



Proposal to include minimum accessibility standards for housing in the National Construction Code

Decision Regulation Impact Statement

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The Australian Building Codes Board*

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Abbreviations

ABCB	Australian Building Codes Board
ABS	Australian Bureau of Statistics
ACSA	Aged and Community Services Australia
ADACAS	ACT Disability, Aged and Carer Advocacy Service
AHRC	Australian Human Rights Commission
AHURI	Australian Housing and Urban Research Institute
AIHW	Australian Institute of Health and Welfare
ANUHD	Australian Network for Universal Housing Design
AQoL	Assessment of Quality of Life
ARATA	Australian Rehabilitation and Assistive Technology Association
BCR	Benefit-cost ratio
BMF	Building Ministers' Forum
CASE	Centre for Analysis of Social Exclusion
CBA	Cost-benefit analysis
CEA	Cost-effective analysis
CIE	The Centre for International Economics
COAG	Council of Australian Governments
COTA	Council on the Ageing
CRPD	The UN Convention on the Rights of Persons with Disabilities
CUDA	Centre for Universal Design Australia
CV	Contingent valuation
DCE	Discrete choice experiment
DCWC	Donald Cant Watts Corke
HIA	Housing Industry Association
HMinfo	Home Modification Information Clearinghouse
HRQoL	health-related quality of life

LHA	Livable Housing Australia
LHD	Livable Housing Design
LHDG	Livable Housing Design Guidelines
LSE	London School of Economics and Political Science
MDI	Melbourne Disability Institute, University of Melbourne
NCC	National Construction Code
NDIA	National Disability Insurance Agency
NDIS	National Disability Insurance Scheme
NPV	net present value
OBPR	Office of Best Practice Regulation
PCA	Property Council of Australia
PPV	Post-Polio Victoria
QALY	quality-adjusted life year
RANZCP	Royal Australian and New Zealand College of Psychiatrists
RIS	Regulation Impact Statement
SDA	Specialist Disability Accommodation
SDAC	Survey of Disability, Ageing and Carers
VSL	value of a statistical life
VLV	value of a life year
WTP	willingness to pay
YPINH	Young People in Nursing Homes National Alliance

Glossary

Accessible housing

Accessible housing is housing providing features that are being proposed in the NCC, which are based on the LHDG (see below). Accessible is similar but not necessarily equal to terms like adaptable, visitable (see below).

Adaptable housing

Adaptable housing is housing designed to cater for people of all ages and abilities. It provides greater housing choices.

Additionality

Additionality refers to the impacts of a policy change over and above the situation under the business as usual case (i.e. without the policy change).

Allocation

In this RIS, allocation refers to the market process and mechanism that determine who purchases or rents the newly constructed accessible dwelling.

Assessment of Quality of Life (AQoL)

AQoL is a system developed by the Centre for Health Economics at Monash University (<https://www.monash.edu/business/che/research-areas/measurement-of-health-and-quality-of-life>) to measure the quality of life (see below). It is derived from questionnaires designed to measure an individual's independence, mental health, social participation and senses.

Baseline

Baseline, or baseline case, refers to the business as usual situation without proposed changes. It provides a base against which the proposed changes are assessed.

Benefit-cost ratio (BCR)

A quotient that total benefit is divided by total cost. A BCR of one means benefit equals to cost. A BCR greater than one means benefits are larger than costs. A BCR less than one means benefits are less than costs.

Break even

A case where the value of benefits equals to the value of costs, that is, a BCR of one.

Class 1a building

A Class 1a building is a single dwelling being a detached house, or one of a group of attached dwellings being a town house, row house or the like.

Class 2 building

Class 2 buildings are apartment buildings. They are typically multi-unit residential buildings where people live above and below each other.

Contingent Valuation (CV)

Contingent Valuation is a method of estimating the value that a person places on a product or service. It asks people to directly report their willingness to pay to obtain a specific good or service, or willingness to accept to give up a good or service, rather than inferring them from observed behaviours in regular market places.

Cost-benefit analysis (CBA)

Cost-benefit analysis (CBA), sometimes also called benefit-cost analysis, is a systematic approach to estimating the strengths and weaknesses of alternatives or options to achieve targets or objectives.

Central case

A central case in CBA is the analysis assuming most likely, or mid-point estimates of benefits and costs, and the commonly adopted parameters such as discount rate (see below).

Discount rate

A rate to convert the future benefits and costs into a value at the present so that they can be compared.

Discrete choice experiment (DCE)

Discrete choice experiment is a method in economics to describe, explain and predict choices between two or more discrete alternatives, such as choosing a set of accessible features, or choosing between modes of transport.

Distributional impact

Distributional impact is the effect of the distribution of the final gains and costs within a community (e.g. who gains and who pays) derived from a project or program.

Elasticity

Elasticity measures the change of one economic variable (the outcome variable, for example demand for a good or service) in response to a change in another (the cause variable, for example the price of the good or service or consumer's income). It is calculated by dividing the percentage change in the outcome variable by the percentage change in the cause variable. An elastic variable (with an absolute elasticity value greater than 1) is one which responds more than proportionally to the change in the cause variable. By contrast, an inelastic variable (with an absolute elasticity value less than 1) is one which responds less than proportionally to the change in the cause variable.

Livable Housing Design Guidelines (LHDG)

Livable Housing Design Guidelines (LHDG) are developed by Livable Housing Australia. They provide a nationally consistent set of guidelines to make homes safer, more comfortable and easier to access for people of all ages and abilities. Three levels of performance are provided in LHDG along with 15 livable housing design elements. Silver Level requires 7 core elements, Gold Level has enhanced requirements for most of the core elements plus additional elements, and Platinum Level requires all 15 elements.

Loneliness

Loneliness is the subjective state of negative feelings about having a lower level of social

contact than desired, according to Australian Institute of Health and Welfare (AIHW) (<https://www.aihw.gov.au/reports/australias-welfare/social-isolation-and-loneliness>).

Present value

The current equivalent value of a future value of benefit or cost. It is calculated by the discount rate (see above).

Quality adjusted life year (QALY)

Quality adjusted life year is a generic measure of disease burden including both the quality and the quantity of life lived in health economics. It is used to assess the value of medical interventions. One QALY equates to one year in perfect health based on a scale from 1 (perfect health) to 0 (death).

Quality of life

Quality of life generally includes factors such as independence, dignity, mental health, social isolation and loneliness. This analysis draws on studies based on the Assessment of Quality of Life (AQoL) developed by the Centre for Health Economics at Monash University (see above).

Revealed preference

Revealed preference is the preference (e.g. how much to pay for one unit of a product or service) derived from observations and data on actual choices made by people.

Scenario

A scenario is a specific case where certain assumptions about benefits and costs are applied as a special form of sensitivity analysis (see below).

Sensitivity analysis

An analysis undertaken to test how sensitive the results are by changing the assumptions and parameters.

Social isolation

Social isolation refers to a situation where an individual has minimal contact with others. According to AIHW, there is a subtle distinction between social isolation and loneliness (see above).

Stated preference

Stated preference is the preference (e.g. how much to pay for one unit of a product or service) derived from respondents' choices over hypothetical scenarios.

Uncertainty

The state of being uncertain, arising from factors such as limited data and information, under researched topic, complexity and unknown future.

Universal design

Universal design is the design and composition of a built environment so that it can be accessed, understood and used to the greatest extent possible people regardless of their age, size, ability or disability.

Value of a life year (VLY)

Value of a life year (VLY) is the notional value that an individual places on each additional year of life. It is related to the concept of value of a statistical life (see below).

Value of a statistical life (VSL)

Value of a statistical life (VSL) is a notional value that individuals place on reducing the risk of death. A related concept is the value of a life year (see above).

Visitability

Visitability is the design approach for housing such that anyone with mobility needs (for example using a wheelchair or other mobility aids) should be able to visit, which requires the ability to enter into the house, to pass through interior doorways and to enter a bathroom to use the toilet.

Willingness to pay (WTP)

Willingness to pay (WTP) is the maximum price at which a consumer will definitely buy one unit of a product or service.

Executive summary

This Regulation Impact Statement (RIS) examines the costs and benefits of including accessibility standards in the National Construction Code (NCC), based on the Livable Housing Design Guidelines (LHDG) which could apply to the construction of new residential housing.

Accessible housing is based on the principles of universal design and is housing that includes features which enable safe and comfortable use by people with disability and those transitioning through life stages. In 2009 governments, industry and advocates agreed through a National Dialogue to pursue an aspirational target that all new homes would be of an agreed Universal Housing Design standard by 2020.

Housing is integral to people's wellbeing.

"A person is more disabled when their built environment is inaccessible".¹

More than 3 million Australians have a mobility limitation and/or a self-care limitation due to disability, with more than 90 per cent living within the community.² This is estimated to increase to around 4.5 million people by 2040.

Inaccessible housing can directly and adversely affect the daily lives of Australians who have mobility limitation, use a wheelchair or use mobility aids or who require care from others for self-care tasks, such as showering or toileting, which is provided either formally or informally. Inaccessible housing can impact economic participation and also have a negative impact on family members or friends providing informal care to their loved ones by imposing restrictions on their ability to provide this care.

Older Australians who strongly prefer to age in place may also be negatively affected by inaccessible housing, which may limit their ability to age in their own home, and instead enter residential aged care earlier than they wanted to, if home modifications are not possible.

In trying to find a place to live that meets their needs, people, sometimes hospitalised with disability and older Australians, may face multiple moves which creates significant financial and emotional stress. This was the experience of older Australians Angie and John, presented in the submission by Australian Rehabilitation and Assistive Technology Association (ARATA).

¹ *Anonymous Submission 90458024, accessed 11 November 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/view_respondent?uuId=90458024*

² Based on data from the 2018 Survey of Disabilities, Ageing and Carers.

Angie (88 years old) and John (90 years old) are a married couple who exemplify through their story how housing journeys could be improved as our population ages.

“Angie and John were forced to relocate homes many times to try to meet their changing needs over later adulthood, during their married life. With each relocation, growing financial and emotional stress was encountered and living environments became more restricted, negatively impacting participation.”³

The effects of inaccessible housing on people with mobility or self-care limitation or who are older can extend beyond coping with daily tasks to impacts on mental health and social inclusion. The lived experience of one person living in an inaccessible house who was able to move to an accessible house demonstrates the different effects of these homes on their well-being.

Effects of living in an accessible home versus an inaccessible home

“... I have lived in both an inaccessible house and a fully purpose built home. In my accessible home – I am happy, productive, social and my best person (to myself, my friends and family). I am an excellent employee ... - and this is partly related to my physical health and my mental health being on track. Without access in my home – I was clinically depressed, suicidal, unemployed and single. I now have a great career, I am a wife, a mother, a friend and I am studying at uni.”⁴

Other members of the community without mobility limitation may also find inaccessible housing creates challenges in their daily lives too; for example, people with temporary injuries and families with young dependants.

Some of the other personal stories received during consultation related to:

- The inability to stay in or return to the family home after a major health change.
- Extensive and unsuccessful searches for an appropriate home.
- The need for ongoing government funding for a carer that would otherwise not be needed if an appropriate home was available.
- Premature entry into residential aged care including for young people.
- Limitations of home modifications and the significant financial costs associated with retrofitting accessibility features, such as grab rails, which are cheaper in a house built to universal design standards.

³ Submission by Associate Professor Libby Callaway for ARATA, p.10-12, accessed 1 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/view_respondent?show_all_questions=0&sort=submitted&order=ascending&q__t_ext=callaway&uuId=522000197

⁴ Anonymous Submission 90458024, accessed 11 November 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/view_respondent?uuId=90458024

- The significant emotional and financial stress resulting from the need to move on several occasions due to changing accessibility requirements.
- The social isolation and loneliness associated with an inability to visit family and friends.

While existing government assistance goes some way to supporting the housing needs of these members of the community, there is currently a lack of accessible housing and it is estimated that the continuing cost on a number of fronts to the community is significant, especially for people with disability and older people.

“Having an accessible environment means I am able to perform at my best level - rather than investing energy into worrying about navigating a space, trying to access things in my home or feeling like a burden on others, I can just get on with living.”⁵

Since the release of the voluntary LHDG by Livable Housing Australia in 2010 estimates of the proportion of new private homes built to the LHDG range between 5 and 10 per cent.

This Regulation Impact Statement (RIS) considers the costs and benefits of options to ensure housing is built to meet the needs of all Australians. It draws on the best available information, supported by important lived experiences and information received during consultation. Undertaking this RIS has highlighted the need for more research and quantitative evidence on the impacts of a lack of accessible housing; and the importance of continued policy discussions, beyond cost-benefit analysis, to consider broader critical social and equity outcomes, and human rights considerations.

Background

Accessible housing is housing that includes features that enable use by people either with disability or those transitioning through their life stages. It is based on principles of universal design. While there are differences, related terms include ‘visitable’, ‘adaptable’, ‘livable’ and ‘universal’. Accessibility features should not be confused with highly specialised housing.

Following the 2009 National Dialogue the LHDG were established to provide information for consumers seeking to introduce livable design features into a new home. The LHDG provide guidance on what performance is expected for design and structural elements in the home to achieve either silver, gold or platinum level accreditation. The silver level focuses on structural and spatial elements such as wider doorways, a continuous step-free pathway to an entry door, a hobless shower recess, ground floor toilet and reinforced bathroom walls to support future home modifications. The gold and platinum levels are progressively more stringent for issues such as circulation space and require additional design elements to be incorporated such as two handrails on stairs.

⁵ Submission by Amelia Condi for Summer Foundation, p. 4, accessed 13 November 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/view_respondent?show_all_questions=0&sort=submitted&order=ascending&q_ext=condi&uuId=51249680

In 2017, the then Building Ministers' Forum (BMF), supported by the then Council of Australian Governments (COAG), directed the Australian Building Codes Board (ABCB) to undertake a Regulatory Impact Analysis on the possible inclusion of accessibility requirements for residential housing Class 1a buildings (houses, townhouses and the like) and Class 2 buildings (apartments) into the National Construction Code (NCC).⁶ The direction required options to be assessed based on the Silver and Gold specifications set out in the LHDG, along with other options as appropriate.

The Centre for International Economics (CIE) was engaged by the ABCB to undertake this Regulation Impact Statement (RIS). In this RIS, the term 'accessible' has been adopted to describe the proposed housing features that are based on universal design principles.⁷

This RIS has been prepared in accordance with the COAG Best Practice Regulation, A Guide for Ministerial Councils and National Standard Setting Bodies. This RIS acknowledges and responds to feedback received from stakeholders in response to the Consultation RIS. Feedback has influenced aspects of the size of the problem particularly information on lived experiences, as well as the potential effectiveness and associated costs of the options considered.

Statement of the problem

Finding suitable accommodation is important to all Australians and is a prerequisite for a happy, stable and dignified life.⁸ There is evidence that a significant number of people with disability and older people have trouble finding housing that meets their needs. As demonstrated by one submission:

*"In several weeks of searching [for a rental property] ... not one of the properties we saw was suitable for someone with a power chair and no walking ability at all ..."*⁹

There are a number of factors that lead to a lack of accessible housing. Australia's housing market does not encourage people to consider incorporating accessibility features unless there is an immediate need for an individual or a family. People with disability often live in low income households meaning they are more likely to rent or may not be able to afford to modify their homes. The nature of the new housing market can make it difficult for some homebuyers to deviate from standard designs to incorporate accessibility features. Landlords are reluctant to allow modifications for private renters, so that home modification is often not an option for renters with accessibility needs.

⁶ Building Ministers' Forum 2017, *Communique*, 21 April 2017.

⁷ Other similar (but not identical) terms include 'visitable', 'adaptable' and 'livable'.

⁸ Commonwealth of Australia 2011, *National Disability Strategy 2010-2020: An initiative of the Council of Australian Governments*, p. 32.

⁹ Submission by Hayley Stone for Physical Disability Council of NSW, p. 6, accessed 13 November 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/view_respondent?show_all_questions=0&sort=submitted&order=ascending&q_ext=hayley+stone&uuId=686843897

These factors result in homes that are not suitable for many in our community, particularly those with mobility impairment who require features such as step free entrances, wider doors and corridors and increased circulation space in sanitary facilities, kitchen, laundry, location specific requirements for bedroom spaces, and window and door hardware.

A lack of accessible housing can impose various costs:

- Where people with disability and older people live in homes that do not meet their needs, costs related to safety from a higher risk of falls, additional care needs and reduced quality of life (including less independence, mental health impacts and limits on social participation).
- Other costs could include unnecessarily high costs of home modification, extended hospital and transition care stays, avoidable relocation costs, inability to visit family and friends, early entry to residential aged care and inconvenience for families with young children or those with short-term injuries.

To measure the costs and benefits of the options to ensure housing is designed to be accessible, it is important to understand the number of people impacted and the level of that impact.

The lack of accessible housing mainly impacts people with disability and older people and their carers. Accessible design features may also benefit for example, people dealing with temporary injuries and families with young dependants, although the benefits to those households are likely to be smaller. The desire to age in place is also acknowledged and people may develop a disability in the course of their life even if the features are not specifically needed now.

This is a complex issue of which some aspects are not extensively studied by the literature. A scarcity of quantitative information and other gaps in information on the impact of inaccessible housing has presented some challenges and limitations to the analysis. In preparing this RIS information has been drawn from a range of sources, including available literature, data collected for other purposes, older data where still relevant, and information provided by stakeholders, such as lived experiences.

While it is difficult to precisely determine the number of people impacted by a lack of accessible housing (noting people with mobility limitation or self-care limitation may already live in housing that meets their needs), by drawing on the available data and input from targeted consultations and public submissions, the estimates in table 1 have been developed. It should be noted that people affected by multiple problems are listed in the numbers more than once and therefore the numbers cannot be added together to represent total populations affected.

1 Estimated number of people affected by a lack of accessible housing per year

Problem	Estimated number of people affected per year
Safety-risks	325 100
Additional care needs	453 400
Quality of life	554 400

Problem	Estimated number of people affected per year
Additional time in hospital/transition care	159 900
Home modifications per annum ^a	21 790
Additional home moves	Range of 6 400 – 17 300
Premature/inappropriate entry into residential aged care	Range of 2 767 – 6 199
Inability to visit family and friends (visitability)	85 800
Families with young dependants	Up to 16 000
Short-term injuries	17 551

^a Assumes 1 person per relevant modification per year

Note: the number of people affected is not additive across each type of problem.

Source: CIE – population is estimated on the basis of analysis in appendices B-J.

Table 1 shows the approximate number of people per year impacted by different types of problems associated with a lack of accessible housing, based on analysis in appendix B-J. This information is a key part of calculating the estimated cost of not providing accessible housing to people with disability and older people. The number of people impacted will increase over time.

- The number of people with mobility limitation is projected to increase by around 52 per cent (an average annual growth rate of around 1.9 per cent) over the period 2018 to 2040.
- To a significant extent, this is driven by growth in the number of people over the age of 65. The number of people over the age of 65 with mobility limitation is projected to increase by around 76 per cent (an average annual growth rate of around 2.6 per cent) over the period 2018 to 2040.
- The number of wheelchair users is projected to increase by around 79 per cent (an average annual growth rate of 2.7 per cent per year) over the period 2018 to 2040.

The cost to the community of a lack of accessible housing is estimated to be between \$3.0 billion and \$6.7 billion per annum, as shown in table 2. This is based on the data in table 1, and feedback from public consultation. It is estimated that these costs could increase to between \$4.6 billion and \$10.2 billion per annum by 2040 due to population growth and an ageing population.

2 Estimated size of the problem – quantifiable costs

Assessed problem	Low estimate (\$ million)	Central case (\$ million)	High estimate (\$ million)
Safety-risks	0.00	154.14	570.30
Additional care needs	938.52	938.52	938.52
Quality of life	1 063.89	1 913.23	3 770.10
Additional time in hospital/transition care	234.59	234.59	234.59
Home modifications per annum	498.86	498.86	498.86
Additional home moves	81.51	161.91	242.31
Premature/inappropriate entry into residential aged care	119.56	184.81	267.86

Assessed problem	Low estimate (\$ million)	Central case (\$ million)	High estimate (\$ million)
Inability to visit family and friends (visitability)	35.73	80.93	126.12
Families with young dependants	0.00	0.62	1.23
Short-term injuries	26.25	28.09	29.92
Total	2 998.92	4 195.69	6 679.81

Note: Based on 2018 SDAC data and RIS appendices B-J.

Source: CIE estimates.

Table 2 shows the cost of each type of problem in millions of dollars. These figures are based on the number of people identified in table 1, multiplied by the estimated cost in dollars of each problem as determined in chapter three of the RIS. Due to the limitations associated with the data relied on in the RIS, a cost range is provided, rather than a single figure. The central case referenced throughout the RIS uses an average as a key input into the cost-benefit analysis (CBA).

In response to feedback on the Consultation RIS, the estimates in table 2 now take into consideration morbidity costs associated with falls, reduced quality of life, informal care costs, additional costs associated with avoidable moves and impacts on short-term mobility injuries and families with young dependants.

Lived experiences received during consultation have informed a better understanding of the impacts of the lack of accessible housing, including broader societal impacts such as how the community values accessibility features. Chapters two and three discuss how this qualitative information has been incorporated into the RIS, including the employment and productivity impacts for people with disability which could be in the order of several hundred million dollars per year.

Options

This RIS explicitly considers the following regulatory options to improve the supply of accessible housing:

- **Option 1 (Silver):** Accessibility standard, broadly reflecting LHDG Silver standard, in the NCC applying to all new Class 1a (houses) and Class 2 (apartments) buildings.
- **Option 2 (Gold):** Accessibility standard, broadly reflecting LHDG Gold standard, in the NCC applying to all new Class 1a (houses) and Class 2 (apartments) buildings.
- **Option 3 (Gold +):** Accessibility standard, broadly reflecting LHDG Gold standard (with some Platinum features), in the NCC applying to all new Class 1a (houses) and Class 2 (apartments) buildings.
- **Option 4 (Gold in apartments):** Accessibility standard, broadly reflecting LHDG Gold standard, in the NCC applying to all new Class 2 (apartments) buildings only.

This RIS also explores two non-regulatory options as a basis for comparison with the regulatory options:

- **Subsidy program (Option 5 in the RIS):** A hypothetical subsidy program to encourage additional availability of accessible rental properties. Conceptually the

subsidy would be paid to landlords who provide accessible rental accommodation to people with accessibility needs.

- **Voluntary guidance (Option 6 in the RIS):** An enhanced approach to voluntary guidance, which includes turning the current proposals into a non-regulatory ABCB handbook and other measures to encourage additional uptake of universal design principles, including: a search engine for dwellings certified as complying with the LHDGs and provision of information to home purchasers.

Consultation

Consultation with key stakeholders formed an important part of finalising this Decision RIS. This consultation was undertaken in two major stages:

- Targeted stakeholder consultation program informed the development of the Consultation RIS between November 2019 and May 2020
- Public consultation for the Consultation RIS during July and August 2020.

Feedback was provided in the form of considered opinion, survey information and lived experiences. It reflected the diversity of interests of people and communities interested in the provision of accessible housing.

While all feedback was taken into account, comments on the Consultation RIS and information received in the following areas resulted in revisions to some aspects of this Decision RIS, including:

- the importance of symmetry in reporting costs and benefits;
- employment and productivity impacts;
- the need for more qualitative analysis, including analysis of quality of life impacts;
- social justice considerations;
- impacts on, and of, other government programs;
- alternative methodological approaches; and
- technical suggestions and interpretation of the proposal.

The following significant adjustments were made to the CBA estimates.

- The main adjustments to the benefit estimates were:
 - A significant upward revision to the size of the problem, due mainly to the inclusion of quality of life impacts. Other adjustments included morbidity costs associated with falls; potential impacts on people with self-care limitation who could benefit from the toilet and shower features; a broader range of costs associated with moving to a more accessible dwelling; and some impacts for households that do not have specific accessibility needs.
 - This was partly offset by revised assumptions relating to the extent to which the proposed options would meet the needs of people with disability. In particular, some dwellings (including double-storey houses and townhouses without bedrooms and showers on the entry level, and apartments above the ground floor in blocks without lifts) built to comply with the proposed requirements

- (particularly under Option 1 - Silver) are assumed not suitable for people with limited mobility as built as they are likely to require the use of internal stairs.
- Societal benefits have been excluded from the CBA results presented in table 3 below to clearly separate the efficiency impacts from the equity impacts (consistent with OBPR guidelines). Estimates of the societal benefits have been retained in a separate scenario reflected in table 4 to provide additional information for decision-makers.
 - The costs were also adjusted. As the costs apply to all new dwellings, the CBA outcomes are particularly sensitive to changes in costs. The main adjustments were:
 - Made due to changes to the NCC proposal under each option. In particular, estimates in the Consultation RIS were based on one-step access rather than step-free access as reflected in this RIS. Further adjustments were also made to corridor and door widths, bathroom elements and internal thresholds.
 - Other adjustments reflect a re-assessment of how the market would respond to the above proposed requirements.
 - An adjustment was made to reflect the additional value of the extra space provided by the proposed accessibility standard which offset to some extent the opportunity cost of space.
 - Additional costs associated with verifying compliance with the proposed NCC standards were also included in this RIS.

Estimated impacts – costs and benefits

This RIS adopts a CBA to assess and compare each of the options. The status quo – that is no changes to existing policy settings – has been used as a baseline against which the costs and benefits of options are assessed.

Table 3 presents the results of the CBA, in which:

- The **costs** reflect the additional construction (and other) costs associated with building accessible dwellings over the 10-year regulatory period from 2022.
- The **benefits** are estimated based on how much each option would address the accessibility problems for people with disability and older people as described in tables 1 and 2. Benefits are estimated over an assumed 40 year life of each dwelling constructed over the 10 year regulatory period to include benefit to people who acquire a disability in the future, including younger people as they age.
- Costs and benefits are estimated in Net Present Value (NPV) terms, meaning future costs and benefits are discounted to reflect their value today, to allow them to be compared.

The non-regulatory options (a subsidy program and enhanced voluntary guidance) are largely outside the ABCB's responsibility and therefore not the primary focus of this RIS. Further discussion of these options can be found in chapters four through eight in the RIS.

The Silver, Gold and Gold + Options (Options 1–3) are estimated to affect around 1.9 million new dwellings over the 10 year period, while the Gold in apartments Option (Option 4) is estimated to affect around 0.6 million new dwellings. As this would be a modest share of the overall dwelling stock, a change to the NCC would attend to only a proportion of the total problem associated with a lack of accessible housing (between 3 per cent and 9 per cent by the end of the regulatory period).

Table 3 details the results of the CBA, which are estimated in NPV terms, and shows that implementing the regulatory options result in a significant net cost to the community.

3 Estimated net impact

Impact	Silver - Option 1 (\$ million)	Gold - Option 2 (\$ million)	Gold+ Option 3 (\$ million)	Gold for apartments Option 4 (\$ million)
Benefits				
Avoided safety costs	99.16	164.05	164.64	64.35
Avoided carer-related costs	590.80	998.90	1 002.47	391.79
Quality of life improvements	1 173.43	2 036.32	2 043.59	798.70
Avoided time in hospital/transition care	151.13	249.68	250.57	97.93
Avoided home modifications	341.89	530.95	532.85	208.25
Avoided moving costs	95.43	172.33	172.94	67.59
Avoided entry into residential aged care	75.85	218.25	219.02	85.57
Visitability benefits	112.79	147.48	148.01	33.78
Benefits for families with young dependants	0.86	1.13	1.13	0.26
Benefits for short-term injuries	39.15	51.19	51.37	11.73
Total benefits	2 680.50	4 570.28	4 586.61	1 759.95
Costs				
Construction costs	-5 243.10	-17 906.95	-23 591.51	-4 699.84
Opportunity cost of space	-1 255.38	-7 709.42	-9 393.51	-7 596.93
Compliance verification costs	- 290.49	- 290.49	- 290.49	- 83.82
Industry re-training costs	- 28.47	- 28.47	- 28.47	- 28.47
Subsidy	0.00	0.00	0.00	0.00
Total costs	-6 817.44	-25 935.33	-33 303.98	-12 409.06
Net benefit/costs	-4 136.94	-21 365.05	-28 717.37	-10 649.11
Benefit-cost ratio	0.39	0.18	0.14	0.14

Note: Costs and benefits are presented in net present value terms covering a 10-year regulatory period from 2022 to 2031, using a discount rate of 7 per cent. Benefits are extended out an additional 30 years, reflecting the flow of benefits over the life of dwellings constructed during the regulatory period.

The CBA analysis within the RIS includes preliminary analysis of Option 5. As this has been done for comparison purposes it has not been included in the summary above.

Source: CIE estimates based on estimates in appendix B-J.

The benefits are calculated based on how well each option addresses the problems associated with accessibility through avoided and/or reduced costs as outlined in tables 1 and 2 (safety benefits such as prevented falls, carer-related costs, improved quality of life, less time in hospital and transition care, avoided home modification or moving home,

avoided premature entry into aged care, improved visitability and more convenience and benefits to families with young dependants and people with short term injuries).

The costs primarily comprise those associated with construction (material, labour and space) estimated by the quantity surveyor Donald Cant Watts Corke (DCWC). Adjusted nationally, and taking account of the net opportunity cost of space, estimated additional costs per dwelling range between \$3 874 (Silver separate house) to \$37 742 (Gold + apartment). This is equivalent to approximately 0.5-1.9 per cent for Silver, 1.4-9.0 per cent for Gold and 1.9-11.6 per cent for Gold +, of the average dwelling price depending on type and the location.

By subtracting the costs from the benefits, a net benefit/cost figure is reached – a negative figure shows that costs exceed benefits. A benefit cost ratio of more than 1 means the benefits are greater than the cost. Table 3 shows that all regulatory options have greater costs than benefits. Noting that the societal benefits are not captured in this table and there are other benefits that could not be reliably quantified.

Effectiveness

To a large extent, the benefits depend on the extent to which people with accessibility needs occupy the new accessible houses that would be built under amendments to the code. The proportion of people already living in accessible housing when they acquire a disability will increase as the share of accessible dwellings in the dwelling stock increase. This will benefit people who may acquire a disability in the future, and for those young people now, would allow the opportunity to age in place as they grow older. Others would need to move to a newly built accessible dwelling which would be allocated through the market rather than an administrative process to receive any significant benefits from the proposal.

The associated costs of moving are relatively low for renters, suggesting a significant proportion of these renters could move to an accessible rental property built under the revised code.

However, there are barriers to owner-occupiers moving to newly built accessible dwellings, including both financial barriers (such as real estate agent fees, conveyancing costs and stamp duty) and non-financial barriers such as new dwellings not being in a preferred location and preferences to remain in existing dwellings. These factors make it less likely that new accessible dwellings built under an amended code will be occupied by those most likely to benefit in the short to medium term. The CBA therefore assumes that the NCC proposal would not increase the proportion of owner-occupiers who move home as a result of acquiring a disability (although alternative assumptions were also considered as part of sensitivity testing).

Other factors

The Consultation RIS had considered the Silver Option would provide suitable accessible housing for the majority of those with accessibility needs. However, following consultation, it is apparent the Silver Option would be less inclusive, particularly in

relation to double storey housing because it does not require the provision of a shower on the ground floor level. Taking this into account, the RIS assumes the Gold proposal would be more suitable to the majority of people with mobility limitation and self-care limitation.

There are some impacts to society from a lack of accessible housing that are not easily quantified and lead to complex distributional considerations.

This RIS explores a number of broader societal impacts including equal access to housing for people with disability, social justice and human rights. The community willingness to pay for more equal outcomes for people with disability, one measure of the societal benefits, has been excluded to separate the efficiency from equity impacts consistent with COAG RIS guidelines.

There are also likely to be employment related benefits (as discussed in chapters three and seven). However, there was not enough information to inform a reliable estimate on the extent of these benefits.

In the interests of providing broader information that may be useful to decision makers when considering distributional impacts, these issues have been further explored in sensitivity tests.

Sensitivity testing

Table 4 shows the results of the CBA using the same benefits as outlined in table 3 plus the estimated benefits associated with positive societal and employment outcomes. It shows that the costs outweigh the benefits for all regulatory options.

To further test the robustness of the CBA the following was undertaken:

- **Break-even analysis** - to determine how much the costs per dwelling of each option would need to change for the benefits to exceed the cost.
- **Sensitivity analysis** - the assumptions within the CBA (as outlined in chapters three, six and seven) were varied to test if different assumptions and scenarios changed the overall outcomes of the CBA. Individual assumptions varied and tested include:
 - different estimates of the size of the problem (combining all upper/lower bound estimates of the problems under the status quo)
 - occupation of properties
 - discount rates
 - regulatory period and
 - estimated life of the dwelling.

These tests were repeated under a further scenario analysis that included employment and productivity benefits and societal benefits.

Key findings from the sensitivity and break-even analysis include:

- When the community's preference for more equitable housing outcomes for people with disability is included in the CBA, the costs are still estimated to outweigh the benefits. While this is one way of considering benefits related to equity, human rights

and social justice within a CBA, weighing up these benefits against the net costs imposed on other members of the community is ultimately a matter for decision-makers.

- Where upper bound productivity and employment impacts are included as a sensitivity test, the benefit-cost ratio improves, yet they aren't sufficient to change the outcome of the CBA.

4 Net benefits/costs including societal and employment-related benefits

Benefits	Option 1 (\$ million)	Option 2 (\$ million)	Option 3 (\$ million)	Option 4 (\$ million)
Benefits included in central case	2 680.50	4 570.28	4 586.61	1 759.95
Societal benefits ^a	666.62	794.92	794.92	301.46
Employment benefits ^a	342.67	532.17	534.07	208.73
Total benefits (including both societal and employment benefits)	3 689.79	5 897.37	5 915.59	2 270.14
Estimated costs	-6 817.44	-25 935.33	-33 303.98	-12 409.06
Net benefits/costs	-3 127.65	-20 037.96	-27 388.39	-10 138.92
Benefit-cost ratio	0.54	0.23	0.18	0.18

^a As with other benefits, the estimates of the societal and employment benefits differ across options because each option provides different levels of accessibility.

The net benefits/costs analysis within the RIS includes preliminary analysis of Option 5. As this has been done for comparison purposes it has not been included in this summary table for the Executive Summary.

Note: The cost-benefit analysis includes the lifetime costs and benefits of all dwellings constructed over a 10-year regulatory period from 2022 to 2031 (including the lifetime benefits of these dwellings over 40 years), using a discount rate of 7 per cent.

Source: CIE estimates.

Other key findings include:

- Under all scenarios tested, the costs associated with all of the regulatory options (Options 1-4) are estimated to outweigh the benefits, suggesting the findings are reasonably robust.
 - The CBA results are relatively sensitive to assumptions around the allocation of housing.
 - Extending the period over which the proposed regulatory changes are analysed tends to result in a modest improvement in the CBA results. This reflects two factors: the size of the problem is estimated to increase over time; and changes to the NCC become more effective in addressing the problem as the share of accessible dwellings in the stock increases.
- For a proposal to break-even, the cost of the proposals would need to be significantly lower, or the benefits significantly higher (more than \$3000 per dwelling on average for Silver). This is considered to be unlikely.

Conclusions

This RIS has investigated the inclusion of minimum accessibility housing standards in the NCC. It considers the costs and benefits of options to ensure housing is built to meet

the needs of all Australians, drawing on the best available information, supported by important lived experiences and information received during consultation.

Although a lack of accessible housing imposes a significant and growing cost on the community (incurred mostly by people with disability and older people), this RIS concludes that regulatory options to amend the NCC for all new houses and apartments based on Silver, Gold and Gold + impose costs that outweigh the benefits.

The CBA provides quantitative information to inform policy decisions. In an effort to provide further information, the RIS also discusses broader impacts to society including employment and productivity benefits and the community's preference for more equitable outcomes in housing.

Finally, the CBA is not the only input to decision making. Decision-makers are best placed to weigh up factors, such as social justice for people with disability supporting more inclusive communities and ageing in place, as well as Australia's future progress towards international human rights treaties, against the net cost imposed on other members of the community.

1 *Background and introduction*

Background

In late 2009, the National Dialogue on Universal Housing Design brought together key stakeholders from the residential building and property industry, the ageing, disability and community support sector and all levels of government to discuss how housing could be designed and built to better respond to the changing needs and abilities of people over their lifetime. Members of the Dialogue were:

- Australian Human Rights Commission (AHRC)
- Australian Institute of Architects
- Australian Local Government Association
- Australian Network for Universal Housing Design (ANUHD)
- Building Commission Victoria
- COTA Australia
- Grocon
- Housing Industry Association
- Lend Lease
- Master Builders Australia
- National People with Disabilities and Carers Council
- Office of the Disability Council of NSW
- Property Council of Australia
- Real Estate Institute of Australia
- Stockland.

National Dialogue members:

- recognised that traditionally most homes have not been designed or built in a way that can easily accommodate the changing needs of households over their lifetime
- agreed that there is a need to develop a national approach to the issue of Universal Housing Design. Such an approach would resolve the confusion of definitions and approaches to improving access in and around homes making them easier and safer to live in for all people, regardless of age or ability
- believed it is important that the community at large is informed and educated about the benefits of Universal Housing Design
- agreed to work together to explain to the Australian community the benefits of Universal Housing Design – that it is about making homes easier and safer for young

families, people who have short or long-term injuries or illnesses, as well as senior Australians and people with disability.¹⁰

The National Dialogue members also agreed to pursue an aspirational target that all new homes will be of an agreed Universal Housing Design standard by 2020 with interim targets to be set within that 10-year period. A strategic plan was released in 2010 to support the achievement of the aspirational targets — a key milestone in that plan was the release of the LHDG and the National Dialogue on Universal Housing Design 2010, Strategic Plan.

These aspirations have not been met, with estimates of new homes built to the LHDG ranging between 5 and 10 per cent.

During the Australian Building Code Board's (ABCB) consultation process, some stakeholders noted the role of the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) (see box 1.1), in the context of considering a minimum accessibility standard. Australia ratified the UNCRPD in 2008, reflecting the Australian Government's commitment to promoting and supporting the equal and active participation by people with disability in all areas of public life. The obligations under the UNCRPD with respect to accessible housing are progressively realisable and Australian governments are obliged to take steps, to the maximum of available resources, to realise these rights over time.

All Australian governments have a range of measures in place to support the provision of housing for people with disability.

The *National Disability Strategy 2010-2020*, an initiative of the Council of Australian Governments (COAG), provides a high-level policy framework for disability policy in Australia and aligns to the international obligations of the UNCRPD. The National Disability Strategy (NDS) has six outcomes, each with a number of Policy Directions which governments should have regard to when developing programs. Accessible housing falls under Outcome One and Policy Direction Three:

Outcome 1: Inclusive and accessible communities.

People with disability live in accessible and well-designed communities with opportunity for full inclusion in social, economic, sporting and cultural life.

Policy Direction 3 — Improved provision of accessible and well-designed housing with choice for people with disability about where they live.

The NDS discusses the importance of taking a universal design approach to programs, services and facilities as an effective way to remove barriers that exclude people with disability.

¹⁰ National Dialogue on Universal Housing Design 2010, *Strategic Plan*, July 2010, pp. 1-2.

1.1 United Nations Convention on the Rights of Persons with Disabilities (UNCRPD)

As set out in the AHRC submission to the ABCB's Options Paper,¹¹ the general principles of the Convention on the Rights of Persons with Disabilities (set out in Article 3) that are relevant to housing include:

- full and effective participation and inclusion in society
- respect for difference and acceptance of persons with disabilities as part of human diversity and humanity
- equality of opportunity
- accessibility.

The AHRC also noted in its submission other relevant articles of the UNCRPD:¹²

- State Parties (under Article 4(f)), undertake to:
 - promote research and development of universally designed goods, services, equipment and facilities which should require the minimum possible adaptation and the least cost to meet the specific needs of a person with disabilities
 - promote universal design in the development of standards and guidelines.
- State Parties shall take appropriate measures to ensure persons with disabilities have access to, on an equal basis with others, the physical environment, including housing. These measures shall include the identification and elimination of obstacles and barriers to accessibility (Article 9).
- State Parties recognise the equal right of all persons with disabilities to live in the community, with choices equal to others, and shall take effective and appropriate measures to facilitate full enjoyment by persons with disabilities of this right and their full inclusion and participation in the community. This will include by ensuring that persons with disabilities have the opportunity to choose their place of residence and where and with whom they live on an equal basis with others and are not obliged to live in a particular living arrangement (Article 19).

In mid-2017, the Prime Minister, on behalf of the Building Ministers' Forum (BMF), proposed to the COAG that a national Regulation Impact Statement (RIS) be prepared to consider applying a minimum accessibility standard for private new dwellings in Australia through the National Construction Code (NCC).¹³ This was subsequently agreed by COAG.

The BMF confirmed in October 2017 that the RIS would, in consultation with Disability Ministers, examine the LHDG silver and gold performance levels as options for a minimum accessible standard; use a sensitivity approach; and be informed by appropriate case studies.

¹¹ Australian Building Codes Board, Accessible Housing Options Paper, Consultation Report, April 2019, pp. 16-17.

¹² United Nations website, <https://www.un.org/development/desa/disabilities/convention-on-the-rights-of-persons-with-disabilities/article-9-accessibility.html>, accessed 6 February 2020.

¹³ Building Ministers' Forum 2017, *Communique*, 21 April 2017.

The accessibility of housing in Australia was recently raised by the United Nations Committee on the Rights of Persons with Disabilities (the Committee) in its Concluding Observations on the combined second and third periodic reports of Australia (Concluding Observations), following Australia's appearance before the Committee in September 2019. Concluding Observations are non-binding recommendations that do not extend or amend Australia's obligation under the UNCRPD. In its Concluding Observations the Committee expressed concerns about the proportion of existing inaccessible built environment and the lack of mandated national access requirements for housing in the NCC. The Committee recommended that Australia amend its federal law to include mandatory rules on access for all new and extensively modified housing.

The Australian Government considers all recommendations of the Committee, but notes that the Committee's recommendations (including those made as part of the Committee's Concluding Observations in October 2019) are not legally binding but rather the committee's views in regard to how Australia is progressing with implementing treaty obligations.¹⁴

During consultation, some stakeholders advocated the view that Australia has a legal obligation under the CRPD to implement the Committee's recommendations. This view is noted in the report to inform decision makers as they consider the outcomes of this RIS.

Development of the proposal and stakeholder consultation

To guide the objectives, options and terminology to be considered in the RIS, the ABCB released an Options Paper in September 2018, including a preliminary menu of options and costings as the basis for receiving feedback from stakeholders. Stakeholders were invited to provide feedback on the Options Paper through the following channels:

- consultation forums — the ABCB held consultation forums in each capital city during October and November 2018; and
- written stakeholder submissions — the ABCB received 179 submissions from a wide range of organisations and individuals between September 19 and 30 November 2018.

The ABCB released a Consultation Report summarising stakeholder feedback on the Options Paper in April 2019.

The ABCB has subsequently developed a formal proposal featuring 3 regulatory options for minimum accessibility standards for Class 1a (houses) and Class 2 (apartments) dwellings that broadly align with the LHDG produced by Livable Housing Australia (LHA). Other accommodation types are out of scope on the basis that they are covered by current NCC accessibility requirements or are for specific purposes such as a caretaker's residences.

- Option 1 is based on the LHDG silver standard
- Option 2 is based on the LHDG gold standard

¹⁴ Based on the Commonwealth's position found at <https://www.ag.gov.au/rights-and-protections/human-rights-and-anti-discrimination/united-nations-human-rights-reporting>.

- Option 3 is based on the LHDG gold standard, plus some additional features from the platinum standard.

This proposal was informed by feedback from the Options Paper and outcomes of a technical review by a reference group comprised of the ABCB's Building Codes Committee members and other experts. Reference group membership included:

- Australian Institute of Architects (AIA)
- Australian Institute of Building Surveyors (AIBS)
- Housing Industry Association (HIA)
- Master Builders Australia (MBA)
- New South Wales Building Administration
- Two access consultants.

The RIS process

Before any decision is made with respect to this proposal to change the NCC, a Regulation Impact Statement (RIS) is required. The RIS process is designed to ensure that regulatory decisions are consistent with the Principles of Best Practice Regulation agreed by COAG (box 1.2).

1.2 Principles of Best Practice Regulation¹⁵

COAG has agreed that all governments will ensure that regulatory processes in their jurisdiction are consistent with the following principles:

- 1 establishing a case for action before addressing a problem
- 2 a range of feasible policy options must be considered, including self-regulatory, co-regulatory and non-regulatory approaches, and their benefits and costs assessed
- 3 adopting the option that generates the greatest net benefit for the community
- 4 in accordance with the Competition Principles Agreement, legislation should not restrict competition unless it can be demonstrated that:
 - a) the benefits of the restrictions to the community as a whole outweigh the costs, and
 - b) the objectives of the regulation can only be achieved by restricting competition
- 5 providing effective guidance to relevant regulators and regulated parties in order to ensure that the policy intent and expected compliance requirements of the regulation are clear
- 6 ensuring that regulation remains relevant and effective over time
- 7 consulting effectively with affected key stakeholders at all stages of the regulatory cycle, and
- 8 government action should be effective and proportional to the issue being addressed.

¹⁵ Council of Australian Governments 2007, *Best Practice Regulations: A Guide for Ministerial Councils and National Standards Setting Bodies*, October 2007, p. 4.

The ABCB engaged the Centre for International Economics (CIE) to prepare a RIS (this document).

As part of this process a Consultation RIS was released for public comment in July 2020.

Consultations

Consultation with stakeholders informed the preparation of this Decision RIS. This consultation was undertaken in two stages:

- A targeted stakeholder consultation informed the development of the Consultation RIS between November 2019 and May 2020
- Public consultation on the Consultation RIS extended from 6 July to 31 August 2020.

Targeted stakeholder consultation

To inform the development of the Consultation RIS, CIE undertook a targeted consultation process between November 2019 and May 2020. Consultations were guided by an Issues Paper setting out CIE's preliminary views on the issues that need to be addressed in the RIS. Table 1.3 summarises the consultations that informed the preparation of the Consultation RIS. More details were provided in appendix M of the Consultation RIS.

1.3 Summary of stakeholder consultations

Consultation format	Stakeholder group	Date of discussion
Costing workshop	Housing Industry Association	29 November 2019
Costing workshop	Master Builders Australia	29 November 2019
Costing workshop	Galbraith Scott	29 November 2019
One-on-one discussions	Australian Network of Universal Housing Design (ANUHD)	26 November 2019
One-on-one discussions	Galbraith Scott	29 November 2019
One-on-one discussions	University of NSW	9 December 2019
One-on-one discussions	Centre for Universal Design Australia	9 December 2019
One-on-one discussions	ADACAS	17 December 2019
One-on-one discussions	Department of Social Services	4 December 2019
One-on-one discussions	Master Builders Australia	12 December 2019
One-on-one discussions	Housing Industry Association	13 December 2019
One-on-one discussions	Occupational Therapy Australia	13 December 2019
One-on-one discussions	Australian Association of Gerontology	18 December 2019
One-on-one discussions	University of Technology Sydney	18 December 2019
One-on-one discussions	Australian Human Rights Commission	18 December 2019
		14 May 2020

Consultation format	Stakeholder group	Date of discussion
One-on-one discussions	National Disability Insurance Agency	19 December 2019 31 January 2020
One-on-one discussions	Transport Accident Commission (Victoria)	23 January 2020
One-on-one discussions	Sekisui House	24 January 2020
One-on-one discussions	Royal Commission into Aged Care Quality and Safety	19 May 2020
One-on-one discussions	Young People in Nursing Homes	27 May 2020
One-on-one discussions	The Summer Foundation	28 May 2020

Source: CIE.

Public consultation

Public consultation on the Consultation RIS was open from 6 July to 31 August 2020 on the ABCB's Consultation Hub platform.¹⁶ To assist the public to provide feedback on the Consultation RIS a structured questionnaire covering 36 different areas was used.

203 submissions were received in total, 98 in response to the questions posed through the ABCB's Consultation Hub, and the remaining submitted separately (mainly through email). Follow-up discussions with individuals and organisations were held in November-December 2020 to clarify some issues raised during the public consultation.

Feedback received through the consultation process was diverse including new sources of data and insights from a range of lived experiences. All feedback has been taken into consideration in the finalisation of this Decision RIS. The key areas of feedback raised during public consultation and how these are addressed in this report is outlined in the next chapter. A more detailed summary of feedback received during the public consultation is provided in appendix A.

Approach to the RIS

Equity and human rights issues are critically important considerations in a decision on whether to include a minimum accessibility standard in the NCC. This point was highlighted by several stakeholders during consultation who felt people with disability should have the same access and housing choices as other members of the community without segregation to specific housing. These stakeholders also believed strongly in Australia's obligation under the UNCRPD as discussed above.

Under the COAG RIS Guidelines¹⁷, the key analytical tool for a RIS is cost-benefit analysis (CBA). CBA generally focuses on assessing whether a proposal delivers a net gain to society as a whole, rather than who receives the benefits and pays the costs. As

¹⁶ <https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/>

¹⁷ Council of Australian Governments 2007, *Best Practice Regulations: A Guide for Ministerial Councils and National Standards Setting Bodies*, October 2007.

such, costs and benefits are added together without regard to equity considerations (i.e. ‘a dollar is a dollar’).¹⁸

“Distributional judgements are properly made at the political level. In the interests of avoiding subjective bias, analysts should, by and large, refrain from attaching distributional weights to cost and benefit streams. Exceptions might be where there are unambiguous government policy objectives to assist specific groups in the community, and where the justification for special assistance to these groups relative to other groups is clearly established. However, for reasons of transparency, decision-makers and the public should be made fully aware of the costs of government action aimed at benefiting particular individuals or groups in the community.”¹⁹

In the Consultation RIS, CIE explicitly incorporated the community’s preference for equal outcomes for disadvantaged members of the community into the CBA based on a stated preference survey (although many stakeholders argued this did not adequately capture the social justice aspects of the proposal). However, according to OBPR Guidance material, equity issues should generally be separated from the CBA and left to decision-makers.²⁰

“Ultimately, it is up to decision makers to decide the trade-off between equity and efficiency.”²¹

This is not to downplay the importance of equity and human rights issues in policy decisions. Consistent with the view of many advocates, the OBPR material explicitly notes that the distribution of benefits and costs across various groups is an important consideration.²² However, how these equity considerations are weighed up against efficiency considerations is best left to decision-makers.

Consistent with this guidance, estimates of the community’s preference for equal outcomes for members of the community with disability and older Australians have been excluded from the central case estimates of CBA in this report on the basis that equity considerations are best left to decision-makers. However, these benefits are included in the sensitivity analysis to provide some guidance to decision-makers.

¹⁸ Australian Government, Office of Best Practice Regulation, Guidance Note, *Cost-Benefit Analysis*, February 2016, p. 12.

¹⁹ Council of Australian Governments 2007, *Best Practice Regulations: A Guide for Ministerial Councils and National Standards Setting Bodies*, October 2007, p. 26.

²⁰ See: Australian Government, Office of Best Practice Regulation, Guidance Note, *Cost-Benefit Analysis*, February 2016, p. 12; and Council of Australian Governments 2007, *Best Practice Regulations: A Guide for Ministerial Councils and National Standards Setting Bodies*, October 2007, p. 26.

²¹ Australian Government, Office of Best Practice Regulation, Guidance Note, *Cost-Benefit Analysis*, February 2016, p. 13.

²² Australian Government, Office of Best Practice Regulation, Guidance Note, *Cost-Benefit Analysis*, February 2016, p. 13.

Terminology

In this RIS, the term 'accessible' is used to describe the housing features that are being proposed, which are based on universal design principles.²³ It is acknowledged that this may not be the most appropriate term given that the changes being proposed are intended for the mainstream housing market, rather than being in any way specialised or separated from that market.

The term 'accessible' has been retained simply to provide for consistent terminology between this RIS and earlier documents issued by the ABCB in relation to the proposal. It is not intended that the term 'accessible housing' would be used in the text of any change to the NCC.

This report

This report is a Decision RIS for the proposal to include minimum accessible housing standards in the NCC. It supersedes the Consultation RIS based on feedback obtained during consultation which provided further information and promoted additional analysis.

The remainder of this report is structured as follows.

- Chapter two discusses the feedback received during public consultation and the methodology to respond to this feedback
- Chapter three sets out the problem
- Chapter four specifies the objectives and a range of options for achieving the objectives
- Chapter five identifies the impacts of the proposed options and sets out the CBA framework used to assess them
- Chapter six estimates the costs associated with each option
- Chapter seven estimates the benefits associated with each option
- Chapter eight brings together the costs and benefits in a CBA framework
- Chapter nine concludes this RIS.

It may assist readers in navigating the analysis to understand that issues are discussed in increasing detail from the:

- Executive summary, which provides a higher level summary
- The main body of the report (Chapters one-nine), which expands the discussion along the elements of the RIS guidelines
- The appendices, which provide detailed assumptions and discussion.

²³ Other similar (but not identical) terms include 'visitable', 'adaptable' and 'livable'.

2 *Feedback on the Consultation RIS*

As a key step in preparing the RIS for the proposal to include minimum accessibility standards for housing in the National Construction Code (NCC) CIE prepared a Consultation RIS.²⁴

Public consultation on the Consultation RIS was open from 6 July to 31 August 2020 and conducted through the ABCB's Consultation Hub platform.²⁵ Consultation particularly focussed around 36 structured questions to assist the public to provide feedback on the Consultation RIS.

There are 203 submissions in total, with 98 being made through the Consultation Hub, and another 105 being submitted separately (mainly through email). Non-confidential submissions were published on the ABCB website www.abcb.gov.au. Confidential submissions are not published and are not identified explicitly in this RIS. The phrase 'a/one submission' is used when referencing feedback from a confidential submission.

Feedback provided as part of the consultations was diverse and on a number of issues opinion was polarised. Feedback included new data sources and insights from a range of lived experiences. All feedback has been taken into consideration in preparing this Decision RIS. Personal stories and industry insights provided during consultation have been used as case studies to support the discussion of relevant issues in the Decision RIS.

After reviewing all of the submissions, CIE has identified key issues for the analysis, considered the evidence and developed the rationale for the approach taken to address them. The below chapter first engages with the key issues and then specific methodological issues raised and their supporting evidence received through the consultation process and further research.

A more detailed summary of the consultation submissions is provided in appendix A.

Key issues raised in consultation

In considering feedback received during consultation, CIE identified the following areas of feedback that had the potential to significantly impact the Decision RIS:

- the importance of symmetry in reporting costs and benefits

²⁴ CIE 2020, Proposal to include minimum accessibility standards for housing in the National Construction Code: Consultation Regulation Impact Statement, July 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/supporting_documents/Consultation_RIS_Proposal_to_include_minimum_accessibility_standards_for_housing_in_the_NCC.pdf

²⁵ <https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/>

- employment and productivity impacts
- the need for more qualitative analysis
- social justice considerations
- impacts on and of other government programs
- alternative methodological approaches, and
- technical issues.

These matters are addressed in turn in this section.

Consultation feedback has also identified some other factors such as discount rate, excavation cost and space cost which had been identified by the Consultation RIS through sensitivity analysis. They will be discussed in the specific methodological issues section of this chapter.

Symmetry in reporting costs and benefits

The importance of symmetry in reporting costs and benefits was raised by the submission from Melbourne Disability Institute (MDI) and Summer Foundation. An accompanying paper prepared by Associate Professor Andrew Dalton and Emeritus Professor Rob Carter from Deakin Health Economics, Deakin University (Dalton and Carter 2020a)²⁶, noted that the costs and benefits should be reported in a symmetrical way to avoid bias or confounding. Dalton and Carter (2020a) suggest that the symmetrical view of the benefits and costs in the Consultation RIS is compromised as the ‘problem reduction approach’ over-counts the cost side while the ‘willingness to pay’ (WTP) approach under-counts the benefit side. Their paper suggests that most items listed are different under the different approaches and therefore benefits in these two approaches are additive with minimal overlap. Dalton and Carter prefer the no overlap or 25 per cent overlap results.²⁷

In the supplementary information provided later, they suggest that only private costs may be entered into the WTP estimates, and at the maximum, reduced costs associated with loneliness, home modification, carer related costs and incidence of moving²⁸ in the problem reduction approach overlap with the WTP approach.

²⁶ Dalton, Andrew and Rob Carter 2020a, *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, as Appendix 1 of the submission by Melbourne Disability Institute (MDI) and Summer Foundation to the public consultation.

²⁷ *ibid*, p.6

²⁸ Dalton, Andrew and Rob Carter 2020b, *Economic advice prepared to assist with responses to the Consultation Regulation Impact Statement on minimum accessibility standards for housing in the National Construction Code*, supplementary information prepared for The Melbourne Disability Institute, University of Melbourne and the Summer Foundation, 6 October 2020. The supplementary information does not provide specific overlapping ratios for the calculation. If using the same calculation in the original submission in Dalton and Carter (2020a), these four items of benefits in the problem reduction approach would be equivalent to 21.3 per cent, 9 per cent, 9.4 per cent, 9.8 per cent and 12.6 per cent overlapping, respectively, for Options 1 through 5.

The principle of symmetry is a key feature of estimating the benefits and costs associated with regulatory impacts. In response to feedback, the application of this principle to this RIS has been further reviewed. CIE has made some modifications with respect to the problem reduction approach as it relates to the elements incorporated into the WTP approach. Otherwise, the review concluded the analysis appropriately reflects the principle of symmetry. A more detailed explanation of this analysis and revised methodology is provided in the next two sections.

Employment and productivity impacts

Dalton and Carter (2020a) also highlight the impact on employment and productivity of premature retirement, premature death and morbidity (section 1.7.3, p.10; section 3.5.3, p.27) and the productivity impact for people not in the paid workforce (section 3.5.3, p.27).

The submission from MDI and the Summer Foundation provides valuable insights into how accessible housing can affect productivity and work opportunities. In particular, the submission identifies four primary ways through which housing design features can reduce productivity and work opportunities for people with mobility restrictions.

- Housing design features can limit the ability of some people with disability to work from home.
- A lack of accessible housing can limit the ability of some people with disability to move closer to employment opportunities.
- Fatigue from living in an inaccessible home and the additional time and energy spent on self-care and homecare reduces productivity, motivation, self-confidence and capacity to work, study and volunteer.
- Inaccessible housing increases reliance on paid and unpaid support with personal and domestic activities, limiting ability to take on employment.

The above information is drawn from a survey undertaken by MDI and is an important contribution to understanding the linkages between accessible housing and employment outcomes. In recognition that survey respondents were identified on a self-select basis and it is not clear to what extent one can extrapolate the survey findings across the broader population with mobility limitation, the results have been used to inform a qualitative discussion of the impact in the Decision RIS. The next subsection (Qualitative analysis), the section (Employment and productivity impacts, page 115) in chapter three and appendix J provide more discussion on this.

2.1 Treatment of evidence from the Melbourne Disability Institute survey

The MDI survey is an important contribution to understanding the lived experiences of individuals and the impacts of an accessible dwelling on their lives. However, consistent with the treatment of a similar survey in a study by the London School of Economics and Political Science (LSE) and Centre for Analysis of Social Exclusion (CASE), the information from the MDI survey is treated as qualitative for the following reasons.²⁹

- It is not clear to what extent the survey is representative of the experiences of all people with disability. The online component of the survey was distributed via email through disability services and advocacy networks. While this was a logical approach to targeting people with disability (particularly within the timeframe for submissions), it is possible that this could lead to a biased sample because:
 - people who received the survey are more likely to be those that have accessibility issues
 - people with accessibility issues may have been more inclined to respond to the survey.
- The survey invites inferences on the benefits of ‘accessible housing’ to be drawn based on a comparison between the experiences of those living in ‘accessible housing’ and those living in ‘inaccessible housing’. However, houses are categorised as accessible/inaccessible based on a self-assessment that is not necessarily linked to the features that would be covered by the NCC proposal.
 - It is self-evident that:
 - ... those who have indicated that their house meets their accessibility needs report having fewer issues relating to the accessibility of their house
 - ... those who have indicated that their house does not fully meet their accessibility needs are more likely to experience accessibility issues relating to their house.
 - It should be noted that houses assessed as ‘accessible’ were more likely to include the sorts of features covered by the proposed changes to the NCC than houses assessed as ‘inaccessible’ (chart 2.2). This suggests that features covered by the NCC proposal (Options 1-3) are likely to make a home more accessible for people with mobility limitation.

²⁹ Provan, B. Buchardt, T and Suh, E. 2016, *No Place Like an Accessible Home, Quality of life and opportunity for disabled people with accessible housing needs*, London School of Economics and Political Science and Centre for Analysis of Social Exclusion, CASE report 109, July 2016, pp. 5-6.

2.2 Accessibility features in respondents homes



Data source: Wiesel, I. Lived experience and social, health and economic impacts of inaccessible housing, prepared for the Melbourne Disability Institute, University of Melbourne and the Summer Foundation, 18 August 2020, as Appendix 2 of the submission by Melbourne Disability Institute (MDI) and Summer Foundation.

The survey results provided as part of the consultation response incorporated useful case studies. The following points are noted with respect to the case studies.

- While wheelchair users account for around 6 per cent of all people with a mobility limitation due to disability, the majority of case studies (7 of 9) provided in the joint submission by MDI and Summer Foundation, referred to the experiences of wheelchair users.³⁰
- Some case studies refer to challenges experienced working from home. However, the types of design features that the case studies indicate would assist are not necessarily the features that would be provided under the NCC proposal. Examples of this include a height adjustable table, multiple computer screens, a microphone for dictation and adequate space for a wheelchair to enable work/studying from home and adjustable kitchen shelves.

Qualitative analysis

A key theme presented during the consultation period, is the need for more qualitative analysis to support the RIS. Australian Network for Universal Housing Design (ANUHD)³¹ stated:

³⁰ Submission by Professor Bruce Bonyhady and Dr Di Winkler for MDI and Summer Foundation, Appendix 2, case studies for wheelchair users (all or some of the time) on pages 19, 25, 27, 30, 35, 36 and 39, accessed 1 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

³¹ Submission by Margret Ward for ANUHD, p.11, accessed 1 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

The consultation RIS repeatedly concedes that the available quantitative data are incomplete and unreliable. We share this concern and add that the Consultation RIS does not provide any qualitative analysis in these areas as required.

The MDI and Summer Foundation submission echoes this concern, '[i]t is notable, however, that they make limited reference to equity considerations and that their analysis does not include any qualitative analysis'.³²

In response to this feedback, new information and suggestions to further improve the qualitative analysis have been developed and are discussed in the next section which discusses the Decision RIS approach to economic analysis and CBA (Qualitative analysis on page 41).

Social justice

Several submissions highlighted the importance of social justice considerations. Dalton and Carter (2020a) discuss social justice (maximising social welfare function through distributive justice, that is, who receives the goods and services produced) as a reason for government intervention, links this to the principle of solidarity, and points to the need for social justice in housing in human rights frameworks and in other government reports.³³

The RIS is an opportunity to inform decision-makers through an assessment of the most efficient way to achieve social justice and human rights objectives.

By quantifying, to the extent possible, the likely costs and benefits associated with each proposed option the RIS will assist to inform informed decision making. In this RIS, the estimates of costs and benefits are further supported by qualitative discussions on unquantifiable non-financial social costs and benefits. This is discussed in more details in the 'Qualitative analysis' subsection in the next section on page 41 and 'Social justice, equity and costs to the community' subsection in chapter three on page 113.

The discussion on social justice is also related to the discussion of some potential consequences of the proposed changes. One of these would be housing affordability, which was a prominent theme of many (25 per cent) submissions. Higher construction costs of new dwellings would increase the housing prices, especially for new housing in non-metropolitan areas where the housing supply is relatively elastic, adversely affecting housing affordability. chapter seven provides more detailed discussion on the housing affordability impact within a supply-demand framework.

Other government programs

Feedback during the consultation period suggested that the RIS should provide more analysis on the impacts of government programs.

³² Professor Bruce Bonyhady and Dr Di Winkler, op.cit., p.3

³³ Section 2.2, p.14 and section 2.3.1, p.15

The methodology in the Consultation RIS is based on outcomes with existing policies in place, so implicitly takes current policies/programmes into account. Reviewing other government programmes separately is beyond the scope of the RIS.

CIE notes that it is possible that where some government programs may not have yet had their full effect (such as NDIS), the estimates may overstate the size of problem. However, as the effectiveness of future policies are uncertain, this reinforces the approach that CIE estimates be based on actual outcomes under current policy settings.

It was also noted during consultation that proposed changes to the NCC could lower the cost of existing government policies and that this should be incorporated into the analysis. CIE notes this but wishes to avoid any risk of double counting. For example, accessibility features in new dwellings may lead to less need for funding home modifications through the National Disability Insurance Scheme (NDIS). The Consultation RIS has included home modification as a part of the problem, and in doing so has inherently recognised the impact of reducing funding from the NDIS.

Alternative methodological approaches

Some submissions suggest alternative approaches to the CBA than those required by the Council of Australian Governments. Best Practice Regulation Guidelines:³⁴

- SGS Economics and Planning (SGS) suggests a cost-effectiveness analysis (CEA)
- One local council proposes a capability approach, and
- Post-Polio Victoria (PPV) suggests a socio-ecological framework.

Under the CEA approach, ‘the desired outcome or end-state is defined. With this outcome established, a range of implementation options can be compared based on their relative costs and effects. This approach, unlike CBA, does not require the benefits to be monetized.’³⁵

This CEA approach is not practical and applicable for this RIS because the outcome is not defined. More specifically it is because six options have been developed. At the least, the Guidelines require two options to be considered – a regulatory option and a non-regulatory option. Moreover, different levels of accessibility requirements have been considered. These options have different outcomes and impacts. In order to compare them, benefits as well as costs have to be estimated.

The ‘capability approach’, developed by Amartya Sen and others,³⁶ extends the traditional income based approach to welfare evaluation. Under this approach, the

³⁴ Council of Australian Governments, Best Practice Regulation, A Guide for Ministerial Councils and National Standard Setting Bodies, October 2007.

https://pmc.gov.au/sites/default/files/publications/COAG_best_practice_guide_2007.pdf

³⁵ Submission by Emily Hobbs for SGS Economics and Planning, p.2, accessed 1 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

³⁶ See Sen, A. 1992, *Inequality Reexamined*, Oxford University Press, Oxford; and Sen, A. 1999, *Development as Freedom*, Oxford University Press, Oxford, for an outline

measure of well-being is the capability (which is a *practical opportunity*) to achieve various functionings (which are the actual achievements) that an individual may value. These functionings are very broad and include things such as being well nourished, being healthy, having productive and interesting work and so on. In this view, income is only one of the constraints that affect an individual's capability. Other market or non-market constraints exist. For example, disability can be understood as a deprivation in terms of capabilities or functionings that results from the interaction of an individual's personal characteristics (e.g. age, impairment), the basket of available resources (assets and income) and environment (social, economic, political, cultural).³⁷

The capability approach provides a valuable framework for measuring outcomes or well-being in general for the development of social economic policies. For example, multi-dimensional measures of health and non-health capabilities could be developed compatible with the capability approach.³⁸

While it is possible to view the implementation of a building code as an expansion of the capability set for people with disability, this does not eliminate the need for CBA. Where resources are limited and trade-offs need to be made, it is still important to compare the value of the increased capability with the cost of providing that increase. This ensures the best use of resources as to maximise the potential increase in capability.

The Consultation RIS has identified a wide range of impacts and benefits of accessible housing, from reduced safety risks, reduced hospitalisation and health care costs, to reduced loneliness. All of these effects, as identified, are consistent with the capability approach. The list of benefit measurements have been further broadened with new information revealed in the public consultation. Detailed discussions on these issues – temporary injuries, families with young dependants, anxiety and mental health impacts, social isolation, quality of life – are provided in the specific methodological issues section on page 43.

Moreover, the needs based assessment for the demand for accessible housing as suggested by the council submission has difficulties in practice. It is difficult to assess those needs because the definition of need itself is value based and will vary depending on who tries to define it.³⁹

As for the usefulness of the capability approach in regard to the UNCRPD, a major issue arises with the practical identification of capabilities. For example, Caroline Harnacke argues that 'the capabilities approach can be regarded as supporting the rights specified in the UNCRPD, but that it proves unable to guide the implementation process due to an

³⁷ Mitra, S. 2006, "The Capability Approach and Disability", *Journal of Disability Policy Studies*, 16(4), p.236-247

³⁸ Gandjour, A. 2014, "Cost-Effectiveness Analysis in Health Care Based on the Capability Approach", *Gesundheitswesen (Healthcare)* 2014: 76, p.39-43

³⁹ Mitra (2006), p.245

insufficient grounding of the capabilities. Employing the capabilities approach thus leads to only limited results'.⁴⁰

The PPV submission suggested a socio-ecological framework. The framework gives a more balanced perspective on the needs of people with disability and older people in terms of not only their needs, but also their families, friends, carers and social networks, and the whole Australian society. It 'accounts for the impact of an individual's social and environmental context on their health outcomes'. For example, inability to access their friends' homes can impact on 'their commitment to continue to build a life full of meaning' and, due to their friends' potential lack of understanding of their physical limitations, to diminished social relationships or inclusion.⁴¹

The socio-ecological framework is therefore not a different approach to the CBA per se. Instead, it provides a perspective to include broad impacts. This has been addressed in the RIS by including additional benefits – see detailed discussions on temporary injuries, families with young dependants (page 51), anxiety and mental health impacts (page 51), social isolation (page 52), quality of life (page 53) in the specific methodological issues section.

Technical change and interpretation of the proposal

Feedback was received during consultation with respect to the application of the LHDG guidelines and associated universal designs.

Several submissions have raised the issue that the proposed changes to the NCC did not accurately reflect the LHDG. In ANUHD's words,⁴²

The draft changes to the NCC has watered down the LHD guidelines. ... The draft changes to the NCC, as they stand, would render homes built under any of Options 1-4 inaccessible.

These comments were endorsed by the MDI and Summer Foundation⁴³ and the Australian Rehabilitation and Assistive Technology Association (ARATA).⁴⁴

It was also noted that home modifications which tend to be specialised and tailored to an individual's needs are not substitutes for proposed accessible features. For example, the submission from the Home Modification Information Clearinghouse (HMinfo) notes that most modifications are bespoke to meeting special needs and not included in the

⁴⁰ Harnacke, C. 2013, "Disability and capability: exploring the usefulness of Martha Nussbaum's capabilities approach for the UN disability rights convention", *Journal of Law, Medicine & Ethics*, 41(4), p.768-80.

⁴¹ Submission by Barbary Clarke for Post-Polio Victoria, p.6, accessed 1 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

⁴² Margret Ward, op.cit., p.6

⁴³ Professor Bruce Bonyhady and Dr Di Winkler, op.cit., p.4

⁴⁴ Submission by Associate Professor Libby Callaway for ARATA, p.3, accessed 1 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

universal designs.⁴⁵ This suggests that some components of the size of the problem may be overstated, for example, the safety costs and care costs which were estimated according to the difference before and after home modifications.

There were also a range of different technical interpretations of the proposal. The following examples in particular could have a significant bearing on costs and benefits:

- requiring only a certain proportion rather than all carpark spaces in apartment buildings to be accessible
- requirement for doorway width
- entrance requirement – one-step as default (HIA)
- exemptions, and
- inclusion of access to outdoor areas under all specifications.

Feedback associated with the technical interpretation of the proposal was referred to the ABCB. The ABCB, in response to comments from the public consultation and discussions with advocates and governments, amended the proposed NCC draft standard to reflect more closely the LHDG specifications in Options 1-3. A quantity surveyor was engaged to provide their independent estimate of its impact on all relevant construction and space costs which are discussed in more detail in chapter six of this report and a separate costing report *Accessible Housing: Estimating the Cost Impact of Proposed Changes to NCC*.⁴⁶

Overall approach to economic analysis and CBA

Considering polarised views

As mentioned above, submissions have very different views on specific issues; for example, some argue the benefits are overstated and costs understated and others argue the opposite.

In most cases, both sides have good reasons for their argument, and their differences reflect the complexity of the issues and the very nature of uncertainties around the assumptions.

A key example is, Dalton and Carter (2020) argue for a higher value of statistical life (VSL) in the RIS - \$7 million (with a range between \$4.5 million and \$7.9 million) as opposed to \$4.5 million used in the Consultation RIS.⁴⁷ CIE has discussed this issue with

⁴⁵ Submission by Professor Catherine Bridge for Home Modification Information Clearinghouse, p.5, accessed 1 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

⁴⁶ DCWC 2020, *Accessible housing: Estimated cost impact of proposed changes to NCC*, Report Version V2.0 – 14 December 2020, see Table 2.1 and appendices.

⁴⁷ Dalton and Carter (2020a), p.10

OBPR, which has reiterated that the RIS approach should follow best practice, based on the guidance of OBPR which draws reference from international literature.⁴⁸

The Decision RIS acknowledges these uncertainties (and therefore disparate views) in the analysis by assigning a range of values for the relevant parameters. Sensitivity analysis is conducted with these assumptions in order to establish how sensitive the net benefit is to the assumed cost and benefit estimates (for more details see chapter eight).

Focusing on the problem reduction approach

In the Consultation RIS, two approaches were used to estimate the benefits of the proposed accessibility requirements in the NCC:

- The central approach, **problem reduction approach**, was based on CIE's estimate of the extent to which one would expect the proposed changes to the NCC (and other options) to improve the accessibility of housing.
- An alternative approach was based on estimates of household **willingness to pay (WTP)** for various accessibility features when choosing a home to buy or rent. These estimates were derived from a stated preference survey using 'choice modelling' questions that offered hypothetical choices between homes with differing accessibility features and rents.

Taking into consideration feedback received on the Consultation RIS, the RIS continues to apply the problem reduction approach, which is in keeping with OBPR guidance,⁴⁹

As a general rule, estimates of individuals' valuations of goods and services derived from observing their behaviour in markets tend to be more creditable than those from survey questionnaires (Boardman et al. 2010). Observing purchasing decisions directly reveals preferences, whereas surveys elicit statements about preferences.

The RIS continues to draw on the WTP study to substantiate/estimate some elements for the problem reduction approach, for issues such as benefits to households without mobility limitations (see more detailed discussions in 'Benefits to households without mobility limitations' subsection in the next section, page 43).

As supported by submissions during consultation the WTP approach captures some additional benefits. CIE has to the extent feasible and appropriate combined these WTP estimates under the problem reduction approach and updated analysis with new information suggested by submissions and/or new research on temporary injuries, families with young dependants, mental health impact, quality of life, informal care cost and employment impacts. More details are provided in the next section under each specific methodological issue.

⁴⁸ OBPR 2014, *Value of statistical life*, Best Practice Regulation Guidance Note, Office of Best Practice Regulation, Department of the Prime Minister and Cabinet, December 2014, https://www.pmc.gov.au/sites/default/files/publications/Value_of_Statistical_Life_guidance_note.pdf

⁴⁹ OBPR 2020, *Cost-benefit analysis*, Guidance Note, March 2020, Office of Best Practice Regulation, Australian Government Department of the Prime Minister and Cabinet, <https://www.pmc.gov.au/resource-centre/regulation/cost-benefit-analysis-guidance-note#:~:text=A%20CBA%20involves%20a%20systematic,or%20effects%20on%20one%20group.>, p10.

Adding some benefits estimated through WTP to the central approach is conceptually consistent with the suggestion by Dalton and Carter (2020a) that the benefits in the problem reduction approach and the WTP may be additive.⁵⁰ Moreover, it would avoid the double counting problem.

Qualitative analysis

The importance of qualitative analysis was a key theme during consultation as identified in the first section of this chapter. Qualitative analysis allows appropriate consideration of costs and benefits that cannot be valued in dollar terms, as stated in the OBPR guidance note of March 2020 – the qualitative analysis is under the section ‘Dealing with costs and benefits that cannot be valued in dollar terms’.⁵¹ Qualitative analysis is part of the overall analysis and is to be used when quantitative information is not available.

Based on feedback on the Consultation RIS, some areas of qualitative analysis have been enhanced or added, for example the impacts of a lack of accessible housing on equity, dignity and employment on people with disability and older people. The MDI survey of people with disability and senior people provides useful inputs into the qualitative analysis, for example, quality of life, ability to perform domestic activities, to study, work or volunteer, impact on social and family relations. It is noted that some of these impacts may be quantifiable.

Qualitative analysis provides a role in testing the appropriateness of quantitative analysis, what factors could change the results of quantitative analysis, and how likely such changes might be. For example, the Accessible Adult Change Facilities in Public Buildings: Final Regulation Impact Statement prepared by Ernst & Young (2018)⁵² included a separate section of qualitative analysis because:

- some impacts are not quantifiable, and
- in their judgement, the unquantifiable benefits were in that case deemed to be potentially very substantial, and in fact in their view the qualitative benefits would almost certainly outweigh the quantitative benefits.

Table 2.3 summarises the benefits that may be subject to qualitative analysis. Section ‘Qualitative assessment’ in chapter three (from page 113 on) provides more detailed discussion and some indicative estimates.

⁵⁰ Dalton, Andrew and Rob Carter 2020a, *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, as Appendix 1 of the submission by Melbourne Disability Institute (MDI) and Summer Foundation to the public consultation.

⁵¹ OBPR (2020), p.12

⁵² Ernst & Young 2018, *Accessible Adult Change Facilities in Public Buildings: Final Regulation Impact Statement*, September 2018, p.47

2.3 Benefits for qualitative analysis

Benefits	Quantifiable?	Qualitative analysis
Improved community inclusion and social participation	In the Decision RIS, 'loneliness' is part of the quality of life assessment. In addition, 'visitability' impact due to inaccessible housing is separately quantified and is further improved by attributing the benefit of improved ability to visit others to all new housing – see the discussion in the social isolation subsection for details)	Loneliness due to accessibility of housing for people with disability and older Australians is included in the quality of life assessment (page 88 in chapter three)
Increased opportunities to engage with the workforce	Indicative estimates made through cross-checking the SDAC data and the MDI survey results with a note that some of the data may have representativeness and self-selection bias issues – see the discussion in the Employment and productivity impacts subsection	Given the issues noted in the left column, the quantification is used in the qualitative analysis as an indication of the potential size of this benefit
Reduced reliance on social welfare	This is a consequence of increased opportunities to engage with the workforce, and thus is not treated as a separate benefit to avoid double counting	This is a consequence of increased opportunities to engage with the workforce, and thus is not treated as a separate benefit to avoid double counting
Greater personal freedom and empowerment	This is part of the quality of life benefits and thus is not treated as a separate benefit to avoid double counting	Included in the quality of life benefit
Improved mental health	This is part of the quality of life impact. Noting there are representativeness issues, quantification has been made through using the MDI survey results and the mental health costs estimated by other studies – see the discussion in Anxiety and mental health impacts subsection	Included in the quality of life benefit The quantification is used to cross check whether the indicative estimate of quality of life impact is in the adequate scale
Improved quality of life, wellbeing and mental health outcomes for informal carers	The CBA includes the opportunity of cost of time. This is included in the costs of informal care	General qualitative discussion when quantifying these impacts
Better awareness of diversity in society	Difficult to quantify as it is not a financial benefit, and mainly an objective of a broader policy regime. Quantification has been made through WTP analysis (the whole society's willingness to pay for improved accessible features)	This is mainly an objective of a broader policy regime – the RIS is to establish whether accessible housing proposal in the NCC is the most efficient way to achieve the objective and includes qualitative discussion The quantification is used in the qualitative analysis as an indicative estimate for this aspect of the benefits See the discussion in Social justice subsection for details
Increased engagement in human-rights and social impact	Difficult to quantify– see above discussion on better awareness of diversity in society	As above for better awareness of diversity in society

Benefits	Quantifiable?	Qualitative analysis
A more equitable society	Difficult to quantify – see above discussion on better awareness of diversity in society	As above for better awareness of diversity in society

Source: CIE.

Specific methodological issues

Benefits to households without mobility limitations

As discussed earlier in this chapter, consultation submissions raised concerns about the application of the principle of symmetry in presenting costs and benefits.

Dalton and Carter (2020a) raise concerns in this regard with respect to benefits for persons without limited mobility; specifically, that the ‘problem-reduction approach’ counted costs but not benefits for persons without limited mobility.

CIE agrees the problem-reduction approach may have omitted some benefits to persons without limited mobility relating to ease of access and use (for example, manoeuvring prams or moving furniture) and receiving visits from family and friends with limited mobility. In response, the RIS now incorporates the stated preference survey results in an additional qualitative discussion of quality of life impact and cost to community assuming partial or no overlapping, which serves to illustrate the likely size of relevant benefits (see section ‘Qualitative assessment’ in chapter three). This is considered a more appropriate response than that proposed by Dalton Carter (2020a) which was to confine cost estimates to buildings occupied by persons with limited mobility. As new dwellings not occupied by people with accessibility needs would also have higher construction costs it is felt this would result in an underestimation of the real cost impacts of the options.

Dalton and Carter (2020a) also suggest that some of the benefits estimated as part of the WTP approach should be added to the benefits already estimated in the problem-reduction approach. Their view is that only up to 25 per cent of the benefits measured under the two approaches overlap and therefore at least 75 per cent of the benefits from each approach should be added together to estimate total benefits. In their supplementary information, Dalton and Carter suggest that only private costs be entered into the WTP estimates, and at the maximum, reduced costs associated with loneliness, home modification, carer related costs and incidence of moving in the problem reduction approach overlap with the WTP approach.

CIE’s view is that the two approaches are primarily measuring the same benefits. For example, benefits of moving around indoors in the WTP approach would include the benefits of reduced falls, reduced time in hospital/transition care, reduced home modification costs and carer-related costs, reduced incidence of moving and reduced premature/inappropriate entry into aged care in the problem reduction approach.

A significant overlap of benefits is consistent with the finding that the two approaches result in similar estimates of benefits for the subgroup of the population with limited mobility. While the debriefing questions in the stated preference survey do not give full

detail on the issues respondents took into consideration when expressing their WTP, the most neutral assumption is that respondents took account of the costs they would bear relating to falls, time in hospital, loneliness, home modification, moving and premature aged care entry. While it is acknowledged that there are some public costs associated with these problems, the economic costs are primarily borne by the affected individual/household.

Based on feedback from stakeholders in relation to the benefits to persons without limited mobility, the RIS incorporates a refined problem-reduction approach that utilises values from the stated preference survey where appropriate. For example, the whole community's willingness to pay for accessible housing (sub-section 'Social justice, equity and costs to the community' in chapter three on page 113), and additional research on temporary injuries (page 107), families with young dependants (page 112), mental health impact and quality of life (page 88 of chapter three and appendix I) are under this approach additive to other problems.

Discount rate

Several submissions, including ANUHD, Summer Foundation and MDI, suggest that the central case discount rate of 7 per cent used in the Consultation RIS is too high. They propose a rate of 3 per cent.

The Consultation RIS was prepared following the OBPR guidelines issued in March 2020, which requires a central discount rate of 7 per cent with rates of 3 per cent to 10 per cent used in a sensitivity analysis.⁵³ Subsequent discussion with OBPR after the public consultation period has endorsed the use of 7 per cent.

CIE also references detailed work on social discount rates prepared by CIE for clients including Infrastructure Australia,⁵⁴ based on the rate of return required in capital markets for private investment with adjustment to account for the fact that project resources may partly come at the expense of consumption rather than alternative investments. Risk premium is a key factor to determine the social discount rate which is especially true for long term investment and in an environment with significant uncertainties.

The Decision RIS adopts a 7 per cent discount rate in the central case CBA.

⁵³ OBPR 2020, *Cost-benefit analysis*, Guidance Note, March 2020, Office of Best Practice Regulation, Australian Government Department of the Prime Minister and Cabinet, <https://www.pmc.gov.au/resource-centre/regulation/cost-benefit-analysis-guidance-note#:~:text=A%20CBA%20involves%20a%20systematic,or%20effects%20on%20one%20group.,p.7>

⁵⁴ CIE 2017, *Real social discount rates for Australian infrastructure projects: Policy discussion paper*, final report for Infrastructure Australia, February 2017.

Space cost

Capital value of space

Dalton and Carter (2020a) also express concern that the problem-reduction analysis includes insufficient benefits from the additional space needed to meet the options. They argue the analysis includes benefits of improved functionality but excludes the capital value of the additional space. CIE does not support adding the capital value to functionality benefits as capital value reflects the preferences of home purchasers, which takes account of functionality benefits, at least in principle. Including both items would therefore risk double counting benefits. No evidence has been provided that accessible features add value to a property. One personal story in a submission noted,⁵⁵

I have thrown so much of my savings [at]... 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 [at]... new home. Modifications made didn't add value to the property but have cost me over \$100,000.

It is acknowledged that the functionality benefits estimated in the Consultation RIS are not the only benefits of a larger home and that more benefits may be included (see separate discussions in later sub-sections – Temporary injuries, Families with young dependants, Anxiety and mental health impacts, Quality of life, Employment and productivity impacts).

The stated preference survey was used to place a value on the increased size of homes, controlling for accessibility features. This value has been used to offset part of the opportunity cost of additional space.

Required additional space

Stakeholder views on additional space requirements as a result of the proposed accessibility standards in the NCC were diverse and at either end of the spectrum – some suggested that the space requirement in the Consultation RIS was overstated while others argue space sizes were too small.

In preparing this RIS this feedback was considered, and available evidence and data further reviewed to inform the updated estimates. This included:

- More scenarios to reflect the different space outcomes developed in the updated quantity surveyor work.
- A qualitative discussion on the impacts of exemptions for step free access.

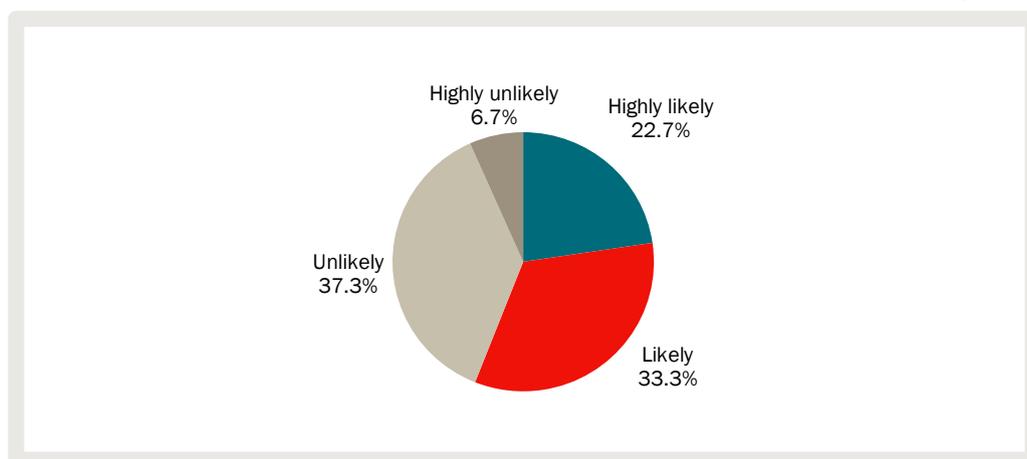
Excavation cost

The Consultation RIS presented estimates of the additional excavation costs associated with complying with the proposed accessibility standard. These estimates were based on information provided by HIA and were not included in the central case estimates (they were included as part of the sensitivity/scenario analysis).

⁵⁵ p.17 of Appendix 2 of Summer Foundation and MDI submission

During consultation, stakeholders were asked whether additional excavation costs are likely to be required to comply with the proposed standard(s). Of the 75 responses to that question, more than half indicated that additional excavation costs are likely or highly likely (chart 2.4).

2.4 Stakeholders responses: are additional excavation costs likely to be required



Note: Answer to Question 23

Data source: Stakeholder feedback on the Consultation RIS.

Including the HIA estimates could add an additional \$230 million per annum to the costs of the proposal. The HIA submission notes that industry feedback on these costs suggests that they are likely to be conservative and in most cases should be doubled.⁵⁶ According to the HIA submission:

- The need for significant additional excavation work comes from the step free entrance requirements challenging all sites and may require costly additional excavation work.
- The alternative option of using the garage as the step-free entrance is also not easily addressed in their view.
- The step-free access requirements have a number of associated requirements (including path widths, path structural loading requirements, cross fall, level landings on the path, as well as 1 200 mm by 1 200 mm space on the arrival side of the door) that had not been adequately taken into account.
- Anecdotal evidence from one member that only around 20 per cent of sites are suitable to provide Silver level housing (without significant excavation costs).
- Examples of lots where providing step-free access would be challenging.

It should be noted that the submission does not provide data or evidence of the proportion of blocks overall that would, in their view, not be able to comply. Though costs were contended to be insufficient, alternative estimates were not provided in this submission.

⁵⁶ Submission by Simon Croft for HIA, p. 21, accessed 1 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent.

However, as these costs could have a material impact on the CBA results, these issues required more consideration. With respect to exemptions, CIE attempted to get information including through a facilitated discussion with stakeholders on exemptions. As no definitive data was available, CIE has assumed that up to 10 to 15 per cent of Class 1a buildings could be exempt from a step free access requirement based on the following information:

- NSW Government data on the topography suggests that around 12 per cent of sites in future potential greenfield development have a total slope (across the whole site) greater than 1:14.
- About 11 per cent of separate houses and townhouse developments in Victoria between 2005 and 2016 were built on lots less than 300 m².⁵⁷ This share is likely to have grown significantly, as lot sizes in Victoria have fallen significantly over time.⁵⁸

See the section ‘Qualitative assessment of exemptions’ in chapter eight (from page 195 on) for more details.

The quantity surveyor, Donald Cant Watts Corke (DCWC), were also engaged to provide an independent review of the issues raised in submissions and their cost implications. In their assessment of additional excavation costs in their updated costing for the RIS, DCWC notes:

- for Class 1a buildings if significant excavation works were required to provide access from the kerb into the dwelling, access through a garage would be a more likely design response and avoid excessive excavation cost;⁵⁹
- for Class 2 buildings, additional excavation costs are factored into the construction cost rate of a basement carpark.⁶⁰ However this is highly dependent on the extent to which allocated resident parking is provided (the proposed NCC changes will not mandate the provision of resident parking as this is considered to be a planning matter).

Case studies

Personal stories and industry insights provided during consultation have been used as case studies to support the discussion of relevant issues in the RIS. For example, stories about home modification, temporary injuries, emotional stress and other issues illustrate the problem in relevant sections of the RIS. Cost estimates from industry submissions and personal stories have been compared to existing scenarios.

Table 2.5 lists some lived experiences discussed in the report.

⁵⁷ SGS Economics and Planning 2019, *Planning Schemes Research*, Draft Report V2, June 2019, Table 7, p.38

⁵⁸ UDIA 2020, *State of the Land 2020 National Residential Greenfield and Apartment Market Study*, p. 46 See: <https://udia.com.au/research/udia-state-of-the-land-2020/>, accessed January 2021

⁵⁹ DCWC (2020), Table 4, p.10; p.16

⁶⁰ DCWC (2020), p.14

2.5 List of lived experiences

Topic	Submission	Discussion in the report
Lack of supply	Anonymous Submission 570905003; Raelene West; Hayley Stone, Physical Disability Council of NSW	Box 3.3
Safety	Jane Scott	Box 3.21
Additional assistance	Melbourne Disability Institute (MDI) of University of Melbourne and Summer Foundation Submission	Box 3.25
Home modification	Amelia Condi for Summer Foundation; Lee Jordan	Box 3.30
Moving home	Associate Professor Libby Callaway for the Australian Rehabilitation and Assistive Technology Association (ARATA) Submission	Box 3.33
Longer stay in hospital or transition care	Anonymous Response 699935736	Box 3.35
Visitability	Queensland Disability Network; Anonymous Submission 656157319; Submission No. ANON QUHT GNKK D; University of Melbourne and Summer Foundation Submission	Box 3.38, Box 3.39, Box 3.48
Ageing in place and premature or inappropriate entry into residential aged care or other institutional care	ANUHD; Amelia Condi for Summer Foundation	Box 3.38, Box 3.39; Box 3.41
Young people with disability	Amelia Condi for Summer Foundation	Box 3.30, Box 3.38
Employment and productivity	MDI and Summer Foundation; Jane Scott	Box 3.50, Box J.7, Box J.8, Box J.11
Short term injuries	Anonymous Submission 184073852; Lee Jordan	Box 3.43
Family with young dependants	Wendy Lovelace; MDI and Summer Foundation	Box 3.48
Better quality of life	Anonymous Submission 90458024; Anonymous Submission 722067220; PDCN member and fulltime wheelchair user in Physical Disability Council of NSW Response (p.5); Anonymous Submission 894045598; Wendy Lovelace	Box 3.27

Source: CIE based on public submissions.

Home modifications and proposed accessible features

Some submissions noted that the proposed changes to the NCC do not reflect the LHDG, and that some home modifications are not substitutable for accessible features. This implies that the estimate for some components of the size of the problem, especially the safety impacts, carer costs and home modification costs based on the difference before and after home modifications, may be overstated.

For example, in estimating the reduced care cost in the Consultation RIS, CIE used evidence from a study by Carnemolla and Bridge (2019) on home modifications.⁶¹ Among 134 bathroom modifications, the proposed accessible features in the NCC may be equivalent to only 55 major bathroom modifications. In other words, the modifications in the study go further than the proposed changes, and thus for the impact on care needs in the study to be used, they should be adjusted down to accurately reflect the impact of proposed changes to the NCC.

This adjustment requires careful mapping of proposed accessible features to targeted beneficiaries. Chapter seven provides detailed discussion on proposed accessible features and beneficiaries.

Temporary injuries

Several stakeholders suggested that the analysis in the Consultation RIS had not taken into account the potential benefits of accessible housing to people with temporary injuries.

Much of the analysis in the Consultation RIS is based on the ABS Survey of Disabilities, Ageing and Carers (SDAC). For the purposes of SDAC, disability is defined as any limitation, restriction or impairment which restricts everyday activity and has lasted, or is likely to last, for at least six months.⁶² As such, the analysis based on SDAC data:

- captures temporary disabilities that last (or are likely to last) for more than 6 months.
- does not capture temporary disabilities that last (or are likely to last) for less than 6 months.

As not all of the analysis is based on SDAC data, the current methodology captures some benefits for people with a temporary disability. In particular, the estimates of additional time spent in hospital (longer stays in hospital) should capture the impacts on those with disability that last for less than 6 months.

Furthermore, not all of the categories that make up the size of the problem are relevant for people with disability that last for less than 6 months. For example, it is less likely that people would move house or make a major home modification for a temporary disability.

Therefore, the major benefit for people with short-term injuries appears to be more independence and convenience (or less inconvenience) as a result of accessible housing, which could be measured by the reduction in care needs.

⁶¹ Carnemolla, P. and C. Bridge 2019, "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*, **16**(11), p.7-8

⁶² ABS website, <https://www.abs.gov.au/AUSSTATS/abs@.nsf/Latestproducts/4430.0Main%20Features52018?open=document&tabname=Summary&prodno=4430.0&issue=2018&num=&view=>, accessed 7 September 2020

Australian Institute of Health Welfare (AIHW) provides data on hospitalised injuries by age groups, injury types, body region injured and causes.⁶³

The number of hospitalised temporary injuries that could benefit from accessible housing was estimated from the AIHW data for fracture, dislocation and soft-tissue injury in the lower body, adjusted by the age group and for those already included in the current estimates in the Consultation RIS (that is people with mobility disability and older people).

For non-hospitalised temporary injuries, some proportion of emergency department attendances and non-hospital treatments to hospital admissions from the SDAC was applied to the estimated temporary hospitalised injuries to refine the estimates.

It takes around 6 to 8 weeks for a minor fracture to heal. For serious ones, such as a tibia-fibula fracture, it takes about 3 to 6 months.⁶⁴ Workers compensation statistics in Australia suggest that workers are off-work for 8 weeks on average in the case of fractures.⁶⁵ For dislocation, the recovery is normally quicker. For example, it takes about 6 weeks to heal from a dislocated kneecap.⁶⁶

For non-hospitalised temporary injuries, the length of required assistance would be much shorter.

With the information mentioned above, the average length of assistance required for temporary injuries was estimated.

This average length represents a fraction of the care needs, and thus a fraction of the benefit from improved accessibility for people with long term needs. Moreover, people with temporary injuries are likely to receive informal care rather than formal care. In addition, they face inconvenience to visit others living in inaccessible housing.

An indication of the potential benefits of accessible housing to people with temporary injuries was estimated by applying this fraction to the annual cost of additional informal care and costs associated with inability to visit others for people with long term needs, and multiplying by the number of people with temporary injuries who are likely to benefit from accessible housing.

⁶³ AIHW 2019, *Trends in hospitalised injury, Australia, 2007-08 to 2016-17*, Injury Research and Statistics Series Number 124, <https://www.aihw.gov.au/getmedia/6cef34e2-2422-4f11-a9f3-06e336edac3f/aihw-injcat-204.pdf.aspx?inline=true>

⁶⁴ NHS 2020, *Broken leg*, <https://www.nhs.uk/conditions/broken-leg/#:~:text=It%20takes%20around%206%20to,weight%20on%20the%20leg%20again>

⁶⁵ Safe Work Australia 2020, *Australian Workers Compensation Statistics 2017-18*, 10 January 2020, <https://www.safeworkaustralia.gov.au/doc/australian-workers-compensation-statistics-2017-18>, Table 37, p.48

⁶⁶ NHS 2020, *Dislocated kneecap*, <https://www.nhs.uk/conditions/dislocated-kneecap/#:~:text=A%20dislocated%20kneecap%20is%20a,the%20front%20of%20the%20knee>

Families with young dependants

Several submissions suggest that the benefits to young families with children should be included in the analysis. Some types of benefits are:

- Young families seek accessibility so ageing grandparents (and their peers) can participate in the lives of their children and contribute in supporting their family; and
- Accessible housing may help the movement of prams.

The first type of benefit is included in the benefit associated with visitability (the ability for a person with mobility needs to visit others) which is discussed separately in this chapter in the social isolation sub-section.

For the second type of benefit, the most relevant accessible feature is level step free access. As a pram is smaller and lighter than a wheelchair, the inaccessible entrance issue could be solved by installing temporary ramps in most if not all cases. In fact, the inconvenience of unlevel access is so small that not many families actually need to install a ramp.

An indicative upper bound estimate of benefit of accessible housing to families with young dependants was made by assuming a certain proportion of families purchasing a ramp to overcome the inconvenience of unlevel access (for more details, see sub-section 'Families with young dependants' in chapter three on page 112).

Anxiety and mental health impacts

Housing accessibility or inaccessibility has significant impact on self-reported mental health and wellbeing. For example, the MDI survey found that 60 per cent 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 per cent of people with high support needs, and 50.0 per cent of people with low support needs, living in inaccessible housing reported worsened mental health and wellbeing.

Mental health forms a component of the quality of life impacts. Using the information from the MDI survey and other sources, CIE estimated the difference for people living in inaccessible and accessible housing as a measurement of the mental health and stress problem caused by inaccessibility.

The ABS National Survey of Mental Health and Wellbeing (Cate.No.4326.0) and National Health Survey (Cate.No. 4364.0.55.001) provide data on the number of people suffering from mental health issues, and the AIHW estimates that spending on mental health-related services in Australia from all sources (government and non-government) was around \$9.9 billion, or \$400 per person, in 2017-18.⁶⁷

However, the actual costs related to mental health issues are much higher than the amount spent by government and non-government sources in 2017-18. For example:

⁶⁷ AIHW 2020, *Expenditure on mental health-related services*, <https://www.aihw.gov.au/reports/mental-health-services/mental-health-services-in-australia/report-contents/expenditure-on-mental-health-related-services?request=smoothstate>

- A report commissioned by the Royal Australian and New Zealand College of Psychiatrists (RANZCP) and the Australian Health Policy Collaboration estimated in 2014 that the cost of severe mental illness in Australia was \$56.7 billion per year, including the direct economic costs of severe mental illness arising from the use of health and other services, as well as indirect costs due to lost productivity because people are unable to work.⁶⁸
- In December 2016, the National Mental Health Commission stated that the cost of mental ill-health in Australia each year was around \$4,000 per person, or \$60 billion in total.⁶⁹

The 2018 KPMG and Mental Health Australia report, *Investing to Save*, estimated that, mental ill-health in the workplace costs an average of \$3,200 per employee with mental illness, and up to \$5,600 for employees with severe mental illness. Overall, it was estimated that the cost of workplace mental ill-health in Australia was \$12.8 billion in 2015–16.⁷⁰

The above mentioned incidence of mental health impacts due to inaccessible housing from the MDI survey results and the cost estimates for mental ill-health were used to estimate the indicative mental health impact costs. For more details see section 'Mental health impacts' in appendix I, page 342.

Social isolation

Several submissions suggest measuring the benefit of reduced social isolation in addition to measuring the benefit of reduced loneliness.

There is a subtle distinction between social isolation, which is where an individual has minimal contact with others, and loneliness, which is a subjective state of negative feelings about having a lower level of social contact than desired, according to AIHW.⁷¹ The method used to estimate loneliness in the Consultation RIS is sufficient for a measure of social isolation, especially because the estimates include both impacts on individuals with mobility disability receiving visits from others and paying visits to others.

That said, a further refinement can improve the estimates of realised benefits of reduced social isolation/loneliness.

⁶⁸ Victoria Institute of Strategic Economic Studies 2016, *The economic cost of serious mental illness and comorbidities in Australia and New Zealand*, report prepared for the Royal Australian & New Zealand College of Psychiatrists and the Australian Health Policy Collaboration, <https://www.ranzcp.org/files/resources/reports/ranzcp-serious-mental-illness.aspx>

⁶⁹ The National Mental Health Commission 2016, *Economics of Mental Health in Australia*, 08 December 2016, <https://www.mentalhealthcommission.gov.au/news/2016/december/economics-of-mental-health-in-australia>

⁷⁰ KPMG and Mental Health Australia 2018, *Investing to Save: The economic benefits for Australia of investment in mental health reform*, 1 May 2018, <https://mhaustralia.org/publication/investing-save-kpmg-and-mental-health-australia-report-may-2018>

⁷¹ Australian Institute for Health and Welfare, <https://www.aihw.gov.au/reports/australias-welfare/social-isolation-and-loneliness>

In the Consultation RIS, the realised benefit of reduced social isolation/loneliness is grouped with other avoided costs and subject to the 'allocation' of new accessible housing to people with accessible needs. This part of the benefits should not be subject to the allocation of new accessible housing only to people with accessibility needs because it would be applicable for all new accessible houses.

In this RIS, social isolation has been included as a part of the quality of life discussion (see sub-section 'Quality of life impacts' in chapter three on page 88). In addition, the cost associated with a lack of visitability (unable to visit family or friends living in inaccessible housing) of people with mobility disability and older Australians were updated (sub-section 'Inability to visit family and friends in inaccessible housing' in chapter three on page 101).

The realised benefits from people with mobility disability and older people being able to visit others is separately attributed to all new housing (not subject to allocation) in the CBA.

Quality of life

A number of submissions suggest that the benefit of improved quality of life due to accessible housing should be considered.

There is very limited data to support an accurate estimate of this type of benefit. The only data located by CIE is the paper by Carnemolla and Bridge (2016) on the impact of home modification on Assessment of Quality of Life (AQoL).⁷² The study found that home modifications to improve accessibility increase the AQoL utility score by 0.12 (from 0.3 before modification to 0.42 after modification). The AQoL utility score consists of four dimensions/components – independent living, relationships, mental health and senses.

As a part of the qualitative analysis, WTP survey results were used to estimate the indicative size of quality of life impact, noting that there may exist double counting with other quantified problems and/or other qualitative issues. For more details, see sub-section 'Quality of life impacts' in chapter three on page 101 and appendix I.

Informal care cost

The Consultation RIS used the minimum wage rate in Australia of \$19.49 per hour to measure the cost of additional informal care due to inaccessibility. It was suggested in some submissions that a higher rate should be used, for example, the formal care unit cost of \$65 per hour.

A recent report by Deloitte Access Economics on the value of informal care in Australia found that the average hourly cost of employing a formal carer to replace an informal

⁷² Carnemolla, P. and C. Bridge 2016, "Accessible Housing and Health-Related Quality of Life: Measurements of Wellbeing Outcomes Following Home Modifications", *International Journal of Architectural Research* **10**(2), p.38-51

carer, **with all relevant loadings**, was \$36.12 in 2020.⁷³ Hourly rate including **overheads** in May 2019 was \$33.12.⁷⁴ The report does not provide an estimate of the proportion of overheads in the hourly rate. As overheads are costs related to running a business they should not be included in the informal care cost which is voluntarily provided.

A better measurement for the unit cost of informal care is the average hourly pay for aged care workers because it is the compensation paid for providing similar care services. ly rate is \$22.85 in Sydney.⁷⁵

Based on the above discussion, the RIS incorporates a unit cost for informal care above the minimum wage rate to reflect the average hourly pay for aged care workers (see subsection 'The cost of additional assistance' in chapter three on page 84 and appendix C).

Person-based versus family-based approach

Several submissions suggest it would be more appropriate to base the analysis in the RIS on the impacts on households rather than on the impacts on the person with a mobility related disability.

There are several reasons why the analysis focuses mostly on **people** with disability, rather than **households**.

- To a significant extent, the analysis relies on detailed cross-tabulations of data from the ABS SDAC using TableBuilder. There is some SDAC data available at both the person and household level. However, the data is much more detailed at the person level. Much of the detailed cross-tabulations to identify those affected by a lack of accessible housing is not possible at the household level.
- For many of the categories that make up the problem that the regulatory proposal is seeking to address, the personal level statistics are a more relevant indicator. For example, it is the **person** with the disability who:
 - is at risk of falls
 - may have longer stays in hospital
 - may be prematurely admitted to residential aged care
 - is unable to visit family/friends, etc.

It is acknowledged that other members of the household may also be affected by a lack of accessible housing in various ways. The analysis in the Consultation RIS took into account the broader impacts on family and friends in the following ways:

- A lack of accessible housing may affect other members of the household through additional caring responsibilities. The analysis has already sought to measure the opportunity cost of the additional time spent caring for the household member with a

⁷³ Deloitte Access Economics and Cares Australia 2020, *The value of informal care in 2020*, May 2020, p.iii

⁷⁴ *ibid*, Table 2.3, p.18

⁷⁵ Payscale 2020, *Average Aged Care Worker Hourly Pay in Sydney, New South Wales*, https://www.payscale.com/research/AU/Job=Aged_Care_Worker/Hourly_Rate/999a3db7/Sydney

disability (i.e. informal care), as well as care provided by friends/family living outside the household.

- The WTP approach was based on the household's willingness to pay for accessible housing, which would incorporate the preferences of other members of the household. The proposed approach below will accommodate household's WTP in the problem reduction approach.
- The analysis has also sought to measure the broader impacts on the community (i.e. the community's preference for people with disability to live in housing that meets their needs). These impacts to some extent take into account the preferences of family and friends of people with disability with disability.

It is possible that the current methodology does not capture some impacts on other members of the household, such as stress (and possibly travel time to visit) associated with:

- a family member spending longer than necessary in hospital;
- a family member prematurely entering into aged care; and
- providing care.

Health economics studies relating to the burden of disease generally do not take into account impacts on people beyond the individual directly affected. Impacts on the individual's family and friends are generally considered to be reflected in the estimated WTP to avoid disease. The WTP results used for estimating the indicative size of quality of life impacts were household based (see sub-section 'The willingness to pay approach' in chapter three on page 91 and appendix I). In this sense, the current approach is consistent with a family-based approach.

Estimation of the impacts of existing policies

Several stakeholders noted that the Consultation RIS did not attempt to estimate the impacts of existing policies aimed at ensuring that older Australians and people with disability have access to housing that meets their needs.

This issue has direct relevance to the RIS, and the impacts of existing policies have been implicitly included in the status quo. Separately estimating the impacts of these policies would be significant and is beyond the scope of the RIS.

The estimates in the Consultation RIS are mostly based on recent survey evidence of the **outcomes** delivered under current policy settings (i.e. the ABS 2018 Survey of Disabilities, Ageing and Carers). This survey evidence implicitly includes the impact of existing policies, to the extent that these policies contribute to the outcomes delivered. That said, to the extent that policies are changing and these changes will have a material impact on the baseline, it is unlikely that this has been fully taken into account.

- In particular, some aspects of the NDIS are still in the 'ramp up' phase and could be expected to deliver improved outcomes for eligible participants in the period ahead (diminishing both costs and benefits). But some aspects of the further evolution of the program are currently unknown, making it difficult to take them into account in the RIS.

- There may also be policy changes arising from the Royal Commissions. However, as these are currently unknown, it is not possible to take them into account in this current analysis.

In response to stakeholder feedback, the baseline assumptions in the RIS have been reviewed to ensure that estimates are based on actual outcomes under current policy settings.

Employment and productivity impacts

In the Consultation RIS, CIE concluded that there was insufficient evidence of the impacts that accessible housing has on employment and productivity outcomes.

The submission from the MDI and the Summer Foundation provided evidence from a survey of 1 187 people with disability and older people and in-depth interviews with 45 respondents on the mechanisms through which inaccessible housing reduces productivity and work opportunities as follows:

- Limitations or enablers to allow work or study from home influenced both employment opportunities and work productivity.
- Difficulties finding accessible homes close to employment opportunities.
- Fatigue from living in inaccessible homes and the additional time and energy spent on self-care and home care activities reduces productivity, motivation, self-confidence and the capacity to work, study or volunteer.
- Inaccessible housing increases reliance on paid/unpaid support with personal and domestic activities, limiting ability to take on employment.

This work adds to the evidence base on the impact of accessible housing on employment opportunities and productivity and its application in the development of this RIS is outlined in box 2.1 (page 33).

However, there is a concern around the representativeness of the sample. The survey was circulated via email through disability services and advocacy networks. Although this approach is effective in identifying the target audience, it could also potentially skew the sample towards those who have experienced the biggest issues (self-selection bias).

CIE has investigated the extent to which the outcomes reported in the sample can be cross-checked/stratified against data from SDAC to produce an indicative quantitative estimate and included it in the qualitative analysis in this RIS (see sub-section 'Employment and productivity impacts' in chapter three on page 115 and appendix J).

3 *Statement of the problem*

Summary

A key element of a RIS is understanding the nature and size of the problem (or issue) that government intervention would address through a regulatory proposal.

- Based on 2018 ABS data, there are around 3 million Australians with a mobility limitation and/or a self-care limitation due to disability, which includes people with the greatest need for help or who are unable to do an activity; people who sometimes need help and/or have difficulty; people who need no help but have difficulty, and people who need no help and have no difficulty but use aids or have limitations.⁷⁶
- It is estimated that this will increase to around 5.75 million people over the next 40 years, due to population growth and the effects of an ageing population.

Finding suitable accommodation is important to all Australians and is a prerequisite for a happy, stable and dignified life.⁷⁷ The right to accommodation and social participation is recognised in international treaties. Under the status quo without intervention it will continue to be contended that international treaty obligations are not being met. There is evidence that people with disability and older Australians have trouble finding housing that meets their needs. Housing that is inaccessible for people with mobility limitation can impose various costs on those people, their families, those with temporary injuries, those with young children, carers and the community more broadly. These costs include the following.

- Where people with mobility limitation remain living in housing that does not meet their needs, the costs include:
 - safety related costs where people may be at higher risk of falls
 - costs associated with additional care needs
 - reduced ‘quality of life’
- Other costs could include those associated with:
 - unnecessarily expensive home modifications to make the dwelling more accessible
 - longer stays in hospital and transition care, where discharge is delayed due to their home lacking accessibility features
 - avoidable moves to more suitable accommodation
 - people with limited mobility being unable to visit friends and relatives (people without accessibility needs may also be impacted if family and friends with accessibility needs are unable to visit them)

⁷⁶ <https://www.aihw.gov.au/reports-data/health-conditions-disability-deaths/disability/glossary>

⁷⁷ Commonwealth of Australia 2011, *National Disability Strategy 2010-2020: An initiative of the Council of Australian Governments*, p. 32.

- inappropriate or premature entry into residential aged care (or other institutional care) due to dwellings lacking accessibility features
- inconvenience for families with young children (who may use a pram)
- inconvenience for people with short-term injuries.

There are a significant number of government policies in place to either subsidise, directly provide or encourage private provision of housing that meets the needs of people with disability and older people. Key policies to ensure that people with disability and older people have access to housing that meets their needs include:

- funding home modifications and other support services (through the NDIS and various aged care policies) to support people with mobility limitations to stay in their own home
- funding for residential aged care places
- state and local government planning policies that encourage private provision of accessible housing, and
- provision of accessible social and community housing.

Despite these policies and other services available, there are limitations and a range of costs that could potentially be avoided through increased provision of accessible housing. These are complex matters and the indicators used to identify the number of people affected and other information relied onto to quantify the benefits are imperfect. As such there is significant uncertainty around the number of people affected by each of the problems outline above.

Based on the evidence available, the number of people per year that could be affected by a lack of accessible housing is summarised in table 3.1. Note that these estimates are not additive across each of the problems as many people may be affected by multiple problems.

3.1 Number of people affected by a lack of accessible housing per year

Assessed problem	Estimated number of people affected per year
Safety-risks	325 100
Additional care needs	453 400
Quality of life	554 400
Additional time in hospital/transition care	159 900
Home modifications per annum ^a	21 790
Additional home moves	Range of 6 400 – 17 300
Premature/inappropriate entry into residential aged care	Range of 2 767 – 6 199
Inability to visit family and friends (visitability)	85 800
Families with young dependants	Up to 16 000
Short-term injuries	17 551

^a Assumes 1 person per relevant modification per year

Note: the number of people affected is not additive across each type of problem.

Source: CIE (details are provided in chapter three and appendices B - I).

While the number of people affected by inaccessible housing appears to be a small proportion of the total population, the costs to the community for those whose needs are not met (or have incurred significant cost in having their needs met) are estimated to be significant. The costs to the community are assessed and estimated around each type of problem.

The size of the problem has also been estimated in dollar terms. As there is significant uncertainty around some costs, a range has been estimated in some cases.

- Based on the information available it is estimated that the costs associated with a lack of accessible housing could be in a range between around \$3.0 billion and \$6.7 billion per year, with a central case estimate of around \$4.2 billion (based on 2018 SDAC data) (table 3.2). In response to public submissions to the Consultation RIS, the following updates/adjustment have been made:
 - morbidity costs associated with falls have been included in the estimate
 - reduced ‘quality of life’ due to inaccessible housing has been estimated (albeit based on limited evidence)
 - informal care costs are updated to reflect the replacement cost of providing similar care
 - the estimated cost of additional moves due to inaccessible housing has been updated to reflect a broader range of costs, and
 - impacts on short-term mobility injuries and on families with young dependants have been added.
- If these costs increase in proportion to the number of people with accessibility needs, it is estimated that these costs could increase to between around \$4.6 billion and \$10.2 billion per annum by 2040, with a central case estimate of \$6.4 billion.
- In addition, CIE has tried to provide some indicative estimates or an order of magnitude for the unquantifiable costs of the problem in appendices J and K, including:
 - employment and productivity impacts more on people with disability and older Australians of inaccessible housing, which could be in the order of several hundred million dollars per year, although CIE is unable to estimate it with any certainty; and
 - social justice and equity (that is cost to the broader community) could be around \$390 million dollars per year.

3.2 Estimated size of the problem – quantifiable costs

Assessed problem	Low estimate (\$ million)	Central case (\$ million)	High estimate (\$ million)
Safety-risks	0.00	154.14	570.30
Additional care needs	938.52	938.52	938.52
Quality of life	1 063.89	1 913.23	3 770.10
Additional time in hospital/transition care	234.59	234.59	234.59
Home modifications per annum	498.86	498.86	498.86
Additional home moves	81.51	161.91	242.31

Assessed problem	Low estimate (\$ million)	Central case (\$ million)	High estimate (\$ million)
Premature/inappropriate entry into residential aged care	119.56	184.81	267.86
Inability to visit family and friends (visitability)	35.73	80.93	126.12
Families with young dependants	0	0.62	1.23
Short-term injuries	26.25	28.09	29.92
Total	2 998.92	4 195.69	6 679.81

Note: Based on 2018 SDAC data and RIS appendices B-J.

Source: CIE estimates.

By definition, unquantifiable costs are difficult to estimate. The figures provided above are highly uncertain and may exist with other areas of unquantifiable costs or may result in double counting with quantifiable costs. For these reasons, these estimates are not directly additive to each other or to the quantifiable costs. Nevertheless, the indicative estimates suggest these costs could be significant.

Underlying causes of these issues include the following.

- There appear to be a range of market imperfections, including:
 - some homebuyers (particularly younger homebuyers) are failing to foresee future accessibility needs when they make design choices
 - the characteristics of the housing delivery chain, which can make it difficult for some homebuyers to deviate from standard designs to incorporate accessibility features
 - as many apartments are built to be purchased off the plan, they are designed to appeal to the buyers' current average demand, rather than the specific needs of an individual buyer.
- Landlords are reluctant to allow modifications for private renters, which means that home modifications are often not an option for renters with accessibility needs.
- Many households containing people with disability have low incomes.

The need for accessible housing

The ABCB define 'accessible housing' as 'any housing that includes features that enable use by people either with a disability or transitioning through life stages'.⁷⁸ Based on findings from the literature on accessible housing and consultation with stakeholders, accessible housing can potentially:

- reduce the incidence of falls for people with mobility limitations
- reduce care needs
- improve the quality of life of people with limited mobility
- reduce costs associated with home modifications
- avoid the need for people who acquire a mobility-related disability to move to more suitable accommodation

⁷⁸ ABCB 2018, *Accessible Housing: Options Paper*, September 2018, p.4

- reduce the length of hospital stays
- increase the ability of people with disability and the elderly to participate in and be included in society
- reduce the inappropriate or premature entry into aged care or other institutional care.

Despite these benefits, many new dwellings are not built to meet the current and future accessibility needs of all members of the community, including people with mobility limitation, such as older people and people with disability, as well as those with temporary mobility limitation.

Submissions provided qualitative evidence of a lack of accessible housing (box 3.3) outlines some lived experiences finding accessible housing provided in submissions).

3.3 Lived experience – lack of supply of accessible housing

Lack of supply and ageing in place (MND sufferer and ageing parents)

I became interested in accessible housing three years ago, after my 38 year old husband was diagnosed with Motor Neurone Disease.

As it happens, our family home is single storey, with a level entry. We were already planning a minor renovation so we altered the plans to include a wheelchair accessible bathroom. At the time, we measured the main corridor and the doorways to ensure that they were wide enough for a wheelchair. Luckily they are - just!

So we have been able to remain in our beloved home, and my husband has been able to remain with us despite his deteriorating condition.

However, we live in regional Victoria and our families live in Melbourne. We used to visit them regularly, and stay overnight. It quickly became apparent that this would no longer be feasible as my husband's mobility deteriorated, because of the poor accessibility of their homes. My parents were planning to buy an investment property so they suggested that they would look for an accessible property, which would provide us with a base to stay overnight when we came to visit. We looked for over 12 months.

There was... NOTHING.

It brought home to us how fortunate we are to be in our current home, and how dire the housing market is for those with “special needs”.

It also brought home how difficult remaining at home will be for my parents as they age and we are actively discussing whether they will modify their house in order to 'future proof' it, or whether they will move out now into some other home.

But perhaps what was most dispiriting was that of the many, many new buildings that we looked at, none of them were suitable. There was clearly no regulation that imposed an accessible or universal design on these new developments. In particular, although some townhouses had been built with internal lifts, the placement of the lifts - and the general design of the home around them - had clearly not been properly considered, for example the lift that opened out onto the top of a flight of stairs!

3.3 Lived experience – lack of supply of accessible housing

I had never heard of accessible design until my husband's diagnosis sent us into a tailspin. But we are not the only family to whom something unexpected will happen. And everyone faces the prospect of aging and the associated deterioration in physical mobility. It makes sense to ensure that housing stock is created to cater for all needs and abilities; that all new homes are built with accessibility as a baseline consideration. No-one should have to move out of their home because they can no longer safely move around in it.

Source: Anonymous response 570905003⁷⁹

Lack of accessible rental property

After a number of years I moved into private rental – it was very difficult to find a unit with accessibility in the private rental market, and it was only a fluke that an old residential aged care facility had sold off its accommodation units and these were in the private rental market that there was a unit available that had level entry an accessible bathroom and that it was available at an affordable price and was close to public transport.

Source: Raelene West Response⁸⁰

In several weeks of searching [for a rental property] not one of the properties we saw was suitable for someone with a power chair and no walking ability at all, in that we didn't see any [properties] that were ground floor with flat access. In the price range we looked at, first floor with a lift and good stairs was the best we found. Only one listing mentioned disability access - to say there was none.

Source: Physical Disability Council of NSW⁸¹

As each individual with a disability (including ageing members of the community) will have specific accessibility needs, it is not possible to design houses that will meet the needs (including accessibility needs) of all members of the community. However, under universal design principles houses are designed for the greatest number of people.⁸²

⁷⁹ Anonymous Submission 570905003, accessed 13 November 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

⁸⁰ Submission by Raelene West, accessed 13 November 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

⁸¹ Submission by Hayley Stone for Physical Disability Council of NSW, p. 6, accessed 13 November 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

⁸² Bringolf, J. 2011, *Barriers to Universal Design in Housing*, A thesis submitted for the degree of Doctor of Philosophy, Urban Research Centre, College of Health and Science, University of Western Sydney, September 2011, p.54

To meet the needs of members of the community with mobility limitation, housing should be:⁸³

- easy to enter (and leave)
- easy to navigate in and around
- be capable of easy and cost-effective adaptation
- be responsive to the changing needs of home occupants.

In addition to accessibility needs, people with mobility limitation also have needs and preferences beyond accessibility, including preferences relating to the type of housing they live in, location and other factors.

According to the NDS, finding suitable accommodation is important to all Australians and is a prerequisite for a happy and stable life. However, there is evidence that many people with accessibility needs are not able to secure suitable housing.

- The current NDS notes there is evidence that people with disability experience substantial barriers in finding a place to live, especially in the private market. Housing designs that do not allow the building structure of the home to change to meet the needs of a person who is ageing or with disability without significant expense is identified as a key barrier.⁸⁴
- A survey conducted by the ANUHD, found that 68 per cent of respondents had experienced difficulty in finding accessible housing.
- During CIE's targeted consultation for the preparation of the Consultation RIS, multiple stakeholders provided qualitative evidence of people with disability experiencing difficulties in finding suitable accommodation.

Number of people that potentially have accessibility needs

The Consultation RIS reported that based on the ABS's 2018 Survey of Disabilities, Ageing and Carers (SDAC), there were around 2.98 million people who could potentially benefit from more accessible housing. This estimate was based on the number of people with mobility limitations due to disability. Some stakeholders were concerned that the Consultation RIS may have under-estimated the number of members of the community that could benefit from more accessible housing for the following reasons:

- The SDAC survey does not capture people with temporary accessibility needs, such as those with temporary injuries.
- Some stakeholders argued that people with long-term health conditions with accessibility needs may have been excluded from the estimates because many do not identify as having a disability.
- Some stakeholders argued that the Consultation RIS focused only on people with mobility limitations and therefore did not capture those with a range of other

⁸³ These features are consistent with the Livable Housing Design Guidelines definition of 'livable' housing.

⁸⁴ Commonwealth of Australia 2011, *National Disability Strategy 2010-2020: An initiative of the Council of Australian Governments*, p.32

disabilities, including those with low vision and those that may require assistance with daily living tasks (e.g. cognitive or intellectual disability or a person with no arm or hand function) that could also benefit from some accessible design features.⁸⁵

In relation to the first point, the SDAC survey includes people with health conditions that have lasted, or are likely to last, for 6 months or more. As such, it would include people with temporary disabilities that last for 6 months or more, but would exclude people with shorter term conditions. That said, where the ‘size of the problem’ has been quantified (see below), CIE has not relied on SDAC to estimate all aspects of the problem. As such, some costs associated with temporary injuries would be included in the estimates; for example, the costs associated with delayed discharge from hospital does not rely on SDAC data and would therefore include people with shorter-term functional limitations, where relevant.

In relation to the other points relating to whether the measure used in the SDAC captures all relevant people that would potentially benefit from accessible housing, it is important to be clear about what the SDAC is measuring. In the SDAC survey, people are categorised as having core limitations due to disability (mobility, self-care or communication) based on questions about their functional abilities.

- The estimate from SDAC does not rely on people self-identifying as having a disability and does not distinguish between disability and long-term health conditions, unlike some other surveys, such as the Census. This measure should therefore capture those with ‘long-term health conditions’ that affect their mobility. SDAC generally produces lower estimates of the prevalence of disability and long-term health conditions than some other surveys because it excludes those with conditions that do not restrict everyday activities.⁸⁶ The extent to which people are restricted in their ability to do everyday activities is a more relevant indicator of their accessibility needs in relation to housing.
- The number of people with a core mobility limitation will include many people with the types of disabilities mentioned in submissions if their disability means they have a mobility limitation. Table 3.4 shows the number of people with mobility limitation (i.e. that would be included in the estimate reported in the Consultation RIS). As above, functional limitations are the most relevant indicator of their accessibility needs in relation to housing.

3.4 Mobility limitation by disability type

Disability type	Mobility limitation ('000)	No mobility limitation ('000)	Total ('000)
Loss of sight	205.7	47.5	253.8
Loss of hearing	558.0	513.8	1 072.4

⁸⁵ See for example, anonymous submission 284174932.

⁸⁶ ABS website, <https://www.abs.gov.au/ausstats/abs@.nsf/Latestproducts/4431.0.55.002Main%20Features72012%20-%202016?opendocument&tabname=Summary&prodno=4431.0.55.002&issue=2012%20-%202016&num=&view=>, accessed 28 October 2020.

Disability type	Mobility limitation ('000)	No mobility limitation ('000)	Total ('000)
Speech difficulties	256.5	78.3	334.8
Breathing difficulties	398.5	31.9	430.9
Blackouts, seizures or loss of consciousness	181.3	50.9	233.2
Chronic or recurring pain or discomfort	1 277.7	179.5	1 457.6
Difficulty learning or understanding things	586.9	142.4	730.3
Incomplete use of arms or fingers	336.0	50.5	388.2
Difficulty gripping or holding things	769.0	135.8	904.9
Incomplete use of feet or legs	577.0	21.3	597.8
Nervous or emotional condition	509.2	123.3	632.5
Restriction in physical activities or work	1 527.5	147.8	1 674.7
Disfigurement or deformity	159.7	45.8	206.2
Mental illness	414.2	31.7	445.0
Memory problems or periods of confusion	414.6	14.6	428.7
Social or behavioural difficulties	404.4	50.4	455.7
Head injury, stroke or other acquired brain injury	277.5	47.7	323.2
Other disability type(s)	1 550.9	254.3	1 805.8
Total	2 980.8	1 385.9	4 367.2

Source: ABS, 2018 Survey of Disabilities, Ageing and Carers, TableBuilder, CIE.

There may be some people with self-care limitations that could also benefit from some accessible design features (such as an accessible toilet and shower) that were excluded from the estimates reported in the Consultation RIS (i.e. those that do not also have mobility limitation). According to the SDAC survey, there are around 1.43 million Australians with self-care limitations that could potentially benefit from more accessible housing (table 3.5). However, most people with self-care limitations also have mobility limitation and were therefore already included in the estimates set out in the Consultation RIS; only around 76 600 of people with self-care limitations do not also have mobility limitation.

There are around 3.06 million Australians with mobility limitation and/or self-care limitation. However, not all people with mobility limitations or self-care limitation would necessarily benefit from accessible design features.

3.5 Number of people with mobility limitation and/or self-care limitation

Mobility limitation	Profound self-care limitation	Severe self-care limitation	Moderate self-care limitation	Mild self-care limitation	Total with self-care limitation	No self-care limitation	Total
	'000	'000	'000	'000	'000	'000	'000
Profound mobility limitation	336.6	108.5	52.1	17.5	514.7	116.7	631.4
Severe mobility limitation	70.8	141.7	86.8	22.4	321.7	196.8	518.5
Moderate mobility limitation	17.1	40.1	144.2	31.2	232.6	204.8	437.4
Mild mobility limitation	18.4	54.8	153.2	59.2	285.6	1 109.7	1 395.3

Mobility limitation	Profound self-care limitation	Severe self-care limitation	Moderate self-care limitation	Mild self-care limitation	Total with self-care limitation	No self-care limitation	Total
	'000	'000	'000	'000	'000	'000	'000
Total with mobility limitation	442.9	345.1	436.3	130.3	1 354.6	1 628.0	2 982.6
No mobility limitation	10.4	15.3	43.4	7.5	76.6	0.0	76.6
Total	453.3	360.4	479.7	137.8	1 431.2	1 628.0	3 059.2

Note: TableBuilder randomly adjusts cells to minimise the risk of identifying individuals in aggregate statistics. This means that table totals do not always add exactly and the totals are not exactly consistent across tables.

Source: ABS, 2018 Survey of Disabilities, Ageing and Carers, TableBuilder.

Users of mobility aids

Although the needs of every individual will vary, the types of mobility aids used may be an indicator of the need for specific accessibility features in the home. In particular, wheelchair users (and to some extent users of other mobility aids with wheels, such as scooters/gophers or walking frames) have specific accessibility requirements in relation to:

- level access
- the need for bedroom and bathrooms on the ground floor
- wider doorways and hallways, and
- space requirements in bathrooms, bedrooms etc.

Dwellings that do not meet these accessibility requirements are unlikely to be suitable for a wheelchair user (i.e. a wheelchair user could not practically live in a dwelling that does not meet these requirements).

According to SDAC data there were around 185 300 wheelchair users in 2018 and around 570 100 users of mobility aids with wheels including wheelchairs (table 3.6).

3.6 Types of mobility aids

Type of mobility aid	0 to 14 years	15 - 64 years	65+ years	Total
	'000	'000	'000	'000
Wheelchairs	4.20	50.40	130.70	185.30
Scooter/gopher	0.00	13.50	40.20	54.00
Walking frame	0.00	46.30	284.00	330.80
Total aids with wheels	4.20	110.20	454.90	570.10
Other aids	3.00	69.60	36.70	107.60
Do not use aids	222.20	1 162.30	919.50	2 304.60
Total	229.40	1 342.10	1 411.10	2 982.30

Note: TableBuilder randomly adjusts cells to minimise the risk of identifying individuals in aggregate statistics. This means that table totals do not always add exactly and the totals are not exactly consistent across tables.

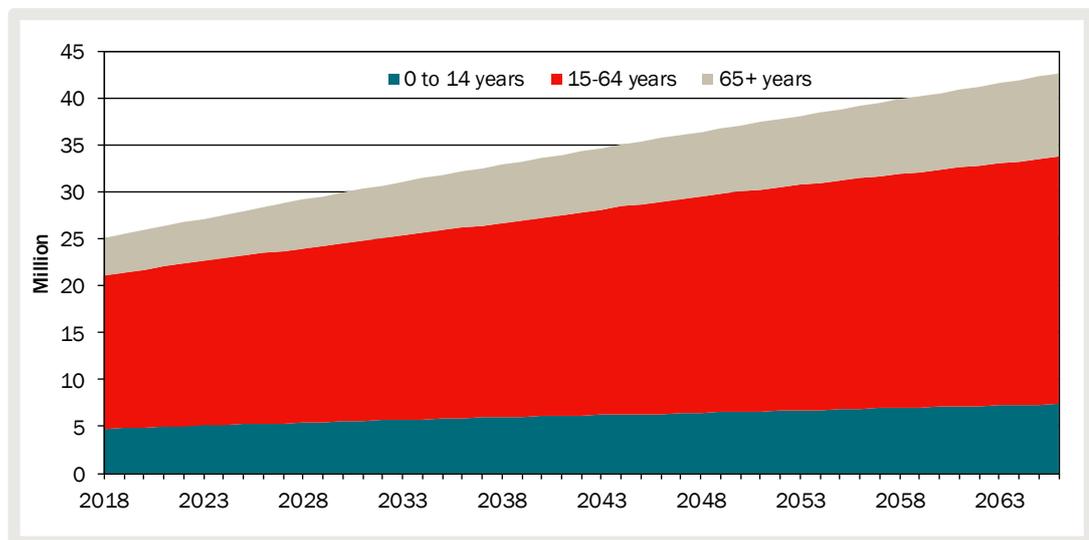
Source: ABS, Survey of Disabilities, Ageing and Carers, 2018, TableBuilder.

Projections of future needs

The number of people with mobility limitation is expected to increase over time. This will be driven by both population growth as well as an ageing population.

The old-age dependency ratio is one indicator of population ageing. The old-age dependency ratio is currently increasing rapidly as the ‘baby boomer’ generation (those who were born in the years following the end of World War II through to the early to mid-1960s) reach retirement age. Based on ABS Projections (chart 3.7), the old-age dependency ratio is expected to increase from the current level of around 24-25 per cent to around 30 per cent over the next 15 years.

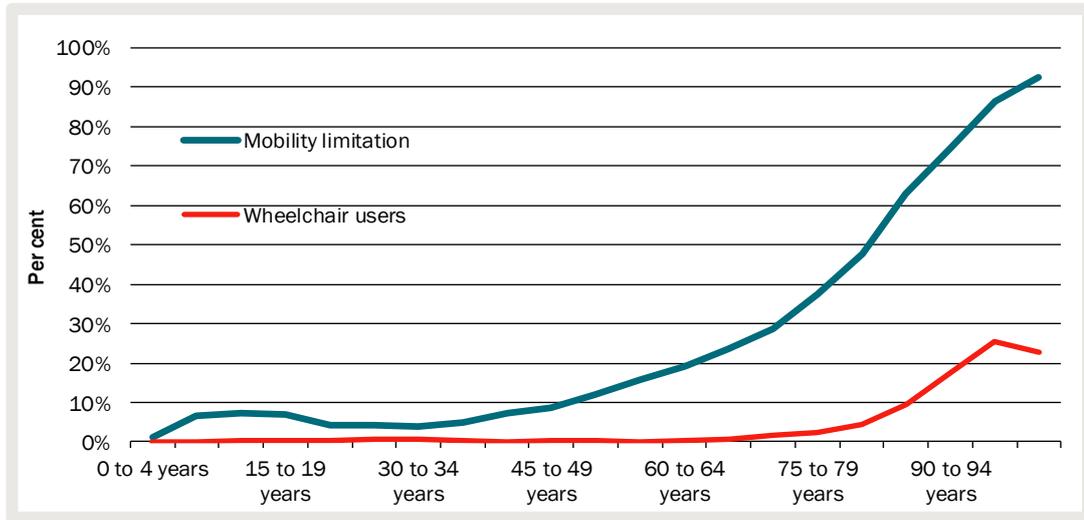
3.7 Population projections



Data source: ABS, Population Projections, Australia, 2017-2066, Catalogue No. 3222.0, Series B.

As the proportion of the population with accessibility needs tends to increase with age (chart 3.8), the ageing population will mean that the proportion of people with accessibility needs (including those with a mobility limitation and those using wheelchairs) will increase at a rate that exceeds population growth.

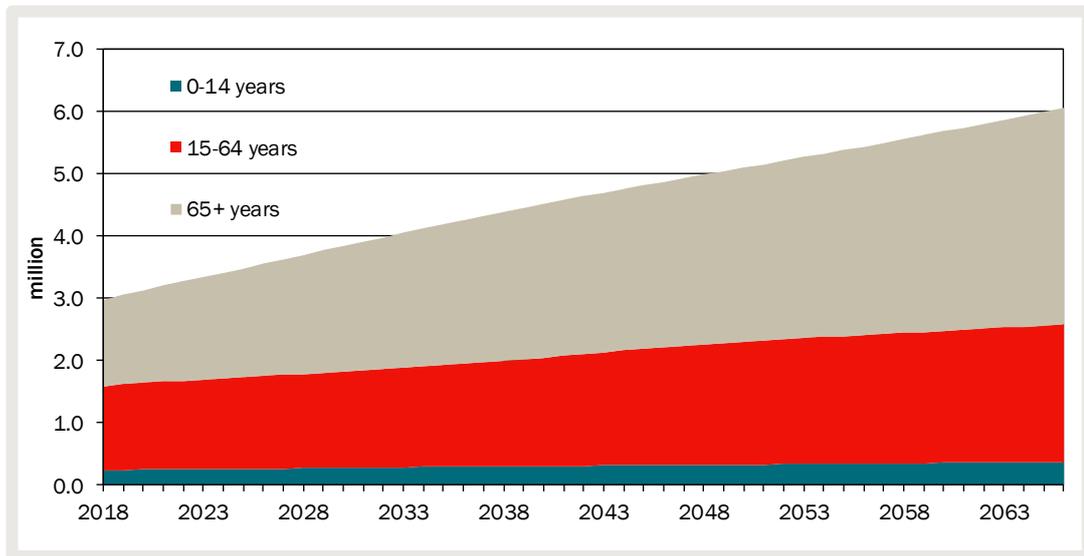
3.8 Mobility limitations and wheelchair users by age – share of population



Data source: ABS, Survey of Disabilities, Ageing and Carers, 2018, TableBuilder; CIE.

It is projected that the number of people with mobility limitation will increase from around 3 million to around 5.75 million over the next 40 years (chart 3.9). This assumes that the proportion of the population with mobility limitations within each age bracket remains constant over time. These proportions are then applied to the population projections.

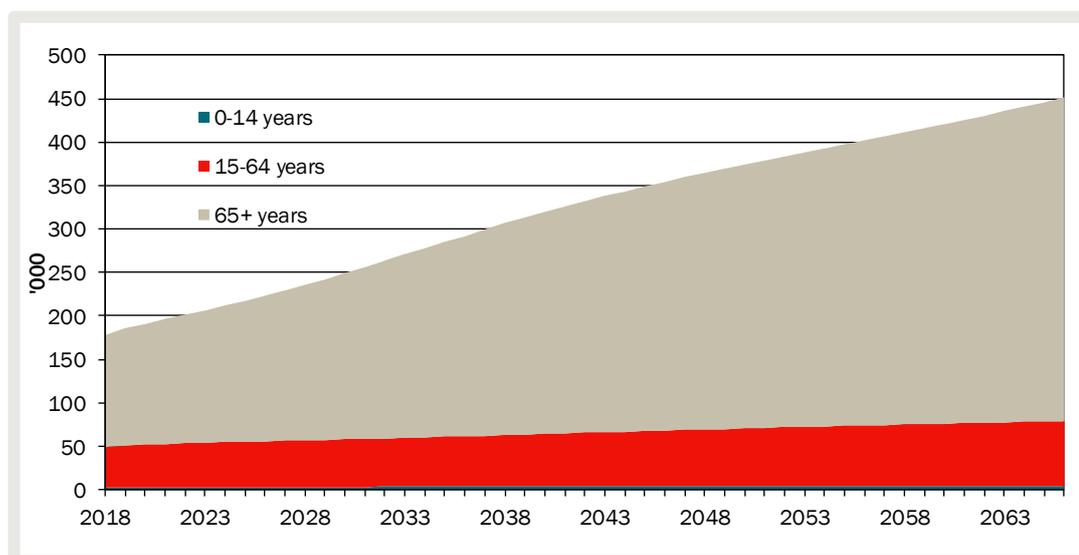
3.9 Number of people with mobility limitations – projection



Data source: ABS, Population Projections, Australia, 2017-2066, Catalogue No. 3222.0, Series B; ABS, Survey of Disabilities, Ageing and Carers, 2018, TableBuilder, CIE.

Using the same approach, it is estimated that the number of wheelchair users will increase from around 185 000 to around 370 000 by 2060 (chart 3.10).

3.10 Number of wheelchair users – projections



Data source: ABS, Population Projections, Australia, 2017-2066, Catalogue No. 3222.0, Series B; ABS, Survey of Disabilities, Ageing and Carers, 2018, TableBuilder, CIE.

Policy context

Under COAG Best Practice Regulation Guidelines, it is important to take account of evidence of the impact of existing policies and services when considering the impacts of including minimum accessible housing standards in the NCC.

There are a range of services (both government and non-government) aimed at meeting the housing (and other) needs of those with disability and older people. Some submissions argued that the Consultation RIS should have provided more analysis of the impact of the various policies and services already available.

Providing a detailed analysis of the impacts of these policies is a complex exercise and beyond the scope of the RIS. As estimates of the ‘size of the problem’ in the RIS are based on data reflecting the outcomes for people with disability and older people with existing policies and services in place, they implicitly take into account the impact of existing policies and services. Where policies (for example, the NDIS) have not yet been fully implemented, it is noted that these may become more effective over time.

A basic description of the policies already in place is provided below. Where relevant, basic information on the number of recipients of various services is also provided.

Increasing the private supply of accessible housing

Various (mostly state) governments have policies in place to increase the supply of private accessible dwellings, either through planning regulation or through state-based variations to the NCC. Table 3.11 summarises existing state planning policies and variations to the NCC that aim to increase the supply of accessible dwellings.

3.11 Summary of state and territory government policies that aim to increase the supply of accessible housing

State	Planning policies aimed at increasing the supply of accessible housing
NSW	<p>In NSW, there are 2 State Environment Planning Policies (SEPPs) relevant to the supply of accessible housing.</p> <ul style="list-style-type: none"> ▪ <i>SEPP No. 65 – Design Quality of Residential Apartment Development</i> has an objective (4Q-1) that universal design features are included in apartment design to promote flexible housing for all community members. The design guidance under this objective is that: developments achieve a benchmark of 20% of the total apartments incorporating LHDG’s silver level universal design features. ▪ The <i>Housing for Seniors or People with a Disability SEPP</i> aims to increase the supply and diversity of residences that meet the needs of seniors or people with a disability by relaxing some local planning controls for developments that meet relevant design principles.
Victoria	<p>Planning Scheme Clause 58 (Better Apartment Design Standards) requires that 50 per cent of apartments in a building of more than 5 storeys are designed and built with LHDG Platinum for path of entry, LHDG gold for main bedroom entry and toilet, and LHDG silver for shower.</p>
Queensland	<ul style="list-style-type: none"> ▪ Accessible housing requirements will apply in locations designated as Priority Development Areas (PDAs) (but will vary across PDAs) <ul style="list-style-type: none"> – It will be mandatory for 10 per cent of all multiple residential dwellings to be accessible – In some PDAs 20 per cent of accessible dwellings should be provided. ▪ Preference for accessible dwellings to be spread across different house types.
Western Australia	<ul style="list-style-type: none"> ▪ Residential Design Codes for Apartments (under State Planning Policy 7.3) require that: <ul style="list-style-type: none"> – 20 per cent of all dwellings across a range of dwelling sizes, meet Silver Level requirements as defined in the LHDG; or – 5 per cent of dwellings are designed to Platinum Level as defined in the LHDG. ▪ Compliance with AS4299 is required for aged and dependent persons’ dwellings. The relevant decision maker has discretion over where AS4299 applies for other types of housing. All single houses, grouped dwellings and multiple dwellings in areas within activity centres must provide wheelchair accessible connections between buildings and public footpaths and carparking areas.
South Australia	<p>In developments consisting of 20 or more residential sole-occupancy units or dwellings, 5 per cent of the total number of sole-occupancy units or dwellings must meet additional accessibility requirements</p>
ACT	<ul style="list-style-type: none"> ▪ Under the ACT Territory Plan: <ul style="list-style-type: none"> – Multi-unit developments of 10 or more dwellings in RZ2 zone are permitted to increase density where dwellings have accessibility features (such as door handles and hardware to AS1428.1) and meets AS4299 – In multi-unit developments of 10 or more dwellings, 10 per cent comply with AS4299 housing class C – Granny flats are required to meet AS4299 Class C (on land >500 m²).

Source: SGS 2019 Planning Schemes Research July; Western Australian Planning Commission, Residential Design Codes: Volume 2 – Apartments, State Planning Policy 7.3.

In addition, some local governments in NSW, Victoria and Queensland have also introduced policies that aim to boost the supply of accessible housing.

There is not enough publicly available data to judge the effectiveness of these policies, and the extent to which they solve the problem of inaccessible housing. It was the view of

many stakeholders during consultation that these state-based planning policies have been ‘tardy’ in addressing the lack of accessible housing.⁸⁷

CIE has adopted an approach that indirectly considers these local government policies through nation-level assumptions on the extent to which each element of LHDG standards is already being incorporated into the design of new homes. These assumptions are based on the professional advice of quantity surveyors (see report by DCWC⁸⁸).

Social housing

State and territory governments are also direct providers of housing to people in need, including some with mobility-related disability. Some governments also have accessibility requirements/targets for social housing. These accessibility requirements for social housing are summarised in table 3.12.

3.12 Summary of state and territory government social housing accessibility requirements

State	Policies aimed at increasing the supply of accessible housing
NSW	NSW Government has a policy that 10 per cent of all new public housing must be ‘adaptable’. That is the dwelling must be easily converted at minimal cost to be suitable for people who use wheelchairs.
Victoria	The design of new dwellings must, where practical, achieve the standard of Gold level of the <i>Liveable Housing Design Guidelines</i> or <i>AS4299 Adaptable Housing</i> (except for car spaces)
Queensland	<ul style="list-style-type: none"> ▪ 50 per cent of all new Class 1 social housing will be built to LHDG Gold standard ▪ For Class 2 dwellings: <ul style="list-style-type: none"> – Ground floor apartments will be built to LHDG Platinum standard – All lift serviced apartments will be built to LHDG Gold standard
South Australia	The South Australian Housing Trust is committed to providing a minimum of 75 per cent of all new houses to meet Universal Design Criteria.
Tasmania	All new social housing properties will be universally designed and suitably diverse for a range of tenants including the elderly, those living with disability, families or singles (a total of 1155 new home by June 2023).
ACT	10 per cent of new social housing meets AS4299 (124 over 2 years)
Northern Territory	Urban Public Housing Design Guidelines require all new urban public housing meets silver level (128 units in 2016)

Source: Information provided by ABCB; NSW FACS website, <https://www.facs.nsw.gov.au/housing/policies/acquiring-new-public-housing-policy>, accessed October 2019.

⁸⁷ Submission by Margret Ward for ANUHD, p.14, accessed 1 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

⁸⁸ DCWC 2020, *Accessible Housing: Estimated Cost Impact of Proposed Changes to NCC*, Report Revision V2.2 to ABCB, 23 December 2020.

Government assistance for under 65s

The NDIS provides funding to assist eligible people under the age of 65 to meet their housing needs. The program currently has around 400 000 participants.

Specialist Disability Accommodation

Some NDIS participants receive Specialist Disability Accommodation (SDA) as part of their NDIS package. SDA refers to accommodation for people who require specialist housing solutions, including to assist with the delivery of support that caters for their extreme functional impairment or very high support needs. Under SDA, the National Disability Insurance Agency (NDIA) funds private organisations that provide accommodation that meets specified design standards to an eligible participant.

Funding is provided only to a small proportion of NDIS participants with extreme functional impairment or very high support needs who meet specific eligibility criteria.⁸⁹ SDA funding will not be available to many people with mobility limitation.

In 2018, NDIA estimated that only 6 per cent of NDIS recipients would qualify for SDA funding.⁹⁰ This suggests that only around 24 000 people could be funded through SDA, accounting for less than 1 per cent of the 2.8 million people who live in a household and have mobility limitation.

Home modifications

Home modifications are also funded through the NDIS in two main ways:

- Participants can choose to fund minor home modifications (up to \$1 500) from their core support budget.
- Higher cost home modifications can be funded through the capital support budget.

Government assistance for over 65s

People over the age of 65 are generally not eligible for NDIS funding. However, they are eligible for government funding through various aged care programs.

Funding for aged care places

Residential aged care, which is partly funded by the Australian Government, is one mechanism through which some older Australians (and some younger Australians) receive accommodation suitable for people with mobility (and other) impairments. This type of accommodation is generally only suitable for those who need care as well as accessible accommodation.

⁸⁹ NDIS website, <https://www.ndis.gov.au/providers/essentials-providers-working-ndia/specialist-disability-accommodation>, accessed 11 October 2019

⁹⁰ National Disability Insurance Agency (NDIA) 2018, *Specialist Disability Accommodation Provider and Investor Brief*, April 2018, p. 8, <https://www.ndis.gov.au/providers/housing-and-living-supports-and-services/housing/specialist-disability-accommodation>, accessed 3 December 2020

Given that residential aged care typically goes beyond the provision of suitable accommodation, designing more houses consistent with universal design principles will not replace the need for aged care. However, more accessible housing may reduce or delay the need for residential aged care to serve the needs of older Australians who may otherwise be able to stay in their own homes for longer (i.e. ageing in place) – about 95 per cent of older people currently live in residential housing.

Funding for home modifications

For older Australians, government funding is provided for home modifications through the following programs:⁹¹

- The Commonwealth Home Support Program — this program helps senior Australians access entry-level support to live independently and safely at home. Home modifications to improve safety and access (such as ramps and rails) are among the services offered.
- Home Care Packages — are designed for those with more complex care needs. These packages can include home modifications.

There is increasing demand for these services. The Grattan Institute estimates that the Federal Government needs to spend 35 per cent more than the current level – an extra \$7 billion a year – and even more in coming decades as Australian’s population continues to age.⁹²

No fault motor accident insurance

Most states have compulsory no-fault accident insurance. This is a funding mechanism to ensure that the needs of people who acquire disability through a motor accident are met. In many cases, these insurance schemes will fund home modifications, or find suitable alternative accommodation for people who have acquired disability through a motor accident.

Other government assistance with accommodation related expenses

Another way that governments assist people with mobility-related disability to access housing (including accessible housing) is through direct financial assistance. For example, people with mobility-related disability may be eligible for Commonwealth Rent Assistance, which is an income supplement payable to eligible people who rent in the private rental market or community housing.⁹³

⁹¹ Australian Government My Aged Care website, <https://www.myagedcare.gov.au/help-at-home/commonwealth-home-support-programme>, accessed 13 January 2020

⁹² Duckett, Stephen, Anika Stobart and Hal Swerissen 2020, *Reforming aged care: a practical plan for a rights-based system*, Grattan Institute, 29 November 2020, <https://grattan.edu.au/report/reforming-aged-care-a-practical-plan-for-a-rights-based-system/>

⁹³ Department of Social Security website, <https://www.dss.gov.au/housing-support/programmes-services/commonwealth-rent-assistance>, accessed 11 October 2019

Voluntary certification scheme

Livable Housing Australia (LHA) administers a voluntary certification scheme whereby homes can be certified as being compliant with LHDG silver, gold or platinum standard.

Other services

There are a range of other services available to people seeking accessible housing provided by private organisations, including community groups, some of which may receive some government funding (table 3.13).

3.13 Summary of other services

Organisation	States	Summary of services
Disability Housing	All States	Listings of rental housing, houses for sale and disability housing projects
The Housing Hub	All States	Lists SDA and supported accommodation. Also lists some private rentals.
Nest	All States	Matches people with disability with houses that suit their funding, support and personal needs.
Housing Choices Australia	Victoria Tasmania South Australia	Not for profit group that houses people with disability in city and country areas.
The Endeavour Foundation	Queensland Victoria New South Wales	A range of housing options where people get help to live on their own.
Freedom Housing	All States	Makes it possible for people with disability to live in a house or apartment with their partner, children, extended family, friends, housemates, or on their own with around the clock support as required.
Accessible Housing	South Australia	Not for profit group that helps people with disability find affordable housing.
E-bility	All States	Advertises wheelchair accessible properties
Home Hunters Relocation	All States	Can assist to find accessible housing

Source: Spinal Cord Injuries Australia website, <https://scia.org.au/accessible-housing/>, accessed 14 October 2019.

Housing outcomes under current policy settings

The type of dwellings people identified as having mobility-related disability are currently residing in is shown in table 3.14. According to the 2018 SDAC, around 92 per cent of

people with mobility limitation are living in private dwellings, including around 75 per cent in separate houses.

3.14 Type of dwelling

Type of dwelling	0 to 14 years	15 to 64 years	65+ years	Total	Share of total
	'000	'000	'000	'000	Per cent
Establishments					
Hospital (general)	0.0	0.5	2.6	3.2	0.1
Hospital (other)	0.0	0.6	0.1	0.7	0.0
Home for the aged	0.0	3.0	75.2	78.2	2.6
Home (other)	0.0	3.0	1.2	4.0	0.1
Retired/aged accommodation (cared)	0.0	4.6	93.5	98.1	3.2
Retired/aged accommodation (self-care)	0.0	4.7	43.9	49.0	1.6
Total establishment	0.0	16.4	216.5	233.2	7.7
Private dwelling					
Separate house	205.6	1 087.5	984.3	2 278.8	75.1
Townhouse	16.0	149.6	170.6	336.4	11.1
Flat/apartment	8.3	87.6	78.0	178.7	5.9
Other	0.0	5.6	2.7	6.3	0.2
Total private dwelling	229.9	1 330.3	1 235.6	2 800.2	92.3
Total	229.9	1 346.7	1 452.1	3 033.4	100.0

Note: TableBuilder randomly adjusts cells to minimise the risk of identifying individuals in aggregate statistics. This means that table totals do not always add exactly.

Source: ABS, Survey of Disabilities, Ageing and Carers, 2018, TableBuilder.

Private market

While there is some evidence that the market is partly responding to the need for accessible housing, it does not meet the needs of many members of the community.

As shown above, most Australians with mobility-related disability live in private residences. The proportion of new private dwellings that are accessible is not known. The ABCB Options Paper reported one estimate from 2014 that only around 5 per cent of newly constructed homes met LHDG silver standard.⁹⁴ This estimate appears to have been based on the number of dwellings certified under the LHA certification scheme.

Industry stakeholders reported that many more homes are built to LHDG standards that are not certified; this is therefore likely to be an underestimate. Other stakeholders noted that although relatively few new dwellings include all of the accessibility features set out in the LHDG standards, most new dwellings incorporate at least some of these features.

⁹⁴ ABCB 2018, *Accessible Housing: Options Paper*, September 2018

Retirement villages

A subset of the private market response to the growing need for accessible housing for older Australians is through retirement villages. The number of dwellings and residents in retirement villages (in 2014) is shown in table 3.15. Recent data also suggests a strong supply pipeline over coming years.⁹⁵

3.15 Retirement village dwelling and resident numbers – 2014

State or territory	Penetration rate of over 65s in retirement villages	Number of residents in retirement villages	Number of dwellings
	Per cent	No.	No.
NSW and ACT	4.9	55 413	42 625
Victoria	5.3	43 107	33 159
Queensland	6.4	38 842	29 878
South Australia	8.6	23 236	17 874
Western Australia	6.9	20 599	15 846
Tasmania	3.4	2 883	2 218
Australia	5.7	184 080	141 600

Source: Property Council of Australia, National overview of the retirement village sector, October 2014, p.5.

Some stakeholders noted that not all retirement villages meet accessibility standards, particularly older retirement villages or retirement villages that have been re-purposed from other buildings.

Moving into a retirement village is often considered a lifestyle choice. However, current or future accessibility needs may be an important factor for some residents.

It was suggested by stakeholders during consultation that some older people who moved to a retirement village would have preferred to remain in their previous homes had those homes met their accessibility needs.

Home modifications

Another way the market (often supported by policy assistance) responds to the need for accessible housing is through home modifications. According to SDAC data, around 477 800 Australians with mobility limitation live in dwellings that have been modified because of their condition or age (around 16 per cent of the total) (table 3.16). This proportion was around 25 per cent for people with profound or severe mobility limitation.

⁹⁵ PwC and Property Council 2018, *2018 PwC/Property Council Retirement Census*, November 2018, p.6.

3.16 Share of people with a mobility limitation living in modified dwellings

Mobile limitation	Dwelling modified	Total	Share
	'000	'000	Per cent
Profound	161.7	632.2	25.6
Severe	123.7	518.9	23.8
Moderate	77.4	434.9	17.8
Mild	117.8	1 394.8	8.4
Total	477.8	2 982.3	16.0

Source: ABS, Survey of Disabilities, Ageing and Carers, 2018, TableBuilder, CIE.

The types of home modifications that have been made (as a share of total home modifications) is shown in table 3.17.

3.17 Types of home modifications – share of total home modifications

Type of modification	Profound	Severe	Moderate	Mild	Total
	Per cent				
Structural changes	15.3	12.9	11.5	5.7	11.5
Ramps	30.7	20.9	20.3	13.8	22.3
Toilet, bath or laundry modifications	57.1	50.5	44.3	39.0	49.2
Kitchen modifications	7.4	4.4	2.6	3.1	4.6
Doors widened	9.1	3.6	3.6	1.1	4.7
Handrails or grab rails	66.1	65.6	70.9	63.4	66.5
Remote controls	1.9	2.3	2.3	0.0	1.5
New or changed heating or air-conditioning	11.8	4.8	3.4	3.1	6.0
Installed home automation/smart home or environmental control system	2.4	0.0	0.0	0.0	0.9
Telemonitoring system	3.0	2.3	0.0	1.7	2.0
Other change to dwelling	11.3	14.6	9.4	13.0	12.0

Note: Refers to the percentage of total home modifications.

Source: ABS, Survey of Disabilities, Ageing and Carers, 2018, TableBuilder.

In 2018-19, the Australian Government funded 48 842 home modifications for people over the age of 65 through the Commonwealth Home Support Program at a total cost of around \$35.3 million.⁹⁶ This implies an average cost of around \$723 per modification, although this Program covers only relatively minor modifications. The cost of home modification that are funded privately or through other government programs is not known.

⁹⁶ Australian Institute of Health and Welfare website, <https://www.gen-agedcaredata.gov.au/Resources/Access-data/2019/September/Aged-care-data-snapshot%E2%80%94942019>, accessed 22 December 2019.

Moving to a more accessible dwelling

Where their current residence no longer meets their needs, one option that may be available to people with mobility-related disability is to move to a dwelling that better meets their accessibility needs (if available). SDAC data suggests that around 10 per cent of people with mobility-related disability have had to move house at least once as a result of their condition or age (table 3.18). This affects all members of the household, not just the person with accessibility needs.

3.18 Moved house because of condition or age

	Has had to move house once	Has had to move house more than once	Total moved house	Total	Share moved
	'000	'000	'000	'000	Per cent
Profound	63.3	22.8	86.1	632.2	13.6
Severe	61.0	18.2	79.2	518.9	15.3
Moderate	35.3	11.0	46.3	434.9	10.6
Mild	78.8	16.2	95.0	1 394.8	6.8
Total	240.0	67.1	307.1	2 982.3	10.3

Source: ABS, Survey of Disabilities, Ageing and Carers, 2018, TableBuilder.

Social housing

The AIHW reports that around 393 912 households were supported through social housing programs as at 30 June 2017. Of these, 153 422 households (39 per cent) contained a person with a disability. However, no information is provided on:

- the severity of the disabilities
- the proportion that had mobility-related disability.

According to data from the SDAC, there were around 221 800 people with mobility-related disability in social housing in 2018 (table 3.19).

3.19 Number of people with a mobility-related disability in social housing

Type of social housing	Profound	Severe	Moderate	Mild	Total
	'000	'000	'000	'000	'000
State or Territory Housing Authority	29.7	28.9	27.4	77.5	166.6
Housing co-operative, community or church group	16.7	7.8	7.7	26.4	55.1
Total	46.3	37.9	35.1	103.7	221.8

Source: ABS, Survey of Disabilities, Ageing and Carers, 2018, TableBuilder.

Aged care

According to SDAC data, there were around 176 300 people with mobility limitation in residential aged care in 2018 (including accommodation for the retired or aged).

The AIHW reports there were 182 705 permanent aged care places funded by the Australian Government in 2019.⁹⁷

Specialist Disability Accommodation

The NDIS Quarterly Report to the COAG Disability Reform Council reported that as at 31 December 2020:

- there were 15 667 participants with SDA funding in an active NDIS plan (the NDIA has estimated that the number of participants eligible for SDA funding will increase to 28 000 over time).
- there were 4 921 enrolled dwellings, including:⁹⁸
 - 2 005 Basic dwellings
 - 1 032 Improved Liveability dwellings (broadly aligning with the LHDG silver standard)
 - 1 007 High Physical Support dwellings (housing that has been designed to incorporate a high level of physical access provision for people with significant physical impairment and requiring very high levels of physical support).
 - 242 Robust dwellings (broadly aligning with LHDG silver standard)
 - 635 ‘Fully Accessible’ dwellings (broadly consistent with LHDG platinum standard dwellings)

Quantifying the problem

The outcomes (including those described above) under current arrangements and policy settings are not necessarily optimal from various perspectives. In particular, housing designs that are not based on universal design principles may not be optimal where:

- the needs of members of the community with mobility-related disability are not met; and/or
- the cost of meeting the needs of members of the community with mobility-related disability is unnecessarily high (including both costs incurred by affected individuals and the government).

These sub-optimal outcomes are effectively the problem that the proposed changes to the NCC are trying to solve (i.e. the problem that is not already being solved through existing mechanisms).

Table 3.20 identifies some sub-optimal outcomes that could arise from a shortage of accessible housing.

⁹⁷ Australian Institute of Health and Welfare website, <https://www.gen-agedcaredata.gov.au/Resources/Access-data/2019/September/Aged-care-data-snapshot%E2%80%942019>, accessed 22 December 2019.

⁹⁸ NDIS Quarterly Report to disability ministers, 31 December 2020, pp. 526-550. <https://www.ndis.gov.au/about-us/publications/quarterly-reports>

3.20 Summary of sub-optimal outcomes from a shortage of accessible housing

Outcome	Circumstances where outcome is not optimal	Cost of sub-optimal outcome
Short-term (temporary) outcomes		
Patient remains in hospital/transition care while suitable housing is found	Where patient would not need to be in hospital if accessible housing was available	Additional cost of hospital stay or respite care
Housing without accessibility features (while suitable housing is unable to be found)	Where individual has accessibility needs but temporarily remains in housing without relevant accessibility features while more suitable housing is found.	<p>Accessibility needs not met, possibly leading to:</p> <ul style="list-style-type: none"> ▪ Higher care needs (family or other), including: <ul style="list-style-type: none"> – Loss of independence – Cost of carers (including opportunity cost of informal care) ▪ Less safe environment, including: <ul style="list-style-type: none"> – Increase in slips, trips and falls for person with impairment – Safety impacts on carers ▪ Inability to participate in the community (i.e. unable to easily enter/leave the dwelling) <ul style="list-style-type: none"> – Loss of employment opportunities – Inability to participate in other aspects of community life.
Longer-term outcomes		
Housing without accessibility features	Where individual has accessibility needs but remains in housing without relevant accessibility features longer-term.	<p>Accessibility needs not met, possibly leading to:</p> <ul style="list-style-type: none"> ▪ Cost of higher care needs (family or other), including: <ul style="list-style-type: none"> – Loss of independence – Cost of carers (including opportunity cost of informal care) ▪ Less safe environment, including: <ul style="list-style-type: none"> – Increase in falls for person with impairment – Safety impacts on carers ▪ Inability to participate in the community (i.e. unable to easily enter/leave the dwelling) <ul style="list-style-type: none"> – Loss of employment opportunities – Inability to participate in other aspects of community life

Outcome	Circumstances where outcome is not optimal	Cost of sub-optimal outcome
Residential aged care ^a	<ul style="list-style-type: none"> Where the person does not require specialist housing or the level of care that is provided in aged care (i.e. their only requirement is housing that is physically accessible, and they can only get this by moving into aged care) 	<ul style="list-style-type: none"> Less preferred environment, potentially leading to: <ul style="list-style-type: none"> – social isolation – loneliness Higher financial cost to the government than home-based care.
Institutional care for younger people with a disability	<ul style="list-style-type: none"> This outcome is sub-optimal in all instances. 	<ul style="list-style-type: none"> Less preferred environment, potentially leading to: <ul style="list-style-type: none"> – social isolation – depression – inability to participate in the community (including employment) Possibly higher cost than home-based care. People in institutional care may be more vulnerable to abuse.
Accessible private/social housing in non-preferred location	<p>A person may have accessible private/social housing, but the location does not suit their needs (in terms of proximity to family/friends, schools and employment opportunities)</p>	<ul style="list-style-type: none"> Social isolation/loneliness Lack of employment opportunities Disruption for families (such as school-aged children moving schools)
Home modifications	<p>Home modifications may not be an optimal option where:</p> <ul style="list-style-type: none"> Home modifications only partially meet accessibility needs Home modifications are prohibitively costly. 	<ul style="list-style-type: none"> High cost of home modification.
People with disability unable to visit family and friends		<ul style="list-style-type: none"> Social isolation/loneliness

Source: CIE.

In summary, the problem that the proposed changes to the NCC are trying to solve includes:

- safety-related costs such as where people with accessibility needs remain living in housing that does not meet their accessibility needs and are therefore at higher risk of falls
- costs associated with additional care needs, where people with accessibility needs remain living in housing that does not meet their needs
- unnecessarily high costs (i.e. higher than if the initial design of the residence had been consistent with universal design principles) associated with home modifications
- costs associated with moving house to obtain accessibility features
- costs associated with longer stays in hospital and transition care, where discharge is delayed due to their home lacking accessibility features

- costs associated with loneliness, where people with accessibility needs are unable to leave their own house as frequently as they would like or are unable to visit friends and relatives (there may also be costs for people without accessibility needs, where family members and friends with accessibility needs are unable to visit them)
- additional costs associated with inappropriate or premature entry into aged care due to dwellings lacking relevant accessibility features.

Some stakeholders argued that a lack of accessible housing may also be contributing to poorer employment outcomes for some people with mobility-related disability. There is related literature that provides relevant qualitative insights into this issue; however, CIE was not able to identify any direct quantifiable evidence. Some findings of the MDI survey have been used to provide an indicative estimate subject to the qualifications mentioned above.

To understand the size of the problem, the following factors need to be understood:

- the number of people affected, and
- the costs imposed on those affected as a result of a shortage of accessible housing.

The estimates of the approximate size of each of these problems based on the available information are presented below.

Safety-related costs

Many people with accessibility needs have trouble finding accessible housing that meets their needs.⁹⁹ When accessibility needs are not met, there may be an increased risk of falls. In some cases, falls result in serious injury or even death. Box 3.21 presents a case from the public submissions where a person using a power wheelchair and living in a third floor apartment faces safety and other issues when the lift does not work.

While it is not clear that the NCC proposal would directly address this issue, the increased availability of accessible dwellings could provide people in this situation greater choice of suitable dwellings and it provides a good example of the safety-related costs.

3.21 Lived experience – safety

I use a power wheelchair and live in a private rental in a third floor apartment. Since truly accessible affordable properties are hard to find, this was the best we could get. When the lift breaks down (which it does), or there is a fire alarm, I am unable to get in and out of the building on crutches without assistance. My safety is significantly more at risk as a result. When the lift breaks down, if I am not at home then I am stuck outside my apartment until someone is able to help me get inside. On one occasion, I was not fit to climb the stairs even with assistance, so I stayed in a hotel overnight when the lift was out. That was a significant expense for which I was entitled to no compensation. If I am at home when the lift breaks down, I am unable

⁹⁹ Australian Network for Universal Housing Design 2018, *Report on the Survey on the provision of Livable housing design: the costs and benefits to Australian Society*, May 2018, p. 19

3.21 Lived experience – safety

to use my power chair to leave the building until it is fixed so my ability to get out into the community is greatly reduced.

Source: Jane Scott Response¹⁰⁰

The main safety-related costs are likely to relate to additional falls. The evidence on the impact of environmental factors on the incidence of falls in homes is mixed.¹⁰¹

- The World Health Organisation (WHO) assessed that the strength of evidence that people with functional impairments have reduced fall and injury rates in homes that have been modified is **moderate** based on a review of the literature.¹⁰²
- An older (2006) review of the evidence for the (then) Australian Government Department of Health and Ageing by the National Ageing Research Institute concluded that:

“There is growing evidence that home hazard assessment and modification programs may be effective in reducing falls, particularly when undertaken by trained health professionals such as occupational therapists, and when targeting those at increased risk of falls. These approaches are more likely to be effective when combined with strategies to modify risky behaviours, and maximise adherence with recommended hazard modifications. **To date there is no strong evidence that modifications to reduce environmental fall hazards within the home or public areas in isolation are effective in reducing fall rates** [emphasis added].”¹⁰³

The implication is that there is limited evidence to suggest that the universal design features would significantly reduce falls.

- **For the purposes of the CBA, the following assumptions are made:**
 - **As a significant number of studies suggest that environmental factors have a minimal impact on falls, a reasonable lower bound would be to assume that the universal design features on their own could have no impact on falls.**
 - **As an upper bound estimate, CIE uses the same impact estimated for the Consultation RIS (i.e. lack of universal design features increases falls by around 37 per cent).**
 - **For the central case, it is assumed that the lack of universal design features increase falls by around 10 per cent. CIE considers that the impact of the NCC**

¹⁰⁰ Submission by Jane Scott, accessed 13 November 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

¹⁰¹ Pynoos, J. Steinman, B.A. and Nguyen, A.Q.D. 2010, ‘Environmental Assessment and Modification as Falls Prevention Strategies for Older Adults’, *Clinical Geriatric Medicine*, November 26(4), pp.633-644.

¹⁰² World Health Organization 2018, *WHO Housing and health guidelines*, chapter seven. Emphasis is in the WHO report (p.71).

¹⁰³ Hill, K. Vratsidis, F., Haralambous, B. Fearn, M. Smith, R. Murray, K. Sims, J. Dorevitch, M. 2004, *An analysis of research on preventing falls and falls injury in older people: Community residential care and hospital settings*, Report to the Australian Government Department of Health and Ageing, Injury Prevention Section by the National Ageing Research Institute, National Falls Prevention for Older People Initiative, p.26.

is more likely to be towards the lower end of the range for the following reasons.

- ... Most (but not all) studies that look at the number of hazards in the home (without other interventions) tend to find that the number of environmental hazards has little to no impact on the number of falls.
- ... Most studies at the upper end of the range tend to include either home assessments (which could assist in removing environmental hazards unrelated to the dwelling design such as rugs, worn carpets, inappropriate furniture placement etc.) or other types of interventions. As such, using the results of these studies (extrapolating from their estimates) is likely to overstate the impact of universal design features.

Based on these assumptions, it is estimated that the cost of additional falls as a result of some people with accessibility needs remaining in housing that lacks relevant accessibility features could range between zero and around \$570.3 million per year, with a central case estimate of around \$154.1 million (table 3.22). This includes:

- costs associated with an increased number of deaths (based on standard economic approaches to valuing the loss of life, discussed on pages 281 to 285 and in appendix B)
- morbidity costs associated with hospitalised falls (which were not included in the Consultation RIS) – given the relatively high morbidity costs implied by available studies, the morbidity costs are more likely associated with hospitalised falls rather than un-hospitalised falls which have therefore not been included, and
- medical costs associated with injuries (including additional hospital admissions, emergency department attendances and non-hospital treatment).

Further details on the approach to estimating these costs are set out in appendix B.

3.22 Estimated annual safety costs from inaccessible housing

Outcome	Low estimate	Central case	High estimate
	\$ million	\$ million	\$ million
Death	0.00	9.13	33.77
Morbidity costs	0.00	135.11	499.92
Hospital admissions	0.00	8.60	31.84
Emergency department attendance	0.00	0.71	2.63
Non-hospital treatment	0.00	0.58	2.15
Total	0.00	154.14	570.30

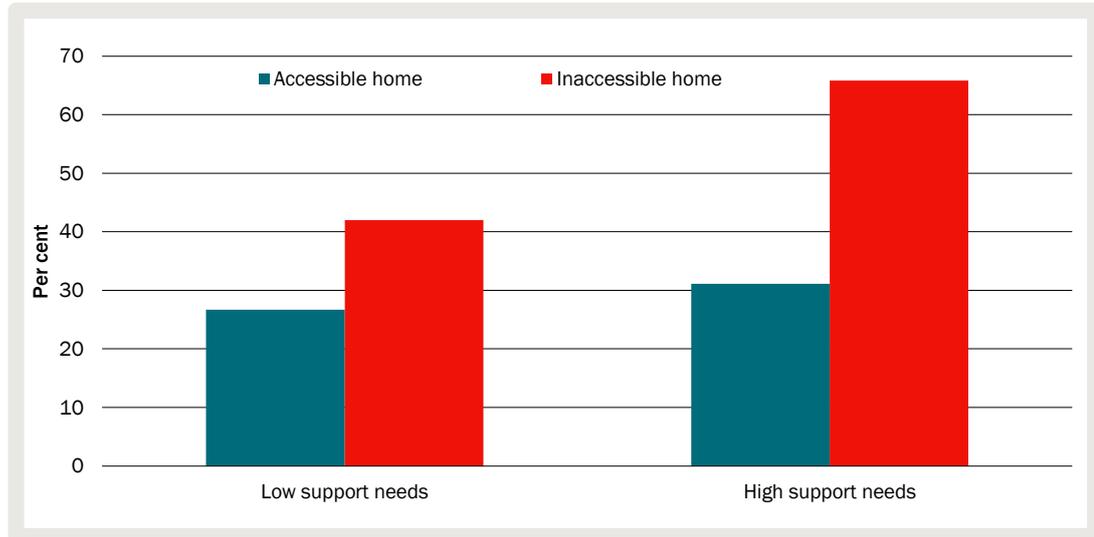
Source: CIE estimates (see appendix A for further details).

The cost of additional assistance

Where people with disability remain in housing that does not meet their accessibility needs, they may also have an increased need for assistance/care. This includes both formal care and informal care provided by family and friends.

A higher share of respondents to the MDI survey that were living in an inaccessible home indicated that their need for paid disability support had increased due to the design of their current home compared to those living in accessible homes (chart 3.23).

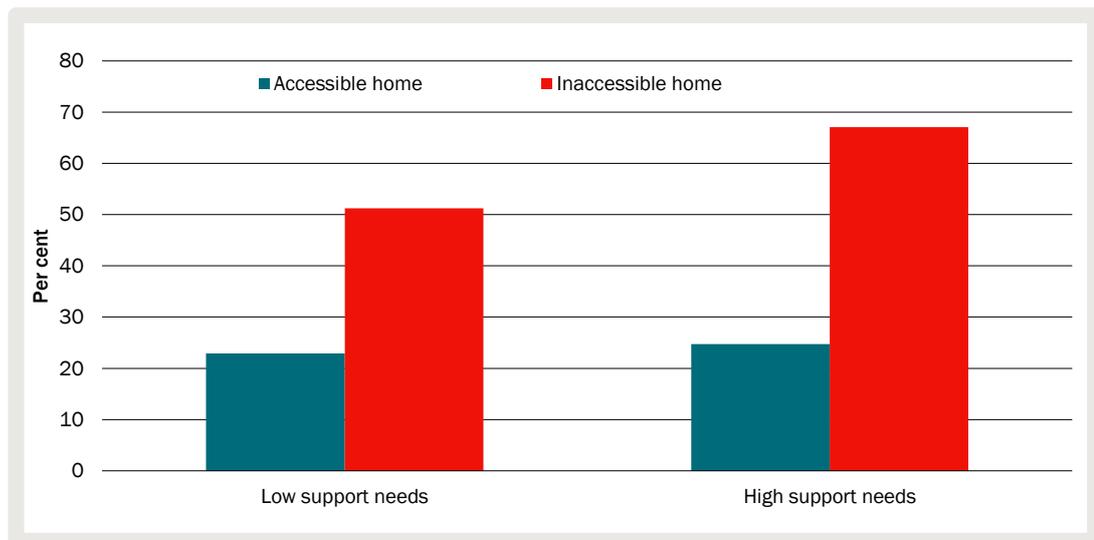
3.23 Share of respondents with increasing need for paid disability support



Data source: Wiesel, I. Lived experience and social, health and economic impacts of inaccessible housing, prepared for the Melbourne Disability Institute, University of Melbourne and the Summer Foundation, 18 August 2020, as Appendix 2 of the submission by Melbourne Disability Institute (MDI) and Summer Foundation.

Similarly, a higher share of respondents living in inaccessible homes indicated that their need for informal care had increased due to the design of their current home compared to those living in accessible homes (chart 3.24).

3.24 Share of respondents with increasing need for informal care



Data source: Wiesel, I. Lived experience and social, health and economic impacts of inaccessible housing, prepared for the Melbourne Disability Institute, University of Melbourne and the Summer Foundation, 18 August 2020, as Appendix 2 of the submission by Melbourne Disability Institute (MDI) and Summer Foundation.

Evidence of additional care needs as a direct result of inaccessible housing was also presented in submissions (see box 3.25).

3.25 Lived experience – additional care

One of the case studies in the submission from the Summer Foundation and the Melbourne Disability Institute — Miriam’s story — provides direct evidence of inaccessible housing significantly increasing the need for paid support. Miriam has cerebral palsy and lives in social housing unit. The shower is over a bathtub and Miriam cannot use it safely without support. As a result, Miriam requires paid support to supervise her showering (funded through the NDIS). This equates to an additional cost of around \$25 000 per year that would be avoided through an accessible shower.¹⁰⁴

This section focuses on estimating the cost of the additional time spent caring for people with mobility and self-care limitations as a result of inaccessible housing (i.e. the opportunity cost of the carer’s time). In some cases, the need for additional care also reduces independence and quality of life of the recipient. These costs are estimated in the section on ‘quality of life’.

In the Consultation RIS, the estimated costs associated with additional care was based on the number of people with mobility limitations only. However, several stakeholders (including ANUHD), suggested this excluded people requiring assistance with bathing and showering, and toileting that would benefit from more accessible showers and toilets.¹⁰⁵ Some stakeholders also argued that the time spent by family and friends caring for people with disability (i.e. informal care) had been undervalued at the minimum wage.¹⁰⁶

To address these issues the following adjustments have been made.

- The number of people requiring assistance with bathing and showering and toileting have now been included.
- Informal care is valued based on current wage rates of aged care workers, which is around \$22.85 per hour (based on Sydney hourly rates).

Under these revised assumptions, it is estimated that the additional cost of carers — including both formal and informal carers — that can be attributable to inaccessible housing could be around \$938.5 million per year (table 3.26).

¹⁰⁴ Wiesel, I. *Lived experience and social, health and economic impacts of inaccessible housing*, prepared for the Melbourne Disability Institute, University of Melbourne and the Summer Foundation, 18 August 2020, as Appendix 2 of the submission by Melbourne Disability Institute (MDI) and Summer Foundation. p. 27

¹⁰⁵ See for example: anonymous submissions 284174932 and submission by Margret Ward for the Australian Network for Universal Housing Design, pp. 9-10.

¹⁰⁶ See for example: Margret Ward, op.cit., pp. 18-19; and Anonymous Submission 284174932

3.26 Annual additional cost of care due to inaccessible housing

	Informal care			Formal care			Total
	People receiving care ('000)	Annual cost per person (\$ per person per year)	Annual cost (\$m per year)	People receiving care ('000)	Additional annual cost per person (\$ per person per year)	Annual additional cost (\$m per year)	Annual additional cost (\$m per year)
Moving about the house	111.5	4 159	463.70	21.3	676	14.40	478.09
Bathing and showering	182.7	2 020	369.04	36.1	338	12.20	381.24
Toileting	83.3	951	79.18	18.5	0	0.00	79.18
Total			911.92			26.60	938.52

^a Based on SDAC 2018, TableBuilder.

Source: See appendix B for details.

Further details of the approach to estimating the additional costs of the assistance provided to people with mobility limitation living in housing that does not meet their accessibility needs is provided in appendix C.

Note that these estimates include only the opportunity cost of the carer's time. CIE has not been able to quantify any costs associated with injuries to carers. That said, the costs associated with injuries to formal carers are at least partly covered as the NDIS rates for formal carers were used as the basis for cost estimates which would include workers' compensation insurance, reflecting the risk/probability of getting injured during work. Although there is evidence to suggest that carers (particularly informal carers) frequently acquire injuries in providing care to people with disability, CIE did not find any empirical studies that explicitly links carer injuries to inaccessible housing that would enable quantification of these costs.¹⁰⁷

Some public submissions suggested that informal care may affect carers' employment and productivity. The above opportunity cost approach to estimate the informal care costs is one way to acknowledge the impact on informal carers' time which could be devoted to work. There is little evidence to suggest that accessible housing would provide additional employment benefit to informal carers than the estimated opportunity cost.

Leigh (2010) used Australian panel data for the period 2001-2007 to track the same individuals over time and to observe how their labour market outcomes alter as their care arrangements change. He found¹⁰⁸

While caregiving does appear to have a modest negative impact on labour force participation, this impact is only one-quarter to one-sixth as large in the panel as in the cross-section. Taking

¹⁰⁷ See discussion in Davy, L. Adams, T. and Bridge, C. *Caring for the Carer: Home design and modification for carers of young people with disability*, Home Modification Information Clearinghouse, City Futures Research Centre, Faculty of the Built Environment, University of New South Wales, p.19.

¹⁰⁸ Leigh, A. 2010, 'Informal Care and Labor Market Participation', *Labour Economics*, 17(1), p.140-149.

account of individual heterogeneity, the impact of caregiving on other labour force outcomes (and on life satisfaction) seems to be small or non-existent.

Inaccessible housing is only one of many factors affecting informal caregivers' labour market outcomes. If the impact of caregiving status on employment is 'small or non-existent', the impact of inaccessible housing would be even smaller.

For this reason, any additional employment impact or productivity impacts have not been included in the quantifiable size of the problem.

Quality of life impacts

A number of submissions suggested that inaccessible housing reduces the quality of life of people with accessibility needs which should be included in the estimates of the size of the problem. Quality of life covers a wide spectrum of impacts, including reduced independence, loss of dignity, poor mental health, social isolation and loneliness.

There is a range of qualitative evidence to support this proposition.

- A study from the London Schools of Economics and Political Science¹⁰⁹ (LSE) emphasised the wider quality of life impacts where housing accessibility needs are met (compared to those with unmet needs). Based on a survey and in-depth interviews, the LSE study identified the importance of retaining dignity, independence and social contact.
- Multiple submissions also identified issues that could broadly be termed as reduced quality of life from inaccessible housing (or quality of life improvements associated with accessible housing) (see box 3.27 for a case study of lived experience of quality of life impacts of inaccessible housing).

¹⁰⁹ Provan, B. Burchardt, T. and Suh, E. No Place Like Home, Quality of life and opportunity for disabled people with accessible housing needs, London School of Economics and Political Science and Centre for Analysis of Social Exclusion, CASE Report 109, pp.15-16.

3.27 Lived experience – quality of life impacts

Better quality of life with accessible housing

A person is more disabled when their built environment is inaccessible. I have lived in both an inaccessible house and a fully purpose built home. In my accessible home – I am happy, productive, social and my best person (to myself, my friends and family). I am an excellent employee ... - and this is partly related to my physical health and my mental health being on track. Without access in my home – I was clinically depressed, suicidal, unemployed and single. I now have a great career, I am a wife, a mother, a friend and I am studying at uni.¹¹⁰

Social isolation due to inaccessible housing

I lead a very social life, we have barbeques and such, but we [my wife and I] never get invited anywhere because our friend's houses aren't accessible for me. It's not just affecting me, it affects [my wife's] socialising too.

PDCN member & fulltime wheelchair user (his wife does not have a physical disability)

Source: Physical Disability Council of NSW (p5)¹¹¹

While I do not personally experience any of the physical disabilities included in the form (so didn't submit it) the difficulty of finding accessible housing impacts me in many ways. I also know several people who are directly impacted due to their physical disabilities - some of whom will not have the capacity to fill out the form (due to mental health situations).

The ways that I am impacted include having been unable to live with people I would have if we were able to find a house that was accessible (and affordable) for them - they ended up moving back into their parents at 38. Even were I not wanting to live with someone with accessible housing needs, I would still prioritise finding a home where I can invite all of my friends to visit - including those who have physical disabilities.

Source: Anonymous Response 722067220¹¹²

¹¹⁰ Anonymous Submission 90458024, accessed 11 November 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

¹¹¹ Submission by Hayley Stone for Physical Disability Council of NSW, p.5, accessed 13 November 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

¹¹² Anonymous Submission 722067220, accessed 13 November 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

3.27 Lived experience – quality of life impacts

Improved visitability and social participation with accessibility features

Based on my own experience of 24 years being a paraplegic in rental housing and trying to visit friends/family in a wheelchair, the most critical features to provide for a basic level of accessibility are STEP FREE, accessible gradient paths of travel from parking area to inside, wider doorways (Gold level provisions), minimum 1m clearance on one side of the bed and accessible bathroom facilities (Gold level provisions). If those things are provided, I can tolerate all the other difficulties with practically accessing kitchens, parking, other rooms in the house but would recommend they were also addressed with additional provisions to make a more holistic [*sic*] solution.

Source: Anonymous (Q30) Response 894045598¹¹³

I have been a member of a Book Club for almost fifteen years. We have evolved into a tight knit and supportive group who have together navigated births, marriages, separation, illness, renovations and meet regularly to share wine, cheese and stories. Originally established in a bookshop, on its closure a new venue was sought. Eventually, cafes and restaurants becoming too expensive or too constrained we discussed visiting each other's homes, a different member hosting each month. With one of our group in a wheelchair an accessibility review of each person's home resulting in only one person from the seven having a home that was equally accessible to all, predictably that of the person in the wheelchair, although two others had homes that were accessible through the garage. Imagine our delight when one evening on arrival there was a handcrafted plywood ramp enabling access with the proud pronouncement that "Everybody should be able to come in through our front door!". And now we all do just that on a regular basis.

Source: Wendy Lovelace Response¹¹⁴

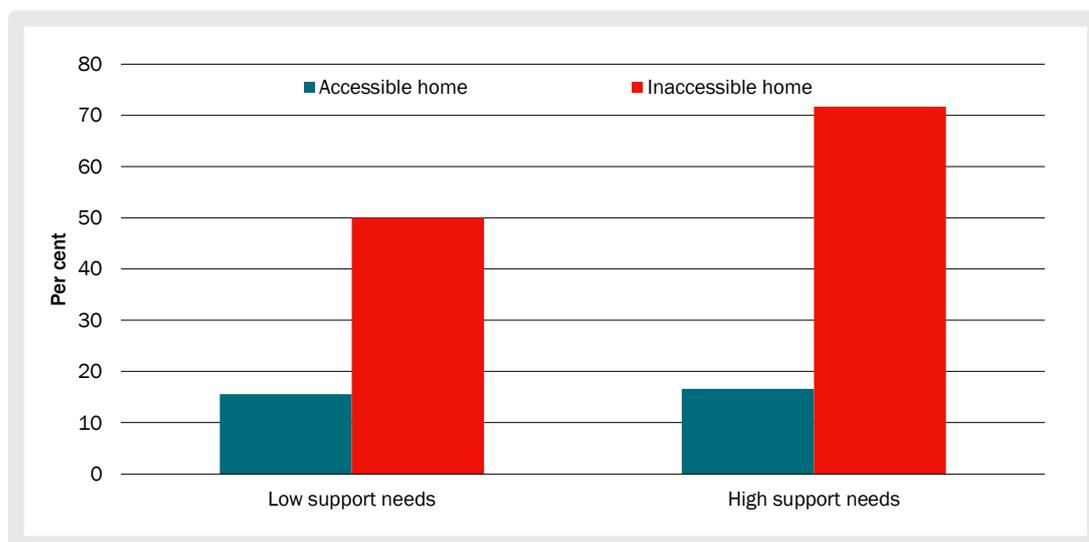
According to the survey by MDI, a significantly higher share of respondents living in inaccessible housing indicated worsened mental health and wellbeing, compared with those living in accessible homes (chart 3.28).¹¹⁵ Conversely, a high share of people living in accessible homes reported improved mental health and wellbeing.

113 Anonymous Submission 894045598 Accessed 13 November 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

114 Wendy Lovelace, op. cit.

115 Wiesel, I. op. cit., p.31.

3.28 Share of respondents indicating that the accessibility of their current home had worsened their mental health and wellbeing



Note: Q: 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?

Data source: Wiesel, I. Lived experience and social, health and economic impacts of inaccessible housing, prepared for the Melbourne Disability Institute, University of Melbourne and the Summer Foundation, 18 August 2020, as Appendix 2 of the submission by Melbourne Disability Institute (MDI) and Summer Foundation.

Although there is significant qualitative evidence demonstrating reduced quality of life, including loss of independence, loss of dignity and poorer mental health outcomes associated with inaccessible housing (relative to accessible housing), quantitative evidence is limited. Based on the limited information available, CIE considered various approaches to quantifying the quality of life impacts (see below).

- **The estimates of the quality of life costs associated with inaccessible housing based on these various approaches varied significantly (reflecting high levels of uncertainty). The CBA assumes:**
 - **A lower bound estimate of around \$1 billion per year, based on the lower bound estimate using the WTP approach.**
 - **A central case estimate of around \$1.9 billion per year, based on the upper bound estimate using the WTP approach.**
 - **An upper bound estimate of around \$3.8 billion per year, based on the estimate using the reduction in quality-adjusted life years (QALYs).**

The willingness to pay approach

Anticipated quality of life improvements should be reflected in household's willingness to pay for accessibility features. The stated preference survey conducted for the Consultation RIS was therefore used as one approach for estimating the WTP for accessible features proposed in the NCC. It is estimated that the WTP for Silver and Gold is \$1 919 per year and \$3 451 per year per household with at least one family member having mobility disability, respectively.

SDAC data suggests that there are about 554 400 people who live in an unmodified home who have difficulties with moving about the house, toileting or showering. Assuming that each household has only one person with difficulties with these activities, it is estimated that the total benefit of making their homes accessible could be between \$1.1 billion and \$1.9 billion per year (table 3.29).

3.29 Willingness to pay for accessible housing

Willingness to pay	Silver	Gold
WTP (\$ per year per household)	1,919.0	3,451.0
Number of households impacted ('000) ^a	554.4	554.4
Total impact (\$ million)	1,063.9	1,913.2

^a Assuming each household has only one family member having difficulty in moving about home, toileting or showering.
Source: CIE estimates based on WTP survey and SDAC data.

It should be noted that this estimate of WTP for accessible housing includes a range of impacts which have been identified and quantified separately to avoid overlapping. For example, as suggested by Dalton and Carter in their supplementary report, privately borne costs and inconvenience (or disutility) such as cost associated with loneliness, care related costs, home modifications and moving may be overlapping with the WTP estimates.¹¹⁶ These items amount to \$1.6 billion and \$1.9 billion per year (see table 3.2). This implies no additional quality of life impact over and above that which was estimated under other problems.

Dalton and Carter (2020a, b) also argue that there is possibly no overlap between WTP and the problem reduction approach. If no overlap is assumed, the above WTP estimate could be viewed as a maximum upper bound measurement of the quality of life impact.

■ Based on the limited evidence available, quality of life costs as a result of inaccessible housing could be between zero and a couple of billion dollars per year.

It should be emphasised that the upper bound of the estimate includes a wide spectrum of impacts. It does not only include the impacts on independent living, mental health, social isolation and loneliness for people with mobility difficulties, but also includes the impact on their family members because the WTP estimate is household based.

As a component of the quality of life impacts, an estimate of the mental health impact is also provided in appendix I. It is estimated that the mental health impact of inaccessible housing is around \$420 million to \$440 million which, as discussed in the appendix, is

¹¹⁶ Dalton, A. and R. Carter 2020b, *Economic advice prepared to assist with responses to the Consultation Regulation Impact Statement on minimum accessibility standards for housing in the National Construction Code: Supplementary information prepared for the Melbourne Disability Institute, University of Melbourne and the Summer Foundation*, p.4, in Melbourne Disability Institute and Summer Foundation, *Accessible Housing the Way Forward: Supplementary information provided to the Australian Building Codes Board Consultation RIS*.

likely an overestimate and suggests the upper bound WTP estimate of \$1.9 billion for the quality of life impacts is also an overestimate.¹¹⁷

Estimating quality of life impacts through QALYs

Another approach to incorporating quality of life changes into economic analysis is through estimating changes in quality-adjusted life years (QALYs). QALYs are calculated by multiplying life years by an index of utility, also referred to as health-related quality of life (HRQoL) or multi-attribute utility (MAU) instrument. Utility represents the strength of a person's preference for a health state on a scale from 0 (representing death) to 1 (representing good health).¹¹⁸

CIE identified only one study that estimated the HRQoL associated with accessible housing, although the relevance of that study to the NCC proposal is questionable (see discussion in appendix J for more details). Nevertheless, Carnemolla (2015)¹¹⁹ estimate that home modifications to make homes more accessible increased the HRQoL by 0.12.

Applying OBPR's preferred estimate of the value of a life year of \$213 000 implies that the HRQoL costs associated with inaccessible housing would be around \$25 560 per person. Note that this estimate is likely to exceed the capacity of many affected individuals to pay for improved accessibility. This is one reason why some health economists prefer not to monetise QALYs.¹²⁰

There is no definitive data on the number of people experiencing significant lower HRQoL due to inaccessible housing. However, there is some evidence to suggest that the main factor contributing to lower HRQoL is the loss of independence.¹²¹ The focus is therefore on people who live in unmodified dwellings who always need assistance with: mobility around the place of residence, showering/bathing and toileting. Based on 2018 SDAC data, this is around 147 500 people.

¹¹⁷ As indicated earlier, quality of life utility index includes four components – independence, mental health, relationships and senses. Accessible housing has little impact on the senses component (vision and hearing changes), as pointed by Carnemolla (2015). It is therefore expected that the total size of quality of life impact is roughly three to four times the size of mental health impact, that is, around \$1.6 billion.

¹¹⁸ Assessment of Quality of Life website, <https://www.aqol.com.au/index.php/allfaqs>, accessed 1 November 2020.

¹¹⁹ See Carnemolla, P. 2015, *Measuring non-shelter effects of housing design, A mixed-methods exploration of home modifications, care-giving and health-related quality of life*, A thesis in fulfilment of the requirements for the degree of Doctor of Philosophy, University of NSW, Faculty of Built Environment, pp. 116-119 and 127.

¹²⁰ See Assessment of Quality of Life website, <https://www.aqol.com.au/index.php/allfaqs>, accessed 23 December 2020.

¹²¹ See for example: Carnemolla, P. and C. Bridge 2016, "Accessible Housing and Health-Related Quality of Life: Measurements of Wellbeing Outcomes Following Home Modifications", *International Journal of Architectural Research* **10**(2), pp.38-51; and Andrich, R., M. Ferrario and M. Moi 1998, "A model of cost-outcome analysis for assistive technology", *Disability and Rehabilitation*, **20**(1), pp.1-24.

Together this information suggests that the quality of life impacts of inaccessible housing could be around \$3.77 billion per year.

As discussed above, some of these benefits could potentially overlap with other benefits estimated separately.

Home modifications

As noted previously, around 16 per cent of people with mobility-related disability reside in dwellings that have been modified as a result of their condition or age, including around 25 per cent of people with a profound or severe mobility-related disability.

Although the evidence suggests that home modifications can improve accessibility and lead to better safety outcomes and fewer care needs (see above), it is not always an optimal outcome.

- **The cost of modifications can be high** — of the homes that are modified, the data available to CIE imply that up to a third require modifications that are relatively substantial (including full bathroom renovations and/or structural renovations), while two thirds of homes only require minor modifications like grabrails.¹²² Homes that are designed to be consistent with universal design principles, would already have accessible bathrooms, ramps, wider doorways, etc. This implies that only minor modifications would be required.
- **Some modifications take time** — for the third of homes that require substantial modifications, these modifications take up to 3 months to complete.¹²³ However, if the dwelling design incorporated universal design principles, this delay in the modifications should reduce significantly because only minor modifications are required.

Box 3.30 presents lived experiences of the cost, time and limitations of retrofitting home modifications.

¹²² Carnemolla and Bridge (2019) report survey data of 157 individuals (average age 72) who have had modifications installed in the last 6 months. In the data set, bathroom modifications are the most significant modifications. There are 55 'full bathroom renovations', which CIE uses to estimate that around one third of homes require substantial modification, while around two thirds require only minor modifications.

¹²³ Substantial modifications can involve full bathroom renovations. Internet commentary suggests bathroom renovations can take up to 7 weeks, including delays (see: <https://www.service.com.au/articles/bathroom/how-long-does-a-bathroom-renovation-take>). Bathroom renovations involving modifications for accessibility are likely to be more complicated than 'normal' renovations.

3.30 Lived experience – home modification

Potential high retrofitting cost

Our builders estimate that the cost of added accessible features would be about \$900 which would include battens for grab bars and the grab bars themselves (the shower rail is a grab bar as are all towel rails) They also estimate that the cost of retrofitting these features would be about \$19,000.

Source: Lee Jordan Response¹²⁴

Limitations of home modification

Michelle was just 19 when she had a severe asthma attack that resulted in an Acquired Brain Injury.

Doctors did not hold much hope for her recovery or her ability to regain the skills she needed to live independently. When her time in rehab expired, with nowhere else to go, she was admitted to Residential Aged Care (RAC) where she stayed for 16 months – fighting to retain relearnt capabilities, like walking and talking, and to maintain her social connections.

However, the determination of Michelle and her parents finally saw her return to the family home just before her 21st birthday.

Although modifications had been made, everyone had to work around the limitations of the family home that made wheelchair access difficult, and presented risks for carers working in cramped spaces.

Source: Michelle's personal story in Amelia Condi for Summer Foundation Response¹²⁵

Furthermore, accessibility needs cannot always be met through home modifications. Related to the high cost of some home modifications, some homes cannot practically be modified to meet accessibility needs within a reasonable budget.

Australian Housing and Urban Research Institute (AHURI) has published the results of a survey on whether people thought they would be able to afford future modifications to make their home accessible/liveable (table 3.31). This survey suggested that only 10 per cent expected not to be able to afford future modifications. That said, around 35 per cent were unsure, suggesting an upper bound of around 45 per cent of homes expect not to be able to afford future home modifications.

In responding to the survey, it is not clear whether respondents were aware of the government assistance available for home modifications. Furthermore, many

¹²⁴ Submission by Lee Jordan, accessed 13 November 2020,
https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

¹²⁵ Submission by Amelia Condi for Summer Foundation, p. 3, accessed 13 November 2020,
https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

respondents may not be aware of what making a home accessible entails and therefore the associated cost.

3.31 Expectations of ability to afford future modifications to make home accessible/liveable

Expectations	Share
	Per cent
Expect to be able to afford to fund modifications	54.2
Unsure	35.3
Expect not to be able to afford modifications	10.5

Source: Judd et al 2010 (for AHURI), p.142.

On the other hand, not all home modification costs can be avoided through designing dwellings that are consistent with universal design principles. Modifications such as the installation of grab rails, home automation and telemonitoring systems may still be required for people who acquire disability while living in a dwelling that complies with LHDG standards.

It is estimated that the weighted-average cost of modifications that could be avoided if dwelling designs were consistent with universal design principles is around \$22 899 per dwelling (table 3.32). This is based on the estimated cost of retro-fitting accessible design features in line with requirements for Options 1 (Silver standard) and 2 (Gold standard) for both Class 1a (separate houses and townhouses) and Class 2 dwellings (apartments) prepared by quantity surveyors DCWC;¹²⁶ and information from the SDAC on the types of modifications that people with disability have made to their homes (see appendix C for further information). The estimate for Option 1 (Silver) aligns with the estimated retrofitting cost of \$19 400 as reported in Young People In Nursing Homes National Alliance's housing policy discussion paper.¹²⁷

3.32 Weighted average cost of avoided modifications per dwelling

Building type	Weighting	Cost
	Per cent	\$
Class 1a - Silver level	83.5	18 821
Class 1a - Gold level	12.6	49 706
Class 2 - Silver level	3.0	20 260
Class 2 - Gold level	0.9	36 292
Weighted average		22 899

Source: CIE based on estimates prepared by DCWC, ABS Survey of Disabilities, Ageing and Carers, 2018, TableBuilder (see appendix D for details).

¹²⁶ DCWC 2021, *NCC Accessible Housing Sundry Cost Advice*, 5 January 2021 and associated spreadsheets

¹²⁷ Young People In Nursing Homes National Alliance and Monash University Department of Architecture 2015, *Shaping the Future Today: Transforming Housing Policy for Australians with Disability*, a housing policy discussion paper, Melbourne, p.20

Comparing the number of modified dwellings reported in the 2018 and 2015 SDAC (and adjusting for deaths) suggests that around 22 000 dwellings are modified to meet the needs of people with disability per year (see appendix D for further details).

- **Based on the above information, it is estimated that the annual cost of home modifications that could be avoided if dwelling designs were consistent with universal design principles could be around \$500 million (i.e. around 22 000 additional home modifications at a weighted average cost of around \$22 899 per dwelling).**

Moving house

Qualitative evidence suggests that accessible housing can be difficult to find, due to a lack of availability. Moving house may not be an optimal outcome for many.

- Moving house can be costly and stressful, particularly for older people.
- Many people may have preferred to stay in their previous residence if it had met their changing accessibility needs.
- A lack of accessible housing may have forced some people with a mobility-related disability (and in many cases their families) to move to a less-preferred location, away from family, friends, schools and employment opportunities.

Box 3.33 provides the lived experience of an elderly couple who had to move house multiple times due to accessibility considerations.

3.33 Lived experience – moving home due to inaccessibility

Angie (88 years old) and John (90 years old) are a married couple who exemplify through their story how housing journeys could be improved if Option 2 of the RIS is adopted and options for increased accessible housing are available in Australia. Without such options, Angie and John were forced to relocate homes many times to try to meet their changing needs over later adulthood, during their married life. With each relocation, growing financial and emotional stress was encountered and living environments became more restricted, negatively impacting participation.

Third relocation

Things changed when Angie had a fall and fractured her hip after 6 years of living in their townhouse, and this led to further medical complications. John wanted to stay in their house in Mornington, but after Angie's fall, her care needs increased and Angie needed a fully accessible home environment with stepless shower and grab rails for toilet transfers.

Therefore, they moved to a retirement village in the area. At this stage, John was 82 years old and Angie was 80 years old. John and Angie bought a self-contained unit in the retirement village, which had two bedrooms. In this retirement village, they had access to a fully accessible home environment with stepless entry point and shower recess. There was a small patch of garden at the back. The decision to move to the

3.33 Lived experience – moving home due to inaccessibility

retirement village was because of the accessible housing offered, the support available on site and the opportunity in their later years to be offered the option to age in place.

Fourth relocation

After a couple of years, Angie started deteriorating. She was diagnosed with dementia, was requiring hoist transferring and her equipment and care needs became too much for John to manage. Angie then moved into the on-site nursing home approximately four years ago, and John moved into the same facility two months ago.

Every relocation is a stressful event

John and Angie were still quite young and fit when they retired. However, due to both acute health events as well as aging over time, multiple relocations have had a significant financial and emotional toll on both them and their family. Each relocation was stressful in terms of having to make important design decisions, deal with real estate agents and plan the delivery of support and access to assistive technology required. Each relocation also involved grieving the loss of a familiar home and community, with its associated emotional connections.

Source: Associate Professor Libby Callaway for ARATA Submission (p.10-12)¹²⁸

- **It is estimated that the annual cost of additional moves due to a lack of accessible housing could range between around \$81.5 million and \$242.3 million per year.**
- **The midpoint of this range – \$161.9 million per year – is used as the central case estimate.**

The lower bound estimate is based on the number of people with limited mobility that moved as a result of their condition or age for reasons directly related to the accessibility of their previous dwelling ('safer environment' or 'to a dwelling more suitable for condition' (top of table 3.34).

- To estimate the number of additional moves per year as a result of inaccessible housing:
 - people who were reported as having moved more than once as a result of their age or condition are assumed to have moved on average 2.5 times
 - an annual estimate was obtained by dividing the total number of additional moves by the average length of time since the accident happened or their main condition occurred, around 16.6 years.
- The cost of each additional move is estimated at:
 - around \$28 449 for owner-occupiers, where moving home is likely to involve selling the previous house and buying a new one, which incurs significant costs (the estimates include agent's fees, marketing, conveyancing, auctioneers' fees and the cost of removalists).

¹²⁸ Associated Professor Libby Callaway, op. cit., p.10-12

- around \$2 500 for renters based on the cost of removalists (renters would avoid the costs associated with buying and selling a home).¹²⁹

The upper bound estimate is based on the same assumption and also includes people with limited mobility that moved as a result of their condition or age for reasons possibly related to the accessibility of their previous dwelling ('due to own age or condition', 'to improve own health' and 'to live with family or friends') (bottom of table 3.34).

3.34 Estimated cost of additional moves due to inaccessible housing

People	Number of additional moves	Cost per move	Annual cost
	'000 per year	\$	\$ million
Owner occupier - lower bound	2.5	28 449	71.84
Renter- lower bound	3.9	2 500	9.67
Total – lower bound	6.4		81.51
Owner occupier - upper bound	7.7	28 449	218.36
Renter - upper bound	9.6	2 500	23.95
Total – upper bound	17.3		242.31

Source: CIE estimates (see appendix D for further details).

Further details on the basis for these assumptions is provided in appendix E.

This estimate includes only the financial costs associated with moving home. Due to a lack of available information that would allow quantification, this estimate does not include:

- search costs
- the stress and anxiety associated with moving home
- the possibility that some people are forced to move to a less preferred address.

Longer stays in hospital or transition care

In addition to potentially increasing hospital admissions (through increased falls), a large share of the housing stock without accessibility features could increase the length of stays in hospitals or transition care. In some cases, it is not possible to discharge someone from hospital unless they are discharged to a safe environment (see box 3.35) for lived experiences).

¹²⁹ See for example: https://www.openagent.com.au/blog/how-much-moving-cost?at=v5&utm_expnid=.6ZprDALXQh2rpM05ZARdBA.1&utm_referrer=https%3A%2F%2Fwww.google.com%2F, accessed 23 January 2020.

3.35 Lived experience – delayed discharge due to inaccessible home

But it's not enough. A good friend of mine is going into hospital in 10 days for a hernia operation. I understand this is straightforward keyhole surgery, and usually only requires day admission or one night in hospital. However, precautions must be taken for at least a week following surgery, to avoid exertion that might disrupt the site. Because my friend has a spinal cord injury, uses a wheelchair, and doesn't have a home that meets the Gold level standards, he will have to spend that extra week in hospital. His home, a modified Queenslander, is just too difficult to get around and he relies on his exceptional transferring ability to use the small spaces and angles to negotiate e.g. toilet and bathroom. I had hoped that I might be able to offer my place for a week, but it also doesn't have the requisite space that a Gold level home would have to allow safe transfers while protecting the site of the surgery.

Source: Anonymous Response 699935736¹³⁰

Several studies note that not having a suitable home to return to can be a key issue causing delays and completing successful rehabilitation and return to independence.¹³¹ This could apply to anyone with mobility limitation following a stay in hospital (including temporary or short-term mobility limitation following hospital treatment), not just those with longer-term disability.

It is estimated that the annual cost of delayed discharge from hospitals and transition care as a result of a lack of accessible housing could be around \$234.6 million (table 3.36).

This is based on:

- inferences drawn from a small number of Australian studies on the extent and cause of delayed discharge from different types of hospital care
- estimates of the cost per day of different types of care.

Further details of the approach are provided in appendix F.

3.36 Estimated cost of delayed discharge from hospital or transition care

Type of cost	Admissions	Patient days	Cost per day	Total cost	Share due to lack of accessible housing	Estimated cost due to lack of accessible housing
	No.	'000	\$	\$ million	Per cent	\$ million
Rehabilitation care	93 751 ^a	2 754 ^b	890 ^c	2 451.7	6.7 ^f	163.2
Geriatric evaluation and management	36 676 ^a	643 ^b	878 ^c	565.0	6.7 ^f	37.6
Psychogeriatric care	1 332	84	983	82.8	6.7	5.5

¹³⁰ Anonymous Submission 699935736, accessed 13 November 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

¹³¹ The All-Party Parliamentary Group (APPG) for Ageing and Older People (UK) 2019, *Inquiry into decent and accessible homes for older people*, Summer 2019, p.4.

Type of cost	Admissions	Patient days	Cost per day	Total cost	Share due to lack of accessible housing	Estimated cost due to lack of accessible housing
	No.	'000	\$	\$ million	Per cent	\$ million
Maintenance care	28 108 ^a	553 ^b	1 055 ^c	583.2	1.8 ^g	10.5
Transition care	24 028 ^d	1 302 ^d	205 ^e	266.7	6.7 ^f	17.8
Total	159 867	5 337		3 949.5		234.6

^a AIHW, Australian Hospital Statistics, 2017-18, Table 4.5. ^b AIHW, Australian Hospital Statistics, 2017-18, Table S4.3. ^c Centre for Health Service Development, Development of the National Subacute and Non-acute Patient Classification Version 4, Final Report, April 2015, pp. 39-49. Data was inflated to 2019 dollars using the national CPI. ^d AIHW Aged Care Data Snapshot. ^e Calculated as the total expenditure on Transition Care divided by the number of patient days. ^f Based on New et. al. (2013). ^g Based on Salonga-Reyes and Scott (2017).

Source: Australian Institute of Health and Welfare, Australian Hospital Statistics, 2017-18; Australian Institute of Health and Welfare, Aged Care Data Snapshot 2018-19; Centre for Health Service Development, Development of the National Subacute and Non-acute Patient Classification Version 4, Final Report, April 2015; New, P.W. Jolley, D.J. Cameron, P.A. Olver, J.H. and Stoelwinder, J.U. 2013, A prospective multicenter study to discharge from inpatient rehabilitations, Medical Journal of Australia, 198 (2), pp. 104-108; Salonga-Reyes, A. Scott, I.A. 2017, Stranded: causes and effects of discharge delays involving non-acute in-patients requiring maintenance care in a tertiary hospital general medicine service, Australian Health Review, 41, CSIRO Publishing, pp. 54-62; CIE.

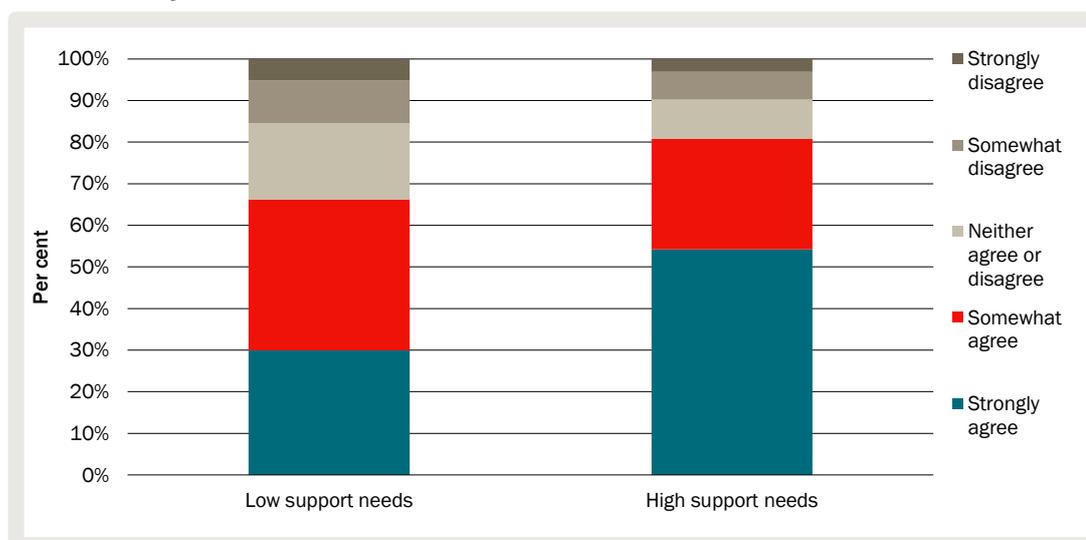
Inability to visit family and friends in inaccessible housing

Inaccessible housing does not just affect the people who live in the dwelling, it also affects the ability of family members and friends with limited mobility to visit.

Around two-thirds of respondents to the MDI survey with low support needs agreed that they cannot visit friends and relatives whose homes are inaccessible.

- Around 80 per cent of respondents with high support needs also agreed that they cannot visit friends and relatives whose homes are inaccessible (table 3.37).

3.37 Inability to visit friends and relatives whose homes are inaccessible



Note: Q: To what extent do you agree or disagree with the statement "I can't visit friends and relatives whose homes are inaccessible." Data source: Wiesel, I. Lived experience and social, health and economic impacts of inaccessible housing, prepared for the Melbourne Disability Institute, University of Melbourne and the Summer Foundation, 18 August 2020, as Appendix 2 of the submission by Melbourne Disability Institute (MDI) and Summer Foundation. p. 28.

Submissions provided extensive qualitative evidence of people with limited mobility being unable to visit friends and family (box 3.38). In many cases this led to social exclusion, with flow-on impacts on mental health and general quality of life.

3.38 Lived experience – inability to visit family and friends

- The submission from the Queensland Disability Network included a personal story from a member, Wendy.¹³²
 - Wendy is a wheelchair user who has limited capacity to visit her family because their homes do not have the accessibility features to support a visit from a wheelchair user. She is unable to access the house and is restricted to the garden and the veranda. She is unable to access the bathroom, limiting the duration of visits.
 - Wendy is also a member of a book club, but has trouble accessing the homes of many of the members.
- Another submission reported:¹³³
 - being unable to visit newborn nieces and nephews due to difficulties negotiating stairs.
 - missing invites from friends because she is unable to access their homes.
- Several of the personal stories highlighted in the Summer Foundation and MDI submission also highlight being unable to visit the homes of family and friends as an issue.
 - ‘Kelly’ was born with spina bifida and has severe scoliosis. She uses a manual wheelchair as she is unable to stand or walk. Access barriers significantly restrict her from spending time with family and friends. She is unable to visit her friends at their inaccessible homes without assistance to be able to move around and use the toilet.¹³⁴
 - ‘Edna’ has muscular dystrophy, which has progressed to the point where she is unable to stand and walk. Edna reports not being able to go to her friends’ place because she could not use the toilet or get in the door.¹³⁵

¹³² Submission by Paige Armstrong for Queenslanders with Disability Network, accessed 1 December, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

¹³³ Anonymous Submission 656157319, accessed 1 December, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

¹³⁴ Wiesel, I. *Lived experience and social, health and economic impacts of inaccessible housing*, prepared for the Melbourne Disability Institute, University of Melbourne and the Summer Foundation, 18 August 2020, as Appendix 2 of the submission by Melbourne Disability Institute (MDI) and Summer Foundation. p.30.

¹³⁵ Wiesel, I., op. cit., p.35.

3.38 Lived experience – inability to visit family and friends

- Other selected comments in relation to difficulties experienced in visiting friends and relatives included the following.¹³⁶

“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 café 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 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 do not get invited any more.”

There is a growing body of evidence showing that social isolation and loneliness can have tangible impacts on both mental and physical health. According to AIHW, social isolation and loneliness are distinctly different but related concepts.

- Social isolation is where an individual has minimal contact with others.
- Loneliness is a subjective state of negative feelings about having a lower level of social contact than desired.¹³⁷

According to a 2018 survey by the Australian Psychological Society and Swinburne University of Technology, around 25 per cent of Australians are lonely.¹³⁸ Loneliness is a growing concern globally, because of its reported impact on health and wellbeing. Various international studies have estimated that loneliness can impose significant health-related costs on the community. Although social isolation can lead to loneliness, the AIHW notes that the two concepts do not necessarily co-exist.¹³⁹

Inaccessible housing may be contributing to social isolation and loneliness among people with limited mobility by preventing them from participating in family gatherings or other social occasions. Based on the evidence provided in submissions, access issues at the homes of family and friends include an inability to access the dwelling or use the toilet with dignity.

¹³⁶ Wiesel, I., op. cit., p.28.

¹³⁷ Australian Institute for Health and Welfare, <https://www.aihw.gov.au/reports/australias-welfare/social-isolation-and-loneliness>, accessed 22 January 2020.

¹³⁸ Australian Psychological Society and Swinburne University of Technology, 2018, Australian Loneliness Report: A survey exploring the loneliness levels of Australians and the impact on their health and wellbeing, p.5.

¹³⁹ Australian Institute for Health and Welfare, <https://www.aihw.gov.au/reports/australias-welfare/social-isolation-and-loneliness>, accessed 22 January 2020.

- Based on the limited information available, it is estimated that an additional 85 800 people with limited mobility may be experiencing loneliness as a result of an inability to visit family and friends due to access issues.
- Estimates of the health-related costs of loneliness range from around \$417 to around \$1 471 per year (with a midpoint of around \$944 per year).
- This suggests the cost to the community of loneliness related to an inability to visit family and friends due to inaccessible housing could range between \$35.73 million per year and \$126.12 million per year, with a midpoint of around \$80.93 million per year.

Details on the approach used to estimate these costs are outlined in appendix G.

Premature or inappropriate entry into residential aged care or other institutional care

Housing lacking key accessibility features can contribute to premature or inappropriate entry into residential aged care (also referred to as a nursing home) or other institutional care. Although residential aged care is an appropriate form of care for many older Australians (particularly those with high care needs), inappropriate or premature entry into residential aged care would be a sub-optimal outcome from multiple perspectives.

- Residential aged care is costly, relative to home-based care.
- As emphasised in a number of submissions, most Australians would prefer to remain at home for as long as possible, rather than enter residential aged care¹⁴⁰ (i.e. ‘ageing in place’ — see box 3.39 for details). This is supported by research by the AHURI, which found that between 78 and 81 per cent of older Australians aged over 55 want to live in their own home as they age.¹⁴¹

3.39 Ageing in place and inappropriate entry into residential aged care

According to the Australian Housing and Urban Research Institute (AHURI),¹⁴² ageing in place means that as people get older they can remain living in their home rather than entering residential aged care, even when the impacts of old age (e.g. the increasing risk of illness or disability) affect their mobility and mental ability.

Under AHURI’s definition, the key element of ageing in place is avoiding living in residential aged care. It does not necessarily mean that older people will continue living in the same dwelling throughout their retirement.

¹⁴⁰ See for example: Submission by Kylie Miskovski for Dementia Australia, submission by Margret Ward for Australian Network for Universal Housing Design.

¹⁴¹ AHURI Brief, What’s needed to make ‘ageing in place’ work for older Australians, 10 December 2019, <https://www.ahuri.edu.au/research/ahuri-briefs/whats-needed-to-make-ageing-in-place-work-for-older-australians>, accessed 13 November 2020.

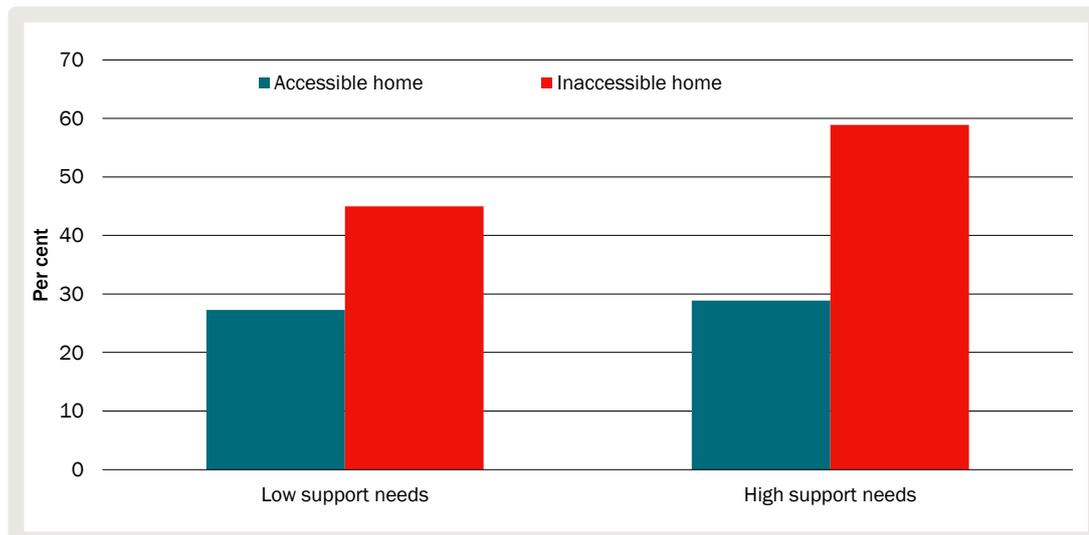
¹⁴² *ibid.*

3.39 Ageing in place and inappropriate entry into residential aged care

Ageing in place requires a degree of independent living ability for the older person (including both adequate levels of mental and physical ability). However, remaining in the community has the advantage of giving older people control over their living space and how they live, as well as ongoing connection to the community that they are used to.

Evidence from the MDI survey suggests that being forced into a nursing home is a concern of many people with disability (chart 3.40). A significantly greater proportion of people living in inaccessible housing are concerned about being forced into a nursing home, compared with those living in accessible housing. Box 3.41 provides the lived experience of Michelle’s entry into residential aged care.

3.40 Survey respondents concerned about being forced into residential aged care



Note: Q: How concerned are you about being forced to move to a nursing home because of difficulty getting around your home?

Data source: Wiesel, I. Lived experience and social, health and economic impacts of inaccessible housing, prepared for the Melbourne Disability Institute, University of Melbourne and the Summer Foundation, 18 August 2020, as Appendix 2 of the submission by Melbourne Disability Institute (MDI) and Summer Foundation. p.37.

3.41 Lived experience – inappropriate entry into residential aged care

Michelle was just 19 when she had a severe asthma attack that resulted in an Acquired Brain Injury.

Ann said Michelle had learnt to walk when she was in rehab but had lost the ability in RAC (Residential Aged Care). “A shorter stay in RAC would have helped Michelle’s recovery because the main progress she made was when she got home.”

3.41 Lived experience – inappropriate entry into residential aged care

“Having Michelle home earlier would have had a big impact on her life,” Michelle’s mother Ann said.

“Sixteen months was wasted on an environment [RAC] that didn’t speak to Michelle. She should have been in rehab longer and then home. We were always going to bring her home no matter what, we just didn’t know it would take 2 years.”

Recent trends in aged care include the following:

- All entrants into government-funded aged care places undergo an assessment of the most appropriate long-term care option before entry into residential aged care.
- There has been a policy shift towards supporting older Australians to remain at home, rather than entering residential aged care.
- This is reflected in a declining share of people over the age of 70 in residential aged care.

These developments suggest it is becoming less likely that someone would be inappropriately or prematurely admitted to residential aged care.

Nevertheless, it is estimated that the costs associated with inappropriate or premature entry into residential aged care could range between around \$120 million and \$268 million per year, with a central case estimate of around \$185 million per year (table 3.42). This is based on the following assumptions.

- Based on SDAC data and modelling of the extent to which various factors affect the probability of being in residential aged care,¹⁴⁴ it is estimated that there may be between 2 660 and 6 023 additional people in residential aged care due to a lack of accessible housing, with a central case estimate of 4 140.
- It is estimated that the additional cost of aged care (relative to remaining in the home) could be around \$33 645 per year.
- The Royal Commission into Aged Care Quality and Safety recently released a report suggesting that the average willingness to pay to avoid entering residential aged care was around \$184 per week or around \$9 568 per year.¹⁴⁵ This is a more direct measure of the loss of wellbeing associated with inappropriate or premature entry into residential aged care than the approach used in the Consultation RIS.

¹⁴³ Amelia Condi, op. cit., p.3

¹⁴⁴ See Jukic, M. 2017, *Modelling Residential Aged Care in Australia: Entry and Exit*, A thesis submitted for the degree of Doctor of Philosophy of the University of Melbourne.

¹⁴⁵ Redcliffe, J., G. Chen, J. Cleland, B. Kaambwa, J. Khadka, C. Hutchison and R. Milte 2020, *Australia’s aged care system: assessing the views and preferences of the general public for quality of care and future funding: A research study for the Royal Commission into Aged Care Quality and Safety*, Research Paper 6, July 2020, p.3.

Details on the approach to estimating these costs are provided in the appendix H.

3.42 Estimate costs of inappropriate or premature entry into aged care

Cost	Low estimate	Central case	High estimate
	\$ million	\$ million	\$ million
Additional resource costs	93.09	143.89	208.55
Loss of individual's welfare	26.47	40.92	59.31
Total cost	119.56	184.81	267.86

Source: CIE estimates (see appendix H for details).

Short-term injuries

Some available evidence suggests that no-step dwelling access and wider spaces, which are offered by accessible homes, are likely to create benefits for some people with short-term injuries, for example:

- Level access is preferred for people with a temporary mobility limitation such as a broken leg as recommended techniques for walking up stairs are very inconvenient.¹⁴⁶
- The width of the toilet that is required broadly aligns with the width of ambulatory toilet specifications.¹⁴⁷

Personal examples related to temporary injuries from public submissions are presented in box 3.43.

¹⁴⁶ See: <https://www.verywellhealth.com/stair-climbing-basics-2696293>, accessed October 2020

¹⁴⁷ See: <https://www.access-board.gov/guidelines-and-standards/buildings-and-sites/about-the-ada-standards/background/ada-aba-accessibility-guidelines-2004/chapter-six-plumbing-elements-and-facilities#:~:text=The%20rear%20wall%20grab%20bar,minimum%20on%20the%20other%20side>, accessed October 2020

3.43 Lived experience – short term injury

Own experience of temporary injury

Recently I suffered a nasty fall that heavily bruised my left knee. Swollen and tender, it was a struggle to ascend the stairs to my unit. This was not insurmountable because the handrail alongside the stair afforded me the necessary stability for ascent and descent. The shower in the bathroom was a little more difficult though as it had a hob, necessitating careful balance and body position to swing into the shower. Somewhat fortunately the previous owner had installed two robust grabrails, both of which I used as I shifted my weight to enter the shower and wash. I'm sure if the bathroom had been designed with the shower away from the door the shower itself could have been hobless and thus easily accessible.

My experience of temporary incapacity/loss of balance I'm sure has been replicated around the country. Able to take care of myself there was no need for carers, and I was able to continue to work from home in these times of COVID. The above demonstrate[s] that dwellings need to incorporate features for all occupants, whether fit, ill or temporarily incapacitated.¹⁴⁸

Accessible features for visitors with temporary injury

I might also add that my accessible bathroom has been used by other family members over the years due to a broken achilles tendon, two broken ankles, and currently my wife is six weeks post a knee replacement and uses my shower and shower chair daily.¹⁴⁹

Some submissions suggested that people with chronic conditions should be included in the estimates of the size of the problem.¹⁵⁰ People with chronic conditions that have mobility needs and thus would be affected by accessible housing, should be already included in the SDAC data, so no adjustment is required to the calculation.

It is estimated that if sufferers of certain temporary injuries were to reside in homes with accessibility features, this would create benefits worth around \$24 million each year, relative to the counterfactual where they do not reside in these homes.

Impacts already included

Much of the analysis in the RIS is based on the ABS SDAC survey. For the purposes of SDAC, disability is defined as any limitation, restriction or impairment which restricts

¹⁴⁸ Anonymous Submission 184073852, accessed 11 November 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

¹⁴⁹ Lee Jordan, op. cit.

¹⁵⁰ See Submission by Melanie Southwell for SDA Alliance and Margret Ward for ANUHD, for example.

everyday activity and has lasted, or is likely to last, for at least six months.¹⁵¹ As such, the analysis based on SDAC data:

- captures temporary disabilities that last (or are likely to last) for more than 6 months
- does not capture temporary disabilities that last (or are likely to last) for less than 6 months.

Because not all of the analysis is based on SDAC data, the current methodology will capture some benefits for people with temporary disability. In particular, the estimates of additional time spent in hospital (longer stays in hospital) should already capture the impacts on those with disability that last for less than 6 months.

Furthermore, not all of the categories that make up the size of the problem are relevant for people with disability that last for less than 6 months. For example, it is less likely that people would move house or make a major home modification for temporary disability.

Therefore, the major benefit for people with short-term injuries would relate to more independence and convenience (or less inconvenience) during recovery as a result of accessible housing, which could be measured by a reduction in care needs and loneliness. Given the short-term nature, other costs such as those associated with moving house and modifying a home would not be applicable.

Quantifying costs to short-term injury sufferers during their recovery

AIHW provides data on hospitalised injuries by age groups, injury types, body region injured and causes.¹⁵² People with short term injuries to the hip, leg, ankle or foot which are fractures, dislocations or soft-tissue injuries are most likely to benefit from accessible housing. It is estimated that there are around 73 043 people with short term injuries requiring hospitalisation each year (see table 3.44).

3.44 Hospitalisation injuries impacted by inaccessible housing

Cause of injury	<i>Injuries to hip, leg, ankle or foot, which are...</i>			Total injuries which may benefit
	<i>Fracture</i>	<i>Dislocations</i>	<i>Soft-tissue injuries</i>	
Falls (excluding falls already included under safety benefits)	35 041	1 382	2 829	39 252
Other ^a	19 986	1 963	11 842	33 791
Total	55 027	3 344	14 672	73 043

¹⁵¹ ABS website,

<https://www.abs.gov.au/AUSSTATS/abs@.nsf/Latestproducts/4430.0Main%20Features52018?opendocument&tabname=Summary&prodno=4430.0&issue=2018&num=&view=>, accessed 7 September 2020.

¹⁵² AIHW 2019, *Trends in hospitalised injury, Australia, 2007-08 to 2016-17*, Injury Research and Statistics Series Number 124, <https://www.aihw.gov.au/getmedia/6cef34e2-2422-4f11-a9f3-06e336edac3f/aihw-injcat-204.pdf.aspx?inline=true>

^a Other injuries included are: transport, exposure to inanimate mechanical forces (e.g. a work injury), exposure to animate mechanical forces (e.g. a dog bite), other unintentional injuries, intentional injuries, assault injuries, undetermined and other injuries. Excluded injury classes are: accidental drowning, accidental poisoning and thermal injuries, where not enough information is provided to estimate how many of these are relevant lower body injuries. However, the nature of these excluded injuries suggests that very few of them would result in injuries to the hip, leg, ankle or foot that are fractures, dislocations and soft-tissue injury.

Note: To estimate falls and other injuries that are injuries to hip, leg, ankle and foot, which are fractures, dislocations or soft-tissue injuries CIE takes total reported injuries in each category and multiply by ratio of hip, leg, ankle injuries to the total, and then by the ratio of fracture, dislocation and soft-tissue injuries to the total, respectively.

Source: CIE estimates based on: AIHW 2019, Trends in hospitalised injury, Australia, 2007-08 to 2016-17, Injury Research and Statistics Series Number 124, <https://www.aihw.gov.au/getmedia/6cef34e2-2422-4f11-a9f3-06e336edac3f/aihw-injcat-204.pdf.aspx?inline=true>

According to the SDAC survey, only 24 per cent of people who use crutches, who live in unmodified homes, require assistance moving around their place of residence. Applying this percentage, it is estimated that there are 17 551 hospitalisation short-term injuries each year where the sufferers would benefit from accessible housing.

Further, the benefits created by accessible homes for people with short term injuries will only last for a finite period. Based on relevant data presented in table 3.45, it is assumed that sufferers of fractures, dislocations and soft-tissue injuries would realise benefits over 10.5, 6 and 2.5 weeks respectively.

3.45 Time period over which short term injuries impacted by inaccessible housing

Injury	Relevant data	Final assumption
Fracture	<ul style="list-style-type: none"> ■ NHS discussion: It takes around 6 to 8 weeks for a minor fracture to heal. For serious ones, such as a tibia-fibula fracture, it takes about 3 to 6 months ■ Workers Compensation statistics: workers are off work for 8 weeks on average after a fracture 	10.5 weeks (average of 8 weeks and 3 months), or 0.2 years
Dislocation	NHS discussion: it takes about 6 weeks to heal from a dislocated kneecap	6 weeks, or 0.12 years
Soft-tissue injury	NHS discussion: it takes 2 to 3 weeks to recover from a soft-tissue injury	2.5 weeks, or 0.05 years

Source: NHS 2020, Broken leg, <https://www.nhs.uk/conditions/broken-leg/#:~:text=It%20takes%20around%206%20to,weight%20on%20the%20leg%20again>; Safe Work Australia 2020, Australian Workers Compensation Statistics 2017-18, 10 January 2020, <https://www.safeworkaustralia.gov.au/doc/australian-workers-compensation-statistics-2017-18>, Table 37, p.48; NHS 2020, Dislocated kneecap, <https://www.nhs.uk/conditions/dislocated-kneecap/#:~:text=A%20dislocated%20kneecap%20is%20a,the%20front%20of%20the%20knee>; NHS 2014, Soft tissue injuries <https://www.ouh.nhs.uk/patient-guide/leaflets/files/10879Psofttissue.pdf>

As outlined above, the impacts of inaccessible housing on people with short term injuries during recovery relate to additional informal care hours and inability to visit family and friends in inaccessible housing. As outlined in appendices C and G, the estimated cost for additional informal care is \$7 129 per year per person and between \$417 and \$1 471 per year for inability to visit. These suggest that the annualised cost for short term injury sufferers is between \$7 546 and \$8 600 per injury with the midpoint of \$8 073 per injury.

Altogether, these assumptions imply that the cost of inaccessible housing for people with short-term hospitalisation injuries would be between \$22.13 million and \$25.22 million per year with the midpoint of \$23.67 million per year (table 3.46).

3.46 Estimated cost for people with short-term hospitalised injuries due to inaccessible housing

	Fracture	Dislocation	Soft-tissue injury	Total
Injuries that impacted (no.)	13 222	804	3 525	17 551
Average impact time period (year)	0.2	0.12	0.05	-
Annualised cost - low (\$/person/year)	7 546	7 546	7 546	7 546
Annualised cost - central (\$/person/year)	8 073	8 073	8 073	8 073
Annualised cost - high (\$/person/year)	8 600	8 600	8 600	8 600
Total cost – low (\$m)	20.15	0.70	1.28	22.13
Total cost – central (\$m)	21.55	0.75	1.37	23.67
Total cost - high (\$m)	22.96	0.80	1.46	25.22

Source: CIE estimates based on: AIHW 2019, Trends in hospitalised injury, Australia, 2007-08 to 2016-17, Injury Research and Statistics Series Number 124, <https://www.aihw.gov.au/getmedia/6cef34e2-2422-4f11-a9f3-06e336edac3f/aihw-injcat-204.pdf.aspx?inline=true>

In addition to hospitalisation, some short term injuries may only require attending emergency room or non-hospital treatment. These short-term injuries should be included in the estimate for completeness. However, there is no data available to identify the number of short term injuries attending emergency rooms or receiving non-hospital treatment. As a result, the relative cost ratios of emergency room attendance and non-hospital treatment to the additional cost of hospitalisation as discussed in appendix B are assumed to be the same on the implicit assumption that accessible housing affects long-term and short-term injuries in the same proportion although the lengths of impacts are different.

The additional costs of emergency room attendance and non-hospital treatment are about 10.3 per cent and 8.4 per cent respectively, of the additional cost of hospitalisation for people with long-term conditions due to inaccessible housing. Applying these ratios suggests between \$2.27 million and \$2.59 million of additional costs associated with emergency room attendance and between \$1.86 million and \$2.12 million additional costs associated with non-hospital treatment for people with short-term injuries each year (table 3.47).

Overall, it is estimated that the total cost for people with short term injuries due to inaccessible housing is between \$26.25 million and \$29.92 million each year (table 3.47).

3.47 Estimated cost for people with short term injuries due to inaccessible housing

Injury	Cost ratio	Low(\$m)	Central (\$m)	High (\$m)
Short-term injuries requiring hospitalisation	1.000	22.13	23.67	25.22
Short-term injuries requiring emergency attendance	0.103	2.27	2.43	2.59
Short-term injuries requiring other non-hospital treatment	0.084	1.86	1.99	2.12
Total (\$m)		26.25	28.09	29.92

Source: CIE estimates

Families with young dependants

Several submissions to the Consultation RIS suggested including in the analysis benefits to families with children from accessible housing. Some of these benefits relate to:

- Families who seek accessibility in order that ageing grandparents (and their peers) can participate in the lives of their children and contribute in supporting their family (see box 3.48 for some lived experiences); and
- Accessible housing may help the movement of prams.

The first type of benefit is included in the benefit associated with visitability (the ability for a person with mobility needs to visit others) which is discussed separately in the subsection 'Inability to visit family and friends in inaccessible housing' on page 101.

3.48 Lived experience – families with young dependants

Difficulty or inability for family members and relatives to visit

Although we live in the same city, I am virtually a stranger to my niece and nephews. They have lived in a series of ordinary family homes, moving in response to growing family needs or nearer to school or work. Never over their lifetimes has there been the possibility of my bounding in to scoop them up in a hug, share cooking, creating and homework, bath time or any of the many activities of ordinary daily family life. Why? Because in all cases their ordinary home has not had the accessibility features to support a visit from their aunt in a wheelchair and all that entails. Visiting, if it occurs at all, has been limited to the garden or the veranda, as the only accessible place where parties and other family gatherings can be held. However, as I'm unable to enter the house I'm also not able to access the bathroom, limiting visits in time and spontaneity. The outcome is feelings of awkwardness and isolation.¹⁵³

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.¹⁵⁴

On the second type of benefit, it is important to emphasise that the question to consider is what is the benefit of 'level access' against the status quo.¹⁵⁵ It is acknowledged that

¹⁵³ Submission by Wendy Lovelace, accessed 12 November 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

¹⁵⁴ Professor Bruce Bonyhady and Dr Di Winkler, op. cit, Appendix 2, Table 16, accessed 12 November 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

¹⁵⁵ The scenario to consider is the benefit to a young family of a newly built home under the proposed changes (which includes level access) vs. the benefit of new a newly built home under the status quo (which generally includes one-step, according to DCWC Quantity Surveyor analysis prepared for the Consultation RIS).

pushing a pram along a flat surface is more convenient than negotiating a single step. However, CIE has not found any evidence that suggests this benefit is so material to be included in the analysis. Available online discussions of parenting groups suggest that parents are adaptable when it comes to negotiating stairs with prams (including going backwards),¹⁵⁶ which is consistent with the idea that a single step does not pose a significant barrier to a significant number of new parents.

Therefore, on the basis of a lack of evidence, it is assumed no additional costs imposed on families with young dependants due to inaccessible housing.

To reflect the small amount of convenience that may be generated by replacing single step with step free entry, it is assumed that 5 per cent of families with young dependants may purchase a plastic ramp to overcome the single step difficulty. Such a ramp costs around \$77 each.¹⁵⁷ The ramp could be used again when a family use the pram for another baby. This implies that about 16 000 families may purchase ramps for this purpose each year, and costing about \$1.39 million each year.¹⁵⁸ This could be seen as an upper bound estimate for this component of the size of the problem.

Qualitative assessment

In addition to the above quantifiable costs of the problem associated with inaccessible housing, some qualitative assessment of unquantifiable (or highly difficult to quantify and highly uncertain) aspects of the problem are presented.

Social justice, equity and costs to the community

As noted by the (then) Chair of the Royal Commission into the Safety and Quality of Age Care:

“The hallmark of a civilised society is how it treats its most vulnerable people...”¹⁵⁹

Although this quote specifically referred to older Australians, it could equally apply to younger people with disability.

¹⁵⁶ See, for example: <https://www.babycenter.com.au/thread/3637820/adding-a-ramp-to-stairs-for-pram>, accessed October 2020

¹⁵⁷ See: https://www.safetyxpress.com.au/other-products/ramps/plastic-kerb-ramp/?gclid=CjwKCAjw_Y_8BRBiEiwA5MCBJrLjTEhIXAwrVDJEt8JP0a453n2NRR2x8nSAqYq5HLJ8MpdKIsyt9BoCXE4QAvD_BwE,a access October 2020. One ramp costs \$38.5. Two are required for the width of a stroller, costing \$77.

¹⁵⁸ There were 315 147 registered births in Australia in 2018 and the total fertility rate was 1.74 births per woman for all Australian women, according to ABS (<https://www.abs.gov.au/statistics/people/population/births-australia/latest-release>). Assuming prams are needed for children up to the age of 2 suggests about 630 294 prams are in use each year. Assuming 5 per cent of families may purchase a ramp and that ramp could be used by again when having another child, it is estimated that about 18 112 ramps (=630294*5%/1.74) are purchased each year, costing about \$1.39 million (=18,112*\$77) each year.

¹⁵⁹ Royal Commission into Aged Care Quality and Safety 2019, *Interim Report: Neglect*, Volume 1, October 2019, p.20.

Dalton and Carter (2020a) discuss social justice as a reason for government intervention, links this to the principle of solidarity, and points to the need for social justice in housing in the human rights frameworks.¹⁶⁰

Ensuring minimum accessibility standards in the NCC is consistent with Australia's human rights obligations, according to QLD Human Rights Commission. Physical Disability Council of NSW argued that international and domestic reputational gains should be included as a benefit.

Equity was also mentioned in the public consultation as an important factor to consider, as demonstrated by the following examples from submissions:

People with injuries or other mobility issues (short-term or long-term) will not have equal opportunities, principally because they will be confined to institutions of one sort or another.¹⁶¹

Disabled people are unable to live equal lives to non-disabled people due to the built environment - this in turn hampers their dignity and ability to perform and secure employment.¹⁶²

Equity refers to fair and equal access to housing. A lack of accessible housing means there is an absence of choice and control for individuals seeking to explore their housing options. The individual may have to either pay more or have less options regarding where they can live. There may also be issues with the time it takes for changes to be made to ensure that housing is suitable relative to others.¹⁶³

In response to consultation feedback it is recognised that equity, and more broadly, human rights and social justice, should be discussed from the perspective that people with disability and older Australians are denied equal opportunity due to inaccessible housing. Lack of equal opportunity in turn affects their daily life, their employment opportunity, their independence, dignity and self-esteem. Some of these impacts have already been quantified, and some will be discussed separately in the following sections.

In the collective sense, there is a cost to the community where people with disability are unable to secure housing that meets their needs, and thus the community is willing to pay to avoid this unequal, unjust outcome.

¹⁶⁰ Dalton, A. and R. Carter 2020a, *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 Summer Foundation, 18 August 2020, as Appendix 1 of the submission by Melbourne Disability Institute (MDI) and Summer Foundation to the public consultation, section 2.2, p.14 and section 2.3.1, p.15

¹⁶¹ Anonymous Submission 420083325, answer to Question 10, accessible 15 November 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

¹⁶² Anonymous Submission 249869896, answer to Question 10, accessible 15 November 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

¹⁶³ Anonymous Submission 284174932, answer to Question 10, accessible 15 November 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

- **It is estimated that the community values these costs at around \$389 million per year.**

This estimate is based on the following.

- A stated preference survey was completed to estimate the community's WTP for all Australians with a mobility limitation to have access to housing that meets their needs. This survey found that the average WTP was around \$40 per household per year (see appendix K for further details).
- This estimate is applied across around 9.9 million households.

Employment and productivity impacts

There is evidence of poorer employment outcomes for working age (15-64 years) people with mobility-related disability, relative to the broader economy (chart 3.49).

- According to 2018 SDAC data, the unemployment rate for people with mobility-related disability was around 11.3 per cent, more than double the rate in the broader economy (based on 2018 data). The unemployment rate is the number of people unemployed (i.e. those who are not employed, but are actively looking for work) as a proportion of the total labour force (i.e. the total number of people who are either employed or unemployed).
- Perhaps more strikingly, the participation rate for people with mobility-related disability was 42 per cent, compared with 65.6 per cent for the broader economy (based on 2018 data). The participation rate is the number of people either employed or actively looking for work (i.e. unemployed) as a proportion of the total number of people aged 15-64.

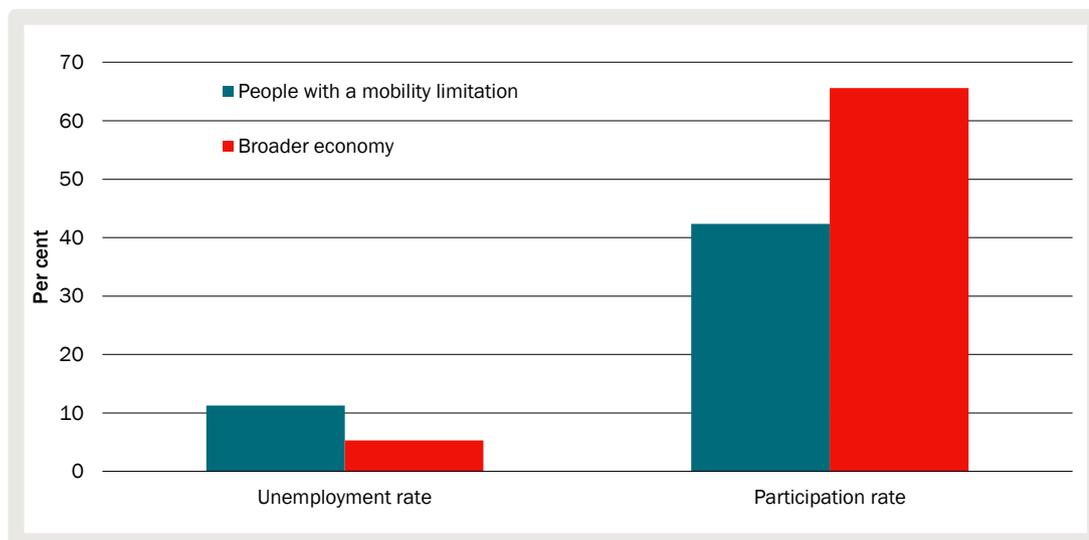
Stakeholders also provided evidence that a lack of accessible housing has affected employment opportunities and productivity at work.

- Close to one-third of respondents to the MDI survey that formed part of the MDI and Summer Foundation submission reported that a lack of accessible housing has resulted in job loss, missed job opportunities, reduced work hours or reduced productivity at work.¹⁶⁴
- Between 16 and 30 per cent of members of Spinal Life Australia report that a lack of accessible housing has impacted their employment.¹⁶⁵

¹⁶⁴ Wiesel, I. *Lived experience and social, health and economic impacts of inaccessible housing*, prepared for the Melbourne Disability Institute, University of Melbourne and the Summer Foundation, 18 August 2020, as Appendix 2 of the submission by Melbourne Disability Institute (MDI) and Summer Foundation. p.21.

¹⁶⁵ Submission by John Mayo for Spinal Life Australia, accessed 15 November 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

3.49 Key labour force indicators



Source: ABS, Labour Force, Australia, Catalogue No. 6202.0; ABS, 2018 Survey of Disabilities, Ageing and Carers, TableBuilder.

Submissions identified several ways that a lack of accessible housing could be leading to relatively poor employment outcomes among working age people with mobility-related disability, as well as reducing productivity.¹⁶⁶ Some of those lived experiences reported in submissions are provided in Box 3.50 below. Additional lived experiences are provided in appendix J.

3.50 Lived experience – potential effects of inaccessible housing on employment

- A case study from the Summer Foundation and Melbourne Disability Institute — Jack’s story — provides evidence of housing features restricting the ability to work from home. Jack lives in a group home that has been purpose built for people with spinal injuries and is therefore fully accessible. Jack needs a high, adjustable table, multiple computer screens, a microphone for dictation and adequate space for his wheelchair to enable him to work from home. As his bedroom is too small, this is set up in a shared space. Jack worries about the impact on his flatmates and is looking at options to live on his own. However, he has not been able to find a SDA home close to his workplace.¹⁶⁷
- Respondents to the Melbourne Disability Institute survey identified a lack of accessible housing close to employment opportunities as an issue affecting some people with a disability. Reported comments included the following.¹⁶⁸

“I chose a house that was accessible but when work relocated the drive was quite far. Expensive by taxi but to find another accessible housing precluded a desire to move closer to work”

¹⁶⁶ Amelia Condi, op. cit.

¹⁶⁷ Wiesel, I. Lived experience and social, health and economic impacts of inaccessible housing, Report submitted to the Australian Building Codes Board, University of Melbourne, 31 August 2020, p.25.

¹⁶⁸ Wiesel, I., op. cit., p.24.

3.50 Lived experience – potential effects of inaccessible housing on employment

“Due to a lack of even minimal accessible housing I have to spend all my disposable income travelling to work in a taxi because no accommodation was closer.”

- A case study from the Summer Foundation and Melbourne Disability Institute — Rowena’s story — provides evidence of housing features contributing to fatigue and limiting her ability to work.¹⁶⁹ Rowena suffers from chronic fatigue syndrome and various features of her home sap her energy and limit her ability to work.

Although submissions provided qualitative evidence that a lack of accessible housing may reduce employment opportunities and productivity for some working aged people with limited mobility, the impact of accessible housing appears to be under-researched and there is little specific quantitative evidence on the potential magnitude of these impacts. As such, it is not possible to estimate the cost of potential employment and productivity impacts.

- Based on examples provided in submissions and other qualitative evidence discussed in appendix J, people with mobility limitation appeared to face significant challenges working from home due mostly to limited space. CIE was not convinced that the NCC proposal would materially address this issue because employment outcomes are more likely affected by other factors such as personal heterogeneity (education, experience, age etc).
- Qualitative evidence from submissions also suggested a lack of accessible housing close to employment opportunities is another way inaccessible housing reduces employment. However, the available economic or quantitative evidence suggests that these impacts are likely to be relatively modest.
- Finally, qualitative evidence provided in submissions suggests that fatigue and additional care needs as a result of inaccessible housing features is reducing productivity for some people with limited mobility. It is not possible to quantify this impact.

While lack of accessible housing is likely making some contribution to poorer employment among people with mobility limitation through the mobility constraint, it should be noted that people looking for work (i.e. the unemployed) make up a relatively small share of those with mobility-related disability that are not employed (around 7.6 per cent). A much larger share does not participate in the labour market at all.

Although it is not possible to estimate the potential employment and productivity impacts based on quantitative evidence, as a qualitative assessment, these employment-related impacts could be quite significant, possibly in the order of several hundred million dollars per year (see appendix J for further discussion on this issue), suggesting a similar magnitude to some of the other cost categories.

¹⁶⁹ Wiesel, I., op. cit., p.25.

Projections of future size of the problem

As noted above, the number of people with a mobility-related disability is expected to increase over time due to:

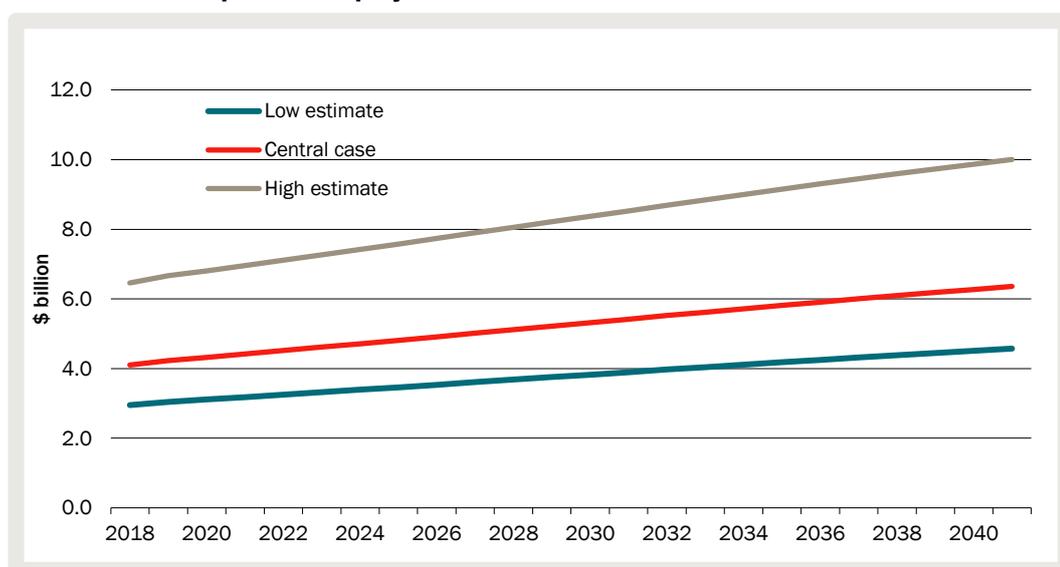
- population growth
- the ageing population.

The size of the problem is likely to be related to the number of people with mobility-related disability.

- The size of the problem in most categories is estimated to grow in proportion to the total number of people with mobility-related disability. Over the period to 2040, the average annual growth rate is estimated at around 1.9 per cent per year.
- However, some aspects of the problem are disproportionately concentrated in older members of the community. In particular, mostly older people would be affected by premature entry into aged care. As such, this aspect of the problem is estimated to grow in proportion to the number of people with limited mobility over the age of 65. Over the period to 2040, the average annual growth rate is estimated at around 2.6 per cent per year.

Under these assumptions, it is estimated that the size of the problem could increase to between around \$4.6 billion and \$10.2 billion with a central estimate of \$6.4 billion over the next 20 years (chart 3.51). The indicative estimates for qualitative assessment (community WTP, employment and productivity impacts) are quantified for quantum only and not included in the projection.

3.51 Size of the problem – projections



Data source: CIE; ABS.

Underlying causes

When operating efficiently, markets generally respond to the needs of consumers. To the extent that there is currently a shortage of accessible private housing, this implies that the market response may be falling short of the need. For the RIS, it is important to understand the underlying cause of the problem (i.e. why is the market not providing sufficient levels or types of housing with accessibility features?).

Market imperfections

Some factors that potentially contribute to a shortage of accessible housing include the following.

Separate houses

In principle, the design of new separate houses should reflect the owner's choice given their current needs/preferences, budget and associated costs. However, various barriers to universal design have been identified in the literature, which potentially lead to an under-supply of accessible housing.

- The market could potentially under-supply accessible housing where owners/buyers are not able to foresee (or do not give sufficient thought to) their future accessibility needs, or possibly the accessibility needs of future residents if accessibility features are not reflected in market prices (this is referred to as a 'bounded rationality' problem). Some stakeholders suggested that buying a home can be an 'aspirational' decision and nobody aspires to acquiring disability. This is consistent with the lack of education on universal design identified by Bringolf (2011).
- Bringolf (2011) also identified the housing delivery chain as a barrier to universal design. Many houses (particularly in greenfield areas) are built by 'volume builders'. Under this business model consumers choose from a set of standard designs. Incorporating additional accessibility features into a dwelling would involve deviating from the standard design. Bringolf (2011) provides evidence that it can be difficult to get volume builders to deviate from a standard design. During consultation, industry stakeholders advised that some volume builders have included some accessible designs in the standard offerings, although uptake had been limited.
- Bringolf (2011) also identifies the rigid application of planning regulations by local government as a barrier to the uptake of universal design.¹⁷⁰ This can create an environment where builders are reluctant to deviate from designs that have received approval in the past. In this respect SGS (2019) provide some specific examples of individual local councils trying to promote accessible housing via planning regulation.¹⁷¹

¹⁷⁰ Bringolf, J. 2011, *Barriers to Universal Design in Housing*, A thesis submitted for the degree of Doctor of Philosophy, Urban Research Centre, College of Health and Science, University of Western Sydney, September 2011, pp.45-47.

¹⁷¹ SGS 2019, *Planning Schemes Research*, Prepared for ABCB July 2019.

During consultation some industry stakeholders noted a growing awareness of accessibility issues by some consumers, particularly from the age of around 50 onwards. Unpublished analysis of a COTA NSW survey for the *50+ Report* found that the extent to which accessibility features influenced the choice of current home varied.

- More than 80 per cent of respondents indicated that easy access kitchen and storage and easy access bathroom and shower was either important or very important.
- Around 60 to 70 per cent of respondents indicated that the following features were either important or very important:
 - Minimal steps into home
 - Easy access from garage
 - Single storey.
- Around 50 per cent of respondents indicated that wide hallways and doorways were either an important or very important feature.¹⁷²

Apartments

Many apartments are sold 'off the plan' and therefore developers aim to appeal to the buyers' current average demand, rather than the specific needs of an individual buyer. Consultation feedback suggested that this business model was a barrier to the apartment market being more responsive to the growing demand for accessible housing.

Renters

Although meeting accessibility needs through home modifications is often a reasonable option for owner-occupiers, it is not always an achievable option for renters. Owner-occupiers have full control over the decision to make necessary home modifications (subject to funding), while renters must obtain agreement from the landlord.¹⁷³

The ABCB Consultation Report notes the following issues in relation to private renters.¹⁷⁴

- Landlords are reluctant to allow property modification even though by law they are required to allow for reasonable modifications. This is reflected in the SDAC data showing that a very small proportion of private rentals are modified to meet the needs of tenants with mobility-related disability.
- Tenants are often required to pay for the relevant modifications and then pay again to have them removed when vacating the property. As rental tenancies are often relatively short, the future benefits associated with these modifications (that may be

¹⁷² Bringolf, J. 2015, *Let's Talk About Where You Live*, Incomplete draft by Jane Bringolf based on COTA NSW 2014 survey data for the *50+ Report* with a focus on how and when older people are living, unpublished draft.

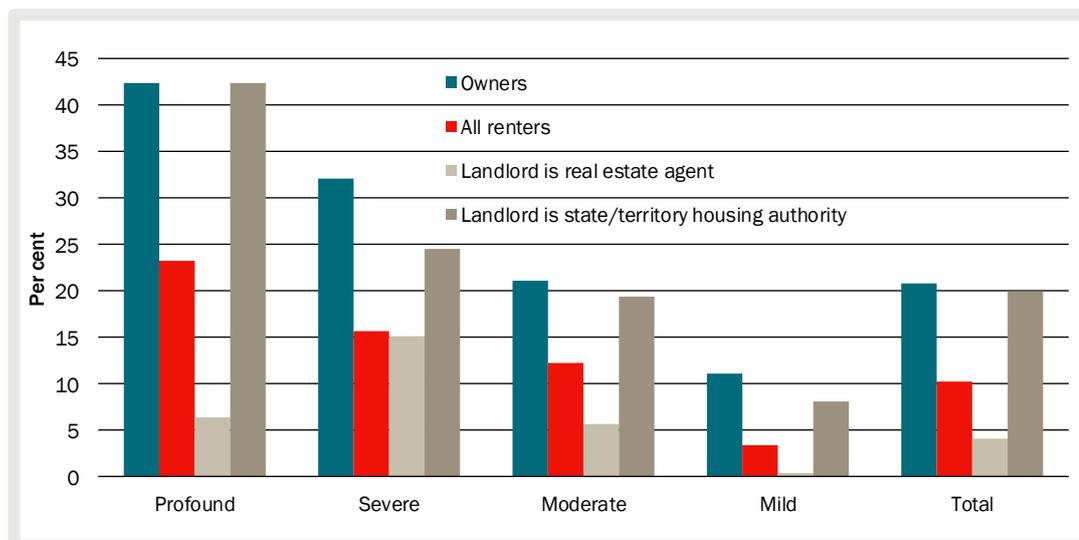
¹⁷³ ABCB 2019, *Accessible Housing Options Paper*, Consultation Report, April 2019, p.55.

¹⁷⁴ *ibid*, p.55.

specific to a particular tenant) may also be short (and uncertain), which acts as a significant disincentive for both landlords and tenants.

This is reflected in the proportion of people with mobility-related disability living in modified dwellings. SDAC data shows that the proportion of owners with home modifications is around double the proportion for all renters (chart 3.52).

3.52 Proportion of people with a mobility impairment with home modifications



Data source: ABS, Survey of Disabilities, Ageing and Carers, 2018, TableBuilder.

The type of landlord is also relevant.

- The proportion of tenants of state and territory housing authorities with mobility-related disability in modified dwellings broadly aligns with owner-occupiers.
- The proportion of people with mobility-related disability living in a modified home rented from a real estate agent is around 5 per cent, even for people with a profound mobility-related disability.

This implies that private renters with mobility-related disabilities are less likely to be living in homes that meet their accessibility needs.

Information failures

There is a lack of reliable information to effectively match buyers and sellers (or landlords and renters) of accessible properties. In principle, a voluntary certification system could address this issue; however, the existing certification system appears to have had limited impact.

- During consultation, stakeholders noted that when people who require more accessible housing try to locate it, it is very difficult to judge (without physically visiting the property) whether it is accessible. This makes the process of searching and securing accessible housing very costly.
- It was also noted that when builders wish to build accessible housing, it is very difficult to get their plans certified in advance of construction, meaning it cannot be

marketed as ‘accessible’ to buyers before the product is completed. Similarly, sellers of newly completed or existing homes that are accessible cannot get these homes certified as accessible. This significantly reduces the incentive for builders to build accessible housing.

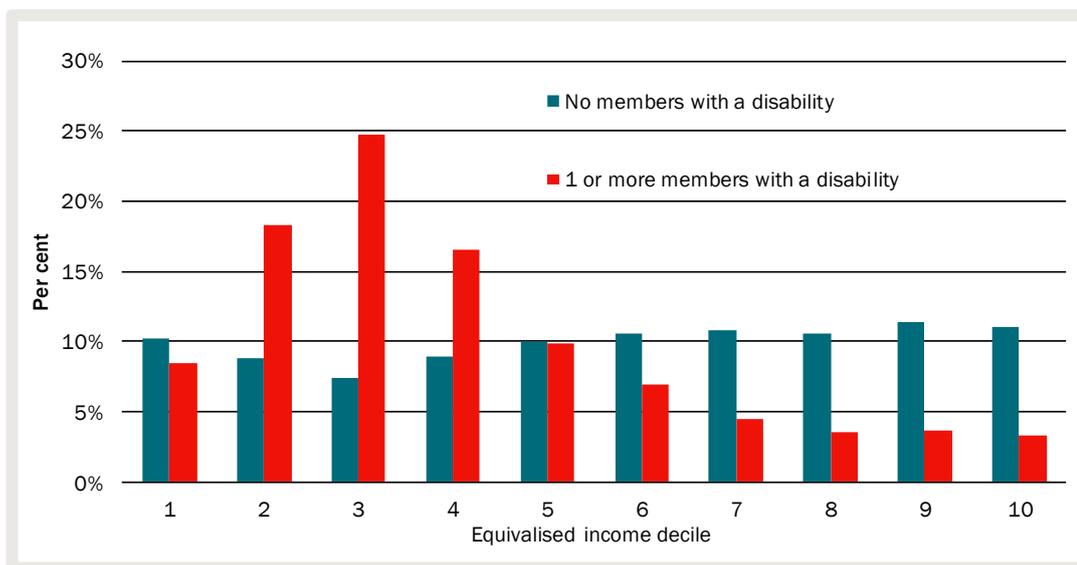
Low incomes

An underlying cause of the problem may be that households containing people with disability have insufficient income to fund their housing needs. A number of stakeholders stressed the importance of affordability, as well as accessibility and location. It was also identified by the public consultation as the top factor causing the problem (table 3.53).

For example, older people may be reliant on a pension, while some people with mobility-related disability may have limited employment opportunities. Employment opportunities may also be limited for other members of the household where they have significant caring duties.

People with disability are more likely to have a lower income. According to SDAC data, income units (families) containing a member with moderate, severe or profound disability are concentrated in the lower deciles, with around 78 per cent of income units below the median equivalised income (chart 3.53).

3.53 Equivalised income distribution



Data source: ABS, Survey of Disabilities, Ageing and Carers, 2018, TableBuilder.

Views from the public consultation

In addition to the two main reasons (‘buyers failing to think about their future accessibility needs’, and ‘volume builders being reluctant to deviate from standard plans’) which were incorporated into the public consultation questionnaire, submissions also pointed out other causes of the problem (table 3.54).

3.54 Other factors contributing to the lack of accessible housing

Factors	Count	Percentage
Additional cost/affordability	37	25.9
No demand/different needs	17	11.9
Other aspiration	10	7.0
Site constraint	5	3.5
Adverse perceptions	3	2.1
Lack of appeal of accessible fixtures	9	6.3
Government inaction	18	12.6
Conflict with other regulations/requirements	3	2.1
Lack of community awareness	10	7.0
Information problem	10	7.0
Industry problem	14	9.8
Limited choice	3	2.1
Social connection	1	0.7
Not sufficiently insured	1	0.7
Stamp duty	1	0.7
Lack of long-term lease security	1	0.7
Total	143	100.0

Source: CIE compilation based on submissions.

It should be noted that some factors raised may be a different expression of the same factor. For example, 'no demand/different needs' may be due to low income and affordability, or 'other aspiration' which in turn appears related to 'buyers failing to think about their future accessibility needs'.

For more details, please see appendix A.

4 *Objectives and options*

Objectives

Under the COAG Guidelines, a RIS should clearly articulate the objectives, intended outcomes, goals or targets of government policy.¹⁷⁵

Broader government policy objectives

Accessible housing issues cut across several policy areas, including disability and aged care policy. In establishing the objectives of the proposed change to the NCC, it is important to consider the Government's broader objectives in these policy areas.

Disability policy

The NDS adopts the principles set out in Article 3 of the UNCRPD:

- respect for inherent dignity, individual autonomy including the freedom to make one's own choices, and independence of persons
- non-discrimination
- full and effective participation and inclusion in society
- respect for difference and acceptance of persons with disabilities as part of human diversity and humanity
- equality of opportunity
- accessibility
- equality between men and women
- respect for the evolving capacities of children with disabilities and respect for the right of children with disabilities to preserve their identities.

More specifically, Outcome 1 of the NDS is:

“People with disability live in accessible and well-designed communities with opportunities for full inclusion in economic, sporting and cultural life.”¹⁷⁶

Policy Direction 3 under Outcome 1 refers to:

¹⁷⁵ Council of Australian Governments, Best Practice Regulation, A Guide for Ministerial Councils and National Standard Setting Bodies, p.10.

¹⁷⁶ Commonwealth of Australia 2011, *National Disability Strategy 2010-2020: An initiative of the Council of Australian Governments*, p.32.

“Improved provision of accessible and well designed housing with choice for people with disability about where they live”.¹⁷⁷

Similar themes — including equity and fostering independence — were raised in submissions to the ABCB’s Options Paper, although the Options Paper Consultation Report (the consultation report) noted that these objectives were generally not well defined.

- According to the Consultation Report, a definition of ‘equity’ can be gleaned from the existing NCC provisions that address accessibility of public buildings. One of the objectives of those provisions is to provide people with ‘safe, equitable and dignified’ access to buildings. In that context, the use of the term ‘equitable’ is explained as follows:

“One of the primary intentions of the [Disability Discrimination Act] is to provide people with a disability with the same rights as the rest of the community.

The word ‘equitable’ refers to concepts of fairness and equality. It does not mean that all people must be able to do the same thing in the same way. However, if some people can use a building for a particular purpose, then most people should be able to use the building for that purpose.”¹⁷⁸

- Based on the broader body of literature, the ABCB inferred that the objective of ‘fostering independence’ refers to the potential for accessible housing to lead to increased ability for people (with disability) to minimise their dependence on others to carry out household tasks.¹⁷⁹

Aged care policy

A key focus of aged care reforms over recent years has been to improve support for people to remain at home for as long as possible.¹⁸⁰ This aligns with the preference of many older Australians, as well as having the potential to reduce the cost of care met by the Australian Government.

Objectives of the proposed changes to the NCC

The ABCB’s Consultation Report notes that equity and fostering independence can both be considered relevant objectives.¹⁸¹ That said, there are a range of other policies in place that are already intended to address these objectives directly.

¹⁷⁷ *ibid*, p.32.

¹⁷⁸ ABCB 2019, *Accessible Housing Options Paper*, Consultation Report, April 2019, p.24.

¹⁷⁹ ABCB 2019, *op.cit.*, pp.24-25.

¹⁸⁰ ABCB 2019, *op.cit.*, p.20.

¹⁸¹ ABCB 2019, *op.cit.*, p.25.

During consultation some stakeholders suggested that the objective is to ‘mainstream’ universal design principles. This suggestion is not in keeping with the COAG RIS Guidelines which state the objectives should not pre-justify a preferred solution.¹⁸²

In recognition that the proposal is based on universal design principles (that aim to meet the needs of the largest number of people), rather than the specific needs of people with disability, CIE proposes an objective that applies more generally to the broader community, but is also specifically related to dwellings as follows.

- **To ensure that new housing is designed to meet the needs of the community, including older Australians and others with mobility limitations.**

Options

The COAG Guidelines require that a RIS identifies a range of viable options including, as appropriate, non-regulatory, self-regulatory and co-regulatory options.¹⁸³ Six options have been considered in this RIS and are discussed below.

Options to include accessible housing standards in the NCC

The proposed changes to the NCC are broadly based on the LHDG produced by Livable Housing Australia.

- Option 1 is based on the silver standard
- Option 2 is based on the gold standard
- Option 3 is based on the gold standard, with some additional features from the platinum standard.

The proposed standards are summarised in table 4.1. These options are based on universal design principles, focusing mostly on design improvements that have broad benefits across many future residents (including future residents without a mobility-related disability), rather than design features specific to those with a mobility-related disability.

The options apply to all Class 1a (houses) and Class 2 (apartments) dwellings subject to some exemptions (discussed below).

¹⁸² Council of Australian Governments, Best Practice Regulation, A Guide for Ministerial Councils and National Standard Setting Bodies, p.10.

¹⁸³ Council of Australian Governments 2007, *Best Practice Regulation: A Guide for Ministerial Councils and National Standard Setting Bodies*, October 2007, p.10.

4.1 Key requirements to be added to NCC under different stringency under consideration

Required element	Option 1	Option 2 or Option 3
Dwelling access and entry	<ul style="list-style-type: none"> ▪ Step-free dwelling access (via garage or external path) ▪ 1000mm wide access path ▪ Landing area of 1200mm by 1200mm for front door ▪ 820mm clear opening front door ▪ Maximum front door threshold: 56mm ▪ Carpark: 3200mm by 5400mm (see Note) 	<ul style="list-style-type: none"> ▪ Step-free dwelling access (via garage or external path) ▪ 1100mm wide access path ▪ Landing area of 1350mm by 1350mm for front door ▪ 850mm clear opening front door ▪ Maximum front door threshold: 56mm ▪ Carpark: 3200mm by 5400mm (if parking space provided) (see Note below the table) ▪ Vertical clearance above the parking space: 2500mm
Internal doors and corridors	<ul style="list-style-type: none"> ▪ 820mm clear opening doors ▪ 1000mm clear width corridors ▪ 5mm threshold 	<ul style="list-style-type: none"> ▪ 850mm clear opening doors ▪ 1200mm clear width corridors ▪ 5mm threshold
Toilet	<ul style="list-style-type: none"> ▪ Toilet on ground floor/level of entry ▪ 1200mm between front edge of toilet and arc of door ▪ 900mm between side walls of toilet ▪ In bathroom, toilet installed in the corner 	<ul style="list-style-type: none"> ▪ Toilet on ground floor/level of entry ▪ 1200mm between front edge of toilet and arc of door ▪ 1200mm between side walls of toilet ▪ In bathroom, toilet installed in the corner
Shower	<ul style="list-style-type: none"> ▪ Removable shower screen ▪ 5mm transition for entry 	<ul style="list-style-type: none"> ▪ Removable shower screen ▪ 5mm transition for entry ▪ Shower on ground floor/level of entry ▪ 900mm by 900mm shower space ▪ 1200mm by 1200mm adjacent space
Reinforce walls for bathroom	<p>Two scenarios:</p> <ul style="list-style-type: none"> ▪ Reinforced walls so rails can be installed in one position only; or ▪ Reinforced walls so that rails and other fixtures can be installed in any location 	Same as Option 1
Internal stairs	No requirement	<ul style="list-style-type: none"> ▪ Straight flights with landing ▪ No winders in lieu of landing ▪ Adjoin wall that supports hand rail
Kitchen	No requirement	<ul style="list-style-type: none"> ▪ 1200mm clearance from benches (Option 2) ▪ 1500mm clearance from benches (Option 3)
Laundry	No requirement	<ul style="list-style-type: none"> ▪ 1200mm clearance from benches (Option 2) ▪ 1500mm clearance from benches (Option 3)

Required element	Option 1	Option 2 or Option 3
Space for bedroom on ground floor	No requirement-	Required
Height of light switches and power outlets	No requirement	<ul style="list-style-type: none"> ▪ Light switches 900mm to 1100mm above floor ▪ Power outlet 300mm above floor
Height of door hardware	No requirement -	<ul style="list-style-type: none"> ▪ 900mm to 1100mm above floor
Specs of window sills	No requirement-	<ul style="list-style-type: none"> ▪ No requirement (Option 2) ▪ Sill 1000mm above floor, allow for single-handed operation (Option 3)

Note: Parking space dimensional requirements only apply if the parking space forms a part of the step-free access path into the dwelling.

Source: ABCB; CIE.

Under the ABCB's proposed changes to the NCC, all new dwellings are required to have all proposed accessibility features, other than features that relate to step-free access. Step free access requirements may be exempted for Class 1a buildings if the site has excessive slope or it is not practical to provide step free access without significant costs and/or exceeding ramping allowances (set out below). Therefore, there are some dwellings that will not have step-free access but will have other accessibility features. This is intended to discourage attempts to avoid accessibility requirements all together by deliberately designing homes where step-free access is not practicable.

It is important to note however that application for an exemption would be voluntary. Step-free access could still be provided by choice even if the proposed dwelling would otherwise be eligible for an exemption.

4.2 Cases where step-free access would not be required, or where exclusions apply

Case	Exception	Discussion
Class 2 dwellings	<p>Class 2 dwellings are dwellings that sit on-top of another structure; it mostly covers:</p> <ul style="list-style-type: none"> ▪ All types of apartments (buildings of 4 or more stories, which include lifts, and 3 or fewer stories, which do not or usually do not include lifts) ▪ Townhouses (or single level apartments) that sit on-top of an underground, shared carpark (as the carpark itself is a structure) 	<p>The proposed changes to the NCC do not alter the 'status quo' for Class 2 dwellings, as existing NCC accessibility requirements for common areas in Class 2 buildings</p> <p>This means where there is no lift (townhouses on top of shared carparks, apartment buildings of 3 or fewer stories), only dwellings on the entry level require step-free access to dwellings (via ground level entrance; not via carpark); dwellings on other stories do not require step-free access</p> <p>Where there is a lift (generally in buildings of four or more stories) dwellings require step-free access if located on a floor served by the lift</p>
Class 1a dwellings	<p>1a dwellings are detached houses and attached houses (including: townhouses, row/terrace houses, etc)</p> <p>The following test is used to establish where 1a houses do not require step-free access:</p> <ul style="list-style-type: none"> ▪ It is not practicable to provide step-free access via a garage or parking space, AND 	<p>Queenslander style homes are raised for ventilation; where the required ramping would exceed the interval limits set-out in the proposed changes, this ramping is not required (step-free access is not required)</p>

Case	Exception	Discussion
	<ul style="list-style-type: none"> ▪ One of the following is true: <ul style="list-style-type: none"> – (i) to provide an external step free access path would necessitate construction of ramping that exceeds the length and gradient allowed – (ii) there is insufficient space available on the site to accommodate – (iii) the ground on which the step free access would be located has a gradient exceeding 1:14. 	<p>For 'smaller blocks' (usually inner-city) where dwelling access is via a step that is right on the edge of the lot (required by planning authorities), ramping is not practicable as there is insufficient space and is therefore not required (step free access is not required)</p> <p>Where the ground floor of a dwelling is a garage, step-free access to the rest of the dwelling is not required</p>

Source: CIE.

Other options

As identified above, there are a range of existing programs that seek to address aspects of the problem. To the extent that existing measures do not fully address the issues, it is possible that expanding some existing programs could reduce the extent of the problem.

A key question raised by industry stakeholders during targeted consultations is that, noting the range of existing programs, is there a need to apply accessibility standards to **all** new dwellings.

Other options through the NCC

As the NCC applies to all new buildings, there is limited scope to impose accessibility standards on only a proportion of new dwellings through the NCC. The proposed options currently include some exemptions; however, these generally apply where it is either not possible or impractical to apply all of the accessible design elements.

Alternative policy options for addressing the problem, include applying accessibility standards to either:

- Class 1a dwellings only, or
- Class 2 dwellings only.

Planning requirements

Some states increase the supply of accessible dwellings through mandated planning requirements or incentives through the planning system.

- Mandated requirements generally apply to a proportion of dwellings and as such, can only be applied to multi-dwelling developments.
 - One potential advantage of this planning approach (compared with the NCC) is that applying accessibility requirements to a proportion of dwellings can reduce compliance costs (as not all dwellings would need to comply).
 - On the downside, this approach will be less effective in increasing the stock of accessible dwellings.
 - Variations across Local Government Agencies (LGAs) can also increase costs for builders and designers.

- Other incentives through the planning system could include:
 - exemptions from infrastructure charges
 - preferential approval pathways
 - density bonuses (or similar).

Unlike the NCC, planning requirements vary across states and in some cases LGAs. Planning frameworks vary significantly across states, making national consistency difficult to achieve. For example, in some states accessibility requirements for multi-dwelling developments are applied through apartment design guidelines. However, not all states have apartment design guidelines.

There is currently no mechanism to apply nationally consistent planning requirements. Implementing this approach would require state and territory governments to reach agreement and apply the agreed nationally consistent requirements through each state or territory's planning framework.

Social housing

One approach to improving the availability of accessible housing for people with a mobility-related disability is through expanding accessible social housing.

- A key advantage of this approach is that it may be more targeted to addressing the problem as state and territory housing authorities could ensure that new accessible housing is allocated to people with a mobility impairment.
- However, increased provision of accessible social housing would address only one aspect of the problem — the lack of accessible rental properties for those who are eligible for social housing.

Direct subsidies

During ABCB's consultations, some stakeholders expressed a preference for direct subsidies to build accessible dwellings. Presumably, this approach would involve either the Commonwealth or state governments funding developers or individuals to build dwellings that meet a specified accessibility standard.

While regulatory options would generally apply to all new buildings (unless specifically exempt), subsidies can have the advantage of being a more targeted approach to achieving the objectives. In particular, a subsidy program can potentially ensure that accessible dwellings are allocated to households with accessibility needs through an administrative process.

Providing subsidies to owner-occupiers would not make additional accessible housing available to households with accessibility needs in the short-term. Owner-occupiers with current accessibility needs would have incorporated accessible design features into the housing design already – without the subsidy. Consequently, additional accessible housing would not become available to those with accessibility needs, unless offered for rent, or until the original owner moved out (or a household member acquires a disability). For these reasons, subsidising owner-occupiers to incorporate universal design

principles into their dwelling design would not be a targeted approach to achieving the objectives.

Given the different barriers to the uptake of universal design principles for apartments, there is more logic in subsidising developers to build accessible apartments; however, there does not appear to be an effective mechanism to ensure that these apartments are actually occupied by people with accessibility needs over the longer-term.

The most targeted approach would be to provide a subsidy to landlords that provide rental accommodation to households with specific accessibility needs. This is similar to the approach used for SDA, although presumably these subsidies would apply to some households that are not eligible for SDA (SDA is an insurance scheme that has stringent eligibility requirements).

- This approach would be specifically targeted to addressing the issue associated with a lack of accessible private rental properties.
- As there are already policies in place to support low-income households with accessibility needs (i.e. social housing) and households with care needs (i.e. SDA), this subsidy could be targeted at ensuring accessible rental stock is available, implying that rents could be charged at rates reflecting rents charged for similar properties (which may not have relevant accessibility features). That is, the subsidy would be designed to stimulate the market for accessible rental properties and would only cover the **additional** cost of the relevant accessibility features.
- A subsidy on accessible rental properties is a way of providing assistance to renters that may be unable to access the subsidies on home modifications provided to owner-occupiers.

Enhanced voluntary guidance

During the targeted consultations, some stakeholders suggested that options for encouraging voluntary uptake of accessible housing designs could be further explored and that the availability of agreed standards could be enhanced if more resources were available to:

- promote the LHDG to both:
 - builders/developers, and
 - potential buyers
- promote the existing LHA voluntary certification scheme.

Voluntary certification schemes can help markets to operate more efficiently through the provision of reliable information.

- Certification provides independent verification to buyers that a product meets a particular standard.
- Suppliers can use voluntary certification to demonstrate that their product meets the standard. This can help them market their product and can have commercial benefits (particularly where buyers are willing to pay more for a product that meets the standard).

In principle, a voluntary certification scheme for accessible houses could encourage additional uptake of LHA-compliant designs.

- Buyers and renters may be willing to pay more for certified dwellings if they are more confident that it will meet their current or future accessibility needs.
- Home builders/investors would therefore have more incentive to invest in accessible design features if there are future financial benefits (through either a higher future sale price, higher rents or lower vacancy rates).

However, as highlighted in submissions, the current LHA voluntary certification scheme does not appear to have been effective in encouraging a significant increase in accessible dwellings.¹⁸⁴ Previous analysis by ANUHD and RI Australia estimated that less than 5 per cent of new dwellings are built to the LHDG standard,¹⁸⁵ although industry stakeholders have argued that not all compliant dwellings are certified to the standard.

An enhanced voluntary option to improve the effectiveness of the current voluntary certification scheme could include the following elements.

- A voluntary ABCB handbook — stakeholders suggested that this would raise the profile of accessible housing and encourage uptake. If a voluntary ABCB handbook was developed, any state or local government requirement could refer to the voluntary standard, perhaps improving the consistency of the standards applied across jurisdictions.
- Information provision at the point of sale — more information on the benefits of accessible housing could be provided at the point of sale to encourage more demand for accessible housing.
- Better matching services — although there are some services available, matching buyers/sellers nevertheless has been identified as a problem. Options to improve these services could include the following.
 - Developing a specialised web-based search facility.
 - Working with mainstream websites (such as realestate.com or domain) to enable people to search for certified accessible dwellings. This would also help to encourage better awareness and greater uptake of the certification scheme.

The ABCB would have responsibility for publishing a voluntary handbook; however, the other elements of this option are outside of the ABCB's responsibility.

Summary of options to be considered

A range of options have been developed based on those proposed through stakeholder consultation, including some not within the ABCB's broad area of responsibility (e.g. Option 5 and the information provision and matching aspects of Option 6) and non-

¹⁸⁴ For example, Margret Ward, op.cit., p.15, p.25, p.48

¹⁸⁵ ANUHD and RI Australia 2015, *Report on the progress of the National Dialogue on Universal Housing Design 2010-14*, p.13,
https://aduhdblog.files.wordpress.com/2016/08/nduhd_report_jan15.pdf

regulatory alternatives as required under best practice guidelines. The RIS explicitly considers the impacts of the following options.

- **Status quo:** The status quo is used as the baseline against which the impacts of all other options are assessed.
- **Regulatory options:** The regulatory options (involving changes to the NCC) include the following.
 - **Option 1:** Accessibility standard, broadly reflecting LHDG silver standard, in the NCC applying to all new Class 1a and Class 2 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 (plus 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.
- **Non-regulatory options:** These options are largely outside of the ABCB's responsibility and are not therefore the primary focus of the RIS. However, they have been considered to comply with the requirements set out in the COAG RIS Guidelines to establish whether a change to the NCC is the most efficient approach to addressing the problems associated with a lack of accessible housing.
 - **Option 5:** A generalised subsidy program to encourage additional availability of accessible rental properties to LHDG Gold standard.
 - **Option 6:** An enhanced approach to voluntary guidance, including:
 - ... a non-regulatory ABCB handbook
 - ... information provision at the point of sale
 - ... better matching services.

Options 1-5 are included in the CBA. Option 6 is discussed qualitatively, without quantifying the costs and benefits.

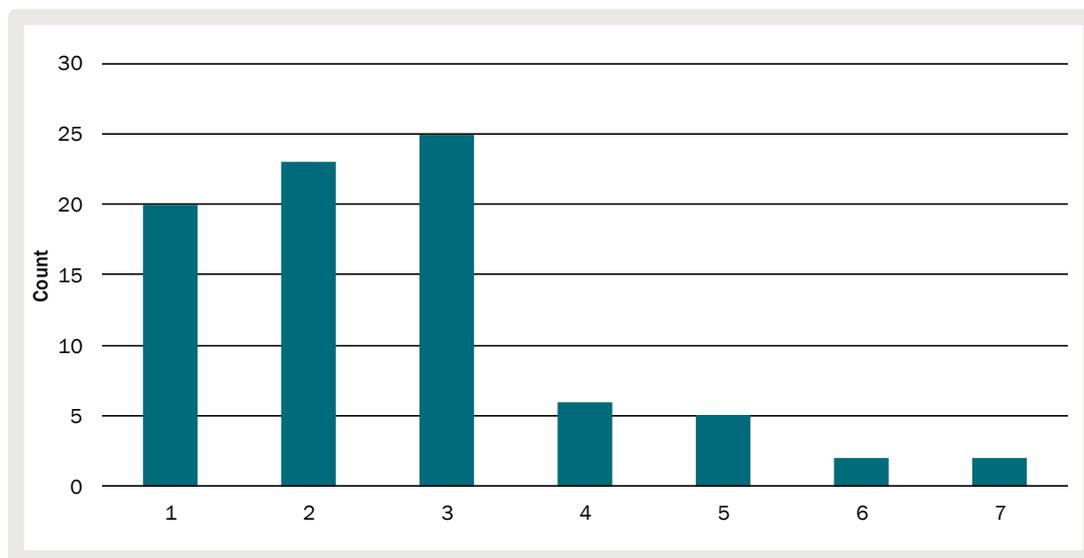
Stakeholder feedback on options

Feasible options

During public consultation, the consultation questionnaire asked a specific question about the feasibility of the options. Among the 98 responses to the question, 83 respondents provided answers to that question (Question 15). Most respondents (63 out of 83) suggested more than one feasible option (chart 4.3).

These figures should be considered with caution as more than half of respondents did not provide an answer to this question and, some 15 respondents did not include their preferred option (for Question 19 discussed below) as one of the feasible options in answering this question.

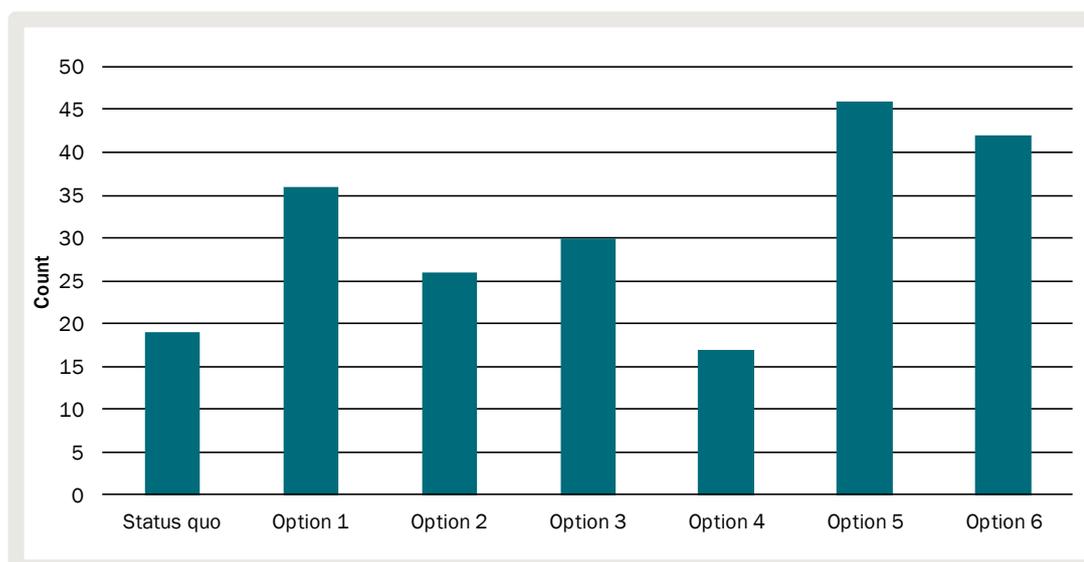
4.3 Responses by number of feasible options



Note: answers to Question 15
Data source: Consultation Hub

As shown in chart 4.4, Option 5 has the highest count – 46 respondents indicated it is feasible. It is followed by Option 6 (42 counts), Option 1 (36 counts), and Option 3 (30 counts).

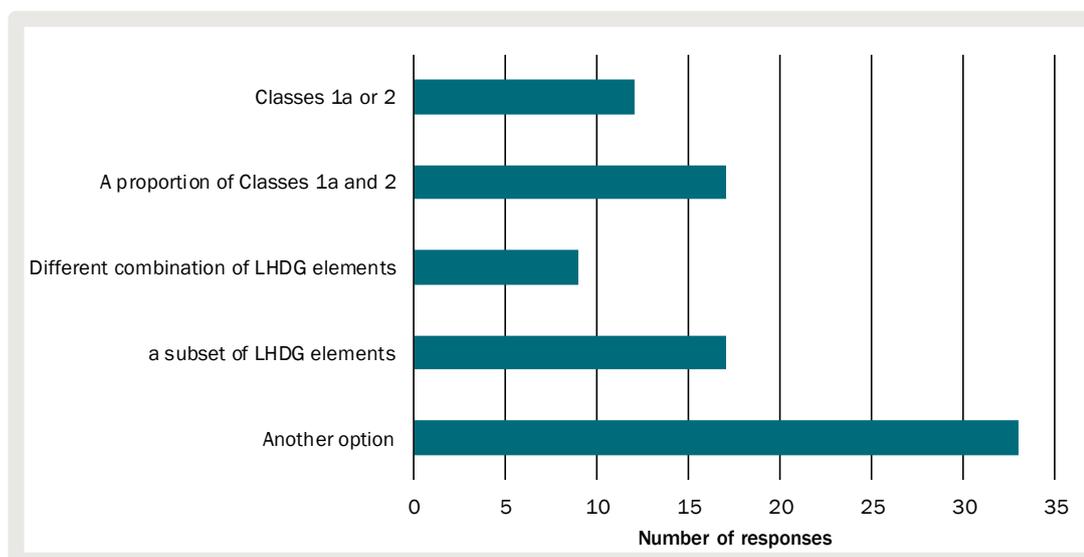
4.4 Feasible option counts



Note: Answers to Question 15.
Data source: Consultation Hub.

Some respondents believe that applying the accessibility standards to a part of the buildings or adopting a different combination or a subset of LHDG elements in the NCC are feasible (chart 4.5).

4.5 Other feasible options



Note: Answers to Question 16.

Data source: Consultation Hub.

It should be noted that none of these views could be verified, but other more specific suggestions included:

- Use planning regulations such that changes only apply to a certain percentage of dwellings built because one-size-fits-all is difficult and should not apply to all dwellings (MBA), and the share should align with percentage of population who require accessible housing (Meriton).
- Introduce wider/more exemptions in addition to the current 1:14 slope exemption so that compliance is not required where it is impossible or unreasonably costly due to topography, gradients, flood risk and so on (PCA). It was suggested that not all sites are suitable to develop to LHDG Standards at low or minimal cost (PowerHousing Australia); for example, AusBuild suggested anecdotally that around 32 per cent of lots created in the last two years in Queensland are suitable for accessible housing, and a submission suggested that the proposed changes are not feasible for lots less than 350 m².
- Align voluntary options with existing planning policy
- Increase funding to LHA
- Increase information available, for example,
 - voluntary handbook, self-declaration form as to the standard
 - governments collect data on accessible housing and make it available; for example, create a publicly available national register of homes with accessibility features, including a simple process to confirm the validity of the original accessibility certificates

- Add a matching service to achieve the benefits – as put by one stakeholder, SDA is successful because it is generously funded and has a matching program ¹⁸⁶
- Provide incentives for developers, builders and purchasers
- Accreditation program for accessible builders
- Lowering transfer duties because the duties lead to low take-up of accessibility features by mobility impaired households
- Light-weight, cheap removable threshold ramps are an alternative
- Proposed changes should be expanded to help vision impaired people and mentally impaired people; for example, better insulation in Class 2 units to cut down noise transfer which can be stressful

Options to meet the objective

Consultation questionnaire Question 17 asked which option can meet the objective. Eighty submissions provided answers to this question through the Consultation Hub. Chart 4.6 compares the answers to the question about feasible options.

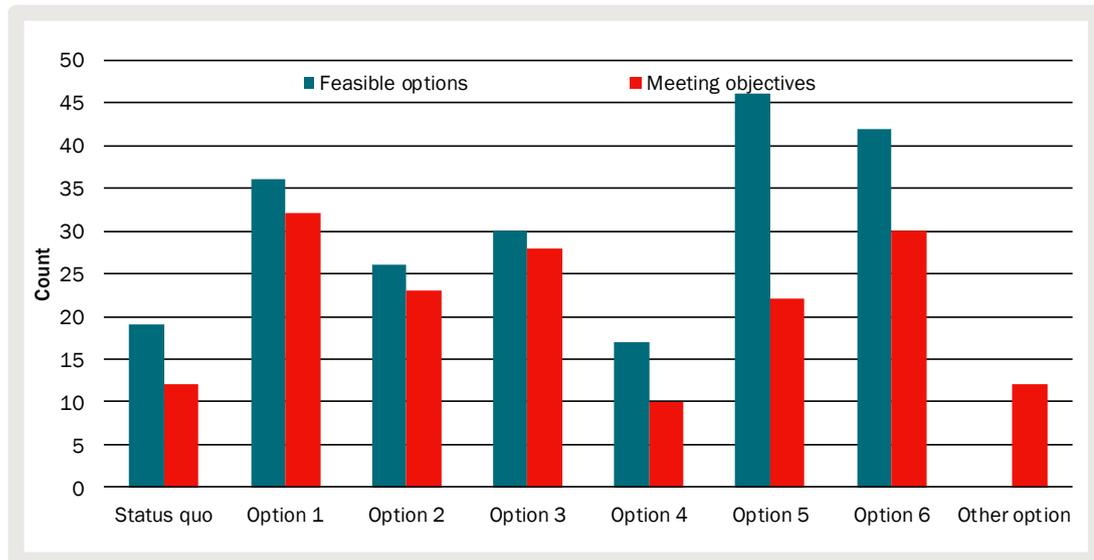
It can be seen from chart 4.6 that the number of respondents thinking one option has the ability to meet the objective is slightly less than the number of respondents who thought they were feasible regulatory options (Options 1 to 4), while the gap is wider for the non-regulatory options (Options 5 and 6).

It is interesting to note that more respondents thought that the Silver standard (Option 1) could meet the objective than the Gold (Option 2) and Gold Plus (Option 3), although the difference is not big.

A similar number of respondents indicated they believed that an enhanced approach to voluntary guidance (Option 6) and the Gold Plus (Option 3) can meet the objective.

¹⁸⁶ Submission by Jane Bringolf for Centre for Universal Design Australia, answer to Question 8, accessed 24 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

4.6 Feasible options versus options meeting the objective



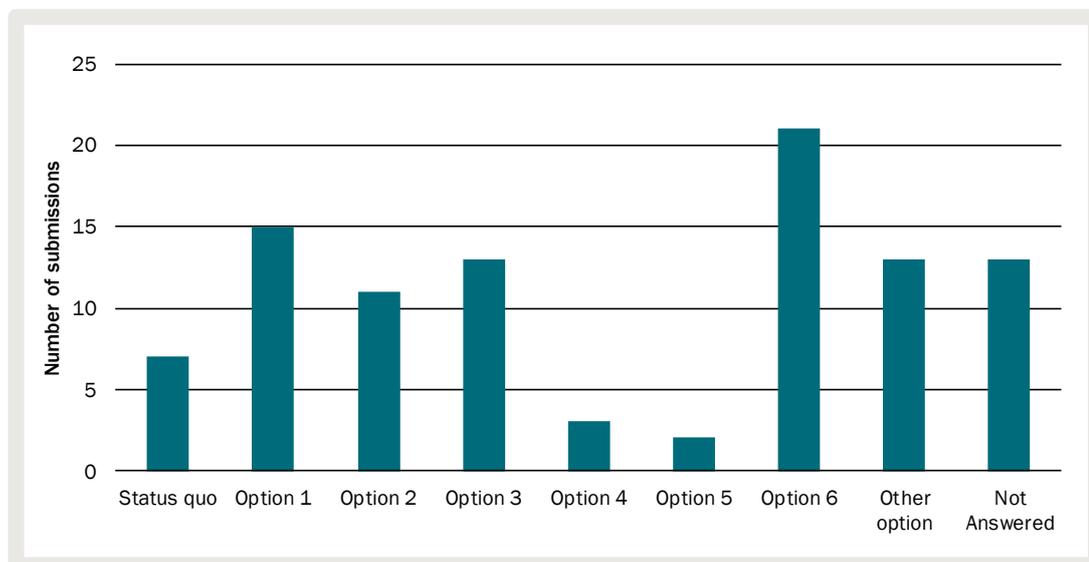
Note: Structured answers to Questions 15 and 17.
Data source: Consultation Hub.

Preferred option

Chart 4.7 reports the count of preferred options from the 98 Consultation Hub responses. 42 respondents prefer a regulatory option with 11 preferring Option 2 (Gold), while 30 respondents prefer a non-regulatory option, and 13 prefer other options.

118 respondents did not answer the question including those submitting their responses separately rather than through the Consultation Hub. By analysing stakeholder feedback outside the Consultation Hub, a further 82 respondents with preferred options were identified. Chart 4.8 reports the simple count of preferred options from both the Consultation Hub submissions and those responding outside that mechanism. The total count in the chart is more than the total number of responses as many submissions outside the Consultation Hub process provided multiple preferred options. The chart shows that Options 2 and 6 are the most preferred options – 55 and 50 counts respectively.

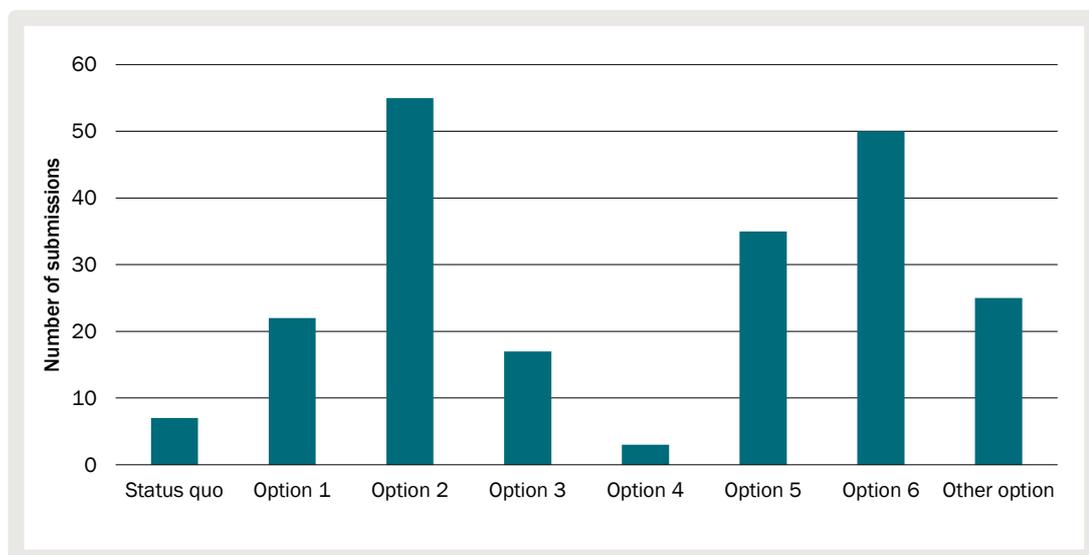
4.7 Preferred option identified through Consultation Hub questionnaire



Note: Structured answer to Question 19 through the Consultation Hub.

Data source: Consultation Hub.

4.8 Preferred option in all submissions including multiple choices

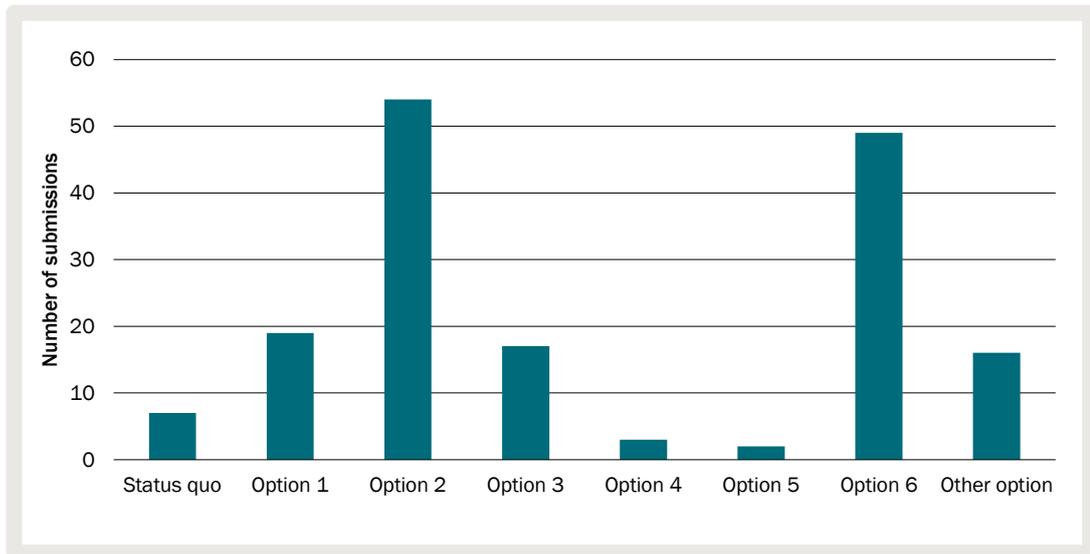


Note: Structured answer to Question 19 through the Consultation Hub.

Data source: Consultation Hub.

To resolve the multiple choices provided by submissions outside the Consultation Hub, the approach to interpreting stakeholder preferences was to allocate the more stringent of regulatory options (where a regulatory option was present) and least stringent of options where it was not. With this interpretation, chart 4.9 reports preferred option counts in all responses identifiable, where each response is allocated only one choice. 93 respondents prefer a regulatory option with 54 preferring Option 2, while 58 respondents prefer non-regulatory options with 49 preferring Option 6. There are 16 respondents who prefer other options.

4.9 Preferred options in all responses



Note: Answer to Question 19 through the Consultation Hub and other submissions.

Data source: CIE based on Consultation Hub.

5 *Impacts*

This chapter identifies the impacts of the proposed options and sets out the CBA framework used to quantify these impacts.

Impacts

The impacts (including costs and benefits) of the proposed options are identified below.

Proposed changes to the National Construction Code

Under the options involving changes to the NCC, there would be an increase in the number of accessible dwellings and therefore an increase in the proportion of the stock of dwellings that are accessible for people with mobility limitations, including older people and people with disability.

Benefits

The benefits of the proposed changes to the NCC (Options 1-4) essentially involve reducing the size of the problem estimated in chapter three. This includes:

- reduced costs associated with falls
- reduced carer needs
- reduced cost of home modifications
- reduced stays in hospital and transition care
- reduced costs associated with social isolation and loneliness
- reduced premature and unnecessary entry into residential aged care
- reduced costs associated with moving
- reduced costs for people with short-term injuries and families with young dependants due to inaccessible housing
- reduced adverse quality of life impacts
- societal benefits.

Costs

The costs of the proposed changes to the NCC (Options 1-4) could include the following.

- The additional costs associated with complying with the proposed accessibility standards – these costs include:
 - Additional construction costs

- Loss of space – where some areas of a dwelling (such as bathrooms and hallways) expand to meet the proposed standards, this space must come from either:
 - ... expanding the footprint of the building, which means either expanding lot sizes or loss of outdoor/garden space, or
 - ... loss of living and/or bedroom spaces where the additional hallway and bathroom space is accommodated within the existing building footprint.
- Costs associated with additional excavation work on sloped lots.
- Transition costs – this includes:
 - Transition costs for volume builders, including the costs associated with re-designing the standard offering and rebuilding display homes
 - Other industry transition costs — this includes the cost of various industry professionals familiarising themselves with the new NCC requirements. This would include:
 - ... architects/building designers
 - ... builders
 - ... certifiers.

Transition costs are likely to be one-off costs due to the nature of industry adaptation to new requirements.

Subsidy scheme

A proposed subsidy (Option 5) would be provided to providers of accessible rental accommodation.

- The benefits of this approach are the extent to which a subsidy scheme would address the problem (see chapter three). However, as the subsidy scheme would apply only to renters, this approach would address only the proportion of the problem relating to renters.
- The costs of this approach include the additional cost of providing accessible accommodation, either through building new dwellings or through refurbishing existing dwellings to meet the standard. One indicator of these additional costs is the subsidy required to encourage private landlords to provide the service.

Both the benefits and costs of the subsidy scheme would depend on the number of subsidised dwellings provided under such scheme. The extent to which private providers would take up the subsidy and provide accessible rental accommodation to people with accessibility needs is difficult to estimate.

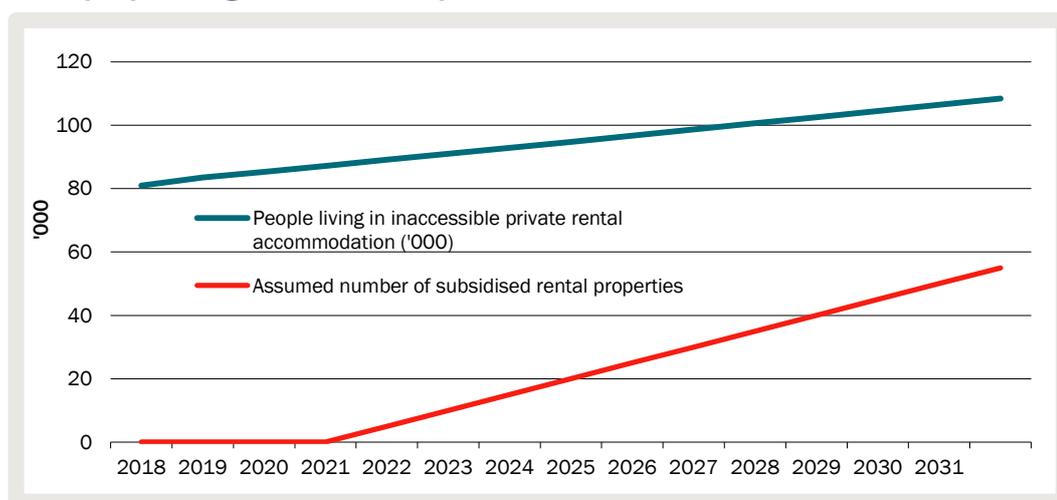
There are around 81 000 people living in unmodified private rental accommodation (i.e. excluding social housing) with limited mobility that require assistance or have difficulty moving around their place of residence (suggesting that the dwelling does not meet their needs).

To provide an indicative estimate of the benefits and costs of a subsidy scheme, it is assumed that an additional 5 000 accessible rental properties are provided each year that

are leased to people whose existing rental accommodation is not meeting their accessibility needs.

Chart 5.1 compares the assumed number of subsidised accessible rental properties compared with the number of people with accessibility needs living in inaccessible private rental accommodation.

5.1 Assumed number of subsidised rental properties compared with the number of people living in inaccessible private rental accommodation



Note: It is assumed that an additional 5000 accessible rental properties would be provided each year.

Data source: ABS 2018 Survey of Disabilities, Ageing and Carers, TableBuilder, CIE.

Enhanced voluntary guidance

As well as a voluntary handbook, this option would include measures, such as:

- a centralised search engine for (certified) accessible housing
- information provision on accessible housing at the point of sale.

Costs

Costs associated with this option would include the following.

- The costs associated with developing a voluntary handbook would be relatively low. The proposed changes (based on LHDG) could be reproduced (subject to permission of LHA), as a voluntary handbook at minimal cost.
- There would be costs associated with developing a new search engine specifically for certified accessible housing or working with an existing provider to include the relevant functionality in their existing search engines. There may also be ongoing operating costs (or an increase in operating costs).
- There may also be modest costs associated with developing information material to be provided at the point of sale, and modest costs associated with providing the relevant material (whether on a voluntary or mandatory basis).

- To the extent that these measures encourage additional uptake of universal design principles, there would also be the associated costs, including construction costs, the opportunity cost of space (where relevant) and possibly additional excavation costs. However, these costs would be incurred on a voluntary basis. A potential advantage of this approach, relative to a mandatory requirement, is that there is scope for consumers to make their own choices; where some consumers have a strong preference for non-compliant designs or the cost of complying with the standard is higher than average (due to the specific characteristics of the lot) they would be able to choose not to include accessible design features.

Benefits

To the extent that this approach encourages additional uptake of universal design principles (if at all) it could potentially reduce the size of the problem. As uptake would be significantly lower than under the mandatory requirements, the benefits would be commensurately smaller.

Unintended consequences

The public consultation encouraged respondents to identify less intuitive or unintended consequences of the proposed changes.

Mis-alignment with state government policies

One submission noted that the proposal could hinder design and housing product choice if adopted across all new homes and residential apartments. This broad approach does not align with state driven housing policies, such as NSW ‘missing middle’ which advocates for multi-level terrace style housing, smaller lot sizes, urban living and so forth. As inner city lots become smaller to accommodate housing affordability constraints, the proposed changes in the NCC seem to be at odds with such policies.

PCA suggested that there is a risk of regulatory overlap given the prevalence and complexity of state, territory and local government regulation. It provided a list of accessibility requirements in state and territory and local government areas.¹⁸⁷

The NCC provides a national framework of consistent requirements and standards. The adoption of the NCC requirements is the jurisdiction of each state and territory and also provides for benefits of harmonisation of standards across states and territories which are established under other reforms. When adopting the NCC, state and territory authorities would take into consideration and manage any inconsistencies between the new NCC requirements and existing state planning and other regulations. However, this may result in any inconsistencies being ‘managed’ by a State or Territory varying or choosing not to adopt the NCC requirements.

¹⁸⁷ Submission by Tim Wheeler for PCA, p2; Appendix B, p.11-13, accessed 1 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

Affordability

A number of submissions suggested that proposed changes would increase costs and thus impact housing affordability, especially for first home buyers. The higher cost could result in a reduction in new dwelling demand.

For instance, as a submission noted, first home buyers or persons with a limited budget may well be excluded from the new housing market due to the increased costs which would generally not assist them directly. Affordable housing supply continues to be an increasing issue and introduction of additional measures across all new dwellings will further exacerbate this problem. It will result in an overall reduction in new housing demand.¹⁸⁸

It was also suggested that people with accessibility needs may actually be adversely affected because they are more likely to have low income, and affordability is also important to them.

By contrast, research cited by another submission supports mechanisms that standardise local planning requirements as a way to reduce costs of construction and improve affordability¹⁸⁹. This view suggested there may be benefits from having a national standard around accessible housing. It further proposed that construction cost increases for the lower end of the market be addressed by introducing specific mechanisms to enable and support affordable housing inclusion and use of government cross-subsidy.

As such, views on affordability impacts were mixed in the submissions. Housing price and affordability are affected by many factors, of which the construction cost is only one factor. In general, increase in construction cost is not fully passed on to housing price due to demand and supply elasticities. In metropolitan areas where land supply is limited and the housing supply is very inelastic, the increase in construction cost would be more likely absorbed by the industry (through reduction in land price premium).

The impact on housing price and affordability are discussed in more detail in the next chapter.

Loss of architecture richness and diversity

A number of submissions pointed out that some house designs will be no longer viable with the introduction of proposed accessible requirements in the NCC. For example, split level homes, those incorporating mezzanines, pole homes and traditional Queenslanders do not lend themselves to being very accessible by their nature.

It should be noted that some of these impacts on architecture diversity could be avoided or alleviated through the exemption clauses in the proposal.

¹⁸⁸ Sam Plaschke, op. cit., p.4

¹⁸⁹ Gurran, N., K. Ruming and B. Randolph 2009, *Counting the costs: planning requirements, infrastructure contributions, and residential development in Australia*, AHURI Final Report No.140, Australian Housing and Urban Research Institute Limited, Melbourne, <https://www.ahuri.edu.au/research/final-reports/140>

Other safety concerns

Registered Accommodation Association of Victoria (RAAV) highlighted a scenario where a non-wheelchair user uses a wheelchair accessible shower. Because the wheelchair accessible shower has no shower door, excessive water could spray across floor, increasing the risk of slips and falls.¹⁹⁰

Cost-benefit analysis framework

Cost-benefit analysis (CBA) is the COAG Guidelines recommended tool for weighing up the costs and benefits of a regulatory (or other) proposal in a systematic way. Where possible, all financial, social and environmental costs and benefits are estimated in a common metric (usually monetary terms) so they can be readily compared. The stream of future costs and benefits are 'discounted' back to their present value to ensure costs and benefits incurred in different periods are on a comparable basis.

Baseline

A key element of a CBA is establishing a 'baseline' against which the costs and benefits of each of the policy options are assessed. A typical baseline is a 'business-as-usual' case; that is, the scenario without the policy (or policies) in question.

As set out in chapter three, there are a significant number of policies aimed at ensuring that older Australians and people with disability have access to housing that meets their needs. The baseline scenario assumes that these policies will continue.

The CBA is therefore assessing the incremental benefits and costs of each of the proposed options relative to existing policies.

With respect to construction costs and space requirements, DCWC takes a two-step approach to define the baseline, reflecting the complexity of building type and design.

First, for each design element, various scenarios are defined to reflect the different baselines. For example, some designs may already be compliant under the baseline, and thus the required changes incur zero cost. Some designs are not compliant in the baseline, and thus require changes to meet the standard, which incur additional construction costs. Furthermore, the compliance may be achieved through different design solutions. For example, to meet the toilet circulation space requirement, a design replacing a side hung door with a cavity sliding door would mean minimal cost, while in some cases this design is not feasible and bigger space is required to meet the standard, with higher costs. For Gold and/or Gold+ standards, more scenarios may be needed to define the baselines for those already meeting the lower standard.

In the second step, weightings are given to each scenario to define the baseline for the relevant elements and building types in the market.

¹⁹⁰ Berenice Hale submission for RAAV, p.2, accessed 1 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

Time periods

According to OBPR, the time period for a CBA needs to be long enough to capture all potential costs and benefits. As with previous ABCB RISs, a 10-year regulatory period has been adopted. However, as buildings are long-lived assets, accessible dwellings constructed over the 10-year regulatory period will provide housing (and therefore benefits) over a much longer period. The benefits of the dwellings built over the 10-year regulatory period have in the past been assessed over the life of the dwelling (generally assumed to be around 40 years).

One challenge with this approach, in the context of the current RIS, is that (one of) the approach(es) to quantifying benefits assumes that the extent to which the proposal addresses the problem (estimated in chapter two) is related to the share of accessible dwellings in the overall stock, rather than estimating the benefits for an individual dwelling and then extrapolating across the stock built under the new code. This is because most (but not all) of the benefits depend on whether a person with specific accessibility needs resides in the dwelling.

The approach therefore involves estimating the additional upfront costs associated with the dwellings constructed over the 10-year regulatory period. The benefits escalate as the share of the stock that is accessible increases. The benefits are then held constant at the end of the 10-year regulatory period for an additional 30 years.

Discount rate

As required by OBPR, all costs and benefits are discounted using an annual real discount rate of 7 per cent.¹⁹¹ Alternative discount rates of 3 per cent, 5 per cent and 10 per cent are used in sensitivity testing.

CBA summary outputs

Key CBA summary outputs are as follows:

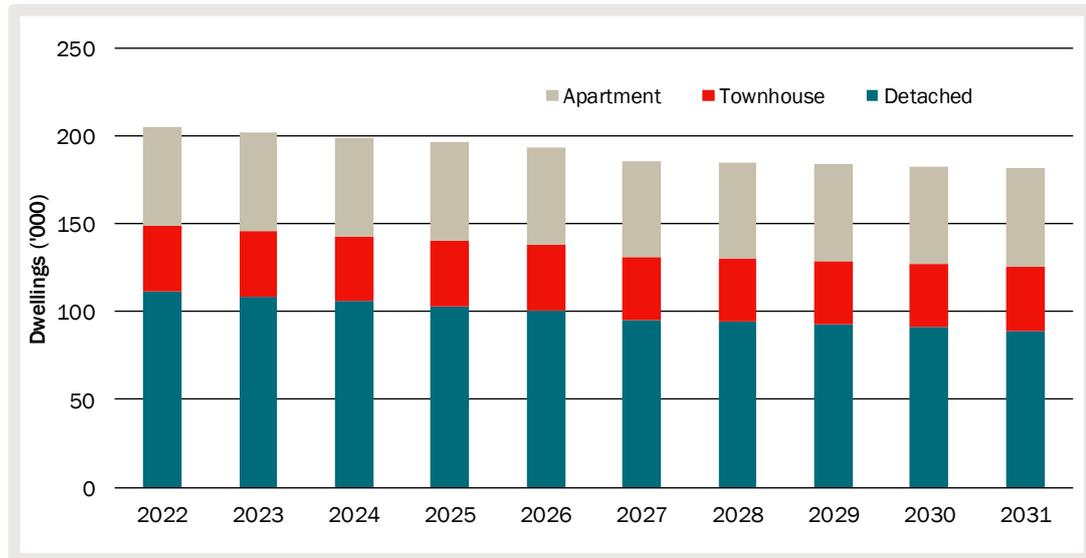
- Net present value (NPV) — this output represents the present value of the future benefits less the present value of future costs.
 - An NPV greater than zero indicates that the benefits of the proposal outweigh the costs.
 - An NPV less than zero indicates that the costs of the proposal outweigh the benefits.
- Benefit-cost ratio (BCR) — this represents the ratio of future benefits to costs (both in present value terms).
 - A BCR greater than 1 indicates that the benefits of the proposal outweigh the costs
 - A BCR less than 1 indicates that the costs of the proposal outweigh the benefits.

¹⁹¹ Department of the Prime Minister and Cabinet 2016, *Cost-Benefit Analysis*, Office of Best Practice Regulation, February 2016, pp.7-8.

Projected dwelling construction

A key driver of both benefits and costs is the level of new dwelling construction over the regulatory period. CIE’s dwelling projection sees completions declining gradually from just above 200 000 in 2022 to around 182 000 by 2031 (chart 5.2).

5.2 Projections for dwelling completions in Australia

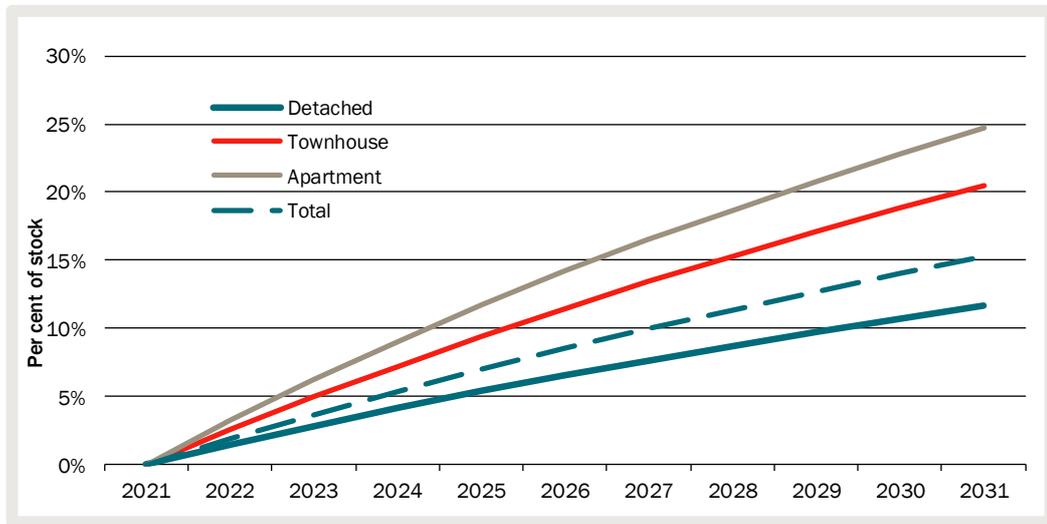


Data source: CIE.

The underlying drivers of completions are population growth, the ratio of the dwelling stock to population and a demolition rate. The ratio of the dwelling stock to population has been derived from state government projections for population and dwellings, and aggregated to the national level.

New dwellings constructed under a revised NCC would become an increasing share of the stock over time (chart 5.3). The share of accessible housing will increase accordingly.

5.3 Share of the dwelling stock (by type) constructed under the new Code



Data source: CIE estimates.

6 *Estimating costs*

This chapter presents the estimates of the costs associated with each of the options.

Additional cost of complying with proposed standards

The impacts of the proposed standards on construction costs will vary across dwellings based on factors such as: the type of dwelling, design choices, the approach to achieving compliance, the size and topography of the lot.

The additional costs associated with complying with the proposed standards (including both additional construction costs and the opportunity cost of space) are estimated in Table 6.1.

- DCWC, quantity surveyor, has provided estimates of the additional construction costs of incorporating the proposed changes to the NCC into new builds.¹⁹² DCWC costing is 'a weighted cost that provides an indication of likely average cost impact on each archetype [sic], averaged across the population of non-exempt dwellings constructed'. A summary of these costs is provided in the construction cost column of Table 6.1.
- DCWC's cost estimates are based on construction costs in Canberra. Construction costs in Canberra tend to be higher than the national average. Rawlinson's Australian Construction Handbook (2019) provides regional cost indices for each state/territory capital and for regional areas. Weighting each capital city cost index by the number of dwelling completions in each state during 2018-19 suggests that construction costs in Canberra are around 5.4 per cent higher than the national average (table 6.2). So that the cost estimates reflect the national average cost, CIE has adjusted DCWC's construction cost estimates accordingly.
- DCWC has also provided an estimate of impacts on space of the proposed changes (for example, where the size of new homes needs to expand to incorporate the changes), see table 6.5 below. The net effect of space is the opportunity cost of the additional land required (developers have to buy more land for each new dwelling they create), offset by the value the new home-owner places on the additional space (table 6.8). The assumptions for the net effect of these impacts are noted in table 6.1.

The summary cost results for the three building types in table 6.1 are aggregated from DCWC's cost estimates for five different dwelling types (archetypes) using the following shares:

¹⁹² DCWC 2020, *Accessible housing: Estimated cost impact of proposed changes to NCC*, Report Version V2.2 – 23 December 2020, see Table 2.1 and appendices.

- Apartment buildings consist of 8 per cent of walk-up blocks and 92 per cent of 4+ storey buildings (which would typically include a lift), according to building approval data from ABS (Cat. 8731), and
- Detached houses consist of 57 per cent of volume builds and 43 per cent of custom builds according to DCWC.

6.1 Estimated additional compliance costs

Option	Dwelling	Estimated construction costs (\$ per dwelling)	Adjusted costs ^b (\$ per dwelling)	Net opportunity cost of space (\$ per dwelling)	Total (\$ per dwelling)
Non-exemption properties					
Option 1 (Silver)	Separate house	4 055	3 837	37	3 874
Option 1 (Silver)	Townhouse	4 385	4 150	36	4 186
Option 1 (Silver)	Apartment	3 005	2 843	2 904	5 748
Option 2 (Gold)	Separate house	12 221	11 565	93	11 658
Option 2 (Gold)	Townhouse	17 036	16 121	153	16 274
Option 2 (Gold)	Apartment	11 850	11 214	18 126	29 340
Option 3 (Gold+)	Separate house	15 914	15 060	124	15 184
Option 3 (Gold+)	Townhouse	21 500	20 346	195	20 541
Option 3 (Gold+)	Apartment	16 571	15 681	22 061	37 742
Exempt properties^a					
Option 1 (Silver)	Separate house	3 414	3 231	33	3 264
Option 1 (Silver)	Townhouse	3 397	3 214	33	3 247
Option 2 (Gold)	Separate house	11 280	10 674	91	10 765
Option 2 (Gold)	Townhouse	15 886	15 033	151	15 183
Option 3 (Gold+)	Separate house	14 972	14 168	122	14 290
Option 3 (Gold+)	Townhouse	20 350	19 258	193	19 451

^a Exemptions for level access are applicable to Class 1a buildings only

^b DCWC cost estimates were adjusted by the difference between Canberra and Australia's weighted average construction costs index from Rawlinsons.

Note: Reported opportunity of space costs are derived with assumptions noted in tables 6.4 and 6.5 net of capital value of bigger space noted in tables 6.6

Source: Estimated construction costs is provided by DCWC (2020) which are aggregated by CIE using market shares of each type of building – see text preceding the table; Net opportunity of cost of space is the space impact (provided in table 6.3 below) multiplied by the net opportunity cost of space (provided in table 6.6 below); CIE estimates.

6.2 Cost adjustment

Capital city	Weight (%)	Rawlinson's cost index (Sydney = 1.00)	Adjusted cost index (Canberra = 1.00)
Sydney	26.9	1.00	99.01
Melbourne	32.4	0.92	91.09
Brisbane	20.0	0.91	90.10
Perth	10.4	1.00	99.01
Adelaide	6.7	0.99	98.02
Hobart	2.1	0.98	97.03
Canberra	1.1	1.01	100.00
Darwin	0.4	1.15	113.86
Total/weighted average	100.0		94.63

Source: Rawlinson's Australian Construction Handbook 2019, p.911, CIE.

The updated estimates of additional construction costs are higher than those prepared for the Consultation RIS due to the following main reasons:

- More stringent requirements are included in the proposal, for example single step entry is replaced by step-free access; door width, corridor width and internal door size are increased
- New cost items considered in response to feedback during consultation; for example waterproofing for removable shower screen, and
- Different consideration given to the approach to complying with some of the new requirements; for example, changed share of owner/developer electing to use cavity slider doors for main bathroom at ground floor level/entry level, assumed ply bracing changed from set flush to full height for the reinforcement of bathroom walls.

For more details please see the accompanying costing report prepared by DCWC.

Table 6.3 compares additional construction cost estimates by DCWC with some estimates provided by responses received during public consultation. DCWC estimates are within the range of and closer to the lower end of those other estimates.

6.3 Comparison of estimated additional construction cost to achieve relevant standard in new build

Source of costs	Silver (\$ 000)	Gold (\$ 000)	Gold+ (\$ 000)
DCWC ^a	3.8	12.8	16.9
WA Government social/comm housing	0.6-2.5	-	-
Murphy Homes (reported by P2P QLD)	3	-	-
Community Housing Industry Association (CHIA)	5.4-6	27	-
Individual HIA member	15		
A home builder ^b	-	20 ^b	-
Meriton		36.5-41	

Source of costs	Silver (\$ 000)	Gold (\$ 000)	Gold+ (\$ 000)
HIA members (summary across members)	5-40 ^c	5-40 ^c	
Industry members	>55 ^c	>55 ^c	

^a weighted average across dwelling types

^b upgrade home to AS128.1

^c It's unclear which standard-level these estimates refer to

Note: Basis of estimates (houses, apartments) vary across submitters and in some cases it is not clear

Source: CIE based on DCWC and submissions

The estimated aggregate costs over time are calculated by multiplying these per dwelling cost estimates by the number of dwellings expected to be built as projected and shown in chart 5.2 in the previous chapter).

Additional construction costs

A key challenge in estimating the additional costs associated with complying with the proposed standards is sufficiently capturing variation across dwellings. While it is difficult to capture all of the variations, it is important that the estimates are broadly representative of the additional costs across dwellings.

Approach to costings

The ABCB engaged DCWC to prepare estimates of the additional cost of meeting the proposed accessibility standards. DCWC has estimated the additional costs for 5 different dwelling archetypes:

- 2 separate houses (Class 1a dwellings), including:
 - a 'custom built' house
 - a typical volume builder house
- a townhouse (Class 1a dwelling)
- 2 apartments (Class 2 dwellings), including
 - an apartment in a 3-storey 'walk-up'
 - an apartment in a 4+ storey building (which would typically include a lift).

To account for the variation across buildings within each building type (archetype), DCWC estimated the weighted average cost of complying with each design element covered by the relevant standard. DCWC:

- identified a range of scenarios (reflecting the current levels of compliance under the baseline, e.g. non-compliant, Silver compliant, or Gold and Gold+ compliant, and different ways to achieve compliance at these levels)
- estimated the cost of complying with the relevant standard under each scenario
- estimated the share of dwellings that are represented by each scenario (these estimates were used as weightings to estimate the weighted average cost across the various scenarios) for each design element in each archetype.

DCWC cost estimates

DCWC has provided detailed cost estimates and discussion in their accompanying report.¹⁹³

Space-related costs

Several accessible design elements have the effect of widening entry passages and increasing garages and bathroom sizes, compared to existing practice.

There are generally two ways that these additional space requirements could be accommodated:

- Expanding the footprint of the building – this means the additional space must come from either:
 - a loss of outdoor (garden) space, or
 - an increase in lot size/width, which implies fewer lots in any given development area. This would mean that the value of the additional lots would be foregone.
- Accommodating the additional space requirements within the existing footprint of the building — this implies a loss of living (or bedroom) space, for example.

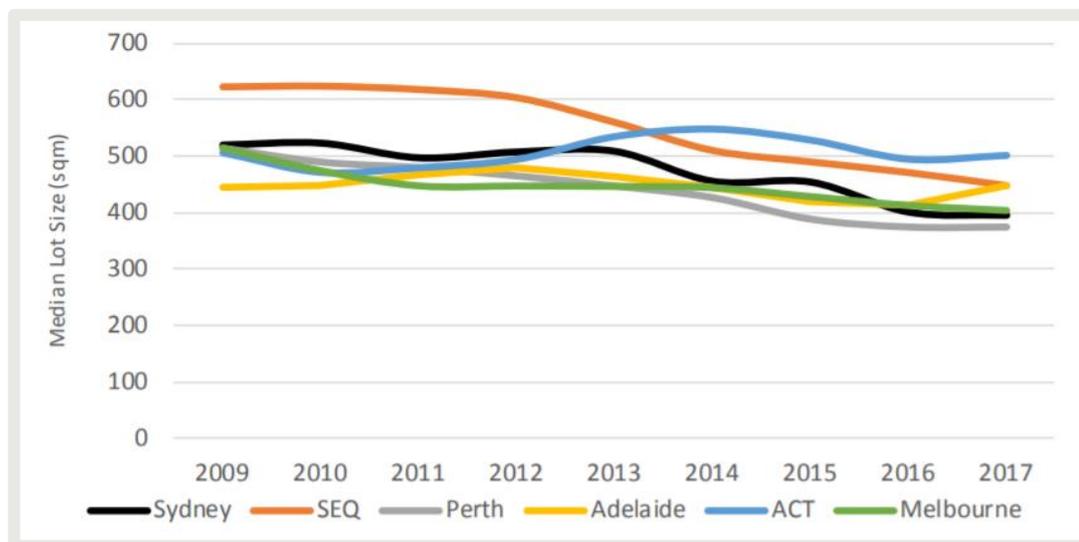
For Class 1a separate dwellings, increasing the building footprint to accommodate accessible design elements may be possible on larger lots. However, there may be more significant impacts on some smaller lots.

- There has been a recent trend towards smaller lots for greenfield housing (chart 6.4).
- Submissions suggest that ‘every millimetre’ is utilised to achieve an affordable product in multiunit and townhouse developments.¹⁹⁴

¹⁹³ DCWC 2020, *Accessible housing: Estimated cost impact of proposed changes to NCC*, Report Version V2.2 – 23 December 2020

¹⁹⁴ For example, see Anonymous Submission 0808182020, accessed 11 November 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

6.4 Median lot size



Data source: Urban Development Institute of Australia, State of the Land 2018, National Residential Greenfield and Multi-Unit Market Study, p. 11.

Consequently, it may not always be possible (or straightforward) to increase the building footprint.

- This could mean that some commonly used dwelling designs may not be possible on smaller lots, resulting in less-preferred designs, such as designs with smaller living (or other) areas to offset increased floorspace elsewhere to meet minimum accessibility standards.
- Alternatively, developers and planning authorities may need to widen lot sizes to accommodate accessible dwellings, leading to fewer lots on a given subdivision. This could also have the effect of reducing the viability of some developments because fewer lots would be offered and thus there would be less revenue.
- Even when it is possible to expand the footprint of the building on a smaller block, this would reduce the (already limited) outdoor space.

These space requirements may also affect some apartment developments and multi-dwelling townhouse developments. As with separate Class 1a buildings, creating additional space in the dwelling to comply with the minimum standards would require either:

- offsetting reduction in floor space in other interior spaces (such as living areas), reducing amenity and possibly impacting on the value of the dwelling;
- fewer dwellings within a given building envelope (for apartments) or subdivision area (for townhouses). As above, this could affect the viability of some developments because sale price increase per dwelling would not offset the loss of the number of dwellings.

Estimated impact on space

DCWC's estimates for the space impacts are noted in table 6.5.

6.5 Estimated space impacts of complying with proposed changes to NCC

Option	Building	Estimated space impacts (m ²)	Share of dwelling footprint (per cent)
Option 1 (Silver)	Separate house	1.5	1.0
Option 1 (Silver)	Townhouse	1.4	1.4
Option 1 (Silver)	Apartment	0.8	0.6
Option 2 (Gold)	Separate house	3.7	2.4
Option 2 (Gold)	Townhouse	6.1	5.8
Option 2 (Gold)	Apartment	4.7	4.0
Option 3 (Gold+)	Separate house	4.9	3.2
Option 3 (Gold+)	Townhouse	7.8	7.4
Option 3 (Gold+)	Apartment	5.8	4.9

Source: DCWC (2020), Table 2.2.

Valuing the space impacts through the marginal value of land for Class 1a buildings

As outlined above, one way to achieve additional internal space required to comply with the proposed standards is to expand the footprint of the building (such as through the loss of outdoor/garden space). These space impacts can be valued through estimating the marginal value of land. The marginal value of land reflects the willingness to pay for an additional square metre of land.

- A recent Reserve Bank of Australia (RBA) Research Discussion Paper estimated the price elasticity¹⁹⁵ of demand for land with respect to lot size in Sydney, Melbourne, Brisbane and Perth. These elasticities can be interpreted as the percentage increase in the sale price of a property for a 1 per cent increase in the size of the lot.
- Based on approximate median greenfield lot sizes in capital cities reported in the Urban Development Institute of Australia's State of the Land 2019 report, a 1 m² increase in the footprint of the building is equivalent to a 0.2 to 0.3 per cent reduction in the median lot size.
- This implies a 0.05-0.06 per cent reduction in property values. Based on the median house prices, this implies a weighted average opportunity cost of land equivalent to around \$500 per m² (table 6.6).

Note that the implied cost per square metre is significantly lower than the average price of land in some cities. The RBA attributes this gap to land use restrictions (such as zoning).

¹⁹⁵ This price elasticity is the percentage change in land price with respect to (divided by) the percentage change in lot size. For example, an elasticity of 0.24 means that, for one per cent increase in the lot size, the land price would increase by 0.24 per cent.

6.6 Estimated marginal cost of land

City	Elasticity	Median greenfield lot size ^c (m ²)	1 m ² reduction in lot size (per cent)	Implied reduction in property value ^e (per cent)	Median property value ^f (\$'000)	Cost of lost space (\$ per m ²)
Sydney	0.24 ^a	379	- 0.26	- 0.06	1 142.2	- 723
Melbourne	0.25 ^a	400	- 0.25	- 0.06	902.0	- 564
Brisbane	0.21 ^a	385	- 0.26	- 0.05	577.7	- 315
Perth	0.24 ^a	375	- 0.27	- 0.06	537.0	- 344
Adelaide	0.24 ^b	425	- 0.24	- 0.06	542.9	- 300
Hobart	0.24 ^b	507	- 0.20 ^d	- 0.05	530.6	- 246
Canberra	0.24 ^b	507	- 0.20	- 0.05	788.6	- 366
Darwin	0.24 ^b	507	- 0.20 ^d	- 0.05	509.5	- 236
Weighted average						- 506

^a From 'Large Equation' reported in Kendall and Tulip (2018, p. 9). ^b As Kendall and Tulip (2019) estimated the elasticities for Sydney, Melbourne, Brisbane and Perth only, the elasticities for the other cities were based on the average across Sydney, Melbourne, Brisbane and Perth. ^c Approximate values taken from UDIA (2019, pp. 14-15). ^d Median lot sizes were not reported for Darwin or Hobart. It is assumed that median lot sizes would be similar to Canberra. ^e Reduction in lot size multiplied by the elasticity. ^f From Domain House Price Report – December 2019, <https://www.domain.com.au/research/house-price-report/december-2019/#sydney>, accessed 29 January 2020.

Source: Kendall, R. and Tulip, P. The Effect of Zoning on Housing Prices, Reserve Bank of Australia Research Discussion Paper RDP 2018-03, March 2018, p. 9; Urban Development Institute of Australia, State of the Land 2019, National Residential Greenfield and Apartment Market Study, pp. 14-15.

As also noted above, rather than expanding the building's footprint, the additional space requirements for functional space could be accommodated within the existing building footprint through reducing the size of living areas or bedrooms. This is, in effective, loss of internal space.

During consultation, some stakeholders suggested that the loss of internal floor space can be overcome through better design. That is, the loss of amenity associated with a loss of internal floor space in living areas can be minimised through better design. Although this is a reasonable position, CIE considers it unlikely that these amenity costs can be completely 'designed away'. In CIE's view, the loss of space is a real cost that should be included in the CBA.

CIE considers that it is reasonable to infer that the costs associated with a loss of internal space would be of a similar magnitude to the increase in construction costs and the loss of garden space in a scenario where the building footprint expands.

- The footprint of the building relative to the size of the lot is effectively a trade-off between indoor and outdoor space. Subject to planning constraints (such as setback requirements), CIE would expect that an owner would choose a building footprint to the point where the marginal benefit of additional internal floor space (i.e. the additional value from the last square metre of floor space) is equal to the marginal cost (the marginal cost of additional floor space is the associated construction costs plus the value placed on the loss of outdoor space).
- This implies that if the balance between internal and external space is optimised under the baseline (i.e. under status quo requirements), the total cost of expanding the

building's footprint to meet the proposed accessibility standards would be similar to the loss of amenity associated with smaller living spaces.

- **The additional construction costs plus the value of land in a scenario where the building footprint expands is likely to be a reasonable indicator of costs, regardless of whether the building footprint expands or additional space requirements are absorbed internally.**

Valuing the loss of living space in apartments

For apartments, it is likely that the footprint of the building would occupy as much of the lot as is permitted by planning restrictions. Consequently, there is likely to be little scope to expand the overall footprint of the building, implying that additional space requirements for functional spaces (bedrooms, kitchen and bathrooms) would come at the expense of living space. Consistent with this, DCWC has assumed that the additional space required for accessibility purposes is achieved by reallocating space within an existing apartment.

One way to value the loss of living space in apartments is to treat it as an effective reduction in the size of the apartment (assuming that the initial balance between living and functional spaces is optimised under the baseline scenario). Based on current apartment prices and an estimated average size of a new apartment, it is estimated that the weighted average price per square metre (weighted by apartment completions) is around \$4 500 (table 6.7).

6.7 Average price per square metre - apartments

City	Median apartment price ^a (\$)	Average apartment size ^b (m ²)	Average cost per square metre (\$ per m ²)
Sydney	735 387	130	5 679
Melbourne	549 701	131	4 196
Brisbane	377 549	126	3 008
Perth	342 708	123	2 786
Adelaide	306 327	152	2 011
Hobart	441 104	130	3 398
Canberra	455 537	96	4 755
Darwin	286 249	155	1 853
Weighted average			4 517

^a From Domain House Price Report – December 2019, <https://www.domain.com.au/research/house-price-report/december-2019/#sydney>, accessed 29 January 2020. ^b CommSec, Australian home size hits 20-year low: CommSec Home Size Trends Report, Economic Insights, 17 November 2017, https://www.commsec.com.au/content/dam/EN/ResearchNews/ECOREport.20.11.17_Biggest%20homes_size-fall.pdf, accessed 30 January 2020.

It may be a more accurate measure of the amenity costs of losing living space to consider the *marginal* value of floor space, rather than the *average* value which implies all areas are equally valued. The marginal value represents the cost of losing that particular space, rather than just a per square metre average based on the value of the space in its entirety. However, there are few relevant studies that estimate the marginal value of floor space in apartments.

Two studies by the Secret Agent (a buyers' advocate based in Melbourne) for a broader study on the economic impacts of Melbourne's apartment design guide by SGS Planning and Economics¹⁹⁶ estimated the marginal value of apartment space for apartments in inner Melbourne.

- The first study estimated that the marginal value of additional floor space was around \$6 200 per m².
- A second study, where the sample was restricted to apartment buildings that were 4 storeys or less, estimated the marginal value of additional floor space was around \$3 900 per m².

The lower estimate was broadly consistent with the average price per square metre at the time, suggesting that the average price per square metre is a reasonable indicator of the marginal value of apartment space.

Capital value of more space

As discussed in chapter two, Dalton and Carter (2020a,b) suggested that the CBA in the Consultation RIS did not capture the 'utility in use' or capital value of the additional space and this should be included in the analysis in addition to the benefit of improved functionality.¹⁹⁷ Dalton and Carter (2020a,b) suggest that the capital value would be equivalent to the opportunity cost of the additional space.

Extra space in functional areas of a home would increase the value of the home only if it provides additional or utility in use (sometimes referred to as amenity) that is valued by the market (the main market failure leading to an undersupply of accessible dwellings is that the market undervalues the functional benefits of accessibility). CIE has found minimal direct evidence to support this proposition, and notes the following:

- Master Builders Australia's submission to the Consultation RIS suggests that Silver-level features do not necessarily improve amenity. The submission refers to the experience of a builder displaying Silver-level homes at a major display village. The submission notes that:¹⁹⁸
 - the public were left confused with a negative impression of the builder's design
 - if the sales consultant does not effectively explain LHDGs (i.e. oversized powder rooms etc.) buyers walk away questioning their designs.
- Hedonic pricing ¹⁹⁹studies using property value typically include a range of variables that have a significant impact on property values (as control variables). These studies

¹⁹⁶ SGS Economics and Planning 2016, *Economic analysis of the Better Apartments initiative*, Final report, Prepared for Department of Environment, Land, Water and Planning and the Office of the Government Architect, Appendix C: Secret Agent Study Part 1 and 2, 18 November 2016.

¹⁹⁷ Professor Bruce Bonyhady and Dr Di Winkler, op.cit. Summer Foundation and MDI submission, Appendix 1, and Supplementary submission

¹⁹⁸ Submission by Max Rafferty for Master Builders Australia, pp. 5-6, accessed 7 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

¹⁹⁹ The hedonic pricing method uses statistical models to link the price of a product to the product characteristics.

rarely include the accessibility features provided under the NCC proposal (such as additional space in bathrooms, toilets, kitchens and hallways).²⁰⁰ This suggests that these features are not a major influence on property prices.

- The evidence from the stated preference survey does not support the proposition that buyers value the additional floor space under the NCC proposal highly. Holding constant accessibility features and the proportion of floor space used for functional versus living areas, the value of the additional spaces provided to comply with the proposed NCC requirements is not statistically significantly different from zero (z values are between 1.5 and 1.9 depending on the models used). In other words, the statistical evidence does not support additional capital value in addition to the functionality benefits.
- Furthermore, there is no particular reason why these benefits would equal the additional cost. Indeed this is likely to be an extreme upper bound estimate; if the utility in use benefits were higher than the cost of the additional space, logically more people would choose designs that incorporate these features.

CIE acknowledges that there may be some ‘utility in use’ benefits from the additional space that would be provided under the proposed change to the NCC in addition to the functionality benefits already estimated; in principle, more space would be preferred to less space (all else being equal).

Although not statistically significant, the ‘use value’ WTP for a 5 per cent increase in floor space, holding constant accessibility features and proportion of floor space used for functional versus living areas, is estimated at \$376 per year for buyers and \$288 per year for renters.

The average size of newly built houses and apartments is about 230.8 m² and 124.8 m², respectively.²⁰¹ Assuming a life span of 50 years for a dwelling and a discount rate of 7 per cent, the annual WTP for a 5 per cent increase in floor space suggests that the capital value in addition to the functional value of additional space is \$481/m² for detached houses and \$682/m² for apartments (table 6.8)

Net opportunity cost of space

In summary, the net opportunity cost of the space impacts is estimated at \$25/m² for separate houses and townhouses and \$3 836/m² for apartments (table 6.8).

²⁰⁰ See for example, Wing, C.K. and T.L. Chin 2003, ‘A Critical Review of Literature on the Hedonic Price Model’, *International Journal for Housing Science and Its Applications*, 27(2), p.145-165; Gilbert, S.W. 2013, *Applying the Hedonic Method*, NIST Technical Note 1811, National Institute of Standards and Technology.

²⁰¹ CommSec 2018, “Australian home size hits 22-year low: CommSec Home Size Trends Report”, *Economic Insights*, 16 November 2018, https://www.commsec.com.au/content/dam/EN/ResearchNews/2018Reports/November/ECO_Insights_191118_CommSec-Home-Size.pdf

6.8 Net opportunity cost of space impacts

Type of house	Opportunity cost (\$/m ²)	Capital value (\$/m ²)	Net opportunity cost (\$/m ²)
Separate house	506	481	25
Townhouse	506	481	25
Apartment	4 517	682	3 836

Source: CIE

Additional cost of verifying compliance

As the proposed accessibility standards in the NCC would be new requirements, additional time would be required for building certifiers/surveyors to verify compliance, which would incur an additional cost.

This additional verification cost would not be avoided even if exemptions are granted for certain sites and designs. Exemptions are only related to a level access requirement for Class 1a buildings, therefore a verification cost for other requirements would still be applicable.

The specific requirements to demonstrate compliance with the NCC requirements will be applied through existing State/Territory building legislation, rather than through the NCC, consistent with the approach taken for all other NCC requirements.

In general, stakeholders had a range of views on approaches to verifying compliance with the proposed accessibility requirements. The rigour of the verification process would affect the associated costs. It is also likely that the level of compliance would be affected; however, this has not been taken into account in the CBA (i.e. it is implicitly assumed that all new dwellings would be built to comply with the proposed standard).

As such, these costs will depend on state/territory government requirements, as well as certification practices of building surveyors.

The proposed accessibility standard could be verified through an assessment from a third-party accessibility expert (such as an accredited LHA assessor). Under this scenario, the costs of existing compliance mechanisms, the costs associated with obtaining LHA design assessment, may be a reasonable indicator of the additional cost.

LHA published a fee guide for design assessment and as-built inspection:²⁰²

- Desk audit fee – \$200 to \$500 per design plus GST, and
- As-built inspection fee – \$150 to \$650 per dwelling plus GST.

This suggests that the as-built inspection by a third-party assessor could cost, on average, \$440 including GST.

²⁰² Livable Housing Australia 2013, *Applicant Information: Work with us to create more comfortable, versatile and accessible homes for everybody, everyday, at all stages of life*, July 2013, p.6. <http://livablehousingaustralia.org.au/library/help/03-Applicant-Information.pdf>, accessed 4 December 2020.

Alternatively, the verification would involve the building surveyor reviewing the plans and/or conducting inspection to ensure compliance. Under this scenario, the additional assessment costs are likely to be relatively modest. According to the Australian Institute of Building Surveyors,²⁰³

- Additional time of assessing the design could range between 5 and 30 minutes.
- Alternatively, an additional inspection could potentially be required to verify a dwelling complies with the proposed standard. This could potentially be mandated through state and territory government legislation or be incorporated into the standard practice of building surveyors.

While the hourly rate charged by building surveyors will vary across companies, \$150 per hour is an indicative average rate.²⁰⁴ This suggests that additional reviewing time may cost between \$12.50 and \$75 with an average of \$43.75.

As for the additional inspection, it was estimated that the cost is \$200 per inspection by CIE when preparing the BCR evaluation.²⁰⁵

Given the approach to verifying compliance with the proposed accessibility standards is unclear, CIE estimates the additional verification costs under a range of approaches.

- The lower bound scenario is based on the average cost of additional time of reviewing the design
- The central case scenario is based on the cost associated with the additional inspection by building surveyors, and
- The upper bound scenario is based on an as-built inspection by a third-party expert (similar to LHA).

Based on the above discussion, it is estimated that the present value of additional compliance verification cost could be between \$63.5 million and \$639.1 million over a 10-year regulatory period with a discount rate of 7 per cent for Options 1 to 3, and between \$18.3 million and \$184.4 million for Option 4 (table 6.9).

6.9 Additional compliance verification cost

	Unit cost	Option 1	Option 2	Option 3	Option 4	Option 5
	\$/dwelling	\$m	\$m	\$m	\$m	\$m
Low	43.75	63.5	63.5	63.5	18.3	0
Central	200	290.5	290.5	290.5	83.8	0
High	440	639.1	639.1	639.1	184.4	0

Note: Additional compliance verification costs (for Options 1 to 5) are evaluated in net present value terms over the 10-year regulatory period, using a discount rate of 7 per cent.

Source: CIE.

²⁰³ Jeremy Turner, pers com., 9 February 2021.

²⁰⁴ CIE 2020, *Building Confidence Report: A case for intervention*, report prepared for the Australian Building Codes Board, p.81.

²⁰⁵ CIE 2020, op. cit., p.85.

Transition costs

Transition costs include:

- The cost incurred by volume builders, such as re-designing their standard offerings
- Costs associated with industry professionals learning and understanding the new requirements.

Transition costs for volume builders

Volume builders typically have a 'standard offering' of a range of designs for consumers to choose from. During consultation, industry stakeholders noted that most standard offering designs do not comply with the proposed standards. Consequently, volume builders will need to re-design their standard offerings. Additional costs include:

- The costs associated with re-designing the standard offering
- Costs associated with re-building compliant display homes.

These costs could be alleviated through a transitional period (in the NCC or State/Territory regulations) which would allow industry to incorporate the required design changes into their normal cycles for updating standard designs and selling and replacing former display homes.

Retraining costs for industry practitioners

As the proposed changes to the NCC are significant, both government and industry would incur some one-off costs associated with raising awareness of the changes and re-training. It is estimated total retraining costs would be around \$28.47 million (including \$721 000 to government and \$27.745 million to industry – for more details see discussion below).

Costs to government

Transition costs to government are estimated to be \$721 000 (see table 6.10)

- These costs reflect: (1) to assist with the transition to the new code, it is assumed the ABCB would prepare a range of guidance material, and (2) the cost to the ABCB or other government bodies for organising and running seminars that educate relevant stakeholders on the changes.
- For a Decision Regulatory Impact Statement for proposed changes to the NCC relating to energy efficiency in commercial buildings, total transition costs to government were estimated at \$355 000. In that analysis, CIE estimated that around 26 000 individuals would require retraining. For the current changes to the NCC relating to accessibility, it is estimated that around 53 000 individuals would require retraining. It is therefore estimated that government transition costs would be around \$721 000 (\$355 000 multiplied by the ratio of 53 000 to 26 000)

6.10 Transitional costs to government

Changes to NCC	Estimate (\$000)
Estimated costs for accessibility changes (current)	721

Source: CIE.

Costs to industry

Industry stakeholders will also incur one-off costs associated with familiarising themselves with the new code requirements. It is estimated that the time costs associated with familiarising themselves with the relevant aspects of the new code would be \$27.7 million (see table 6.11), which is based on assumptions that follow.

6.11 Estimated number of individuals to be retrained and retraining costs

Profession/trade	People to be retrained ('000)	Total time costs (\$'000)
Construction managers	41	23 560
Architects/building designers	11	3 522
Certifiers/surveyors	2	663
Total	53	27 745

Source: CIE estimates.

Assumptions underpinning estimated industry retraining costs

Stakeholders that will require retraining due to changes in the code include individuals in the following professions/trades, who work in (or provide services to) the residential building industry:

- Construction managers
- Architects/building designers
- Certifiers/surveyors

Number of construction managers who require re-training

CIE estimates there are 40 876 construction managers in 2019 who would require retraining, as follows (see table 6.12).

- There were 71 817 construction managers at September 2016, according to Census data. Using employment growth in the equivalent occupation in ABS Cat. 6291, these data were grown to 2019.
- Census data indicates whether these individuals work in residential construction, non-residential construction, heavy and civil engineering construction or construction services. It is assumed individuals who work in residential construction and the sub-sector of residential construction services would require retraining. The share of individuals who work in construction services which services residential construction is assumed to be employment in residential construction as a share of residential construction, non-residential construction and heavy and civil engineering construction. These are 40 876 construction managers.

6.12 Construction managers

Item	Total in 2016	Total in 2019	Who do not require training ^a	Who do require training
Data source	Census data	CIE estimates (using ABS Cat 6291)	CIE estimates (using Census data)	CIE estimates (using Census data)
Construction managers	71 817	75 442	34 566	40 876

Source: CIE estimates, sources as noted.

Number of architects and certifiers and surveyors that require retraining

The occupation details in the Census data are not sufficient to count architects and certifiers/surveyors (the Census only provides data on ‘architects and landscape architects’ and ‘Architectural, Building and Surveying Technicians’).

ABCB data indicates there are 32 905 architects and 5 731 certifiers/surveyors who are subscribers to the NCC.

Census data cannot be used to estimate how many of these individuals provide services to residential construction or to other types of construction (only data on their industry of employment is provided).

Data in the ABS Input-Output Tables (Cat. 5209) suggest that the industry ‘Professional, Scientific and Technical Services’ (which employs architects and certifiers) provided \$2 931 million dollars of output to the residential construction, non-residential construction and heavy engineering and civil construction industries in 2016-17, of which \$940 million (32 per cent) was provided to residential construction. Therefore, it is assumed that 32 per cent of architects (10 533 individuals) and 32 per cent of certifiers/surveyors (1 723 individuals) provide services to residential construction and would therefore require retraining.

Time costs incurred by individuals who require retraining

It is estimated that each individual who requires retraining would require 9.5 hours of retraining (attending a 2 hour seminar/webcast, 3.75 hours of continuing professional development, and 3.75 hours of self-paced learning), based on another RIS.²⁰⁶ The assumption is adopted because retraining is required for similar changes to the NCC.

It is assumed that these time costs are additional to other training that occurs. This can be interpreted literally: this retraining time is added onto any other training that would otherwise occur. Alternatively, where the retraining *replaces* other training that would have occurred, these time costs are retained as the value of the training which is lost.

²⁰⁶ CIE 2018, *Decision Regulation Impact Statement Energy Efficiency in Commercial Buildings*, Prepared for ABCB, 20 November 2018, p.88-89

Opportunity cost of time

CIE's estimates of the hourly earnings of individuals in the relevant professions/trades, excluding taxation, are shown in table 6.13. CIE has adjusted the underlying ABS data.²⁰⁷ It is assumed that this data represents the opportunity cost of the relevant individuals' time.

6.13 Assumptions for hourly earnings in relevant occupations

Profession/trade	Hourly earnings (\$/hour)
Construction managers	61
Architects/building designers	35
Certifiers/surveyors	41

Source: CIE estimates

Total time costs

The cost of the time of individuals for retraining is the estimated hours for retraining multiplied by the opportunity cost of the individual's time.

Subsidies

One indicator of the level of subsidy that would be required to encourage the private sector to offer more accessible rental properties is the pricing for SDA.

CIE estimates the subsidy required in the following way.

- The estimates start with SDA rates for different types of residences (averaged across new buildings and existing stock). The estimates are based on the SDA 'Fully Accessible' standard with no onsite overnight assistance.
- The rental payment SDA participants would be required to pay (based on 25 per cent of the Disability Support Pension) is then added to the above estimates.
- As it is assumed that participants in the proposed subsidy program would pay market rent, the estimated market rent (based on the weighted average median rent across capital cities) is then subtracted.

²⁰⁷ From ABS Cat. 6306, data for May 2018 on total hourly cash earnings is available for the occupations: construction, distribution and production managers (which are used for construction managers), architects, designers, planners and surveyors (architects), and building and engineering technicians (certifiers). These data are grown forward to 2019 using nationwide WPI. ABS Cash earnings data is a gross amount that includes superannuation and taxation. Taxation is excluded as it is a transfer to government (not a cost). The data are multiplied by 0.8, which is equivalent to assuming each of these individuals has an average tax rate of 20 per cent.

6.14 Estimated subsidy

Dwelling	Average SDA subsidy (\$)	SDA subsidy plus rent (\$)	Market rent (\$)	Subsidy (\$)
Separate house	19 563	28 117	23 052	5 065
Townhouse	19 711	28 265	23 052	5 213
Apartment	40 016	48 570	21 838	26 732

Source: National Disability Insurance Scheme, Specialist Disability Accommodation, Price Guide (2019-20), 28 October 2019.

The subsidy is targeted at private renters whose accessibility needs are not currently met. These cost estimates are applied to the assumed uptake profile shown in chart 5.1 in Chapter five.

Flow-on impacts of higher construction costs

Impact on housing price

A flow-on impact of the higher costs associated with complying with the new requirement in the NCC is the impact on housing price and housing affordability.

It should be noted that housing price is determined by many supply and demand factors, among which construction cost is only one factor.

From the supply side, land availability, which is in turn affected by planning regulations, has an impact on housing price. Construction costs, which are affected by the labour and material markets and technological progress, also affects the housing price.

From the demand side, population growth, income growth and preference change are the most important factors affecting the housing price.

Table 6.15 reports the increase in construction cost, space impacts and compliance verification cost as a percentage of the average housing price in capital cities. The percentage varies from slightly higher than a half of one per cent to 11.6 per cent, depending on the level of changes in the NCC, housing type and the location.

6.15 Additional construction cost as percentage of average housing price

	Silver		Gold		Gold+	
	House	Apartment	House	Apartment	House	Apartment
	%	%	%	%	%	%
Sydney, NSW	0.48	0.88	1.44	4.22	1.85	5.43
Melbourne, Vic	0.62	1.15	1.87	5.53	2.39	7.10
Brisbane, Qld	0.87	1.63	2.60	7.80	3.33	10.02
Adelaide, SA	0.99	1.87	2.96	8.95	3.80	11.49
Perth, WA	0.92	1.67	2.75	8.00	3.53	10.28
Hobart, Tas	1.02	1.89	3.06	9.05	3.92	11.63
Canberra, ACT	0.69	1.49	2.05	7.14	2.63	9.17

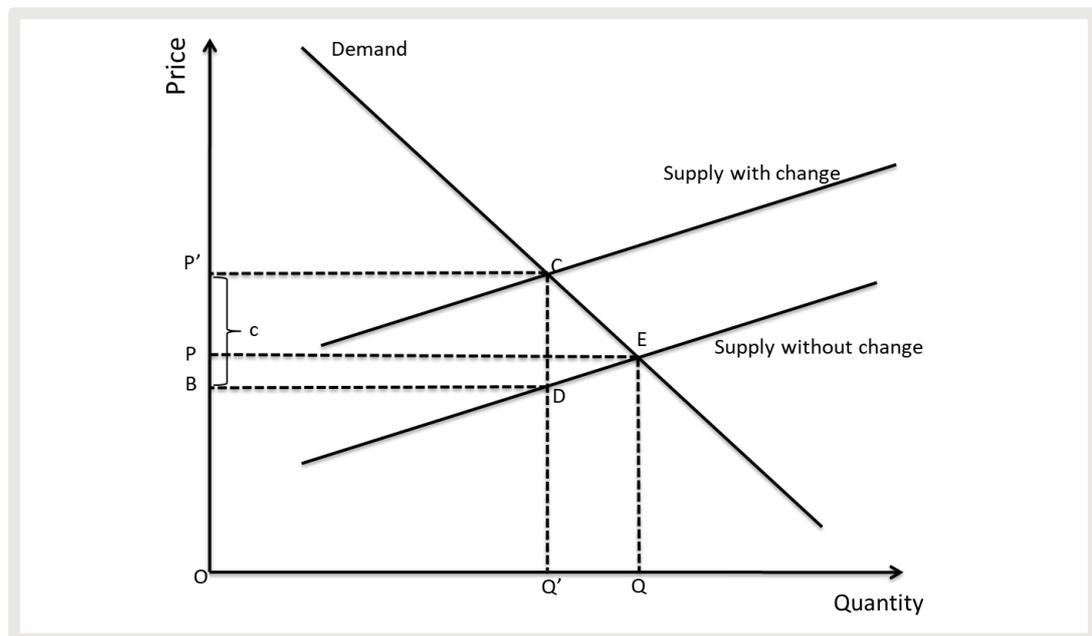
Source: CIE calculation based on DCWC costing and space impact, compliance verification costs (central estimate) and capital city housing price (<https://www.livingin-australia.com/australian-house-prices/>)

This however does not suggest that the housing prices would increase by the same percentage as shown in table 6.15.

In a typical supply-demand model, the higher cost would be partly absorbed by the suppliers and partly passed onto consumers. The magnitude of costs passed on is determined by the supply and demand elasticities.

As illustrated by chart 6.16, the proposed changes would increase the construction cost by c , shifting the supply curve up by that amount.

6.16 Illustration: price impact of increased supply cost



Data source: CIE.

Without the change, the housing price is P and the housing supply is Q . With the proposed change, housing price and supply become P' and Q' , respectively. The increase in price ($P'P$) is less than the cost increase (c), the balance of the full cost increase (PB) is absorbed by the suppliers.

In this particular case, the supply is more elastic than the demand, that is, it is easier for producers to adjust production in response to price change than consumers to adjust their demand. As a result, it is easier for suppliers to pass the higher cost on to consumers. By contrast, if the demand is more elastic than the supply, more of the cost increase would be absorbed by the industry.

In urban areas especially metropolitan areas, land for new housing development is scarce and thus the housing supply is more inelastic, suggesting that more of the cost increase due to the proposed changes in the NCC would be absorbed by the industry and less would be passed on to consumers. For example, as CIE found for the Infrastructure Contributions Review by the NSW Productivity Commission, land prices hold a substantial premium over the opportunity cost of the land for its next best use due to land

use regulations. This means higher infrastructure contributions, or higher construction cost in general, would be reflected in lower land values (reduced land price premium) rather than higher housing prices.²⁰⁸

In other regions where land for housing development is less scarce, relatively more of the construction cost increase due to the proposed changes in the NCC is likely to be passed on to housing price. All other things being equal, the impact on housing price could be closer to the full amount estimated. While it is not possible to definitely state the quantum or scale of an impact on house prices, the impact could be higher in this case.

Another factor that would further limit the overall housing price increase is that the proposed regulatory Options would likely increase construction costs of new dwellings only. As new dwellings account for a small share of total housing the overall impact on housing price is less observable due to 'averaging out'.

Competition impact

Competition effects of a regulation can be assessed against the following aspects:

- imposing barriers to entry, exit, or innovation
- restricting consumer choice
- raising prices, and
- reducing overall economic efficiency and productivity.

The proposed accessible requirement for residential buildings in the NCC would have minimal additional impact on competition.

Although the proposed changes in the NCC would favour existing architects, designers, developers, builders and certifiers with accessibility expertise, they do not impose any barriers for relevant players to enter or exit the market. Those who do not have the relevant expertise could improve their competitiveness through retraining. As discussed above, the retraining costs for industry practitioners are estimated at \$27.7 million.

With respect to consumer choice, these requirements lead to more features in new dwellings provided to consumers and as such these requirements do not restrict consumer choice per se (although some consumers without accessibility needs may not appreciate these additional features and place a low value or no value on them).

There may be some restriction in consumer choice with respect to house designs that may be more difficult to build following the introduction of proposed accessible requirements in the NCC. For example, split level homes, those incorporating mezzanines, pole homes and traditional Queenslanders do not lend themselves to being very accessible by the nature of their design. This restriction of consumer choices is intended to be alleviated through the exemption clauses to be included in the NCC.

²⁰⁸ CIE 2020, *Evaluation of infrastructure contribution reform in New South Wales*, report prepared for NSW Productivity Commission, December 2020, Chapter four, p.39-59,
<http://productivity.nsw.gov.au/sites/default/files/2020-12/Evaluation%20of%20Infrastructure%20Contributions%20Reform%20in%20NSW.pdf>

Impact on housing prices has been discussed above. Overall, the price impact of the new requirements in the NCC is highly dependent on the housing type and location. It could be small in metropolitan areas where the supply is more inelastic due to land use regulations. In other places the impact could be larger. It is not possible to definitively state the quantum or the scale of the impact.

Other than the cost estimates presented above, there would be no loss of economic efficiency and productivity. The additional costs arise from the additional requirements, that is, to provide more features. In measuring the productivity as resource costs per 'feature' or 'functionality', the proposed changes would not reduce productivity.

7 *Estimating the benefits*

This chapter sets out the approach to estimating the benefits of each of the options.

General approach to estimating the benefits

In the Consultation RIS, CIE estimated the benefits generated by each of the options using two different approaches.

- The central approach was based on an estimate of the extent to which the proposed changes to the NCC (and other options) would be expected to address the extent of the problem (see chapter three).
- The alternative approach was based on estimates of household willingness to pay for various accessibility features when choosing a home to buy or rent. These estimates were derived from the stated preference survey using questions that offered hypothetical choices between homes with differing accessibility features and rents.

There are inherent uncertainties associated with relying entirely on stated preference surveys. As pointed out by OBPR:²⁰⁹

As a general rule, estimates of individuals' valuations of goods and services derived from observing their behaviour in markets tend to be more credible than those from survey questionnaires (Boardman et al. 2010). Observing purchasing decisions directly reveals preferences, whereas surveys elicit statements about preferences.

Therefore, in this chapter, CIE has adopted a methodology that estimates the benefits for each option based on the extent to which each option will address the problem(s) as defined in chapter three.

Accessibility of the NCC options

The Consultation RIS assumed that:

- Option 1 would meet the needs (and therefore address all of the associated problems) for all people with accessibility issues, except for wheelchair users.
- Options 2 and 3 would meet the needs (and therefore address all of the associated problems) of all people with accessibility needs.

However, feedback from stakeholders during consultations and associated further review of available data suggests these assumptions may not necessarily be an accurate reflection

²⁰⁹ Department of the Prime Minister and Cabinet 2016, *Cost-Benefit Analysis*, Guidance Note, Office of Best Practice Regulation, February 2016, p. 11.

of the benefits created in all circumstances. Stakeholder submissions made the following points:

- A dwelling needs to have all of the relevant features to be ‘accessible’. Under this view, a dwelling is either accessible or it is not (i.e. a dwelling cannot be a ‘bit accessible’). For example, ANUHD (supported by other stakeholders), notes that the features only create benefits when provided as a ‘coherent suite’, not as individual items.²¹⁰
- Option 1 (Silver) does not have all of the relevant features and cannot therefore be considered ‘accessible’. This is reflected in a strong preference for Option 2 over Option 1 (see chapter four).

Together these arguments could be interpreted as meaning that a dwelling that complies with Option 1 would deliver no benefits.

Although some people may require all accessibility features, there is also evidence to suggest that not everyone with accessibility needs require all features provided under the NCC proposal for a dwelling to meet their needs.

- According to the MDI survey, a significant share of respondents rated their dwelling as ‘accessible’ even though the dwelling did not have all of the relevant features.
 - For example, more than 40 per cent of homes were self-rated as ‘accessible’ by people with limited mobility, even though they did not have at least one step-free entrance.
 - Similarly, not all dwellings that were self-rated as accessible had other relevant features (including safe continuous step-free path from the street or parking to the entrance and a hobless shower).
- The SDAC data also suggests that when homes are modified to meet accessibility needs, not all of the features included in the NCC proposal appear to be provided.
 - For example, only 60 per cent of electric wheelchair users and only 20 per cent of people who use walking sticks implement toilet, bath or laundry modifications, (table 7.1).
 - In general the prevalence rate is low. However some types of modifications are more prevalent than others. For example, toilet, bathroom and laundry modifications are the most prevalent, followed by ramps. In contrast, door widening and kitchen modifications have a much lower level of prevalence.

While this data may be consistent with the proposition that some proposed features are not essential, data on modifications must be interpreted carefully because many people who require modifications may be budget constrained (and government subsidy programmes often have strict eligibility requirements), and therefore are not able to make modifications that they want and need.

²¹⁰ Submission by Margret Ward for ANUHD, p.18, accessed 1 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

7.1 Prevalence of modifications, by selected mobility aids

Mobility aid	Toilet, bath or laundry modifications	Ramps	Structural changes	Doors widened	Kitchen modifications
Electric wheelchair	0.6	0.5	0.3	0.3	0.2
Manual wheelchair	0.4	0.3	0.1	0.1	0.1
Walking frame	0.3	0.2	0.1	0.0	0.0
Walking stick	0.2	0.1	0.0	0.0	0.0

Note: Data is drawn from people who live in households, who have a mobility limitation. For each type of mobility aid, for each type of modification, the data is the number of people who implement the relevant modification, divided by the number of people who use the relevant aid.

Source: CIE.

As the above evidence suggests that not all people with limited mobility need all of the accessibility features provided under the NCC, this suggests that Option 1 (Silver) will provide some benefits, even though it is not accessible to all.

Review of the features provided under each option

Table 4.1 in chapter four summarises the features required under the proposal. These features could be grouped by

- dwelling access requirements
- wider internal doorways and corridors
- toilet
- shower
- kitchen and laundry
- space for bedroom on entrance level

This section provides a detailed review of these features with respect to how they help people with disability and older people.

Dwelling access requirements

In general, the dwelling access requirements under all options provide step-free access into the dwelling via either a path from the perimeter of the property or from a parking space. The main differences between the options are as follows.

- Options 2 and 3 provide a wider access path, compared with Option 1 (1 100 mm wide versus 1 000 mm wide)
- Options 2 and 3 provide a wider entrance (850 mm), compared with Option 1 (820 mm).

In principle, step-free access should:

- enable access (unassisted) for:
 - users of some mobility aids (potentially including wheelchair users, users of walking frames, crutches and walking sticks)
 - people unable to lift their feet

- improve safety outcomes by removing a trip hazard.

However, it is not clear that a dwelling that complies with the step-free access requirements under the NCC proposal would provide accessibility for all as explained below.

- Consistent with the LHDG, the proposed NCC access standard under all of the NCC options allows for a 56 mm transition at the entrance.
 - Discussions with accessibility experts²¹¹ suggest that many wheelchair users, users of walking frames and others who are unable to lift their feet may be unable to negotiate a 56 mm transition (unless a ramped threshold is provided).
 - While this issue could potentially be addressed by providing a transition ramp, it is not clear that a 56 mm transition ramp would be accessible for all
 - A 56 mm threshold with a threshold ramp exceeds the maximum entry transition used in some other standards.
 - ... Similarly, the NDIS SDA Design Standards refer to the Australian standard *AS1428.1: Design for access and mobility* (which applies to public buildings) and allows a maximum threshold of 35 mm (and requires a threshold ramp for entrance thresholds between 5 mm and 35 mm).²¹² This applies across all SDA Design categories, including ‘Improved Liveability’ and ‘Robust’, where many features are based on Silver requirements.
 - It is not necessarily the case that a transition ramp would be used in all cases. While it is reasonable to assume that someone who was prevented from accessing their own home by a 56mm threshold would use a transition ramp, there are likely to be circumstances where a transition ramp is not provided, including for visitors (although presumably some households would provide a transition ramp if friends/family with accessibility needs visited regularly).
- The proposed accessibility standard allows for step-free access via a path from the perimeter of the property **or** the garage.

Wider internal doorways and corridors

Wider doorways and corridors allow for easier movement around the dwelling, by providing additional circulation space for users of some mobility aids (such as wheelchairs and walking frames with wheels). Additional width can also be helpful where a person with limited mobility requires assistance moving around the dwelling.

The main differences across the options are as follows.

- Options 2 and 3 provide wider internal doorways (850 mm), compared with Option 1 (820 mm).
- Options 2 and 3 provide wider corridors (1200 mm), compared with Option 1 (1000 mm).

²¹¹ Discussions with representatives from Occupational Therapy Australia, 10 December 2020; and Professor Catherine Bridge, pers. comm. 8 December 2020.

²¹² NDIS, NDIS Specialist Disability Accommodation Design Standards, Edition 1.1, 25 October 2019, p. 25.

- The door widths may not be wide enough to meet all accessibility needs.
 - Discussions with accessibility experts suggest that 820 mm doorways provided under Option 1 are unlikely to be sufficiently wide for some people (such as wheelchair users and potentially users of walking frames with wheels).²¹³
 - The 850 mm door width provided under Options 2 and 3 is somewhat consistent with *AS1428.1*²¹⁴ and is therefore likely to be sufficiently wide for at least 80 per cent of people with accessibility needs. However, this still may not be wide enough to provide easy access for some people.
 - ... Discussions with Occupational Therapy Australia suggest that some people may require 900 mm or more.²¹⁵
 - ... The SDA Design Standards require wider door widths for 'Fully Accessible' (900 mm) and High Physical Support (950 mm) dwellings.²¹⁶

Toilet

The main difference between the options in relation to toilet requirements is that Options 2 and 3 provide extra space (1200 mm between walls) compared with Option 1 (900 mm between walls) where the toilet is provided in a separate room.

These requirements are broadly consistent with the requirements of an ambulant toilet (i.e. a toilet that can be used by someone who can walk).²¹⁷ However, feedback received during consultation suggested it is not clear there would be sufficient space for a wheelchair user to transition onto the toilet without assistance. In some cases it may be possible to transition onto a toileting aid outside the bathroom/toilet cubicle and then roll into position.²¹⁸ However, such an arrangement may not be suitable for everyone and toileting aids will not necessarily be available for visitors.

The NCC proposal provides for reinforced walls to facilitate installation of grab-rails, which is a feature of all regulatory options. In general, grab-rails are helpful for many people with limited mobility. But this does not necessarily mean that grab-rails will be installed. In particular, it is less likely that grab-rails would be installed:

- for visitors
- in rental properties (where evidence has been provided that landlords are reluctant to allow any sort of modification).

This suggests the NCC requirements may not address accessibility issues for some people in these contexts.

²¹³ Discussion with representatives from Occupational Therapy Australia, 10 December 2020.

²¹⁴ Standards Australia 2009, op.cit., p 57

²¹⁵ Discussion with representatives from Occupational Therapy Australia, 10 December 2020.

²¹⁶ NDIS, NDIS Specialist Disability Accommodation Design Standards, Edition 1.1, 25 October 2019, p. 26.

²¹⁷ Standards Australia 2009, op.cit., Figure 53b, p 92

²¹⁸ Professor Catherine Bridge, pers. comm. 8 December 2020.

Shower

The requirements relating to showers are significantly different across options:

- Option 1 requires:
 - step-free access
 - a removable shower screen.
- Options 2 and 3 also require:
 - Shower on ground floor/level of entry
 - 900mm by 900mm shower space
 - 1200mm by 1200mm adjacent space

Under Options 2 and 3, the shower is likely to be accessible for most people with disability. The extra space would be beneficial for carers providing assistance with showering.²¹⁹

However, under Option 1 there is no requirement for a shower to be on the ground floor/entry level. Where there is no shower on the ground floor/entry level, the house may not be suitable for people who have trouble ascending and descending stairs (see discussion below), without significant modification.

Kitchens and laundries

Under Option 1 (Silver), there is no requirement relating to accessibility of kitchens and laundries.

It is therefore questionable whether a Silver-level dwelling would fully support independent living for people with limited mobility without additional modifications.

Options 2 and 3 provide for additional space in kitchens and laundries. This additional space would not necessarily make these spaces accessible for some people with limited mobility (such as wheelchair users). For example, standard benches may not meet the needs of wheelchair users. However, the additional space would allow kitchens and laundries to be more easily adapted.

Space for bedroom on entrance level

Options 2 and 3 require a space that could be used as a bedroom to be provided on the ground floor/entry level. If a resident acquired a disability that prevented them from using stairs, this requirement would enable them to live satisfactorily on the ground floor/entry level.

It is not clear whether the requirement for a space on ground-level that could be used as a bedroom would have any material impact on housing designs. In principle, any space (such as living spaces) could be used as a bedroom for the purposes of complying with the NCC requirements, provided it also meets existing NCC requirements for natural light and ventilation. However, in the event that a resident did acquire a disability, it is not clear how practical this arrangement would be in some houses. For instance, partitioning

²¹⁹ Discussions with Occupational Therapy Australia, 10 December 2020.

off an area of the living space to be used as a bedroom may not be convenient for some households.

Option 1 does not specifically require a space that could be used as a bedroom to be provided on the ground floor/entry level. In principle a downstairs living space might be converted to a bedroom. However, it is not clear how satisfactory this arrangement would be in the longer term, particularly where there are other people living in the dwelling.

Key points

Some general points that emerge from the discussion above are set out in table 7.2. These points are further elaborated below.

7.2 Key points

Type of dwelling	Silver standard	Gold or Gold+ standard
Single storey (Class 1a) dwelling	<ul style="list-style-type: none"> ▪ May be a suitable long-term dwelling for some people with limited mobility (but not wheelchair users and users of some walking frames), assuming a transition ramp would be provided. ▪ May not be a suitable long-term dwelling for wheelchair users, people who use a scooter/gopher inside and some walking frame users. ▪ May be visitable for most people with limited mobility, but only if a transition ramp is provided. 	<ul style="list-style-type: none"> ▪ May be a suitable long-term dwelling for most (but not all) people with limited mobility (assuming a transition ramp is provided). ▪ May be visitable for most (but not all) people with limited mobility, but only if a transition ramp is provided.
Two-storey (Class 1a) dwelling	<ul style="list-style-type: none"> ▪ May not be a suitable long-term dwelling for people with limited mobility (unless bedrooms and showers are provided downstairs or there are modifications to allow people with limited mobility to get to the upper floor). ▪ May be visitable for some people with limited mobility (except wheelchair users and some users of walking frames). 	<ul style="list-style-type: none"> ▪ May be a suitable long-term dwelling for people with limited mobility (but may require conversion of a downstairs living space to a bedroom). ▪ May be visitable for some people with limited mobility.
Apartment (Class 2) on the ground floor of a 3-storey walk-up or in a 4+ storey complex	<ul style="list-style-type: none"> ▪ May be a suitable long-term dwelling for some people with limited mobility. ▪ May not be a suitable long-term dwelling for wheelchair users, users of walking frames. ▪ May be visitable for people with limited mobility. 	<ul style="list-style-type: none"> ▪ May be a suitable long-term dwelling for most (but not all) people with limited mobility. ▪ May be visitable for people with limited mobility.
Apartment (Class 2) above the ground floor in a 3-storey walk-up building	<ul style="list-style-type: none"> ▪ May not be a suitable long-term dwelling for people with limited mobility. ▪ May not be visitable for people with limited mobility. 	<ul style="list-style-type: none"> ▪ May not be a suitable long-term dwelling for people with limited mobility. ▪ May not be visitable for people with limited mobility.

Source: CIE.

Accessibility of NCC options

Some general points on the accessibility of the NCC options are as follows.

- Options 2 (Gold) and 3 (Gold +) provide greater accessibility than Option 1 (Silver).
- A Silver level dwelling is unlikely to be a long-term suitable dwelling for some people with disability, including wheelchair users and some users of walking frames (particularly those with wheels). However, it may provide adequate levels of accessibility temporarily or for visitors.²²⁰
- A Gold and Gold+ level dwelling would generally be suitable for most people with disability. However, it may not provide sufficient accessibility to be a suitable dwelling for people with high accessibility needs.

Two-storey homes

Dwellings built to Gold and Gold+ standard are required to:

- provide space for a bedroom on entry-level
- provide a shower on entry level.

In the event that a resident of a two-storey Gold or Gold+ standard dwelling acquires a disability that limits their ability to climb stairs, these requirements mean they would be able to use the ground-level bedroom space and remain living in the dwelling.

However, two-storey dwellings designed to comply with Silver-level requirements could potentially retain a number of features that are 'inaccessible'. It is therefore not clear that two-storey dwellings would be accessible for people with limited mobility, even if designed to meet Silver-level requirements.

Two-storey dwellings could continue to have internal stairs. Stairs can be a major issue for people with disability and older people.

- An (unpublished) survey of people over the age of 50 found that a single storey home was among the most important design features respondents would look for in a future home.
- Some of the personal stories provided in submissions highlight the problems associated with steps. For example, one of the case studies in the submission from MDI and the Summer Foundation — Andrea's story in Box J.10 — referred to challenges associated with stairs. Andrea's bedroom is located upstairs, which requires her to sit and use her arms to push herself up and down the stairs.

A relatively common configuration of two-storey homes has living spaces downstairs and bedrooms upstairs. These designs typically have a toilet downstairs, but full bathrooms are often located upstairs.

People with limited mobility may be able to enter the dwelling; however, without significant modifications, they would not necessarily be able to access:

- the bedrooms, or

²²⁰ Discussions with Occupational Therapy Australia, 10 December 2020.

- the shower (there is no requirement for a shower to be downstairs under Silver).

General modelling assumptions

As demonstrated by the discussion above, modelling the differences between options is a challenge. Accessibility needs are specific to each individual, making it difficult to generalise about accessibility needs based on the information available from SDAC and the extent to which the various options would address their needs.

Although, as established in the above discussion, the needs and abilities of people within different groups (identifiable through SDAC cross-tabulations) could vary considerably, it is necessary to define clear assumptions on which to base the modelling.

The modelling assumptions adopted are outlined below. They have been further refined from the Consultation RIS based on information provided during consultation.

- **A Silver-level single-storey house/townhouse is:**
 - liveable (i.e. would avoid the costs estimated in chapter three) for people with limited mobility living in the dwelling, except for wheelchair users (this is a similar assumption to that used in the Consultation RIS)
 - visitable for all people with limited mobility
- **A Silver-level double-storey house/townhouse (where a toilet is on the ground floor but a bathroom with a shower/bedrooms are upstairs) is:**
 - not liveable for people with limited mobility and would therefore deliver no benefits to these people
 - visitable for all.
- **A Silver-level apartment on the ground floor of a 3-storey walk-up (with no lift) or in 4+ storey building is:**
 - liveable for all people with limited mobility except wheelchair users
 - visitable for all people with limited mobility.
- **A Silver apartment above ground floor in a 3-storey walk-up is:**
 - not liveable for people with limited mobility
 - not visitable for people with limited mobility.
- **A Gold or Gold+ level house (single or double-storey) is:**
 - liveable for all people with limited mobility
 - visitable for all people with limited mobility.
- **A Gold or Gold+ level apartment on the ground floor of a 3-storey walk-up or in 4+ storey building is:**
 - livable for all people with limited mobility
 - visitable for all people with limited mobility.
- **A Gold or Gold+ level apartment above the ground floor in 3-storey walk-up is:**

- not livable for people with limited mobility
- not visitable for people with limited mobility.

While it is impossible to model every individualised scenario as the needs of people with disability vary and are highly individualised, these specific assumptions have been chosen as it is more likely they will overstate rather than understate the benefits of the proposed NCC standards for the following reasons:

- houses/townhouses are assumed to be visitable for all, despite allowing for a 56 mm transition threshold at the entrance, and
- dwellings are assumed to be livable for renters with accessibility needs, even though the landlord could possibly prevent them from installing grab-rails.

However, these assumptions are considered broadly reasonable from a high-level modelling perspective based on the information available.

Specific modelling assumptions

The specific assumptions used in the modelling are set out below.

Proportion of wheelchair users

Based on the assumptions outlined above, housing designed to Silver level would not be a suitable long-term dwelling for wheelchair users.

While wheelchair users are around 6 per cent of all people with limited mobility, they tend to benefit from accessible housing more proportionately than other people with disability. As a result, wheelchair users would represent more than a 6 per cent share of people with the various problems estimated in chapter three. Table 7.3 reports the estimated share of wheelchair users in each of the problems estimated in chapter three and the adjusted size of the problem that could potentially be addressed through mandating Silver-level dwellings. The adjusted size of the problem in table 7.3 is used as a base to determine the benefits of Option 1 in the CBA subject to the allocation and additionality adjustments (discussed in the next two sections).

7.3 Adjusted size of the problem

Cost item	Share of wheelchair users (%)	Adjusted size of the problem ^a (\$ million)
Safety-related costs	6.1	100.61
Additional carer-related costs	8.1	862.06
Quality of life	10.5	1 712.18
Additional time in hospital/transition care	6.0	220.51
Home modifications	0.0	452.30
Additional moving costs	14.0	139.24
Premature/inappropriate entry into aged care	46.0	99.75
Cost of non-visitability	n.a.	80.93
Families with young dependants	n.a.	0.62

Cost item	Share of wheelchair users (%)	Adjusted size of the problem ^a (\$ million)
Short-term injuries	n.a.	28.09
Total		3 696.29

Note: The adjusted size of the problem shown in the table is based on the central case assumptions.

Source: CIE (details are provided in chapter three and appendices B to I).

Number of inaccessible dwellings

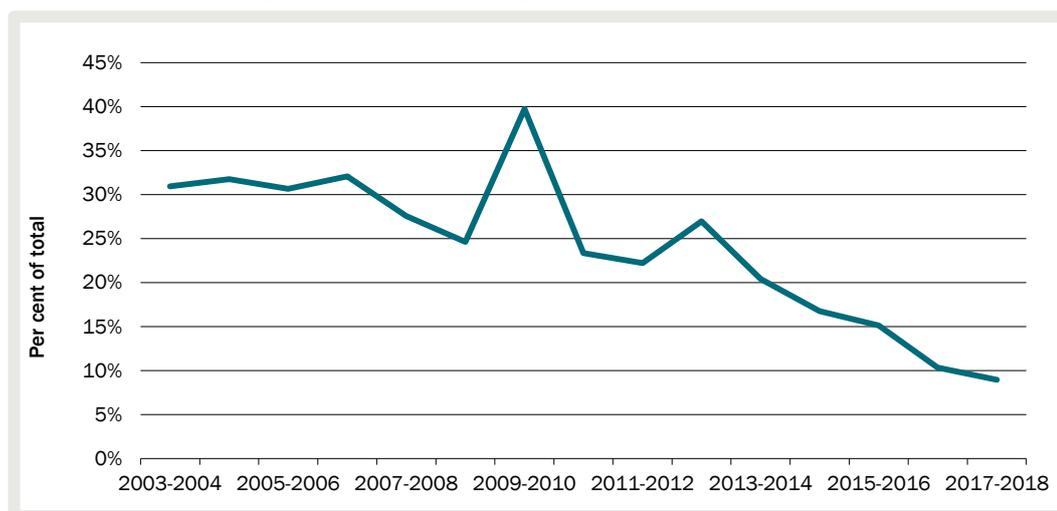
CIE has employed the following assumptions relating to the accessibility of dwellings:

- Double-storey houses built to Silver level that do not have a bedroom and/or a shower on the entrance level are not a suitable long-term dwelling for people with limited mobility.
- Apartments in a 3-storey walk-up building that are above ground-level would not be a suitable dwelling under any option.

As the number of high-rise residential towers has increased (particularly in the major cities), the share of apartments in blocks that are 3-storeys or less has declined significantly (chart 7.4).

- Based on the most recent data, only around 10 per cent of new apartments are in blocks that are 3-stories or less.
- For the purposes of the CBA, it is assumed that two-thirds of these apartments would not be suitable for people with limited mobility (i.e. dwellings on the ground floor would be accessible, but not on the second and third storeys). This implies that around 6.7 per cent of new apartments would not be accessible.

7.4 Share of new apartments in buildings 3-storeys or less



Data source: ABS.

To date, there is no data on:

- the proportion of new build houses that are double-storey, or

- the proportion of double-storey houses that have no bedrooms or showers on the entrance level.

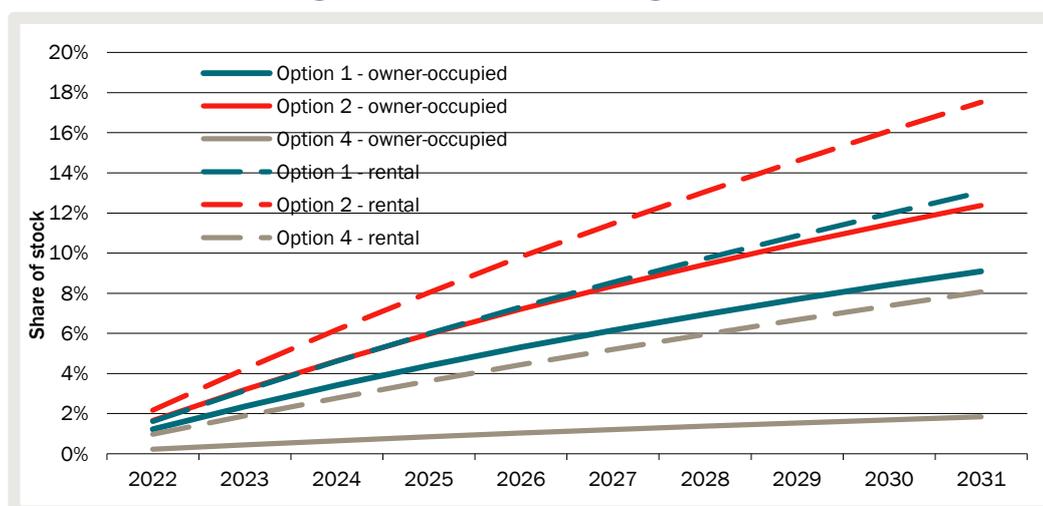
With lot sizes declining (particularly in major cities), the proportion of double-storey dwellings has reportedly been increasing.²²¹

- In their cost estimates, DCWC estimated that around 26 per cent of townhouses would need to relocate the shower to comply with Gold and Gold+ requirements. On this basis CIE assume that 26 per cent of townhouses would not be accessible due to the shower being upstairs.
- In the absence of other information, CIE also assumes that 26 per cent of separate houses built to Silver level would be inaccessible for people with limited mobility due to a lack of a bedroom and/or shower on the ground level.

Accessible housing as a share of the dwelling stock

Based on the assumptions outlined above and the dwelling projections presented previously, the number of accessible dwellings as a share of the dwelling stock under the various options is shown in chart 7.5.

7.5 Accessible dwellings as a share of the dwelling stock



Data source: CIE estimates.

As the characteristics of the dwelling stock (and the likelihood that a person with limited mobility would live in an accessible dwelling — see below) varies, it is necessary to differentiate between owner-occupied homes and rental properties.

It is assumed that the share of each type of dwelling (house/townhouse/apartment) that is occupied by the owner or a renter is based on the current share of (from the 2016 Census) (table 7.6). Apartments account for a higher share of new dwellings than their share in the existing stock and a greater proportion of apartments are used as rental

²²¹ See for example: Dalton, T. Hurley, J. Gaharale, E. Wakefield, R. and Horne, R. 2013, *Australian suburban house building: industry, organization, practices and constraints*, AHURI Final Report No. 213, October 2013, p. 12.

properties. On this basis the share of rental properties is likely to continue to increase over time.

7.6 New accessible dwellings by tenure

Type of dwelling	Owner-occupied (%)	Rental (%)
Separate houses	77	23
Townhouses	48	52
Apartments	32	68
Total	66	34

Source: 2016 Census.

Allocation of accessible housing to people with limited mobility

New housing is generally allocated through the market so it is not necessarily the case that new accessible housing will be occupied (either purchased or rented) by those with accessibility needs.

There are broadly two types of benefits from an increase in accessible housing under the various options.

- The greatest benefits (but not all) are contingent on people with accessibility needs living in the additional accessible housing provided under the various options. The extent of these benefits therefore depend on the extent to which people with limited mobility live in the new accessible housing.
- Additional accessible housing also has some benefits for people other than residents. In particular, more accessible housing increases the ability for people with limited mobility to visit family and friends. These ‘visitability’ benefits would generally be proportional to the share of ‘visitable housing’ in the total dwelling stock. For example, if there are 10 per cent visitable dwellings in the total housing stock, the cost associated with a lack of visitability would be reduced by 10 per cent.

Increasing the stock of accessible housing would reduce the size of the problem (estimated in chapter three) over time in the following ways.

- The proportion of the population who acquire a disability already living in accessible housing will increase over time.
- For people not already living in accessible housing and who acquire a disability (or have a pre-existing disability), there will be, in general, greater options available to move to an accessible dwelling. The impacts are different for owner-occupiers and renters based on the assumption that
 - the proposed changes to the NCC would have minimal impact on owner-occupiers due to a range of factors outlined below, and
 - the proposed changes will significantly increase the proportion of renters moving.

Owner-occupiers

As noted above, as accessible housing increases as a share of the stock over time, a greater proportion of people (including both owner-occupiers and renters) will already be living in accessible housing at the time they acquire a disability.

It is estimated that around 4.5 per cent of the total number of people with mobility limitation due to disability have newly acquired the disability in the past year. This estimate is based on:

- the growth in the number of people with mobility limitation each year
- **plus:** the estimated number of deaths (based on weighted-average mortality rates by age).

This approach assumes that people with mobility-related disability have the same age-specific mortality rates as the broader community. It effectively assumes that all people with a mobility-related disability have that disability until their death (i.e. ignores the possibility that a disability is resolved); and ignores the net impact of migration. It is a reasonable approximation of the number of newly acquired disabilities in each period.

- **It is assumed that the proportion of owner-occupiers already living in accessible housing when they acquire a disability will reflect the share of new accessible housing built under a revised NCC in the total dwelling stock.**

As the proportion of new accessible dwellings (i.e. those that would comply with the proposed accessibility requirements) being built under the current code is not known, this issue is addressed separately (see below).

For owner-occupiers who already have a mobility-related disability or acquire a mobility-related disability and are not already living in accessible housing when they acquire it, the benefits of the proposed changes to the NCC are less clear. In principle, the stock of accessible housing would increase over time as a result of the proposed change to the NCC. This would give these people (and their families) greater choice of accessible dwellings should they choose to move to a dwelling that better meets their needs.

However, the following factors would limit the impact of the proposed changes to the NCC on the available stock of accessible housing.

- First, the option of building an accessible house that meets their specific needs is already available to people who acquire a mobility-related disability. While there are many reasons people do not choose this option including financial constraints, location etc, the proposed regulation would not change this choice.
- Second, to the extent that the regulation encourages additional accessible houses to be built, it is likely that the initial owner would not have accessibility needs (if they did, they would have chosen to build an accessible home under current conditions).
 - The regulations are therefore unlikely to directly benefit the initial owner (unless they acquire a disability while still living in the dwelling – see above).
 - Additional accessible dwellings would become available to people with accessibility needs only when the initial owner moves out. The RBA reports that

owner-occupier turnover rates have been less than 4 per cent over recent years.²²² This implies that on average it would take around 25 years for the accessible home to become available for a person with accessibility needs to purchase.

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.

- SDAC data suggests that between 2 and 6 per cent of owner-occupiers have ever moved because of their condition for reasons that are either directly or possibly related to the characteristics of the dwelling. That said, the reason that some people have not moved may have been a lack of available accessible dwellings.
- Several stakeholders, as well as a number of studies stressed the importance of factors such as affordability and location, as well as accessibility for the decision of buying a house. Affordability and location issues could reduce the likelihood of people moving to newly built accessible housing.
 - In particular, the new accessible housing may not be in the preferred neighbourhood for many people with a mobility-related disability.
 - ... In NSW, just 11 (out of 131) LGAs account for 50 per cent of all dwelling approvals²²³
 - ... Currently, only 29 per cent of all people in NSW with a mobility limitation live in these LGAs according to SDAC data
 - ... Analysis of Census data suggests that more than 80 per cent of all people who moved house over the past 5 years, moved within the same LGA. This proportion increases to more than 90 per cent for people over the age of 65.
 - The financial cost of moving house is relatively high for owner-occupiers relative to renters because moving house for owner-occupiers generally involves buying a new dwelling and selling the existing dwelling, both incurring transaction costs (including stamp duties, real estate agent commissions and legal expenses). This means that in many cases home modifications (where possible) may be more cost-effective, particularly as home modifications are subsidised through the NDIS and various aged care programs.
 - ... Many households containing people with disability have lower than average incomes (see chapter three).
 - ... The financial cost of selling an existing home and buying a new one is estimated at close to \$30 000 (see table E.1 in appendix E).

²²² Leal, H. Parsons, S. White, G. and Zurawski, A. “Housing Market Turnover”, *Bulletin*, Reserve Bank of Australia, March 2017, p. 23.

²²³ Blacktown, Parramatta, Liverpool, The Hills Shire, Camden, Bayside, Cumberland, Penrith, Canterbury-Bankstown, Sutherland Shire, Campbelltown, Central Coast

- ... Stamp duties are a significant barrier to moving in most States and Territories.²²⁴ Stamp duties can amount to tens of thousands of dollars (particularly in the major cities).²²⁵
- ... Some older Australians on a full or part pension could lose their pension if they choose to down-size as the family home is not included in the pension asset test.

People with pre-existing mobility limitation (i.e. mobility limitation acquired prior to the commencement of the proposed regulations) may be even less likely to be affected by the increased availability of accessible housing. These people have already made a housing choice at the point when they acquired the disability (although where the disability gets worse over time, these choices may be constantly re-assessed). Furthermore, they may have already made choices to accommodate their disability in their existing home (such as through home modifications).

- **This discussion suggests that including an accessibility standard in the NCC is unlikely to significantly affect owner-occupiers with pre-existing mobility-related disability or those still living in inaccessible housing when they acquire a disability in the future (in the CBA CIE assume that the regulation has no benefits for these people), although a small number may benefit from increased choice of accessible dwellings over time.**

²²⁴ The ACT abolished stamp duties for eligible first home buyers from 1 July 2020 and continues to reduce stamp duty rates for all home buyers; and NSW intends to phase out stamp duties over time.

²²⁵ See for example, <https://www.revenue.nsw.gov.au/taxes-duties-levies-royalties/transfer-duty>

Renters

As for owner-occupiers, the proportion of renters that are already living in accessible housing at the time they acquire a disability will increase as the proportion of accessible housing in the rental stock increases over time. Renters who acquire a disability may be more likely to move as more accessible rental properties become available for the following reasons.

- Renters generally move more frequently than owner-occupiers²²⁶ (although the proportion of renters with a mobility-related disability who have moved because of their disability is only slightly higher than owner-occupiers at 15 per cent).
- The financial disincentives for renters to move are less than owner-occupiers, as renters do not incur stamp duties and selling agent commissions.
- Renters are less likely to have already made home modifications to meet their accessibility needs as landlords are reluctant to allow for major changes to their property and tenants are required to make the property to its original condition when the lease is ended.

The estimates of the share of renters with accessibility needs that are likely to live in an accessible rental property under the proposed regulations are based on the following assumptions.

- The probability of a tenant with accessibility needs living in an accessible rental property is likely to be related to the share of accessible properties in the rental stock. Where the probability of a tenant with accessibility needs lives in an accessible dwelling is equal to the share of accessible dwellings in the rental stock (e.g. if accessible housing makes up 10 per cent of the dwelling stock, the probability of living in an accessible house is 10 per cent), this implies ‘random allocation’.
- It would be reasonable to assume that tenants with accessibility needs would value accessibility features more highly than those without accessibility needs and would therefore be more likely to be attracted to rental properties with these features. However, the evidence from the stated preference survey of randomly-selected households is mixed:
 - There is some evidence that households containing a member with mobility limitation are more likely to have a dwelling with some accessibility features.
 - On the other hand, there were several accessibility features that were just as likely to be present in households that did not include a member with mobility limitation as those that did.

²²⁶ As of September 2019, property owners in Australia are now holding on houses for an average of 11.3 years, while apartments average 9.6 years (see Lorusso, Vic 2020, *Length of home ownership in Australia reaches 10 year peak*, <https://www.homes.com.au/news/length-of-home-ownership-in-australia-reaches-10-year-peak/#:~:text=Facts%3A%20Average%20Home%20Ownership%20Length,while%20apartments%20average%209.6%20years.>). By contrast, renters on average stay in the same rental for 4.4 years (see Goddard, Hayley 2017, ‘Victorian renters say in the same home longer than the national average’, *Herald Sun*, 29 May 2017, <https://www.realestate.com.au/news/victorian-renters-stay-in-the-same-home-longer-than-the-national-average/>).

- Based on the analysis of the survey results (weighting accessibility features by the estimated willingness to pay for them), it can be determined that for renters, households that include a member with mobility limitation are around 12.6 per cent more likely to have accessibility features than rental households that do not contain a member with mobility limitation (see discussions in appendix K for details).
- **Based on the above discussion, it is assumed that the probability that households with accessibility needs live in an accessible rental property is 12.6 per cent higher than the share of accessible properties in the rental stock.**

For example, if 50 per cent of rental properties were accessible, this approach implies that 56.3 per cent (i.e. 50×1.126) of households with accessibility needs would live in accessible rental properties.

Additionality

The benefits attributable to the proposed options could also depend on the extent to which dwellings with accessibility features would have been provided under the baseline scenario (i.e. the extent to which the accessibility features in dwellings built under the new code are 'additional' and therefore can be attributed to the new code).

Under the proposed changes to the NCC, all (or most) new dwellings would need to comply with the relevant standard. However, some proportion of new housing would have included some or all of the accessibility features set out in the standard, even without the proposed changes to the NCC. Previous estimates and stakeholder feedback suggest that around 5-10 per cent of new stock current meets LHDG Silver standard.

Stakeholder feedback suggested that, although relatively few new dwellings incorporate **all** of the design elements in the standard, a significant proportion incorporate at least **some** of these design elements. This is also evident in DCWC's cost weightings where scenarios involving 'no impact' had significant weightings across some design elements, indicating that compliance with the standards reflects current practice for these dwellings.

Where the proposed changes to the NCC reflect current practice for particular design elements, there are no additional costs and benefits from the standard. These costs have been excluded from our cost estimates (through a non-zero weighting on a 'no impact' scenario). This is in keeping with the approach adopted in the Consultation RIS.

Stakeholder submissions provided different suggestion on how these 'baseline effects' should be taken into account in estimating the benefits.

- The HIA submission argued that as the weights used to derive the weighted-average costs imply that many accessibility features are already provided, the benefits would also need to be adjusted accordingly.²²⁷ This argument is consistent with the approach in the Consultation RIS.

²²⁷ Simon Croft, op.cit., p. 30.

- On the other hand, some submissions suggested that dwellings must have all relevant features to be accessible and that the features must be provided in a coherent way.²²⁸ To the extent that at least some accessibility features are currently provided in some dwellings, the additional cost of complying with the proposed standard would reflect only the cost of the features not already provided (as reflected in the weighted average approach — see chapter six) and that providing these additional features would provide **all** of the benefits of accessibility.

There is limited data on what features are needed by specific people and the extent to which individual accessibility features provide benefits even when not combined with all of the other accessibility features under the NCC options. However, on the basis of the discussion in the second section (Accessibility of the NCC options) in this chapter, it may be assumed that there is a distinction between wheelchair users and non-wheelchair users. As noted in the Consultation RIS, all accessibility features are needed for the dwelling to be suitable for wheelchair users. By contrast, for other people with disability (non-wheelchair users), dwellings with some accessibility features could meet (at least part of) their needs, even without some of the features provided under the various NCC options.

The Consultation RIS reduced the benefits attributable to the NCC proposal based on the extent to which the provision of the various features reduced costs. Consultation feedback and additional evidence suggest that the relationship between the cost of a particular accessibility feature and the benefits provided is weak.²²⁹

Where possible, the features provided under the base case are weighted by the estimated WTP for each feature (and cost where a separate WTP estimate was not available).

Based on this approach, the benefits attributable to the NCC proposal is:

- around 66 per cent of the total estimated benefits for Option 1
- around 86 per cent of the total estimated benefits for Option 2
- around 86 per cent of the total estimated benefits for Option 3.

The estimates of the average share of features provided in the baseline are presented in appendix K.

The benefits where no adjustment is made to the benefits based on features provided in the base case are estimated as an alternative scenario in sensitivity testing.

The benefits of a subsidy on accessible rental properties

This option would reduce the number of people living in rental properties that do not meet their needs. Where this option provides an accessible rental property to a household

²²⁸ Margret Ward, op.cit., p.46.

²²⁹ See Carnemolla, P. 2015, *Measuring non-shelter effects of housing design, A mixed-methods exploration of home modifications, care-giving and health-related quality of life*, A thesis in fulfilment of the requirements for the degree of Doctor of Philosophy, University of NSW, Faculty of Built Environment, pp. 116-119 and 127.

with accessibility needs that would not otherwise be available, this option could potentially:

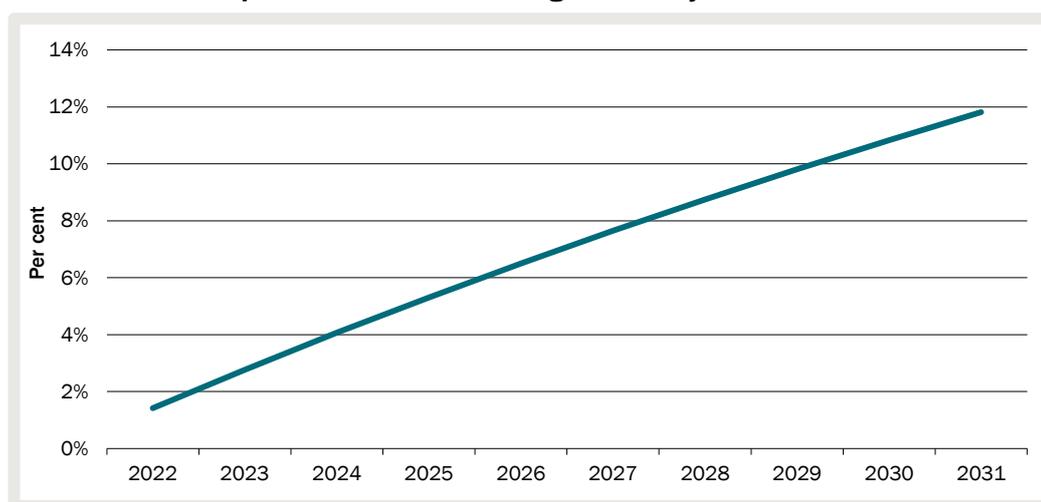
- reduce the number of falls
- reduce the need for formal and informal care
- improve quality of life
- reduce some time spent in hospital or transition care
- reduce premature or inappropriate entry into residential aged care.

However, this option is less likely to significantly:

- reduce the costs associated with moving to a more accessible home (this option would involve a person with disability moving to a subsidised accessible rental property and could in fact increase the number of moves and therefore the cost)
- reduce the cost of home modifications (as relatively few rental properties are modified)
- improve the ability of people with disability to visit family and friends
- deliver benefits to households that do not contain a member with disability (as these households would presumably not be eligible for a subsidy).

The assumed uptake profile (see chart 5.1) is presented as a percentage of the total number of people with limited mobility that live in unmodified dwellings that require assistance or have trouble moving around their place of residence (implying that their home does not meet their accessibility needs) (chart 7.7). This is an indicator of the extent to which a subsidy scheme could potentially reduce the extent of the problems identified above.

7.7 Share of the problem addressed through a subsidy scheme



Note: This option reduces costs associated with: falls, additional care needs, reduced quality of life, additional time in hospital or transition care and premature or inappropriate entry into aged care.

Data source: CIE estimates based on ABS, 2018 Survey of Disabilities, Ageing and Carers, TableBuilder.

Societal benefits

In the Consultation RIS, CIE estimated the community's preference for more equitable housing outcomes for people with disability and older Australians using a stated preference survey. This was included in the CBA as a 'societal benefit'.

The survey undertaken for this project (see appendix K for further information) included a component designed to estimate household WTP to improve housing accessibility for other people outside the household. The conservative estimate of average altruistic WTP derived from the survey is around \$40 per household per year for a policy scenario that would increase the amount of accessible housing to 15 per cent by 2035 and "greatly improve the chances of Australians with limited mobility finding suitable homes."

This equates to \$389 million annually across all households. Assuming an income elasticity of WTP of 0.42, projected annual real wage growth of 0.25 per cent per year²³⁰ and the ABS Cat No. 3236 Series II household projections (extrapolated beyond 2041 to 2066), this equates to \$6.9 billion in present value terms.

For the purpose of deriving benefit estimates for options that partially solve the problem, it is assumed that this \$40 amount represents the value households place on solving the problem completely by 2035.

CIE considers that the limited amount of information provided in the questionnaire would have given respondents the impression that the policy would solve the problem, particularly the comparison between two figures that were provided — the 15 per cent of housing stock that would be accessible by 2035 and the 5 per cent of Australians who have a disability and use a mobility aid.

It is assumed that a partial solving of the problem by 2035 would be valued proportionately to the extent to which the problem is solved. For each of the options, the \$6.9 billion figure above is scaled in this way. Specifically, the assumptions used to estimate the benefits for the Decision RIS imply that by 2035:

- Option 1 would address around 11 per cent of the problem
- Options 2 and 3 would address around 13 per cent of the problem
- Option 4 would address around 5 per cent of the problem
- Option 5 would address around 15 per cent of the problem.

Estimating the societal benefits acknowledges that the primary beneficiaries of these proposals are people with disability and older Australians (as well as savings on government programs that assist these people). However, as discussed in chapter one (refer to the subsection 'Approach to the RIS' on pages 27-28), OBPR guidance material (including the COAG RIS Guidelines), requires that weighing up equity considerations against the costs and benefits of the proposal is best left to decision-makers, rather than directly incorporated into the CBA.

²³⁰ Based on the recent slowdown trend in Australian real wage rate, see Gilfillan, Geoff 2019, *The extent and causes of the wage growth slowdown in Australia*, Research Paper Series, 2018-19, Parliamentary Library, table 3, p.25, https://parlinfo.aph.gov.au/parlInfo/download/library/prspub/6609740/upload_binary/6609740.pdf

As such, the 'societal benefits' are not included in the central case CBA.

They are, however, included in the sensitivity analysis (in the next chapter) as additional information for decision-makers.

8 Cost-benefit analysis

This chapter combines the costs and benefits discussed in the previous two chapters using a cost-benefit analysis framework.

Estimated net benefits and costs

The estimated costs and benefits of Options 1-5 in present value terms over the 10-year regulatory period (using a discount rate of 7 per cent) are shown in table 8.1. The benefits of all dwellings constructed over the regulatory period are estimated over the (assumed) 40-year life of the dwelling. These have been discussed in chapter five (subsection 'Time periods' on page 146).

Based on the benefits that were able to be quantified, the CBA results suggest the following.

- All of the options involving changes to the NCC are estimated to impose a net cost on the community.
- Option 5 (involving a generalised subsidy program to encourage additional accessible rental properties) is estimated to deliver a significant net benefit. This option is not formally under consideration, so this program is in effect hypothetical and as such not ready to be implemented. This option is included in the CBA to compare regulatory options (Options 1-4) with non-regulatory options, consistent with the RIS guidelines. The CBA results demonstrate that this more targeted approach could be more effective in addressing the specific problem associated with renters.

8.1 Estimated net benefits/costs

	Option 1 (\$ million)	Option 2 (\$ million)	Option 3 (\$ million)	Option 4 (\$ million)	Option 5 (\$ million) ^a
Benefits					
Avoided safety costs	99.16	164.05	164.64	64.35	88.97
Avoided carer-related costs	590.80	998.90	1 002.47	391.79	541.70
Quality of life improvements	1 173.43	2 036.32	2 043.59	798.70	1 104.29
Avoided time in hospital/transition care	151.13	249.68	250.57	97.93	135.40
Avoided home modifications	341.89	530.95	532.85	208.25	287.93
Avoided moving costs	95.43	172.33	172.94	67.59	0.00
Avoided entry into residential aged care	75.85	218.25	219.02	85.57	116.17
Visitability benefits	112.79	147.48	148.01	33.78	0.00
Benefits for families with young dependants	0.86	1.13	1.13	0.26	0.00

	Option 1 (\$ million)	Option 2 (\$ million)	Option 3 (\$ million)	Option 4 (\$ million)	Option 5 (\$ million) ^a
Benefits for short-term injuries	39.15	51.19	51.37	11.73	0.00
Total benefits	2 680.50	4 570.28	4 586.61	1 759.95	2 274.47
Costs					
Construction costs	-5 243.10	-17 906.95	-23 591.51	-4 699.84	0.00
Opportunity cost of space	-1 255.38	-7 709.42	-9 393.51	-7 596.93	0.00
Compliance verification costs	- 290.49	- 290.49	- 290.49	- 83.82	0.00
Industry re-training costs	- 28.47	- 28.47	- 28.47	- 28.47	0.00
Subsidy	0.00	0.00	0.00	0.00	-1 076.70
Total costs	-6 817.44	-25 935.33	-33 303.98	-12 409.06	-1 076.70
Net benefit/costs	-4 136.94	-21 365.05	-28 717.37	-10 649.11	1 197.77
Benefit-cost ratio	0.39	0.18	0.14	0.14	2.11

^a For Option 5, the proposed subsidy covers the value of industry costs, which are assumed to be willingly adopted.

Note: The cost-benefit analysis includes the lifetime costs and benefits of all dwellings constructed over a 10-year regulatory period from 2022 to 2031 (including the lifetime benefits of these dwellings over 40 years), using a discount rate of 7 per cent.

Source: CIE estimates.

A point to note is that the opportunity cost of space under Option 4 (applying the Gold standard to new Class 2 buildings only) has a different trend to construction costs, when comparing to those under Option 2 (applying Gold to both Class 1a and Class 2 buildings) – construction costs reduce significantly from \$18.9 billion under Option 2 to close to \$5.0 billion for Option 1, while opportunity cost of space changes only marginally from \$7.7 billion to \$7.6 billion. This is because the net opportunity cost for Class 1a building is relatively small (only \$25/m²) while that for Class 2 building is significant (\$3 836/m²) as reported in table 6.7 in chapter six.

Qualitative assessment of Option 6

The aim of Option 6 (enhanced voluntary guidance) would be to encourage voluntary provision of accessible housing through improving the effectiveness of the existing LHA voluntary certification scheme. An enhanced voluntary option could potentially increase the supply of accessible dwellings, without imposing excessive regulatory costs on homebuilders.

The reasons the current voluntary arrangements have been relatively ineffective at encouraging voluntary uptake of LHA compliant dwellings are not entirely clear.

- There is evidence of significant demand for accessible housing.
 - As discussed above (see Chapter three), people with accessibility needs have trouble finding accessible housing. This indicates demand for accessible housing (but not necessarily housing with LHA accreditation)
 - The stated preference survey for the Consultation RIS also suggested significant demand from the general community for accessibility features (although it is possible that the stated preference survey does not capture the community's true preferences). The survey suggested that the WTP of many members of the community (including many without specific accessibility need) is higher than the

cost. Where the value buyers place on these accessibility features are higher than the cost, we generally expect to see these design features adopted voluntarily. However, this does not align with the reported low uptake of the LHDG.

- Yet industry submissions argued that a lack of demand has been a key contributor to low uptake. In particular, HIA attributed the low uptake partly to a failure to generate demand from home owners and residents through education and promotion of the LHDG.²³¹

This suggests that while there is significant demand for accessible housing, there is not necessarily demand for LHA accredited housing. Without demand for accredited housing, there is little incentive for home-owners and investors to obtain accreditation (industry stakeholders have suggested that not all LHA-compliant dwellings obtain accreditation).

The underlying reasons why there appears to be little demand for LHA certified dwellings despite evidence of significant demand for accessible housing could include the following.

- A lack of awareness of the LHA voluntary certification scheme and what it means.
- Deficiencies in services available to match buyers and sellers (although there are some specialised services available). Some stakeholders noted cases where homes are advertised as accessible, but in reality lack key accessibility features.²³² This increases the time and effort associated with finding and securing an accessible home²³³ and is frustrating for people with accessibility needs.

Stakeholders had mixed views on the effectiveness of this option.

- Industry groups tended to support this option, arguing it could be effective. The submissions from both HIA and MBA argued that publishing the LHDG as an ABCB Handbook would raise its profile and increase uptake of accessible options.
- Other stakeholders noted that voluntary approaches do not work, given the existing voluntary initiatives over the last two decades have failed to achieve significant uptake of accessible housing.²³⁴

Publishing agreed accessibility standards as a voluntary handbook (the component that is within the ABCB's area of responsibility) could raise awareness (as noted by HIA, the ABCB's subscriber base is nearly 250 000 people). However, on its own, this may do little to encourage uptake of accessible design as there currently appears to be little incentive to either invest in accessible design or to obtain certification.

However, together with other measures (that are not within the ABCB's area of responsibility), it is possible that an enhanced certification scheme could create a market for LHA certified homes and encourage further uptake. In particular:

²³¹ See Simon Croft, *op.cit.*, pp.15, 30-31.

²³² ABCB 2019, *Accessible Housing Options Paper: Consultation Report*, April 2019, p. 56.

²³³ Hayley Stone, *op. cit.*, p. 18

²³⁴ See for example, Margret Ward, *op.cit.*, 9.48.

- Increased effort to raise awareness of the certification scheme among buyers could create demand for LHA certified housing (reflecting the underlying demand for accessible housing).
- Although there are currently some specialised services that advertise accessible housing, these services could be improved. For example, an ability to search specifically for LHA certified housing on mainstream real estate websites could help to raise awareness of the certification scheme. This could:
 - reduce search costs (and frustration) associated with finding accessible housing through the provision of reliable independently verified information
 - allow property owners to buy and sell homes as assets that can be reliably advertised as ‘accessible’, and potentially earn additional returns for these assets, where the market supports this. This increases their incentive to pay for accessibility features that go beyond their own needs, as they may be able to recoup costs via renting or selling the property to someone who needs the additional features. In turn, this increases incentives for the building industry to supply more homes with accessibility features.

Although an enhanced voluntary scheme could encourage some additional uptake of LHA compliant designs, it is unlikely to achieve the targets that were previously set by the National Dialogue on Universal Housing Design and would not therefore meet the aspirations of many advocates.

Qualitative assessment of exemptions

In its proposed changes to the NCC, the ABCB has included ‘exemptions’ for circumstances where a step-free access path (Clause 1.1) would not need to be provided for a new Class 1a home. In these circumstances the exemption is applicable for the step-free access requirement only; all other requirements still apply.

The purpose of these exemptions is to reduce cases where costs to meet the step free path requirements are unreasonably large (for example, on a lot with significant slope) and cases where meeting the standard is potentially unfeasible (for example, a small lot where dwelling sits on the boundary).

While exemptions would reduce both benefits and costs, they are generally intended to apply to dwellings where compliance costs are disproportionately high and can therefore improve the net benefit of the proposal.

Exemptions and interpretation

The proposed exemptions are not specified in terms of objective criteria and are therefore open to interpretation. Issues of ‘practicality’, ‘insufficient space’, and so on are matters of interpretation. Their impact would therefore depend on how they are implemented by governments and how they are interpreted by appropriate authorities.

As an example, there is no clear definition for small lots. Some state and local governments provide different definitions of ‘small lots’; for example,

- In Victoria, a lot is defined as ‘small’ if it less than 300 m².²³⁵
- The Brisbane City Council defines a small lot as less than 450 m² (600 m² where the lot is a ‘rear lot’, excluding the driveway).²³⁶
- In Western Australia, development approval is required for the erection of a single house on any lot that is smaller than 260 m², except where it complies with a local structure plan or local development plan.²³⁷

While the 1:14 slope condition for exemption²³⁸ appears definitive, it may still be subject to interpretation in combination with other requirements. The *Drafting of Proposed NCC Changes* notes a dwelling is exempt if:²³⁹

- It is not practicable to provide step-free access via a garage or parking space, **and**
- One of the following is true:
 - To provide an external step free access path would necessitate construction of ramping that exceeds the length and gradient allowed
 - There is insufficient space on the site to accommodate a compliant step-free access path
 - The average slope of the ground on which the access path would be constructed exceeds 1:14

It could be interpreted that even if a house is built on a site where one or more of the three criteria (including the slope criteria) listed above are applicable, it is not exempt from step free access if step free access via a garage or a parking place could be achieved.

Difficult to determine the number of new builds impacted by exemption

There is insufficient data to reliably estimate the number of Class 1a buildings that would be exempt from the step free access requirement.

Two data sources may be used to provide some indicative estimates.

- NSW Government topography data²⁴⁰ suggests that around 12 per cent of sites in future potential greenfield development have a total slope (across the whole site) greater than 1:14.

²³⁵ Victoria Planning Authority 2019, *Small lot housing code*, November 2019, p 2, <https://vpa-web.s3.amazonaws.com/wp-content/uploads/2020/06/Small-Lot-Housing-Code-November-2019.pdf>, accessed January 2021.

²³⁶ Brisbane City Council Small lot projects. See: <https://www.brisbane.qld.gov.au/planning-and-building/do-i-need-approval/residential-projects/dwellings/small-lot-projects>, accessed January 2021

²³⁷ WA Government 2018, *R-Codes State Planning Policy 3.1*, p. 6, https://www.dplh.wa.gov.au/getmedia/5dce3eb2-abe9-4fc3-bbab-92cc89f0b5cf/State_Planning_Policy_3-1-Residential_Design_Codes-for-mobile, accessed January 2021

²³⁸ ABCB 2021, *ABCB Standard for Livable Housing Design*, p.4

²³⁹ ABCB 2021, *Accessible Housing Drafting of Proposed NCC Changes*, February 2021 p.14.

²⁴⁰ See <https://maps.six.nsw.gov.au/clipnship.html>

- About 11 per cent of separate houses and townhouse developments in Victoria between 2005 and 2016 were built on lots less than 300 m².²⁴¹ This share is likely to have grown significantly, as lot sizes in Victoria have fallen significantly over time.²⁴²

While the conditions for exemption are subject to interpretation as discussed above, this limited data may suggest that up to 10-15 per cent of new Class 1a buildings could be exempt from step free access requirement.

Potential impact of exemptions

As more extreme cost assumptions are associated with more obvious exemptions, it is reasonable to assume that the estimated construction cost would be applied in cases closer to the average (where interpretation is likely to be most common). Where properties are exempt from the step-free access requirement, a significant proportion of the proposal's costs due to other requirements are still incurred. As shown in table 6.1, under Option 1, an exempt townhouse and an exempt detached house would still incur 77 per cent and 84 per cent of additional costs, respectively. For Option 2 and Option 3, these percentages are above 90 per cent.

Detached houses and townhouses account for about 56 per cent and 15 per cent of new dwellings, respectively. Exemptions are not applicable to apartment buildings which have higher compliance costs than Class 1a buildings. Assuming 15 per cent of Class 1a buildings are exempted, the exemption would see compliance cost in weighted average terms reduced by:

- 1.6 per cent for Option 1
- 0.6 per cent for Option 2
- 0.4 per cent for Option 3.

The impact of exemption on benefits is complicated. There are different ways to measure the impact on benefits. One way is to assume that benefits change in proportion to the change in costs. CIE suggest it would be too extreme to assume that all, or none, of the benefits are lost without the step free access.

The WTP results present a middle point of the above assumptions. As shown in table K.17 in appendix K, WTP for step free access account for 59 per cent, 29 per cent and 33 per cent of total WTP, respectively, under Options 1, 2 and 3. Assuming 15 per cent of Class 1a buildings are exempt, the benefits may fall by 6.3 per cent, 3.0 per cent and 3.5 per cent, respectively, for Options 1, 2 and 3.

Given that the potential for higher than average costs can't be known, due to a lack of data, the impact of exemptions on the proportion of new builds can't be estimated with accuracy.

²⁴¹ SGS Economics and Planning 2019, *Planning Schemes Research*, Draft Report V2, June 2019, Table 7, p.38

²⁴² UDIA 2020, *State of the Land 2020 National Residential Greenfield and Apartment Market Study*, p.46 See: <https://udia.com.au/research/udia-state-of-the-land-2020/>, accessed January 2021.

With all these factors considered, and assuming reductions in costs under the average case (where interpretation is likely to be more common) for the step free path are representative, the above discussion indicates that benefits may reduce disproportionately to costs in all but extreme cases. In other words, the CBA results presented above, which do not apply exemptions and assume average construction costs and full benefits for all new builds, are more likely to understate the costs and/or to overstate the benefits.

Scenario and sensitivity analysis

As the CBA was prepared based on limited evidence and there were differing stakeholder views on some input assumptions, it is important to test the sensitivity of the estimated impacts to alternative assumptions. This provides insights into the robustness of the conclusions drawn from the CBA result.

The potential impact of qualitative but not quantifiable benefits

As discussed above, CIE has made every effort to quantify as many of the costs and benefits that the available information would allow. There are a number of potentially significant benefits that are not able to be completely quantified in economic terms and are not presented in the central case of the CBA. These are noted below.

Societal benefits

Many stakeholders have put forward the reasonable view that concepts such as human rights (including compliance with the UN Convention on the Rights of Persons with Disability) and social justice are critical to any decision on whether to include a minimum accessibility standard in the NCC. These issues relate to the distribution of benefits and costs within the community (i.e. many of the benefits would accrue to disadvantaged groups and also in cost savings to programs to assist these groups).

Consistent with OBPR Guidance, these issues cannot be resolved through CBA.²⁴³ Weighting benefits which accrue to certain groups, against the costs imposed on other members of the community, are judgements decision-makers are best placed to make.

To support decisions making with respect to the societal benefits, CIE's stated preference survey was used to measure the community's preference for equitable housing outcomes for people with mobility-related disability (including older members of the community) (see discussion in chapter three from page 113 on). This provides a way to include some of these benefits in the CBA.

The CBA results with the inclusion of these societal benefits as informed by the stated preference survey, are presented in table 8.2. This has been included as information for decision-makers.

²⁴³ Office of Best Practice Regulation 2020, *Guidance Note, Cost-Benefit Analysis*, March 2020, pp. 12-13.

While these societal benefits are estimated to be significant, the sensitivity analysis indicates that the broad conclusions from the central case CBA remain unchanged.

8.2 Net benefits/costs including societal benefits

Benefit/cost	Option 1 (\$ million)	Option 2 (\$ million)	Option 3 (\$ million)	Option 4 (\$ million)	Option 5 (\$ million)
Benefits included in central case	2 680.50	4 570.28	4 586.61	1 759.95	2 274.47
Societal benefits ^a	666.62	794.92	794.92	301.46	978.00
Total benefits (including societal benefits)	3 347.12	5 365.20	5 381.52	2 061.41	3 252.47
Estimated costs	-6 817.44	-25 935.33	-33 303.98	-12 409.06	-1 076.70
Net benefits/costs	-3 470.32	-20 570.13	-27 922.46	-10 347.65	2 175.77
Benefit-cost ratio	0.49	0.21	0.16	0.17	3.02

^a As with other benefits, the estimates of the societal benefits differ across options because each option provides different levels of accessibility.

Note: The cost-benefit analysis includes the lifetime costs and benefits of all dwellings constructed over a 10-year regulatory period from 2022 to 2031 (including the lifetime benefits of these dwellings over 40 years), using a discount rate of 7 per cent.

Source: CIE estimates.

Employment benefits

The main employment-related benefits include improved productivity and more employment opportunities for people with mobility-related disability. Although the qualitative evidence suggests that accessible housing can improve productivity and employment opportunities for working age people with disability, there was insufficient quantitative evidence to quantify these benefits.

The analysis presented in appendix J suggests that these benefits could be significant. An assessment of these benefits suggests that up to around \$500 million per year could be a reasonable upper bound estimate.

The net benefits/costs of the proposal after including the employment-related benefits (as calculated above) is shown in table 8.3. While these estimates suggest that the employment-related benefits could potentially be significant, they are not significant enough to change the CBA results from negative to positive. The broad conclusions from the central case of CBA hold with the inclusion of employment benefits.

8.3 Net benefits/costs including employment-related benefits

Benefit/cost	Option 1 (\$ million)	Option 2 (\$ million)	Option 3 (\$ million)	Option 4 (\$ million)	Option 5 (\$ million)
Benefits included in central case	2 680.50	4 570.28	4 586.61	1 759.95	2 274.47
Employment benefits ^a	342.67	532.17	534.07	208.73	1 345.01
Total benefits (including employment benefits)	3 023.17	5 102.45	5 120.67	1 968.68	3 619.48
Estimated costs	-6 817.44	-25 935.33	-33 303.98	-12 409.06	-1 076.70
Net benefits/costs	-3 794.27	-20 832.88	-28 183.31	-10 440.38	2 542.78
Benefit-cost ratio	0.44	0.20	0.15	0.16	3.36

^a As with other benefits, the estimates of the employment benefits differ across options because each option provides different levels of accessibility.

Note: The cost-benefit analysis includes the lifetime costs and benefits of all dwellings constructed over a 10-year regulatory period from 2022 to 2031 (including the lifetime benefits of these dwellings over 40 years), using a discount rate of 7 per cent.

Source: CIE estimates.

Societal and employment benefits

The broad conclusions from the central case CBA also hold when both the societal and employment-related benefits are included (table 8.4).

8.4 Net benefits/costs including societal and employment-related benefits

Benefit/cost	Option 1 (\$ million)	Option 2 (\$ million)	Option 3 (\$ million)	Option 4 (\$ million)	Option 5 (\$ million)
Benefits included in central case	2 680.50	4 570.28	4 586.61	1 759.95	2 274.47
Societal benefits ^a	666.62	794.92	794.92	301.46	978.00
Employment benefits ^a	342.67	532.17	534.07	208.73	1 345.01
Total benefits (including both societal and employment benefits)	3 689.79	5 897.37	5 915.59	2 270.14	4 597.48
Estimated costs	-6 817.44	-25 935.33	-33 303.98	-12 409.06	-1 076.70
Net benefits/costs	-3 127.65	-20 037.96	-27 388.39	-10 138.92	3 520.78
Benefit-cost ratio	0.54	0.23	0.18	0.18	4.27

^a As with other benefits, the estimates of the societal and employment benefits differ across options because each option provides different levels of accessibility.

Note: The cost-benefit analysis includes the lifetime costs and benefits of all dwellings constructed over a 10-year regulatory period from 2022 to 2031 (including the lifetime benefits of these dwellings over 40 years), using a discount rate of 7 per cent.

Source: CIE estimates.

Sensitivity analysis

As noted in previous chapters, there is significant uncertainty associated with the above estimates on both the cost and benefit sides, largely due to data limitations. It is therefore important to test the robustness of the results (and the conclusions drawn from the analysis) with alternative assumptions.

Alternative allocation assumptions for owner-occupiers

A key finding from the CBA is that although the problems associated with a lack of accessible housing are relatively significant, the NCC options are estimated to have a relatively modest impact in the near to medium term. This is largely because under the NCC options accessible housing is allocated through the market (rather than through an administrative process), meaning that the additional accessible housing will not necessarily be allocated to people with accessible needs.

One of the key assumptions in the CBA is that owner-occupiers with a pre-existing mobility limitation (or that acquire one while living in inaccessible housing) will not move from their current residence to new accessible housing.

- A key rationale for this assumption can be summarised as follows.

- People with accessibility needs already have the option of building a new house that meets their accessibility needs. The proposed regulation will not change the incentive (including affordability) of this option.
- Additional accessible homes as a result of changes to the NCC would not become available for people with accessibility needs to purchase until the original owner moves out. On average this would take 25 years.
- Other reasons include:
 - New accessible housing constructed under a revised NCC would not necessarily be located in preferred locations.
 - Many people have a preference to remain in their current home.
 - In many cases, the financial costs associated with moving house for owner-occupiers (including stamp duties and other transaction costs) would make home modifications more cost-effective.

The first argument above implies that consumers have control over the design of the dwelling. This is largely the case for new houses, but less so for townhouses and apartments, which are often purchased off the plan (although the other barriers to owner-occupiers moving to newly constructed accessible dwellings apply equally to all types of dwellings).

To test the sensitivity of the CBA results to this assumption, an alternative scenario where some owner-occupiers move to newly constructed accessible townhouses and apartments is considered. The alternative assumption is that the proportion of owner-occupiers that move to newly constructed accessible townhouses and apartments reflects the share of these dwellings in the total owner-occupied dwelling stock. These 'movers' are in addition to the increase share of owner-occupiers who live in accessible housing at the time they acquire their disability, which is reflected in the central case assumption.

Some points to note:

- One of the benefits of mandating that new dwellings comply with an accessibility standard is to avoid unnecessary moves and to facilitate 'ageing in place'. If this assumption were to hold, more owner-occupiers with disability would move house incurring additional moving costs (these costs are estimated at close to \$30 000 plus stamp duty). The cost of these additional moves has not been included in the estimates below.
- Based on SDAC data, around 88 per cent of owner-occupiers with limited mobility living in the community currently live in separate houses. This assumption would therefore require a large number of owner-occupiers to move from a separate house to a townhouse or apartment. Survey evidence suggests that around 40 per cent of older Australians who 'downsize' move from a house to a townhouse or apartment.²⁴⁴

²⁴⁴ James, A. Rowley, S. and Stone, W. 2020, Effective downsizing options for older Australians, AHURI Final Report No. 325, Australian Housing and Urban Research Institute Limited, p. 98.

Alternative allocation assumptions for renters

A significant share of the benefits arise from the increased availability of accessible rental properties. However, the extent to which these accessible rental properties would be allocated to renters with accessibility needs is not known.

The central case CBA assumed that the probability of a renter with accessibility needs moving to a new accessible rental property is around 12.6 per cent higher than the share of new accessible rental properties in the stock based on an analysis of the stated preference survey data.

Two scenarios are tested:

- As a lower bound scenario, the probability of a renter with accessibility needs living in a new accessible rental property is the same as the share of new accessible rental properties in the stock (random allocation scenario).
- As an upper bound scenario, the probability of a renter with accessibility needs living in a new accessible rental property is assumed to be 25 per cent higher than the share of new accessible rental properties in the stock (high allocation scenario).

Sensitivity analysis for benefits

The allocation assumptions are a key uncertainty in relation to the benefits estimates. Other areas of uncertainty and additional scenarios tested include the following.

- The CBA assumes that under Option 1 some dwellings (including double-storey houses and townhouses with the only bedrooms and shower not on entry level) are not livable for people with limited mobility, even if compliant with the proposed standard. The share of these dwellings is not known. The CBA assumes the share would be around 26 per cent for both houses and townhouses (based on DCWC's estimate relating to townhouses). The following alternative scenarios are also tested.
 - As a low alternative assumption, it is assumed that 16 per cent of houses and townhouses would not be livable for people with disability, even with compliant with the proposed standard under Option 1.
 - As a high alternative assumption, it is assumed that 36 per cent of houses and townhouses would not be livable for people with disability, even with compliant with the proposed standard under Option 1.
- For some of the problems identified (including safety-related costs, reduced quality of life, additional moving costs, premature or inappropriate entry into aged care, costs of non-visitability, costs to families with young dependants and short-term injuries), a range is estimated and in some cases the range is relatively wide. Alternative scenarios using low and high estimates of benefits are therefore tested.
- Dalton and Carter (2020a) suggested that OBPR's preferred VSL of \$4.9 million may be too low.²⁴⁵ The benefits are also tested using Dalton and Carter's preferred VSL of \$7.0 million. This also implies a Value of a Life Year of around \$304 000 (rather than \$213 000 preferred by OBPR).

²⁴⁵ Dalton, A. and Carter, R. 2020a, op.cit., p. 26.

- To take into account the fact that a significant proportion of new housing built under the current code will have some accessibility features (although relatively few houses will have all of the features in the proposed standard), the benefits attributable to the NCC proposal were reduced. However, in response to stakeholder suggestions that dwellings must have all the accessibility features to be accessible, a scenario is considered whereby all of the accessibility benefits are attributed to the NCC.

Sensitivity analysis for costs

Key uncertainties in relation to the cost estimates and our approach to sensitivity testing are as follows.

- The weightings underpinning the costings are mainly based on DCWC's professional judgement, as limited responses and reliable data were received at consultation. Rather than testing the sensitivity to each weighting, the sensitivity of the results can be seen in the cost change per dwelling required for each option to break-even.
- Whether the opportunity cost of additional space requirements has been measured correctly. Some stakeholders suggested that any loss of amenity could be minimised through better design or that the increase in the capital value of the dwelling as a result of the additional space would offset the additional cost. To test the extent to which the opportunity cost of space affects the CBA results, CIE tested a scenario that excludes the opportunity cost of space.
- The approach to verifying compliance with the proposed NCC standards is also not known and a range of possible costs were estimated. The impact of using the low and high alternative assumptions is therefore tested.

CBA parameters

The sensitivity of the results to alternative CBA parameters is also tested.

- Consistent with OBPR requirements, net benefits are calculated under alternative discount rates, 3 per cent and 10 per cent. A 5 per cent discount rate scenario is also tested to provide additional information for decision makers.
- The CBA is based on a 10-year regulatory period. However, as only around 2 per cent of the dwelling stock is added per year, the impact on the size of the problem is relatively modest. As a long-term strategy, the impacts over a 20-year regulatory period are also estimated.
- The benefits are estimated over the life of the dwelling, assumed to be 40 years. Some submissions suggested this should be longer. In response to this suggestion, a scenario where the life of the dwelling is assumed to be 50 years is also tested.

Sensitivity analysis for central case CBA

Table 8.5 shows the estimated benefit-cost ratio under these alternative input assumptions/parameters as well as the break-even analysis.

- A benefit-cost ratio greater than 1 indicates that the benefits are greater than the costs.
- A benefit-cost ratio less than 1 indicates that the costs are greater than the benefits.

8.5 Sensitivity and break-even analysis – benefit-cost ratio under alternative assumptions

Assumptions	Option 1	Option 2	Option 3	Option 4	Option 5
Break-even analysis					
Change in cost per dwelling to break even (\$)	-3 010	-15 544	-20 893	-26 850	n.a.
Sensitivity analysis (BCR)					
Central case	0.39	0.18	0.14	0.14	2.11
Alternative allocation assumption for owner-occupiers	0.57	0.26	0.20	0.21	2.11
Random allocation for renters	0.36	0.16	0.13	0.13	2.11
Higher allocation for renters (25% higher than random allocation)	0.43	0.19	0.15	0.16	2.11
Opportunity cost of space excluded	0.42	0.18	0.14	0.14	2.11
Low problem scenario	0.37	0.18	0.14	0.14	2.11
High problem scenario	0.48	0.25	0.19	0.37	2.11
High VSL ^a	0.28	0.13	0.10	0.10	1.54
No adjustment for baseline effects (Additionality)	0.62	0.28	0.22	0.23	3.38
10% discount rate	0.41	0.18	0.14	0.14	2.11
5% discount rate	0.37	0.17	0.14	0.14	2.11
3% discount rate	0.40	0.18	0.14	0.14	2.15
20 year regulatory period	0.60	0.20	0.16	0.16	2.11
50-year life of dwelling	0.29	0.13	0.10	0.11	2.11

^a reflects the value of statistical life (VSL) suggested by Dalton and Carter (2020a).

Source: CIE estimates.

Sensitivity analysis for CBA including employment and societal benefits

Table 8.6 shows the break-even analysis and the BCRs when the societal benefits and the upper bound estimate of employment impacts are included.

8.6 Sensitivity and break-even analysis with societal and employment benefits being included in the central case – benefit-cost ratio under alternative assumptions

Assumptions	Option 1 (\$ million)	Option 2 (\$ million)	Option 3 (\$ million)	Option 4 (\$ million)	Option 5 (\$ million)
Break-even analysis					
Change in cost per dwelling to break even (\$)	-2 276	-14 580	-19 927	-25 566	n.a.
Sensitivity analysis (BCR)					
Central case	0.54	0.23	0.18	0.18	4.27
Alternative allocation assumption for owner-occupiers	0.79	0.33	0.26	0.27	4.27

Assumptions	Option 1 (\$ million)	Option 2 (\$ million)	Option 3 (\$ million)	Option 4 (\$ million)	Option 5 (\$ million)
Random allocation for renters	0.36	0.16	0.13	0.13	2.11
High allocation for renters (25% higher than random allocation)	0.59	0.25	0.19	0.20	4.27
Opportunity cost of space excluded	0.58	0.23	0.18	0.18	4.27
Low problem scenario	0.50	0.23	0.18	0.18	4.27
High problem scenario	0.66	0.32	0.25	0.47	4.27
High VSL: ^a	0.43	0.18	0.14	0.14	3.69
No adjustment for baseline effects (Additionality)	0.77	0.33	0.26	0.27	5.54
10% discount rate	0.56	0.23	0.18	0.18	4.27
5% discount rate	0.51	0.22	0.18	0.18	4.27
3% discount rate	0.55	0.23	0.18	0.19	4.30
20 year regulatory period	0.77	0.26	0.20	0.21	4.27
50-year life of dwelling	0.41	0.17	0.13	0.14	4.20

^a reflects the value of statistical life (VSL) suggested by Dalton and Carter (2020a).

Source: CIE estimates.

Key finding from sensitivity testing

Key findings from the sensitivity and break-even analysis outlined above are as follows.

- When the community's preference for more equitable housing outcomes for people with disability is included in the CBA, the costs are still estimated to outweigh the benefits. This is one way of incorporating benefits related to equity, human rights and social justice into CBA. However, weighing up these benefits against the net costs imposed on other members of the community is ultimately a matter for decision-makers.
- One of the main unquantified benefits from more accessible housing relate to improved productivity and greater employment opportunities for those members of the community with accessibility needs. Even though these employment-related benefits could be significant, the analysis shows they are unlikely to be sufficiently large to change the outcome of the CBA.
- Under all scenarios outlined above and tested, the costs associated with all of the NCC options are estimated to outweigh the benefits, suggesting that this finding is reasonably robust.
 - The CBA results are generally relatively sensitive to the assumptions around market allocation, which is a key area of uncertainty.
 - Extending the period over which the proposed regulatory change are analysed tends to result in a modest improvement in the CBA results. This reflects two factors: the size of the problem is estimated to increase over time; and changes to the NCC become more effective in addressing the problem as the share of accessible dwellings in the housing stock increases.
- For the breakeven figure to be achieved the cost of Options 1-4 would need to have been significantly overestimated, as changes to the weightings would imply greater

provision of particular design features under the baseline would counteract the benefits from mandating these features. This is considered to be unlikely.

- On the other hand, the benefits associated with a subsidy program to provide accessible housing for renters with mobility-related disability is estimated to outweigh the costs under all scenarios tested. Although this option is outside the ABCB's area of responsibility, it is included as an alternative non-regulatory option as opposed to the regulatory options (Options 1 to 4). The finding suggests that a more targeted approach to addressing the issue of a lack of accessible rental properties is likely to be more cost-effective than changing the NCC, but the option has not been subject to a detailed, operational analysis. As this approach is targeting a limited number of rental properties, it would not fully address visitability issues which would require all dwellings to be accessible.

These findings will be discussed in the next chapter to form the conclusion of the RIS.

9 Conclusions

Inaccessible housing is a significant problem

The costs associated with inaccessible housing are a large and growing problem for the community. More than 3 million Australians have a mobility limitation and/or a self-care limitation due to disability, with more than 90 per cent living within the community.²⁴⁶ This is estimated to increase to around 4.5 million people by 2040.

Despite their disability, more than 80 per cent of people with limited mobility living in the community have no difficulty moving around their residence,²⁴⁷ suggesting that their housing generally meets their needs.

Table 9.1 reports the estimated number of people who may be affected by inaccessible housing with respect to the type of problems associated with inaccessibility. The numbers across problem type are not additive because one person may have multiple problems.

9.1 Number of people affected by lack of accessible housing per year

Problem	Estimated number of people affected per year
Safety-risks	325 100
Additional care needs	453 400
Quality of life	554 400
Additional time in hospital/transition care	159 900
Home modifications per annum ^a	21 790
Additional home moves	Range of 6 400 – 17 300
Premature/inappropriate entry into residential aged care	Range of 2 767 – 6 199
Inability to visit family and friends-(vistability)	85 800
Families with young dependants	Up to 16 000
Short-term injuries	17 551

^a Assumes one person per relevant modification per year

Note: the number of people affected is not additive across each type of problem.

Source: CIE – population is estimated on the basis of analysis in appendices B-J.

While the number of people affected by inaccessible housing appears a small proportion of the total population, the costs to the community for those whose needs are not met (or who have incurred significant cost in having their needs met) are estimated to be

²⁴⁶ Based on data from the 2018 Survey of Disabilities, Ageing and Carers.

²⁴⁷ Based on data from the 2018 Survey of Disabilities, Ageing and Carers.

significant. The costs to the community are assessed and estimated around each type of problem. For quantifiable costs they are additive.

- The costs associated with inaccessible housing that were able to be quantified are estimated to range between around \$3 billion and \$6.5 billion per year based on 2018 data.
- These costs are estimated to increase to between \$4.5 billion and \$9.9 billion per year by 2040.

Discussion of results

NCC options

The costs of each of the NCC options considered as part of the RIS were estimated to outweigh the benefits, although not all of the benefits were able to be quantified.

One of the main benefits that were not able to be quantified were the employment-related benefits. Although there is qualitative evidence to support the proposition that inaccessible housing can contribute to poorer employment outcomes among people with limited mobility, this evidence does not enable robust quantification.

However, sensitivity analysis presented in the previous chapter suggests that these benefits are unlikely to be sufficiently large to change the outcome of the CBA. Including these unquantifiable benefits in the CBA would still result in net cost.

The key factors that drive the net cost outcome of the CBA are as follows.

- The cost of complying with the proposed requirements are estimated to be non-trivial, in the order of several thousand dollars per dwelling. These estimates are conservative, compared with most cost estimates from industry submissions that ranged from \$3 000 to over \$55 000 (table 6.2 in chapter six).
- As new dwellings contribute around 2 per cent of the dwelling stock per year, changes to the NCC will address the problem slowly over time. The impacts are estimated to be modest in the near to medium term.
- Addressing the problem through the NCC is generally a blunt approach to addressing the problems associated with inaccessible housing. A mandatory accessibility standard in the NCC would result in a large number of accessible dwellings being built, although a relatively small share will be occupied by people with accessibility needs through the market process. There are many factors affecting who may purchase or rent a dwelling with accessible features, as discussed in the 'allocation' section in chapter eight.
- There is a risk with adopting a universal design approach to accessible housing that one size does not fit all. In particular, it is possible that the accessibility features provided under the NCC proposal are not needed by most of the population (i.e. the benefits are likely to be small), while the features may not be sufficient to meet the needs of those with significant accessibility needs (i.e. the universal design features are in some cases less stringent than some other accessibility standards – see the discussion in chapter seven).

There are two important caveats around these findings.

- The CBA does not explicitly take into account distributional impacts. In particular, the benefits of the proposal would mostly accrue to people with disability and older Australians and their families (and also reduce costs to government support programs).
- The CBA is based on limited evidence of the benefits of universal design as discussed in chapters three (statement of the problem) and seven (estimating the benefits) in particular.

Distributional impacts

Several stakeholders advocated for minimum accessibility standards on human rights and other equity grounds. These arguments can be summarised as follows.

- People with disability should have the same access and housing choices as other members of the community. They should have access to mainstream housing options, rather than segregated housing that specifically caters for those with accessibility needs.
- Australia has an obligation to implement the recommendation of the Committee on the Rights of Persons with Disabilities to introduce a minimum accessibility standard into the NCC.²⁴⁸

Consistent with the COAG RIS Guidelines, the key analytical tool adopted in this RIS is CBA. CBA is based on utilitarian principles, where the costs and benefits on all members of the community are considered equally. This approach does not take into consideration distributional impacts, although as suggested by stakeholders these impacts are important when considering the provision of accessible housing.

Consistent with the COAG RIS Guidelines, decision-makers are best placed to weigh up the distributional impacts against the net cost of the proposal. In particular:

“Distributional judgements are properly made at the political level. In the interests of avoiding subjective bias, analysts should, by and large, refrain from attaching distributional weights to cost and benefit streams. Exceptions might be where there are unambiguous government policy objectives to assist specific groups in the community, and where the justification for special assistance to these groups relative to other groups is clearly established. However, for reasons of transparency, decision-makers and the public should be made fully aware of the costs of government action aimed at benefiting particular individuals or groups in the community.”²⁴⁹

For the Consultation RIS, CIE estimated the community’s preference for fairer outcomes for people with disability and older people through a stated preference survey.

To provide some guidance to decision-makers, an estimate of these societal benefits is included as part of the scenario analysis. When these benefits are included, all of the

²⁴⁸ Note that CIE is not in a position to offer a legal opinion on whether Australia has an obligation to implement the recommendations of the Committee on the Rights of Persons with Disabilities.

²⁴⁹ Council of Australian Governments 2007, *Best Practice Regulations: A Guide for Ministerial Councils and National Standards Setting Bodies*, October 2007, p. 26.

NCC proposals are estimated to impose a net cost to the community (see the scenario and sensitivity analysis section, especially tables 8.4 through 8.6 in chapter eight). However, some stakeholders have suggested this approach did not capture the full range of benefits.

Though CIE has attempted to include all benefits in its CBA assessment, some benefits resist quantification. Decision-makers are best placed to weigh up factors, such as social justice for people with disability and policies to progress Australia's human rights commitments under the UNCRPD against the net cost imposed on other members of the community.

Limited research in the literature

Although there is much qualitative evidence on the costs associated with inaccessible housing, there is little robust quantitative evidence on the number of people who require accessible housing and the benefits of universal design.

- Although SDAC is a detailed and reliable source of information, there is little detail on accessibility needs in relation to housing and the extent to which these needs are met. As such, the estimates in this report are mainly based on inferences, rather than direct evidence.
- Most of the literature on the impacts of accessible housing relates to home modifications. However, the benefits of universal design cannot necessarily be extrapolated from the impacts of bespoke home modifications.
- There is limited quantitative evidence on some of the key benefits.
 - In particular, there is limited evidence on the impact of universal design on some of the key benefits (which together are likely to contribute most of the total), including:
 - ... quality of life
 - ... care needs and
 - ... employment outcomes.
 - In some cases, the benefits were not able to be quantified at all.

The lack of a strong body of quantitative evidence creates room for different interpretations of the available evidence and the need to make general assumptions that are contestable. In this regard, although CIE's sensitivity testing suggests it is unlikely, the possibility that the proposal could deliver a net benefit cannot be completely ruled out. For example, it is possible that some of the benefits may be much larger than estimated based on CIE's interpretation of the available evidence. If strong quantitative evidence was to emerge in the future that the benefits were significantly understated in the CBA, the conclusions may need to be re-considered.

Under COAG best practice principles, the RIS must demonstrate the benefits of the restrictions to the community as a whole outweigh the costs. In this context, the lack of strong quantitative evidence to support the proposal tends not to strengthen the case for change.

Non-regulatory options

The Decision RIS also considered two non-regulatory options:

- a generalised subsidy scheme to target a lack of accessible rental properties – Option 5
- an enhanced voluntary code – Option 6.

While a subsidy scheme is outside of the ABCB's area of responsibility, it is included in the analysis to test whether regulatory options deliver more net benefits than non-regulatory options. Consistent with the COAG RIS Guidelines, a RIS must establish not only that the benefits of a regulatory proposal outweigh the costs, but also that it is the best policy approach to meet the objectives (i.e. delivers the greatest net benefits). As such, regulatory options must be tested against alternative approaches to meet the objectives.

As this option is not formally under consideration, the design of a subsidy scheme (including eligibility requirements) has not been fully developed. Furthermore, the speed with which such a scheme could be developed is likely to be much slower than estimated in the CBA.

Nevertheless, the CBA suggests that a subsidy scheme to provide accessible rental properties to people with accessibility needs is a more targeted and therefore more cost-effective approach to at least partially addressing the problems associated with inaccessible housing than through the NCC. In particular:

- renters are often unable to make modifications to a rental property because landlords are reluctant to approve modifications
- renters are unable to take advantage of subsidies on home modifications.

The benefits and costs of an enhanced voluntary code were unable to be quantified.

However, construction of more accessible homes is likely to be beneficial. Although it is acknowledged that a voluntary approach has not seen high levels of adoption in the past (which means the impact of enhanced measures may be limited), any relatively low-cost initiatives to encourage voluntary uptake of more accessible dwellings would be beneficial.

Findings of analysis

This RIS has investigated the inclusion of minimum accessibility housing standards in the NCC. It considers the costs and benefits of options to ensure housing is built to meet the needs of all Australians, drawing on the best available information, supported by important lived experiences and information received during consultation.

Although a lack of accessible housing imposes a significant and growing cost on the community (incurred mostly by people with disability and older people), this RIS concludes that regulatory options to amend the NCC for all new houses and apartments based on Silver, Gold and Gold + impose costs that outweigh the benefits.

To provide a comparison to the regulatory options, this RIS also looked at two non-regulatory options (Options 5 and 6). Analysis of Option 5 (conceptual targeted

subsidies), undertaken on a general basis, suggests the potential for a net benefit, noting the analysis of Option 5 and Option 6 were conducted in general and on limited terms.

The CBA provides quantitative information to inform policy decisions. In an effort to provide further information, the RIS also discusses broader impacts to society including employment and productivity benefits and the community's preference for more equitable outcomes in housing.

Finally, the CBA is not the only input to decision making. Decision-makers are best placed to weigh up factors, such as social justice for people with disability supporting more inclusive communities and ageing in place, as well as Australia's future progress towards international human rights treaties, against the net cost imposed on other members of the community.

A Consultation summary

The Centre for International Economics (CIE) prepared the Consultation Regulation Impact Statement (Consultation RIS) for the proposal to include minimum accessibility standards for housing in the National Construction Code (NCC).²⁵⁰

The Consultation RIS provided a basis for review and input from a range of stakeholders including advocacy groups, industry and the general public.

Public consultation on the Consultation RIS extended from 6 July to 31 August 2020. Consultation was conducted through the ABCB's Consultation Hub platform²⁵¹ which featured 36 structured questions to assist the public to provide their feedback on relevant parts of the Consultation RIS. Submissions were also received outside the Consultation Hub.

There were 203 submissions in total, with 98 submissions responding through the Consultation Hub, and the remaining being submitted separately.

Among the 203 submissions, there were 114 public submissions, 63 anonymous submissions, and 26 confidential submissions. Public submissions are identified by the respondent name while anonymous ones by their unique ID number on the ABCB consultation website²⁵². Confidential submissions are not published and are not identified explicitly in this RIS. The phrase 'a/one submission' is used when referencing feedback from a confidential submission.

CIE has conducted three follow-up consultations to better understand how the proposed accessible features benefit people with accessibility needs. These consultations were held with Professor Catherine Bridge of the Home Modification Information Clearinghouse; Madison Silver, Michael Barrett, Emily Steel and Tammy Aplin of Occupational Therapy Australia (OTA); and Michael Fox AM (access consultant).

This appendix summarises the views expressed in the submissions received during public consultation on the Consultation RIS. It is structured around the topics discussed in the Consultation RIS. The appendix does not provide comments and/or responses to the submission received. It is discussed in chapter two in the main body of the report.

²⁵⁰ CIE 2020, *Proposal to include minimum accessibility standards for housing in the National Construction Code: Consultation Regulation Impact Statement*, July 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/supporting_documents/Consultation_RIS_Proposal_to_include_minimum_accessibility_standards_for_housing_in_the_NCC.pdf

²⁵¹ <https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/>

²⁵² https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

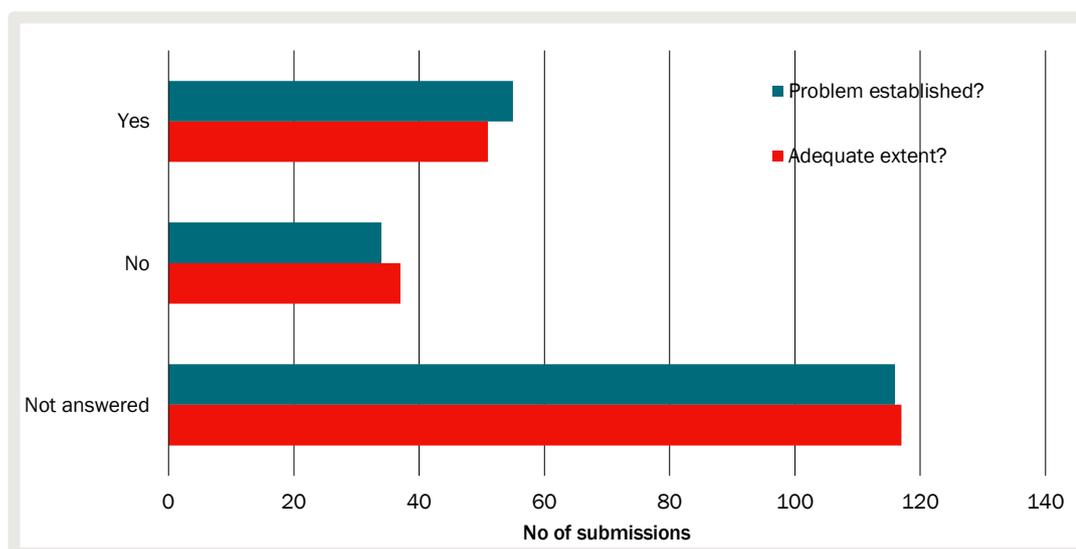
Size of the problem

General assessment

Despite the high number of nil answers to many of the questions around the problem, more respondents agreed that the problem in the Consultation RIS is adequately established (Question 8) and the extent of the problem is adequately described (Question 9) (chart A.1).

The following subsections discuss the specific issues raised in the submissions which would affect the estimation of the size of the problem.

A.1 Problem established and the extent of the problem



Note: answers to Questions 8 and 9.

Data source: Consultation Hub.

Impacts to the broader community

A number of submissions suggested that the Consultation RIS should consider the costs to a wider community that inaccessible housing has caused, rather than costs to people with mobility disability and older Australians. For example, one submission expressed concern that the Consultation RIS was 'only using the information from the exceptionally small cross section of the community who have a strong personal interest in the matter, and treating it as is it is somehow "broadly representative."²⁵³

Spinal Life Australia suggested the following people need accessible housing:²⁵⁴

²⁵³ Anonymous Submission 462974436, answer to Question 12, accessed 1 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

²⁵⁴ Submission by John Mayo for Spinal Life Australia, p.2-3, accessed 1 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

- people with disability in order to participate in their community as Australians without disability do
- people over 60s to manage diminishing functionality associated with ageing, to age in place, and to maintain their local relationships through peers and family with diminished functionality being able to visit them
- people with a medical condition (illness, muscular, respiratory and cognitive) to manage diminished functionality associated with their medical condition and aging, to age in place, and to maintain their local relationships through peers and family with diminished functionality being able to visit them, and
- young families to seek accessibility in order that aging grandparents (and their peers) can participate in the lives of their children and contribution in supporting their family.

Accordingly, the populations affected by inaccessible housing are:

- people with short-term injuries and chronic health conditions
- families rather than individuals with accessibility needs, and
- the general public.

These are discussed in detail below.

People with short-term injury and chronic health conditions

Several submissions (including Specialist Disability Accommodation (SDA) Alliance²⁵⁵) noted that the analysis in the Consultation RIS has not taken into account the potential benefits of accessible housing to people with temporary injuries.

SDA Alliance and ANUHD²⁵⁶ suggested that people with chronic health conditions but not identified as having disability are affected by the lack of accessibility. These chronic illnesses include:

- mental and behavioural conditions (4.8 million people);
- back problems - 4.0 million people (16.4 per cent)
- arthritis - 3.6 million people (15.0 per cent)
- asthma - 2.7 million people (11.2 per cent)
- diabetes mellitus- 1.2 million people (4.9 per cent) comprising Type 1 Diabetes - 144,800 people (0.6 per cent) and Type 2 Diabetes - 998,100 people (4.1 per cent)
- heart, stroke, and vascular disease - 1.2 million people (4.8 per cent)
- osteoporosis - 924,000 people (3.8 per cent)
- chronic obstructive pulmonary disease (COPD) - 598,800 people (2.5 per cent)

²⁵⁵ Submission by Melanie Southwell for SDA Alliance, answer to Question 9, accessed 1 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

²⁵⁶ Submission by Margret Ward for ANUHD, p.10, accessed 1 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

- cancer - 432,400 people (1.8 per cent)
- kidney disease - 237,800 people (1.0 per cent)

According to SDA Alliance, in 2017-18, two thirds (67.0 per cent) of Australian adults were overweight or obese (12.5 million people), a condition that is on the increase not only in numbers but also in severity. There is also a large increase in the incidence of obesity in people aged 18-24 years. It has been established that, for many people, obesity leads to chronic health problems later in life.²⁵⁷

Submissions also suggested that pregnant women and young families would also benefit from accessible housing.

Post-Polio Victoria (PPV) suggested that the accessibility needs of the hearing impaired and those with psycho-social disability need to be considered, as per the UN Committee on the Rights of Persons with Disabilities' *Concluding Observations on the Initial Report of Australia*, adopted by the Committee at its Tenth Session (2-13 September 2013).²⁵⁸

Person-based versus family-based approach

Some submissions made the point that the analysis is flawed because it is based on the impacts on the person with a mobility-related disability, rather than the household. The submissions made the point that people with disability live in households – accessible housing is not about individuals; it is about households (families).

Broader community

Some submissions suggested that the impact of inaccessible housing on the general public has not been considered in the Consultation RIS.

For example, the SDA Alliance²⁵⁹, PM&D Architects P/L²⁶⁰, among others, were concerned that the true and realistic estimate of cost to the community from a lack of accessible housing was not fully captured. They agreed with Dalton and Carter (2020a)²⁶¹ that the significant benefits that flow directly from improved design and functionality to the general community were not included.

²⁵⁷ Melanie Southwell, op.cit., answer to Question 9

²⁵⁸ Submission by Barbary Clarke for Post-Polio Victoria, p. 10, accessed 1 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

²⁵⁹ Melanie Southwell, op.cit., answer to Question 11

²⁶⁰ Submission by Geoffrey Barker for PM&D Architects P/L, answer to Question 11, accessed 1 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

²⁶¹ Dalton, Andrew and Rob Carter 2020a, *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, as Appendix 1 of the submission by Melbourne Disability Institute (MDI) and Summer Foundation to the public consultation.

Physical Disability Council of NSW (PDCN) argued that liveable housing design (LHD) has benefits across the broader population for the following reasons:²⁶²

- the benefit of decreased general trips and falls in the home across all population demographics
- the benefit of childcare being able to be provided by older relatives in the home
- benefits in terms of savings across the NDIS, Aged Care system and individuals' personal funds for modifications to homes
- benefits stemming from a reduced need for mobility aids
- benefits from reduced need for respite services
- better health outcomes for carers, particularly mental health costs
- less time and resources spent looking for suitable accommodation, both for the individual and their carers/advocates
- benefits in terms of cost saving relating to homelessness for persons with physical disability who cannot secure affordable/accessible accommodation
- benefits accruing from individuals being able to remain in the workforce for longer and delay retirement
- benefits associated with delayed physical decline from existing medical conditions, and
- benefits of increased capacity for formal and informal volunteer work

It is noted that some of these reasons relate to other items associated with the size of the problem (benefits).

Ageing in place

A number of submissions, including:

- Housing for the Aged Action Group (HAAG)²⁶³
- Shelter WA²⁶⁴
- Spinal Life Australia²⁶⁵
- Jacqueline Marks²⁶⁶

²⁶² Submission by Hayley Stone for Physical Disability Council of NSW (PDCN), p.18, accessed 1 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

²⁶³ Submission by Gemma White for Housing for the Aged Action Group, p.2, accessed 4 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

²⁶⁴ Submission by Michelle Mackenzie for Shelter WA, p.5, accessed 4 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

²⁶⁵ John Mayo, op.cit., p.2-3

²⁶⁶ Submission by Jacqueline Marks, accessed 4 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

- Victorian Council of Social Service (VCOSS)²⁶⁷
- Department of Communities, Housing Advisory Unit WA²⁶⁸

noted that costs associated with care for those remaining in their family home are much lower than residential aged care, whether care is provided through formal or informal means.

Therefore, housing designs that support enabling people with care needs to remain in their home are important in reducing the calls on the residential aged care system, reducing costs to government. The cost savings associated with in home care have been a major reason guiding policies around ageing in place.

As cited by the submissions, Judd et al (2010)²⁶⁹ found that most older home owners (over 90 per cent) prefer to age in place – usually in their present dwelling, modifying their home and using care services in the home. However in a survey of older home owners, around a third (34 per cent) had made modifications to their house to make it safer or easier to use, with the most common modifications being grab rails, modified bathrooms or stairs.

One submission highlighted mixed appeal for universal, adaptable or visitable designs among older people. On the one hand, as quoted by the submission, Judd et al (2010) found that most older people support adaptable or universal design (85 per cent and 78 per cent respectively see it as important) compared to moving house or visitable design (68 per cent and 65 per cent seeing as important). On the other hand, the submission quoted a study by James et al (2019)²⁷⁰ that found, when asked about the most important physical features they aspired to in their housing, only 28 per cent regarded accessible or universally designed housing as an important physical characteristic in their housing, and similar numbers regarded adaptability as an important characteristic in a house.

²⁶⁷ Submission by Karen Taranto for VCOSS, p.9, accessed 4 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

²⁶⁸ Submission by Coralie Ayres for Department of Communities, Housing Advisory Unit WA, answer to Question 8, accessed 4 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

²⁶⁹ Judd, B., D. Olsberg, J. Quinn, L. Groenhardt and O. Demirbilek 2010, *Dwelling, land and neighbourhood use by older home owners*, AHURI Final Report No. 144, Australian Housing and Urban Research Institute Limited, Melbourne, <https://www.ahuri.edu.au/research/final-reports/144>

²⁷⁰ James, A., S. Rowley, W. Stone, S. Parkinson, A. Spinney and M. Reynolds 2019, *Older Australians and the housing aspirations gap*, AHURI Final Report No.317, Australian Housing and Urban Research Institute Limited, Melbourne, <https://www.ahuri.edu.au/research/final-reports/317>

Visitability

Post Polio Victoria (PPV)²⁷¹ cited a study by Duncan et al (2018)²⁷² on the impact of an individual's social and environmental context on their health outcomes. The study points out that inability to access their friends' homes (Duncan et al, 2018:6) can impact on 'their commitment to continue to build a life full of meaning' (Duncan et al, 2018:3) and, due to their friends' potential lack of understanding of their physical limitations, to diminished social relationships, or inclusion.

Employment and productivity

Dalton and Carter (2020a) in the MDI and Summer Foundation submission also raise other issues that may have a smaller impact. One of them is the employment and productivity impact of premature retirement, premature death and morbidity (section 1.7.3, p.10; section 3.5.3, p.27 in Dalton and Carter (2020a)) and the productivity impact for people not in the paid workforce (section 3.5.3, p.27 Dalton and Carter (2020a)).

For example, someone who is injured as result of a fall may also require time off work, which is a cost to their employer and to the wider economy.²⁷³

Some submissions provided data on the employment impact of people with disability, for example:

- Close to one-third of respondents to a survey by Dr Wiesel reported lack of accessible housing has resulted in job loss, missed job opportunities, reduced work hours, or reduced productivity at work.²⁷⁴
- 16 per cent to 30 per cent of members of Spinal Life Australia report that a lack of accessible housing has impacted their employment.²⁷⁵

Cost of falls

PPV²⁷⁶ cited the estimates of costs of falls related injuries by the Australian Commission on Safety and Quality in Health Care (ACSQHC) (2009). It was estimated that, if nothing was done to decrease the number of falls in older people between 2020 and 2051,

- the cost of falls-related injury would be \$1.4 billion p.a.

²⁷¹ Barbary Clarke, op.cit., p.6

²⁷² Duncan, A. and Batliwalla, Z. 2018, 'Growing older with post-polio syndrome: Social and quality-of-life implications', SAGE Open Medicine, v.6, p.1-7.

²⁷³ Submission by Jane Scott, answer to Question 11, accessed 4 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

²⁷⁴ Submission by Professor Bruce Bonyhady and Dr Di Winkler for Melbourne Disability Institute and Summer Foundation, Appendix 2, accessed 4 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

²⁷⁵ John Mayo, op.cit., p.3

²⁷⁶ Barbary Clarke, op.cit., p.8

- hospitals would have 886 000 additional bed days occupied by people who had suffered from falls (or 2 500 dedicated hospital beds), and
- 3 320 additional residential aged care places would be required due to falls-related injuries.

Health care cost

ANUHD²⁷⁷ suggested that the costs of avoidable hospital stays are underestimated – transition care added on average 12 weeks of care within the health system for each person. The figure for avoidable costs as a result of bed blocking in rehabilitation care wards is also likely to be underestimated because of a continuing trend towards patients in sub-acute beds being sicker and older than would typically have been the case in the past. It suggested that people who stay in hospital longer than is clinically required tend to suffer adverse consequences such as heightened risk of infection, and loss of independence, which in turn, lead to higher rates of readmission, more accidents, increased need for greater home care etc.

Care costs

Submissions suggested the Consultation RIS understated estimates of care costs (as a result of inaccessibility) in relation to the:

- hours of care required
- minimum wage rate, and
- productivity and/or employment impact on informal carers.

Hours of care required

One submission²⁷⁸ pointed out that the care cost estimates in the Consultation RIS were understated:

For appendix B, the paper cited considers older Australians who have a condition that is gradually deteriorating and the change in hours of care provided may significantly underweight the benefits of universal design for people with significant mobility issues. The cost of care and **time of interventions** were based upon certain studies relating to individuals with vision issues. The minimum wage calculation also does not take into account penalty wages or the cost of assistance on weekends or at short notice.

This part of the paper is particularly underwhelming and needs to be heavily revised. It is quite common for showering and dressing of an individual once per day to take 2-3 hours and some NDIS packages provide for 24 hr a day care.

An assumption (without a clear basis) is made that the need for assistance for people with disability is often unrelated to housing design. This is, again, difficult to reconcile. Services provided for older Australians and Australians with disability are often related to **selfcare** and

²⁷⁷ Margret Ward, op.cit., p.19-20

²⁷⁸ Anonymous Submission 284174932, answer to Question 11, accessed 4 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

personal care, which require access to either the bathroom or the kitchen. The significant waiting periods for entry into aged care highlight that many Australians need a vast array of services in the home, which may be impacted upon my housing design (cf the number of Aged Care Assessment Team reviews conducted annually).

The submission suggested work by Professor Catherine Bridge and other accessibility researchers might prove helpful.

Minimum wage rate for informal carers is inappropriate

Some submissions questioned the use of the minimum wage rate in the Consultation RIS to estimate informal care costs, suggesting that the same rate of formal care or the average wage rate should be used instead.

For example, Alexandrina Council²⁷⁹ pointed out, '[t]he opportunity costs for many providers of informal assistance would be much higher where their time could be used in work, study or other caring responsibilities'.

One submission²⁸⁰ pointed out that the minimum wage calculation also does not take into account penalty wages or the cost of assistance on weekends or at short notice.

Productivity and/or employment impacts of informal carers

Some submissions, including Building Designers Association of Australia,²⁸¹ suggested that the impacts on informal carers resulting from their reduced opportunity to engage in paid work should be included in the analysis.

As explained by Carers WA²⁸², informal carers may wish to participate in the workforce but are limited by the care they need to provide to a family member who does not have access to suitable housing. Carers often spend a great deal of time and effort seeking information, assessments and advice on modifications to the family home which could be saved with better availability of accessible housing.

A recent report by Carers Australia and Deloitte Access Economics on the value of informal care, which was mentioned in the Carers WA submission, notes that there are

²⁷⁹ Submission by Sam Priest for Alexandrina Council, p.12, accessed 4 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

²⁸⁰ Anonymous Submission 284174932, answer to Question 11, accessed 4 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

²⁸¹ Submission by John Hatch for Building Designers Association of Australia, answer to Question 11, accessed 4 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

²⁸² Submission by Felicity Mitchell for Carers WA, answer to Question 11, accessed 4 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

substantial differences in the employment outcomes for carers relative to non-caregiving Australians.²⁸³

Moving home

Several submissions suggested that the costs associated with moving home are likely to be understated because the Consultation RIS only covers removalist costs.

Moving-related costs that have been omitted could include:²⁸⁴

- real estate agent fees
- stamp duties
- repair and cleaning obligations for renters, and
- additional search costs associated with a lack of accessible housing.

Home modifications

About 53 submissions provided additional information about the type and cost of home modifications that are made to improve the accessibility of a home (Question 13).

Home Modification Information Clearinghouse²⁸⁵ stressed that modifications are not universal design and cannot be assumed as a proxy for their costs. Because most of the modifications are bespoke to meeting special needs and are not included in the universal design, using their costs as an indication to the size of the problem that universal design could avoid may be an overstatement.

Features added by home modification

A number of submissions provided suggestions on the features that people with disability often need and/or have been added to existing dwellings based on their personal or professional experience. These features include:

- Adding grab rails, noggins for grab rails
- Widening doorways, hallways and corridors
- Converting garages to bedrooms
- Modification to bathrooms
- Adding ramps
- Level access – simultaneous pedestrian and car access and levelling flooring transitions do not only help to reduce trip hazards for those less mobile but also help

²⁸³ Carers Australia and Deloitte Access Economics 2020, *The value of informal care in 2020*, <https://www.carersaustralia.com.au/wp-content/uploads/2020/08/FINAL-Value-of-Informal-Care-2020.pdf>, p.iv

²⁸⁴ Sam Priest, op.cit., p.12

²⁸⁵ Submission by Professor Catherine Bridge for Home Modification Information Clearinghouse, p.7, accessed 4 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

robot vacuums to move between rooms which many people with disability use to remain independent

- Shade for car parking as many people with neuromuscular conditions and spinal cord injuries are sensitive to heat
- Access to clothes lines
- Additional storage in a home as clear space for circulation impacts on the amount of furniture in any room, its position and placement, additional storage is also needed for mobility equipment
- Stair lifts
- Changing bench top heights, cupboard heights and appliance heights in kitchens, bathrooms and laundries
- Kitchen access between counters
- Automated lights, doors, curtains, and
- Door and cabinet handles

One submission cited a survey of older home owners, which found around a third (34 per cent) had made modifications to their house to make it safer or easier to use, with the most common modifications being grab rails, modified bathrooms or stairs (Judd et al. 2010).

The Alexandrina Council²⁸⁶ survey also found that the majority of respondents felt that it would be easy to modify their home if needed (59 per cent) or reported that their home was already modified to their needs (16 per cent).

One submission²⁸⁷ noted that some of these modifications are not obvious access modifications, but that they all play a part in daily tasks for people with disability.

Some submissions noted that some modifications are impractical. For example, as mentioned in the submission by Andrew Ferris Drafting and Design²⁸⁸, a bathroom upgrade involving removing a corner shower was impractical in itself.

Home modification costs

The community survey conducted by Alexandrina Council²⁸⁹ in 2016 found that 16 per cent of respondents felt that it would not be easy to modify their home if needed, and the most common reason cited was the need for major/high cost home renovation.

²⁸⁶ Sam Priest, op.cit., p.5-10

²⁸⁷ Anonymous Submission 454639644, answer to Question 13, accessed 4 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

²⁸⁸ Submission by Andrew Ferris for Andrew Ferris Drafting and Design, answer to Question 13, accessed 4 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

²⁸⁹ Sam Priest, op.cit., p.5-10

Some submissions suggested that the modification costs would be substantial or significant. In contrast, a couple of submissions suggested that the modification costs would be comparable to good quality alterations.²⁹⁰

Home Modification Information Clearinghouse²⁹¹ noted that the five most common modifications are under \$1 000 and can be done without the need for licensed tradesmen i.e. installation of grabrails and handrails. However, it also noted that most existing Australian housing cannot be modified to comply with the LHDG Silver level²⁹² which means that substantial costs could be incurred in retrofitting modifications to kitchens and laundries but mostly these can be done using modular furnishing for approximately \$20 000 to \$40 000 if required.

Some submissions referred to the Victorian Government RIS on visitable and adaptable features in housing,²⁹³ stating that modification costs 14 to 20 times more than building them at the beginning.

Many home modifications have been done through government programs.

WA Department of Communities Housing Advisory Unit²⁹⁴ advised that available data on home modification expenditure for eligible people with disability (those people with substantially reduced functional capacity) shows many are related to inaccessible housing:

- \$2 000 to \$5 000 for shower hob removal, and
- \$15 000 to \$20 000 per room (for laundry, bathroom, bedroom, kitchen modifications to LHDG Silver level).

According to ANUHD²⁹⁵, it costs about \$30 000 for the NDIS funded retrofitting of the following features:

- provision of step-free showers
- wider access doors, and
- reinforcement of walls to support grab rails.

²⁹⁰ Submission by Michelle Surgeon, answer to Question 13, accessed 4 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

²⁹¹ Professor Catherine Bridge, op.cit.

²⁹² *sic*. There is no requirement for kitchen and laundry under the proposal equivalent to LHDG silver level.

²⁹³ Department of Planning and Community Development 2010, *Visitable and Adaptable Features in Housing: Regulatory Impact Statement*, <https://www.vic.gov.au/sites/default/files/2019-11/Amendment-to-the-Building-Code-of-Australia-Visitable-and-Adaptable-Features-in-Housing-RIS.pdf>

²⁹⁴ Coralie Ayres, op.cit., answer to Question 11.

²⁹⁵ Margret Ward, op.cit. p.41-42

The submission by the ACT Disability, Aged and Carer Advocacy Service (ADACAS)²⁹⁶ noted that Home and Community Care (HACC) allocated approximately 75 per cent of funds to services for older people, and the remainder on people with disability under the age of 65 in NSW between 2000 and 2011.

There were three tiers of funding for home modifications, allocated to providers and allocated on priority. Level 2 modifications were above \$10 000, and Level 3 were above \$25 000. In 2009-2010 in NSW there were 260 home modifications jobs done under Level 2, at an average cost (then) of \$16 013, and 50 jobs completed under Level 3, at an average cost of \$36 045.

Some other submissions provided more specific estimates of costs of home modification to achieve accessibility. For example,

- An accessible toilet costs 3 times that of a normal toilet.²⁹⁷
- Wheelchair ramps cost \$6 000, while Gold standard wheelchair accessibility involving knocking down walls cost \$18 000.²⁹⁸
- Converting a unit to Platinum standard costs \$115 000.²⁹⁹
- A personal story suggests that it cost \$900 to include battens for grab bars and the grab bars themselves (the shower rail is a grab bar as are all towel rails) in new builds and would cost \$19 000 to retrofit them as informed by the builder.³⁰⁰
- A respondent, who has cerebral palsy, notes her modification costs: around \$42 000 for the kitchen, \$50 000 for bathroom, \$67 000 for structural changes (including raising the level of a floor) and \$35 000 for other changes (including extending the pergola).³⁰¹

Some submissions emphasised that modification costs may be an underestimate of the problem as in some cases modifications are not sufficient to meet accessibility needs.

²⁹⁶ Submission by Michael Bleasdale for ADACAS, answer to Question 13, accessed 7 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

²⁹⁷ Anonymous Submission 607199877, answer to Question 13, accessed 7 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

²⁹⁸ Anonymous Submission 122486412, answer to Question 13, accessed 7 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

²⁹⁹ Anonymous Submission 914154835, answer to Question 13, accessed 7 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

³⁰⁰ Submission by Lee Jordan, p.1, accessed 7 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

³⁰¹ Anonymous Submission 118250068, p.2-3, accessed 7 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

It was also suggested that time cost of modifications (that is waiting for the modification to be completed) should be considered.

Further information

Some further information sources were suggested by submissions. They include:

- Home Modification Information Clearinghouse³⁰²
- NDIS providers
- Government compensable insurance schemes, e.g. Transport Accident Commission (TAC) in Victoria
- Councils, e.g. permit information relating to retrofitting existing structure
- Public housing authorities, e.g. SA Housing Authority; Queensland Department of Housing and Public Works
- Hospitals, and
- Aged care.

Costs of prolonged hospital stay

A couple of submissions suggested that avoided costs of longer stays in hospitals were understated. Prolonged hospital stay would result in higher risk of infection and higher risk of dependence, which in turn increases risk of readmission. These impacts should be considered in the size of the problem.

Search cost

Submissions suggested search costs should be included in the size of the problem as a result of the lack of accessible housing in the market. These costs would reduce if more houses are accessible. The creation of a substantial number of accessible homes would offer people more choices and thus reduce the search cost.

Cost to industry

One submission mentioned that there are costs to the building industry due to the lack of accessible housing and the lack of harmonised standards:

The lack of accessible housing provisions represents a significant cost to industry. This is predominantly for provision of Class 2 dwellings, where there are multiple different planning policies requiring different designs to differing proportions of dwellings. For example, some planning requirements will seek 20 per cent of all dwellings to AS4299 Class C and 10 per cent to LHA Silver. The amount of time in design is extensive as designers grapple with the nuances between different standards and builders incur rework costs as they get confused building to multiple requirements.

This also affects Class 1 where multiple dwellings are being built and planning requirements are similarly triggered.

³⁰² <https://www.homemods.info/>

Value of statistical life (VSL)

The Consultation RIS used value of statistical life (VSL) (box A.5 and table A.6 in the Consultation RIS) as suggested by the OBPR guidelines. The VSL for the 25-34 years old cohort in the Consultation RIS was \$5.4 million.

Dalton and Carter (2020a) suggested that the VSL should be higher – ranging from \$4.5 million to \$7.9 million with an average value of \$7 million.

Social justice

Dalton and Carter (2020a) discussed social justice as a reason for government intervention, links this to the principle of solidarity, and points to the need for social justice in housing in the human rights frameworks and in other government reports (section 2.2, p.14 and section 2.3.1, p. 15). Some other submissions also share this view.

Ensuring minimum accessibility standards in the NCC is consistent with Australia's human rights obligations, according to QLD Human Rights Commission.³⁰³ Physical Disability Council of NSW argued that international and domestic reputational gains should be included as a benefit.³⁰⁴

Intangible morbidity impacts and quality of life

A number of submissions, some through personal stories, pointed out the negative impacts of inaccessible housing on mental health and daily life.

It was suggested that the additional cost of the mental health impact on someone living under the stress of inappropriate housing or the pressure of having to find accessible housing in a pressured market should be considered.³⁰⁵

Dalton and Carter (2020a) suggested that 'pain and anxiety' were not considered in the Consultation RIS in the cost-reduction approach, or at least not explicitly in the case of WTP analysis. They acknowledged that placing a dollar value to such intangibles is not straightforward or uncontested. They suggested that such health status considerations could be 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.

The survey by Dr Wiesel included in the MDI and Summer Foundation submission of people with disability and senior people found that 60 per cent 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

³⁰³ Submission by Heather Corkhill for Queensland Human Rights Commission, p.3-4, accessed 7 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

³⁰⁴ Hayley Stone, op.cit., p.18-19

³⁰⁵ Jacqueline Marks, op.cit., answer to Question 12.

per cent of people with high support needs, and 50.0 per cent of people with low support needs, living in inaccessible housing reported worsened mental health and wellbeing.³⁰⁶

It was suggested avoided costs of loneliness and exclusion should be considered too. For example, Summer Foundation noted that:

- 53 per cent of young people living in residential care receive a visit from a friend less than once a year, and
- 45 per cent never participate in leisure activities in the community.

Causes of the problem

Question 14 asked responders to consider the main contributor to a lack of uptake of universal design principles in new dwellings. The question offered the following two factors along with other reasons for respondents to specify:

- Buyers failing to think about their future accessibility needs, and
- Volume builders being reluctant to deviate from standard plans.

Chart A.2 summarises the responses to this question.

Buyers failing to think about their future accessibility needs

Among those submitting their answers to the Consultation Hub, 46 submissions considered buyers failing to think about their future accessibility needs as the main contributor to a lack of uptake of universal design principles in new dwellings.

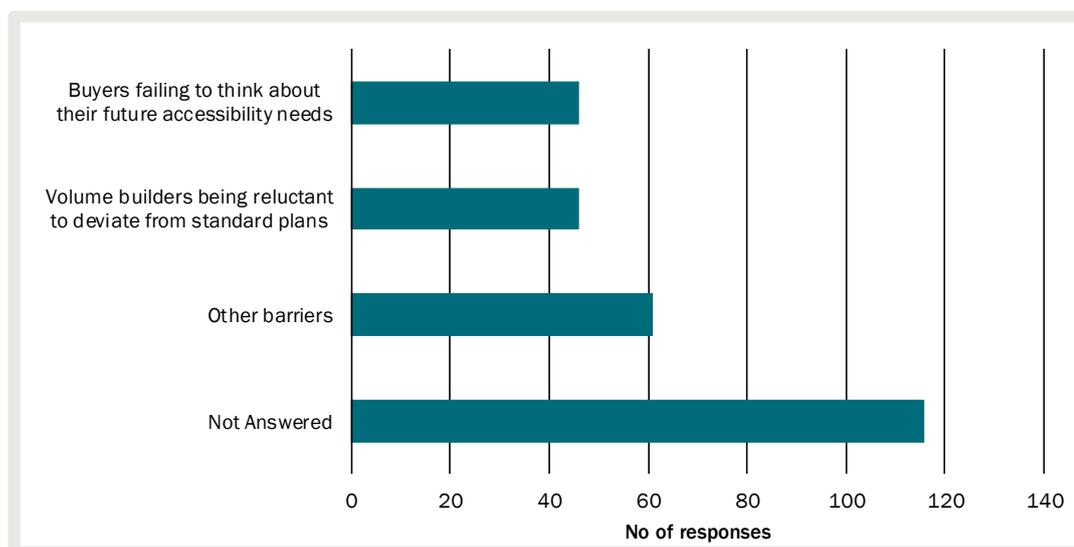
There are other underlying factors leading to this barrier, for example, different needs and failing to foresee future accessibility demand, which will be discussed below.

Volume builders being reluctant to deviate from standard plans

Forty six submissions also considered reluctance of volume builders to deviate from standard plans as the main contributor to a lack of uptake of universal design principles in new dwellings.

³⁰⁶ Professor Bruce Bonyhady and Dr Di Winkler, op.cit. Appendix 2, p.5; p.14; Table 19, p.31.

A.2 Main contributor to a lack of uptake of universal design principles in new dwellings



Note: answer to Question 14.

Data source: Consultation Hub.

Other factors in general

61 submissions indicated other barriers to the uptake of universal design principles and 77 submissions provided more specific discussions to these barriers. Table A.3 categorises these other factors.

A.3 Other factors contributing to the lack of accessible housing

Factors	Count	Percentage
Additional cost/affordability	37	25.9
No demand/different needs	17	11.9
Other aspiration	10	7.0
Site constraint	5	3.5
Adverse perceptions	3	2.1
Lack of appeal of accessible fixtures	9	6.3
Government inaction	18	12.6
Conflict with other regulations/requirements	3	2.1
Lack of community awareness	10	7.0
Information problem	10	7.0
Industry problem	14	9.8
Limited choice	3	2.1
Social connection	1	0.7
Not sufficiently insured	1	0.7
Stamp duty	1	0.7
Lack of long-term lease security	1	0.7
Total	143	100.0

Source: CIE compilation based on submissions.

Higher cost and affordability

High cost of construction accounts for one quarter of the other barriers mentioned by submissions.

Most people including home buyers and the industry perceive that universal design principles will put severe economic pressure on land and building. As one submission stated, ‘you get substantially less usable building function in the same space and it costs you more money.’³⁰⁷

Some submissions suggested that some people have the perception that accessible features of a new dwelling are cost prohibitive, and unnecessary at their particular stage of life.

Some submissions noted that people are very conscious of costs. As pointed out by Environmental Design in answering Question 13 relating to home modification, \$500 to \$1 000 cost difference could change one’s opinion on the house choice.³⁰⁸

One submission cited a survey of older home owners, which found around a third (34 per cent) had made modifications to their house to make it safer or easier to use, with the most common modifications being grab rails, modified bathrooms or stairs. When asked if they would be able to pay for necessary modifications only a little over half indicated they would, 35 per cent were uncertain and 11 per cent said they could not. Ability to pay was even more constrained for lower income groups (Judd et al. 2010).

The same submission also suggested that significant sunk costs in their existing accommodation are an important factor preventing people from moving even if their present housing is inappropriate. Citing a study by Beer and Faulkner (2009), the submission noted that 42 per cent of people with mobility impairments had not moved house for over a decade and a further 29 per cent had only made one move. Despite this, around one fifth felt their present house did not meet their needs, with almost 30 per cent feeling the house would not meet future needs.

It should be noted that some submissions mentioned the cost factor in a totally different way.

One submission argued that it is a misunderstanding that universal design costs more – ‘when integrated it needn’t cost more’.³⁰⁹

The Centre for Universal Design Australia (CUDA) pointed out that costs were often cited as the main reason for not applying universal design features, however, quantifiable

³⁰⁷ Anonymous Submission 506249822, answer to Question 14, accessed 7 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

³⁰⁸ Submission by Peter Robert Hirst for Environmental Design, answer to Question 13, accessed 7 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

³⁰⁹ Anonymous Submission 113712101, answer to Question 14, accessed 7 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

calculations were not forthcoming. Some of the features are more expensive because they are not standard.³¹⁰

Another submission provided a positive personal experience of her universally accessible home:³¹¹

My home is universally accessible and it is by far the most stunning home that I have ever been in. It is no more expensive than the homes of my friends and neighbours – but it has a great feel, it is open and it flows.

Submissions also highlighted another factor related to higher cost as site and design constraints. For example, topography and lot size will impact on the feasibility and/or costs of building accessible housing.

Related to cost factor, stamp duty and lack of government subsidy were also mentioned in submissions as a barrier to the uptake of universal design in the new dwellings.

No demand or different needs

The lack of demand or different needs was also identified in submissions as an important barrier to uptake of universal design in the new dwellings. The number of people who need accessible houses is a small proportion of the housing market. For most buyers it is ‘an unnecessary and burdensome cost’³¹².

One submission identified seven different categories of families that have different needs for housing, with only two categories being able to benefit from accessible design features.

Moreover, MBA pointed out that people move approximately every 7 years, implying that not everyone needs accessible housing at one stage.³¹³

Some submissions questioned the ‘one size fits all’ approach, arguing that the problem is small and does not warrant a universal solution. ‘People want their own home to be designed for their own ergonomic needs. Why would you impose that on everyone?’³¹⁴

³¹⁰ Submission by Jane Bringolf for CUDA, answer to Question 14, accessed 7 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

³¹¹ Anonymous Submission 90458024, answer to Question 14, accessed 7 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

³¹² ‘Submission by Tory Puglisi, answer to Question 14, accessed 7 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent’

³¹³ Submission by Max Rafferty for MBA, p.5, accessed 7 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

³¹⁴ Anonymous Submission 506249822, answer to Question 14, accessed 7 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

It was claimed that investors in private rental housing generally do not consider people with disability as preferred tenants (Beer and Faulkner 2009 as quoted by an anonymous submission³¹⁵).

As an indication of the lack of demand for accessible housing, one submission made the observation from its own business experience: 'Our business has several Silver and Platinum Level LHA designs available if a client decides that type of product is for them. The uptake from the community on this however is extremely low.'³¹⁶

Features may not align with aspiration

This factor is closely related to the barrier of buyers failing to think about their future accessibility needs as discussed above.

Submissions suggested that housing is an aspirational purchase or is symbolic of meeting an aspiration in the future. Whereas no-one aspires to have future disability.

Submissions suggested people systematically underestimate their need for an accessible home. For example, as quoted in the ANUHD submission, Ozanne (2009) observed that imminent retirees, mostly 'baby-boomers', indicate they want to stay in the community, live well and for a long time, yet, are not showing signs of planning for the realities of old age, illness or disability; caring for an ageing or ill partner; or for the costs of home modifications that may be necessary.³¹⁷

One submission quoted several studies to suggest that consumers are relatively myopic about the relative importance of accessibility and are willing to trade off these aspects. While they regard accessibility and universal design positively in principle, when making market decisions, it gets prioritised down.

However, alternative views were also expressed in submissions. For example, Building Designers Association of Queensland noted, 'the exception to this is in the retiree market where quite often the new house is likely to be their forever house and as such they are looking ahead to potential mobility issues as they get older and are prepared to pay a little more to have these accommodated for future use.'³¹⁸

³¹⁵ Submission by Erika Webb for Blind Citizens WA, answer to Question 14, accessed 7 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

³¹⁶ Submission by Peter Springham, answer to Question 14, accessed 7 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

³¹⁷ Margret Ward, op.cit., p.21

³¹⁸ Submission by Brenden Creed for Building Designers Association of Queensland, answer to Question 14, accessed 7 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

Government inaction

Some 18 submissions argued that the non-mandatory requirement is a factor and blamed the reluctance by governments to apply and enforce accessible standards and to provide subsidies for the lack of uptake of universal design in new dwellings. Failure of the voluntary approach was presented as an argument for government regulation.

Lack of consistent access requirements in legislation was also mentioned as a barrier.

Conflict with other regulations and requirements

Conflicts with other regulations and good design objectives were mentioned by some submissions as factors contributing to the problem. They include, for example,

- stepped entry thresholds for waterproofing
- subfloor clearances for ventilation and termite inspection, and
- raised window sills and opening mechanisms for compliance with overlooking and anti-fall regulations.

Lack of community awareness

Lack of community awareness and society prejudices towards change, especially lack of awareness of the benefits of accessibility to the whole economy, were raised by some submissions as a barrier.

For example, the ACT Disability, Aged and Carer Advocacy Service (ADACAS) noted that, the inclusion of people with disability is not normative. It is still considered special. It has been characterised as a minority movement that works only in the interest of those with specialised needs.³¹⁹

Industry lacking leadership

Some submissions noted that inertia in the building industry leads to less uptake of universal design in new dwellings. For example, volume builders are reluctant to deviate from standard plans, designers fail to think about future accessibility needs of occupants. Design trends and the acceptability to home buyers of certain features were also raised as barriers.

Submissions suggested consumers have less influence in the design and construction process. Many homes, especially Class 2 homes, are built 'on spec' and design is decided and locked in well before coming on to the market.

Industry inertia is also linked to the cost consideration, especially for the low-cost volume builders who try to make homes as low cost as possible for market competition. Some submissions acknowledged that the costs of incorporating accessibility features would fall on the builder with a limited increase in value to the client.

³¹⁹ Michael Bleasdale, op.cit., answer to Question 14.

Information problem

Some submissions mentioned there are different understandings of what universal design is. Most trade personnel are not familiar with the LHDG.

In addition, one submission noted that the ambiguity of the LHDG creates confusion and contrary opinions which introduces liability.³²⁰

Submissions also noted there is often an information imbalance between builders and buyers. For example, consumers are persuaded that their accessible needs are not allowed in the building code or that the local council will not allow them. These are probably due to the lack of education available to builders and consumers. It is also difficult to educate people as to what design features are needed to make a home accessible.

Lack of appeal of accessible features

The lack of appeal of accessible fixtures, such as ambulatory grabrails/Disability Discrimination Act (DDA) compliant toilets which aren't appealing, often costly and incredibly limited in design options, was raised by some submissions as the barrier. Submissions suggested accessible compliant dwellings often look very nursing home or hospital like, impacting visual attractiveness.

In addition, some submissions noted that houses may be devalued by the look of grab rails in bathrooms, disabled toilets and shower curtains.

Some submissions noted that accessible features are removed in some cases. As noted in the answer to Question 13 regarding home modification by SDA Alliance, '[i]f a participant of these schemes chooses to relocate and leave the modified home, more than often the home is purchased by a person who doesn't immediately require the modifications and the modification is reverted to an inaccessible configuration.'³²¹

As mentioned above, one submission provided positive experience of her accessible home's appearance: 'My home is universally accessible and it is by far the most stunning home that I have ever been in. ... it has a great feel, it is open and it flows.'³²²

Limited choices

Some submissions noted that there are a limited number of accessible houses and/or accessible designs in the market, making it difficult to find or to build an accessible dwelling. The inaccessible salesrooms and display homes also add to the difficulty of buying new accessible housing.

³²⁰ Submission by Sam Plaschke for Wilson Homes Tasmania Pty Ltd, p.2, accessed 7 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

³²¹ Melanie Southwell, op.cit., answer to Question 13.

³²² Anonymous Submission 90458024, answer to Question 14, accessed 7 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

Lack of long-term lease security is another factor which disinclines renters to invest in their rental property, according to ANUHD. The problem is aggravated by renters being legally obliged to reinstate the home at the end of the lease.³²³

Views about the options

Views were sought for the following options in relation to the proposed accessibility requirement in the NCC:

- **Status quo:** No changes to existing policy settings
- **Option 1 (Silver):** Accessibility standard, broadly reflecting LHDG Silver standard, in the NCC applying to all new Class 1a (houses) and Class 2 (apartments) buildings
- **Option 2 (Gold):** Accessibility standard, broadly reflecting LHDG Gold standard, in the NCC applying to all new Class 1a (houses) and Class 2 (apartments) buildings
- **Option 3 (Gold +):** Accessibility standard, broadly reflecting LHDG Gold standard (with some platinum features), in the NCC applying to all new Class 1a (houses) and Class 2 (apartments) buildings
- **Option 4 (Gold in apartments):** Accessibility standard, broadly reflecting LHDG Gold standard, in the NCC applying to all Class 2 (apartments) buildings
- **Option 5:** A subsidy program to encourage additional availability of accessible rental properties, and
- **Option 6:** An enhanced approach to voluntary guidance, which includes turning the current proposals into a non-regulatory ABCB handbook and other measures to encourage additional uptake of universal design principles, including: a search engine for dwellings certified as complying with the LHDGs and provision of information at the point of sale.

Options 1 through 4 may be classified as regulatory options while Status quo and Options 5 and 6 non-regulatory options.

Proposal versus LHDG

A number of submissions pointed out the difference between accessible, liveable and universal designs.

Some submissions distinguished the Silver and Gold/Gold + standards. Silver is mainly about visitability while Gold/Gold + is about accessibility (that is for someone to live in).

A number of submissions suggested that the current proposal in the NCC is a 'diluted' version of the LHDG and will not achieve accessibility. ANUHD pointed out a number of items in the proposal that deviate from the LHDG that ANUHD does not support.³²⁴

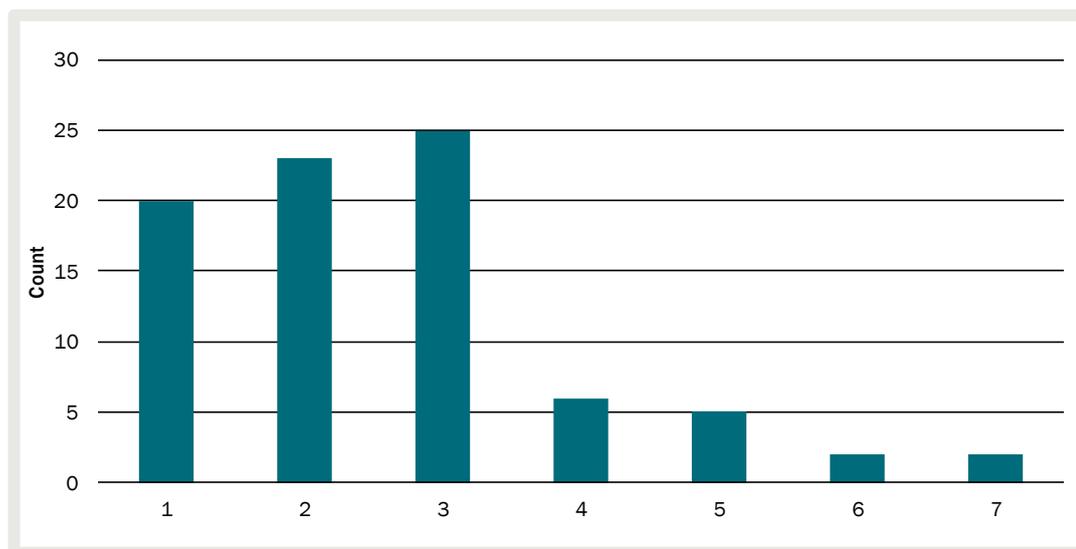
³²³ Margret Ward, op.cit., p.21

³²⁴ Margret Ward, op.cit., p.30

Feasible options

Among the 98 respondents to the Consultation Hub questionnaire, some 83 respondents provided answers to the feasible options question (Question 15). Most respondents (63 out of 83) suggested more than one feasible option (chart A.4).

A.4 Responses by number of feasible options

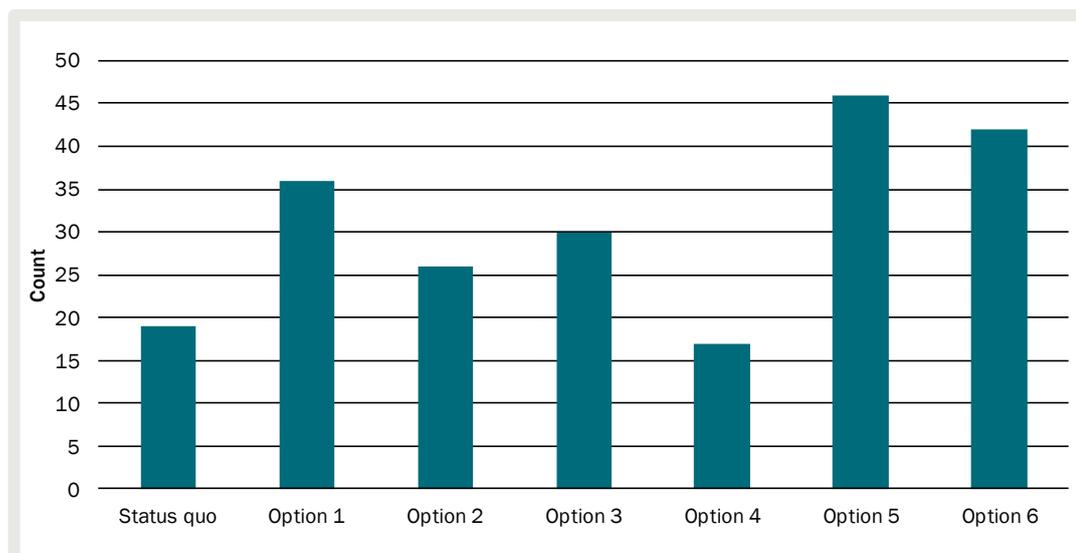


Note: answers to Question 15.

Data source: Consultation Hub.

Chart A.5 reports the count of feasible options provided by respondents. Option 5 has the highest count – 46 respondents indicated it is feasible. It is followed by Option 6 (42 counts), Option 1 (36 counts), and Option 3 (30 counts).

A.5 Feasible option counts



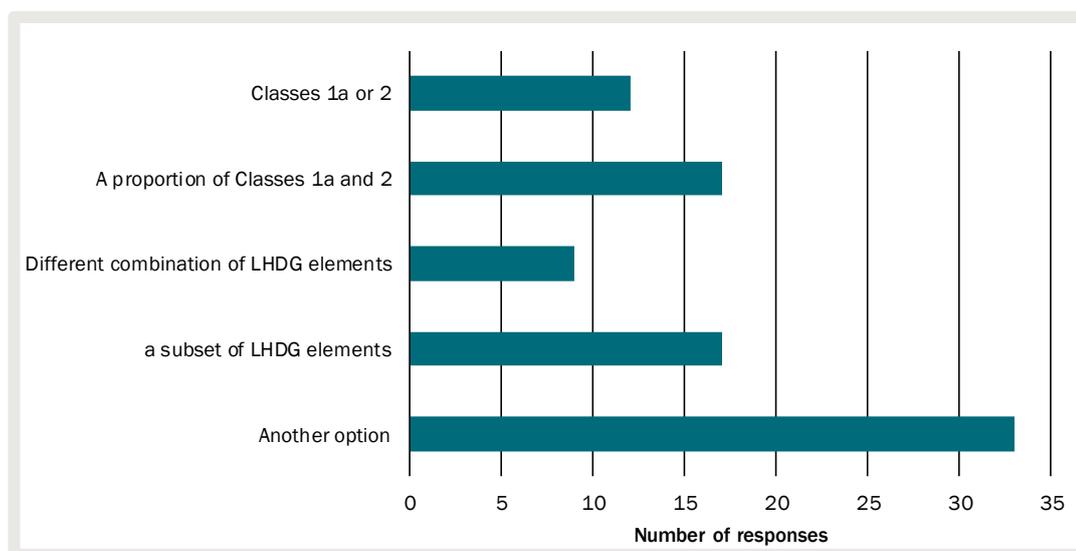
Note: Answers to Question 15.

Data source: Consultation Hub.

It should be noted that these numbers are indicative only because more than half of respondents did not provide an answer. Moreover, some 15 respondents did not include their preferred option as one of the feasible options in answering Question 19 (discussed below).

Some respondents believe that applying the accessibility standards to a part of the building or adopting a different combination or a subset of LHDG elements in the NCC are feasible (chart A.6).

A.6 Other feasible options



Note: Answers to Question 16.

Data source: Consultation Hub.

Other more specific suggestions in the submissions included:

- Use planning regulations such that changes only apply to a certain percentage of dwellings built because one-size-fits-all is difficult and should not apply to all dwellings (MBA),³²⁵ and the share should align with the local demographics.³²⁶
- Introduce wider/more exemptions in addition to the current 1:14 slope exemption so that compliance is not required where it is impossible or unreasonably costly due to topography, gradients, flood risk and so on (Property Council of Australia).³²⁷ The reason for this suggestion is that not all sites are suitable to develop to LHDG

³²⁵ Max Rafferty, *op.cit.*, p.3

³²⁶ Anonymous Submission 252858313, answer to Question 16, accessed 7 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

³²⁷ Submission by Tim Wheeler for PCA, p.8, accessed 7 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

standards at low or minimal cost (PowerHousing Australia³²⁸), for example AusBuild noted around 32 per cent of lots created in the last two years in Queensland are suitable for accessible housing,³²⁹ and one submission argued that the proposed changes are not feasible for lots less than 350 m².

- Align voluntary options with existing planning policy
- Increase funding to LHA to expand its education systems
- Increase information available, for example,
 - voluntary handbook, self-declaration form as to the standard
 - governments collect data on accessible housing and make them available; for example, create a publicly available national register of homes with accessibility features, including a simple process to confirm the validity of the original accessibility certificates (PCA)³³⁰
- Add matching service to achieve the benefits
 - For example; SDA has a matching program
- Provide incentives for developers, builders and purchasers
- Accreditation program for accessible builders
- Lowering transfer duties because the duties lead to low take-up of accessibility features by mobility impaired households (ANUHD)³³¹
- Light-weight, cheap removable threshold ramps are an alternative
- Proposed changes should be expanded to help vision impaired people and mentally impaired people; for example, better insulation in Class 2 units to cut down noise transfer which can be stressful.

Options to meet the objective

Question 17 of the Consultation Hub questionnaire asked respondents to consider which option can meet the objective. Some 80 submissions provided answers to this question through the Consultation Hub. Chart A.7 compares the answers to the question about feasible options.

For the regulatory options (Options 1 to 4), the number of respondents who thought one option has the ability to meet the objective was slightly less than the number of respondents who thought the option is feasible. For the non-regulatory options (Options 5 and 6), the gap is wider.

³²⁸ Submission by Nicholas Proud for PowerHousing Australia, p.3, accessed 7 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

³²⁹ Submission by Brent Fletcher for AusBuild Pty Ltd, p.3, accessed 7 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

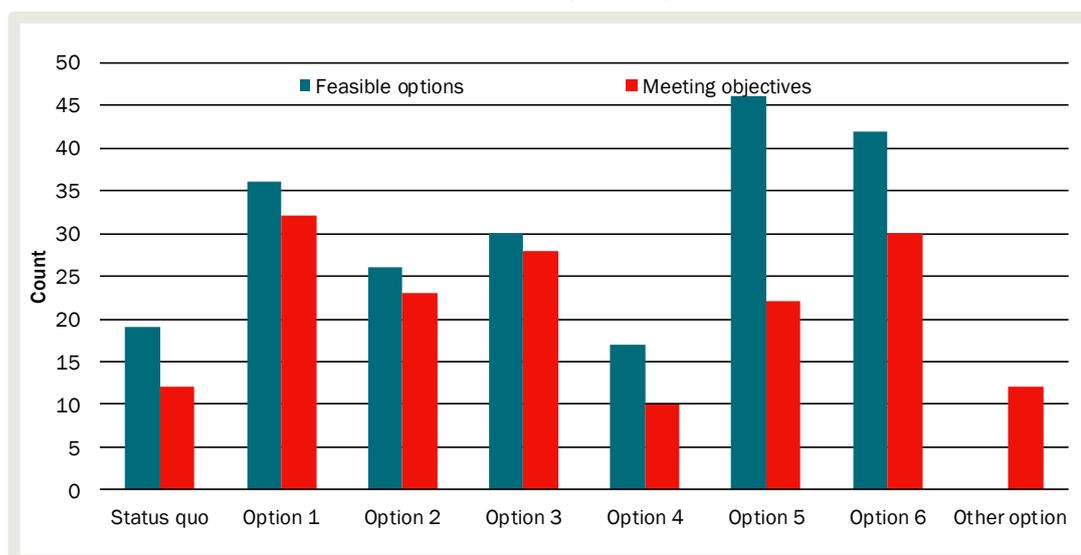
³³⁰ Tim Wheeler, op.cit., p.2-4

³³¹ Margret Ward, op.cit., p.23

More respondents thought that the Silver standard (Option 1) could meet the objective than the Gold (Option 2) and Gold Plus (Option 3), although the difference is not large.

There was a similar number of respondents who consider that an enhanced approach to voluntary guidance (Option 6) and the Gold Plus (Option 3) can meet the objective.

A.7 Feasible options versus options meeting the objective



Note: Structured answers to Questions 15 and 17.

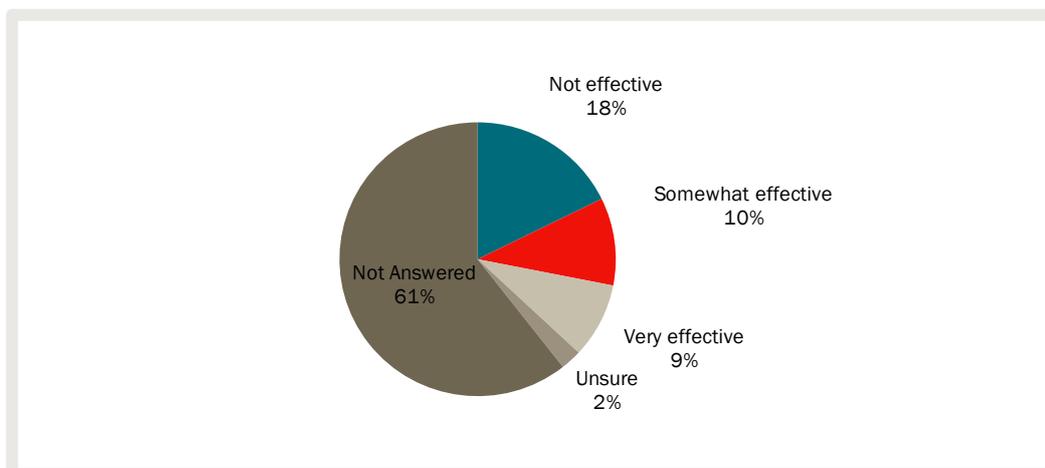
Data source: Consultation Hub.

Effectiveness of voluntary approach

Questions 32 asked about effectiveness of providing better information and promotion of an enhanced non-regulatory approach (Option 6) to encourage the voluntary uptake of universal design principles in new dwellings.

Chart A.8 summarises the responses to this question. As can be seen from the chart, there are about an equal number of responses thinking it is at least somewhat effective (39 responses or 19 per cent) or not effective (36 responses or 18 per cent).

A.8 Effectiveness of non-regulatory option



Note: Structured answers to Question 32.

Data source: Consultation Hub.

Aged and Community Services Australia (ACSA) requested government consider whether accessible housing outcomes can be achieved adequately through non-regulatory approaches, including guidance documents, and other mechanisms such as providing incentives, including subsidies designed to address affordability of incorporating ‘accessibility’ into new buildings. It emphasised that governments should continue ‘to provide subsidised home modification services through the Commonwealth Home Support Program enabling older Australians to remain living in their current homes in the community they know.’³³²

One submission noted that only a small percentage of home occupiers require accessible features in their houses, and mandating that all new houses include accessible features may compromise housing affordability within the private housing market and may also increase the costs of providing public and social housing. They argued that the costs associated with mandating accessible features for new houses may be better spent on targeted community-based incentive schemes.

Some submissions^{333,334} suggested that voluntary approaches may be more effective if they focused on consumers, that is pursuing a demand-driven approach, as opposed to a supply-driven approach.

In its advocacy for voluntary adoption of the LHDG, one submission noted that not all sites are suitable to meet all the requirements of the LHDG and thus the RIS shouldn’t consider every dwelling - hence the principle of voluntary adoption providing market

³³² Submission by Derek Dittrich for Aged and Community Services Australia (ACSA), p.6, accessed 7 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

³³³ Anonymous Submission 754879813, answer to Question 32, accessed 7 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

³³⁴ Anonymous Submission 90458024, answer to Question 32, accessed 7 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

flexibility. It was suggested the greater flexibility provided through utilisation of non-mandatory options will result in the LHDG being implemented more efficiently, aligning with accessibility requirements of the community and site suitability.

A number of submissions questioned the effectiveness of voluntary approaches, arguing previous attempts at voluntary or enhanced nonregulatory approaches have failed in Australia and overseas.

Some submissions cite higher costs to industry and consumers as a reason why voluntary approaches would not be effective in encouraging uptake of universal designs in new dwellings.

Unintended consequences

Question 18 asked respondents to identify less intuitive or unintended consequences of the proposed changes.

ACSA suggested that assessment of unintended consequences should be undertaken to understand flow-on effects for the building sector and for homeowners and renters, including impact on business models for village operators should refurbishments require accessibility to be built in.³³⁵

Mis-alignment with state driven policies

One submission noted that the proposal would likely hinder design and housing product choice if adopted across all new homes and residential apartments. This submission suggests that this approach does not align with state driven housing policies, such as NSW 'missing middle' which advocates for multi-level terrace style housing, smaller lot sizes, urban living and so forth, or the trend towards inner city lots become smaller to accommodate housing affordability constraints.

PCA argued that there is a risk of regulatory overlap given the prevalence and complexity of state, territory and local government regulation. It provided a list of accessibility requirements in state and territory and local government areas.³³⁶

Red tape and delays

Wilson Homes Tasmania noted that, depending on the certification outcome, the introduction of additional red tape into the design and construction of new dwellings will increase the required time (with cost noted previously) for each respective activity.³³⁷

³³⁵ Derek Dittrich, op.cit., p.6-7

³³⁶ Tim Wheeler, op.cit., p2; Appendix B, p.11-13

³³⁷ Sam Plaschke, op.cit., p.4

Affordability

A number of submissions pointed out the proposed changes would increase the costs and thus impact housing affordability, especially for first home buyers. The higher cost would result in a reduction in new dwelling demand.

First home buyers or persons with a limited budget may be excluded from the new housing market due to the increased costs which would generally not assist them directly. Affordable housing supply continues to be an increasing issue and introduction of additional measures across all new dwellings will further exacerbate this problem. It will result in an overall reduction in new housing demand.³³⁸

For many people with accessibility needs and those on low incomes, affordability would be a key concern. Reductions in affordability would disadvantage some in the community.

Questioning 'one-size-fits-all' approach

A number of submissions questioned the 'one-size-fits-all' approach taken in the proposal to the NCC.

Some suggested it may erode the market system.³³⁹

Some suggested that it is a tax mixed with social policy.³⁴⁰

Loss of architecture richness and diversity

A number of submissions pointed out that some house designs will no longer be viable with the introduction of proposed accessibility requirements in the NCC. For example, split level homes, those incorporating mezzanines, pole homes and traditional Queenslanders do not lend themselves to being very accessible by their nature.

Other safety concerns

Registered Accommodation Association of Victoria (RAAV) pointed out a scenario as an unintended consequence, where a non-wheelchair user uses a wheelchair accessible shower. Because the wheelchair accessible shower has no shower door, excessive water could spray across the floor, increasing the risk of slips and falls.³⁴¹

³³⁸ Sam Plaschke, op.cit., p.4

³³⁹ Anonymous Submission 958471840, answer to Question 17, accessed 7 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

³⁴⁰ Anonymous Submission 715644280, answer to Question 11, accessed 7 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

³⁴¹ Berenice Hale, op.cit., p.2

Preferred option

Question 19 asked respondents to suggest their preferred option.

Chart A.9 reports the count of 98 respondents answering their preferred option through the Consultation Hub. Some 42 respondents prefer a regulatory option with 11 preferring Option 2 (Gold), while 30 respondents prefer a non-regulatory option and 13 prefer other options.

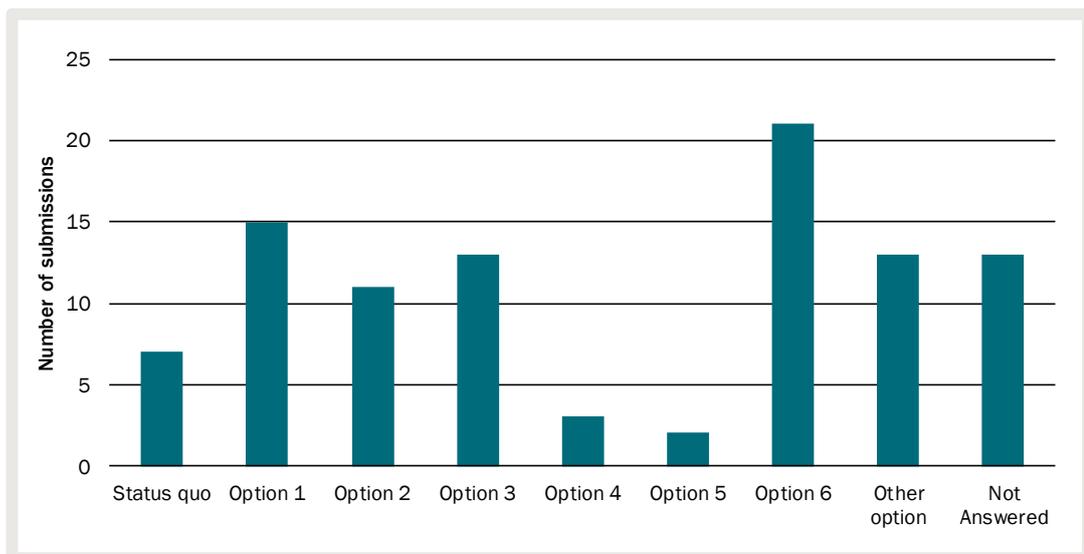
In total about 118 respondents did not answer the question, including those submitting their responses outside the Consultation Hub. By manually analysing the answers/submissions provided outside the Consultation Hub, a further 82 respondents with preferred options were identified.

Chart A.10 reports the simple count of preferred options, including those submitted in response to the Consultation Hub questionnaire and those providing direct submissions. It should be noted that many written submission-based responses provided multiple choices as their preferred options. This is why the total count in the chart is more than the number of responses. The chart shows that Options 2 and 6 are the most preferred options – 55 and 50 counts respectively.

To resolve the multiple choices provided in the written submissions, an option with the most stringent requirement was selected by CIE for the response which favours several regulatory options, and if multiple non-regulatory options were preferred by one response, the least stringent option was selected. The results are presented in chart A.11.

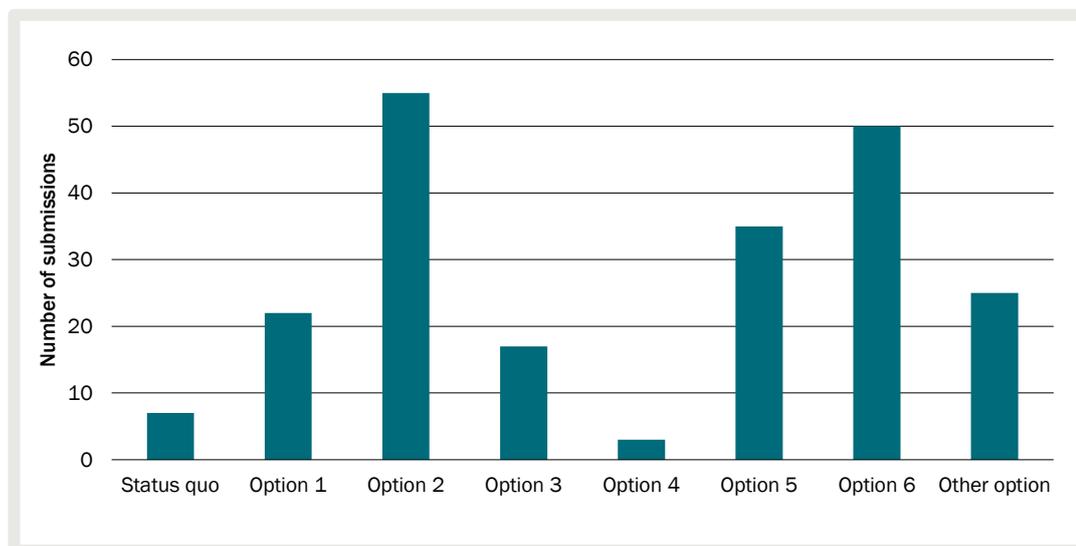
As shown in chart A.11, 93 respondents prefer a regulatory option with 54 preferring Option 2, while 58 respondents prefer a non-regulatory option with 49 preferring Option 6. There are 16 respondents who prefer other options.

A.9 Preferred option (feedback through Consultation Hub)



Note: Structured answer to Question 19 through the Consultation Hub.
 Data source: Consultation Hub.

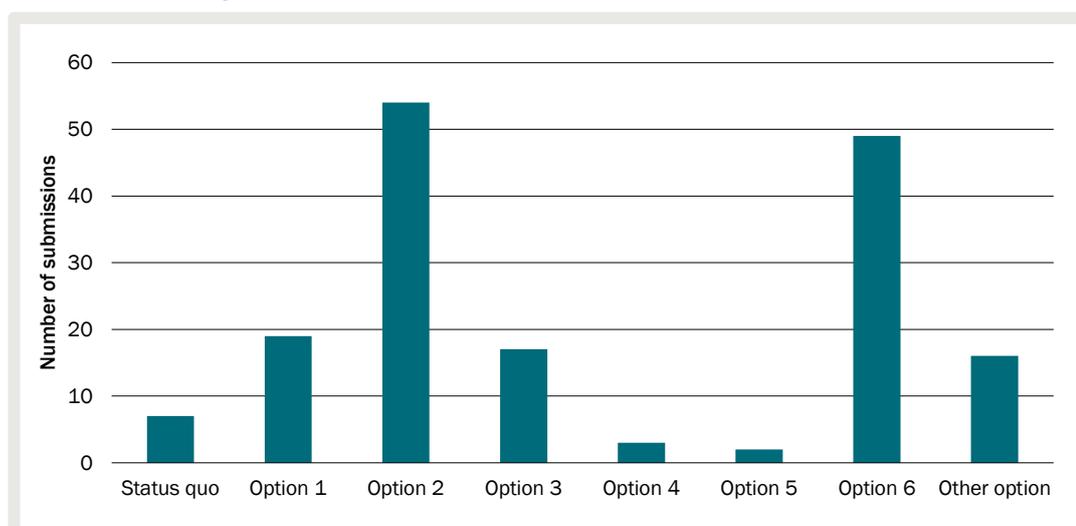
A.10 Preferred option in all submissions including multiple choices



Note: Structured answer to Question 19 through the Consultation Hub.

Data source: Consultation Hub.

A.11 Preferred options in all submissions



Note: Answer to Question 19 through the Consultation Hub and other submissions.

Data source: CIE based on Consultation Hub.

Other options

Respondents were also asked to identify any alternative options to solve the identified problem.

Some submissions suggested that a broader range of options should be considered, including those beyond changes to the NCC. For example, one submission provided in-principle support for ongoing progression of the RIS process and its findings, and suggested considering a broader range of options, including beyond changes to the NCC,

that might be considered to support the delivery of the appropriate level of accessibility in new houses.

Some of the other options most cited are presented below.

Incentives provided to new accessible housing supply

One submission welcomed and supported both subsidy and enhancement options, complemented by a certification and registration process for quality assurance and to provide information on complying dwellings citing the Universal Housing Design Incentive introduced by Brisbane City Council (BCC) in June 2019.

Some other incentive measures raised by submissions include:

- Stamp duty holidays or reductions or other incentives to assist older Australians to downsize to new, more accessible housing
- Development of additional social housing
- Support for housing incentive schemes which spread the cost burden of increased accessibility across a broader cross spectrum of the community in line with the whole-of-community responsibility for improving quality of life for Australians with disabilities.

Education

Some submissions suggested that Options 5 and 6 will increase supply organically through education of the wider community. Demand will be created and will more accurately address supply issues without imposing unnecessary requirements on 100 per cent of new housing supply.³⁴²

One submission suggested it would be sensible to develop the LHDG into a precise and accurate document to remove ambiguity and enable it to become a standard (not a guideline) in its own right.³⁴³

Education could be provided to members of the community through various mediums along with research into demand which could be both location and needs specific. Financial incentives or stimulus could be targeted to specific areas of need to cater for the time lapse between education and the growth in market demand.³⁴⁴

It was argued that this approach would result in the provision of targeted, fit for purpose housing, in the correct volume and in the correct location. Should uptake in the private sector not eventuate the evidence gained through this time would direct the result, with potential amendments completed accordingly.³⁴⁵

³⁴² Sam Plaschke, op.cit., p.3

³⁴³ Sam Plaschke, op.cit., p.3

³⁴⁴ Sam Plaschke, op.cit., p.3

³⁴⁵ Sam Plaschke, op.cit., p.3

Applied to only defined sites and areas

One submission suggested there is a key role for state and local governments in identifying sites that are suitable for LHA certified dwellings through incentives to encourage voluntary adoption of the LHDG compliant housing options. Offsetting impacts on net usable area of a dwelling should also be considered. This would have positive impacts for educating the market about the benefits of the LHDG and further enhance the market's perceived value and willingness to pay for liveability.

ACSA suggested accessibility criteria could apply to only defined areas in new buildings e.g. entrance, hallways, kitchen/dining/lounge, main bathroom and bedroom (and not subsequent bathrooms and bedrooms).³⁴⁶

Proportional to suburban demographics

One submission suggested the creation of new housing stock (Class 1 and Class 2) be appropriate to the demographics of each suburb, rather than a broad-brush national mandate.

Exemption

A number of submissions suggested that exemptions to accessibility requirement should be clearly defined and included in the NCC. For example, ACSA suggested incorporating an exemptions process to accessibility criteria where local circumstances would render accessible housing financially unviable. Criteria for exemptions could, for example, include:

- site issues (slope/ramping requirements, step free entrances)
- yield, and
- car parking costs (particularly for class 2 buildings).³⁴⁷

One example, provided in a submission, considered an exemption could be granted if the cost of providing ramp exceeds 15 per cent of the build cost.³⁴⁸

One submission suggested that, if there are to be mandatory provisions they should only apply to a percentage of new dwellings and a broad range of housing types should be completely exempt from the provisions.

Mornington Peninsula Shire Council suggested regular reporting and auditing to ensure that there is no overuse of exemptions. This should include an operational general review of the effectiveness of any new provisions after 12 months of operation.³⁴⁹

³⁴⁶ Derek Dittrich, op.cit., p.6

³⁴⁷ Derek Dittrich, op.cit., p.6

³⁴⁸ Submission by Andrew Remely for Andrew Remely - Building Designer, answer to Question 23, accessed 8 12 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

³⁴⁹ Submission by Cr Sam Hearn, Mayor Mornington Peninsula Shire for Mornington Peninsula Shire, p.2 and p.10. accessed 8 December 2020,

Applied to refurbishment too?

ACSA raised the issue of whether ‘accessibility’ is to be incorporated into refurbishment of older building stock (for example older independent living units or older retirement village units) where the upgraded buildings are not being ‘repurposed’. Requiring ‘accessibility’ outcomes for refurbishments of these types of dwellings may make them financially unviable. If this is the outcome, housing availability will be reduced at the affordable end of the housing market, further exacerbating a lack of supply.³⁵⁰

Database

One submission suggested that to ensure that accessible housing supply is meeting localised demand, a central database containing all new projects and apartments which are accessible and adaptable could be kept and linked to a search function within property websites.

Similarly, PCA proposed establishing a national register for accessible housing to collate existing data and expand it as new information becomes available, and to investigate the possibility of providing accessibility information at the point of sale.³⁵¹

Postponing the implementation of the proposal

One submission suggested that the ABCB should delay the NCC 2022 introduction by at least 5 years, whilst undertaking a whole-of-project analysis approach.

Technical issues

One submission pointed out that the options presented might not be adequate for wheelchair accessibility, particularly large electric wheelchairs which would require additional modification to the home.

The same submission also pointed out that, some forms of housing; for example, townhouses, split level homes, those incorporating mezzanines, pole homes, traditional Queenslanders, and those on sloping sites, do not lend themselves to being very accessible by their nature. It is suggested increasing accessible housing supply should be achieved across industry while not creating an impact on these forms of housing.

Cost estimates

Scenarios and weights

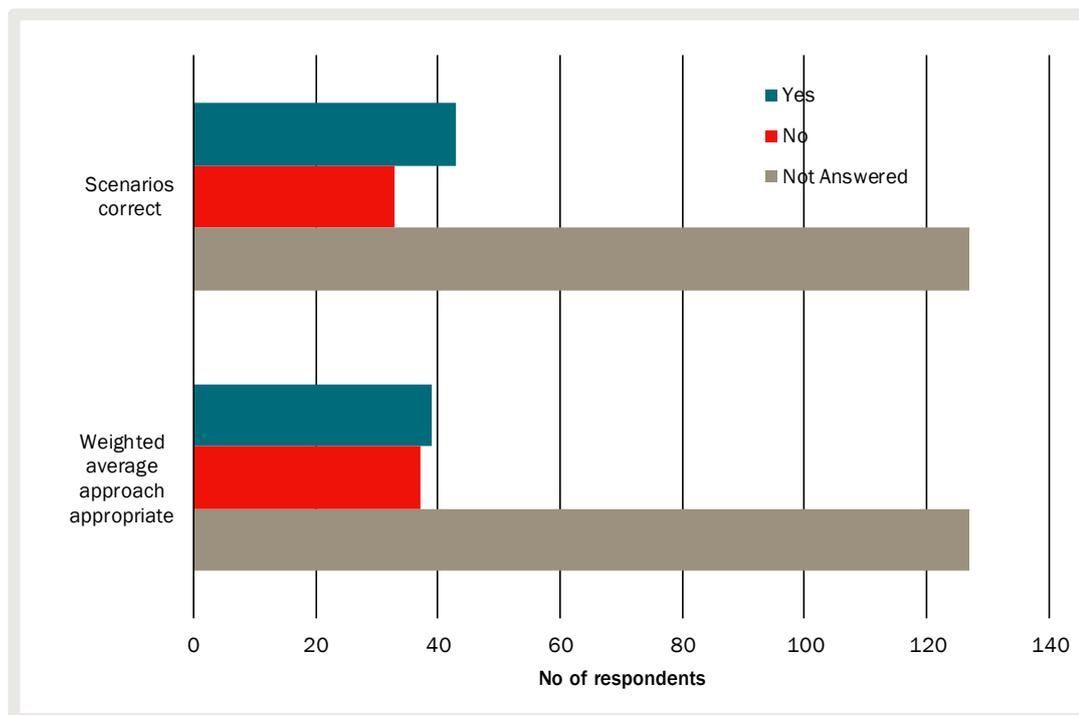
There were 76 responses to the Consultation Hub questions about the costing scenarios (Question 20) and the weighted average approach (Question 21). Slightly more

³⁵⁰ Derek Dittrich, op.cit., p.6.

³⁵¹ Tim Wheeler, op.cit., p.2 and p.4

responses, 43 versus 33 for Question 20 and 39 versus 37 for Question 21, agree with the scenarios and the weighted average approach for estimating the costs (chart A.12).

A.12 Views on the costing scenarios and approach



Note: Structured answer to Questions 20 and 21.

Data source: Consultation Hub.

Baseline

Some submissions argued that the estimated costs are higher than the true cost because some requirements in the proposal are already present in new dwellings.

For example, minimum dimensions and floor areas for width of halls, circulation spaces to kitchen areas, bathrooms and laundries are generally already greater than the minimum dimensions and areas in most new Class 1a project homes and custom built homes.³⁵²

One submission pointed out that accessible dwellings have been provided in new construction, so no or minimal modifications are required.³⁵³

Doorways are usually built with 820mm wide doors.³⁵⁴

³⁵² John Hatch, op.cit., answer to Question 21.

³⁵³ Anonymous Submission 351248224, answer to Question 13, accessed 8 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

³⁵⁴ Submission by David Aitken for Town of Victoria Park, answer to Q13, accessed 8 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

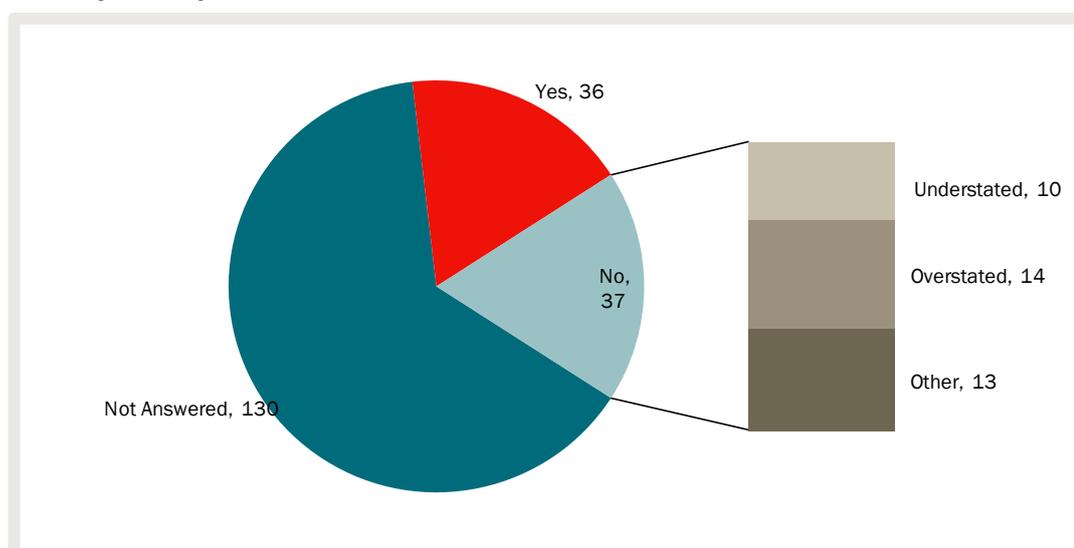
A submission noted that closer to 100 per cent (rather than 70 per cent as assumed in the DCWC costing) of custom homes have corridors of 1 000mm already.

Level access through double garage is standard, according to Murphy Homes in Queensland, so there are no additional costs.³⁵⁵

Opportunity cost of additional space requirement

Question 22 asked about the approach taken to valuing the opportunity cost of the additional space required. 36 submissions agreed with the approach while 37 submissions did not, with the remaining 130 submissions not providing an answer. Among the 33 submissions not agreeing with the approach, 14 argued that the cost was overstated while 10 suggested the opposite (chart A.13).

A.13 Do you agree with the approach of valuing the opportunity cost of additional space requirement



Note: Answers to Question 22.

Data source: CIE compilation based on submissions on the Consultation Hub.

Space cost may be overstated because:³⁵⁶

- good design can overcome space impacts (absorbed internally)
- quality of design will improve over time. For example, the apartment guides in NSW (2015) and Victoria (2017) through State planning mechanisms markedly improved the quality of design and the level of innovation in apartment construction and ended the proliferation of substandard sole-occupancy units
- costs may be recovered through the supply of better designed buildings (lighter, more airy spaces, more thoughtful layouts and greater ease of movement) for early adopters of the standard before it is mandated. The City of London's RIS found that this to be

³⁵⁵ Margret Ward, op.cit., p.41

³⁵⁶ Margret Ward, op.cit., p.16-17, p.41

a significant cost recovery factor with the lower end of the recovery range at 60 per cent of costs (EC Harris, 2014) referred to in the submission

- functional spaces in apartments are shared spaces (e.g. laundry in cupboard or corridor, study nook in entrance), so dis-amenity from space impacts may be overstated, and
- most homes are spacious enough to incorporate the requirement so there is no need to increase floor space.

In addition, one submission argued that there would be potential environmental benefits due to less wasted space with its associated build and running costs.³⁵⁷

On the other hand, some submissions argued that space costs were understated as land has been more and more difficult and expensive to access. Custom home design and building on sloping sites will be difficult.

One submission argued that on a 10 to 15 per cent sloping lot, the proposed accessible requirement would make a house 38 m² bigger and accordingly require the lot size to be 100 m² bigger.³⁵⁸

P2P Housing presented four plans for detached houses from Murphy Homes and the additional space requirement for Silver ranges from 2.01 m² to 4.78 m² for single storey houses, implying the average space requirement for Silver is 3.67 m² (compared to the 0.61 m² for volume build and 0.48 m² for custom build used in the Consultation RIS).³⁵⁹

One submission suggested, for Class 2 buildings, a whole-of-project approach is required to costing the space requirement; for example, deeper basements and water table levels all increase the costs. The feasibility of apartment yields and sensitivity of gross floor area (GFA) are important factors to understand the true costs. ³⁶⁰

One submission argued that 7 to 30 per cent more space would be required to be compliant. ³⁶¹

³⁵⁷ Submission by C Harvey, answer to Question 22, accessed 8 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

³⁵⁸ Anonymous Submission 958471840, answer to Question 26. accessed 8 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

³⁵⁹ Submission by Shane de klerk for P2P Housing (Parent to Parent Assoc QLD Inc.), p. 7-10, accessed 8 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

³⁶⁰ Anonymous Submission 252858313, answer to Question 22, accessed 8 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

³⁶¹ Anonymous Submission 462974436, answer to Question 22, accessed 8 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

Another submission suggested in its answer to Question 14 that real costs are likely four times higher for sloping sites.³⁶²

One submission suggested that Option 1 requiring all apartment car parking spaces to be around a third larger, creates underestimated costs in the Consultation RIS. Another submission argued that Option B (one step) is not accessible.³⁶³

One submission suggested that significant costs are also generated from slab finished level requirements, balcony step, stair landings, additional space use and the requirement for a ground floor bedroom.

MBA suggested that cost impacts to the home from a valuation perspective by decreasing net useable area of the building and property to facilitate accessibility has not been accounted for.³⁶⁴

Capital value

Dalton and Carter (2020a) suggested that additional space as a result of accessibility requirements would increase capital value in addition to the value of enhanced functionality from improved accessibility.

The Centre for Universal Design Australia pointed out the experience in the UK where the requirement for a downstairs toilet soon became of additional value to purchasers.³⁶⁵

In addition to the potential capital gain, the extra space has other potential value for use other than for accessibility to people with mobility impairment, suggested by the ACT Disability, Aged and Carer Advocacy Service (ADACAS); for example, future requirement of housing for work purposes, a place to educate children, a place where people will age and receive care and support.³⁶⁶

In addition, it has long term benefits to the community and all levels of government, in terms of services and capital infrastructure implications (PM&D Architects P/L).³⁶⁷

Other submissions made counter arguments for capital value. As pointed out by MBA, the consumer measures and values the size of habitable rooms and recreational outdoor space more than the width of a hallway or toilet space. Where room sizes are reduced to accommodate wider hallways to facilitate compliance for accessibility, the capital value of the home would be lesser as a result.³⁶⁸

³⁶² Anonymous Submission 400818322, answer to Question 14, accessed 8 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

³⁶³ Submission by Michael Fox for Rights & Inclusion Australia, answer to Question 21, accessed 8 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

³⁶⁴ Max Rafferty, op.cit., p.10.

³⁶⁵ Jane Bringolf, op.cit., answer to Question 22.

³⁶⁶ Michael Bleasdale, op.cit., answer to Question 22.

³⁶⁷ Geoffrey Barker, op.cit., answer to Questions 18 and 22.

³⁶⁸ Max Rafferty, op.cit., p.10

In addition, a number of submissions pointed out that the accessible features were often removed after a new consumer purchased or rented the house, suggesting a capital loss.

Excavation cost

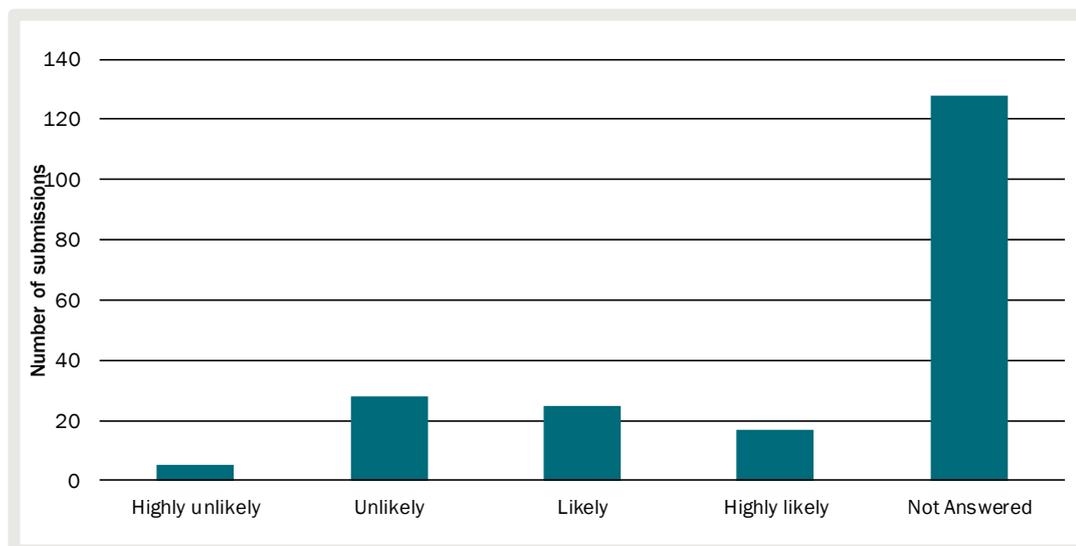
The Consultation RIS discussed the excavation costs and presented the estimates in table 5.12. The costs were used for sensitivity analysis, but not included in the central CBA.

Question 23 asked respondents whether additional excavation costs are likely to be required in order to provide homes that comply with the regulatory options (Options 1-3), and Question 24 asks whether the excavation cost estimates presented in table 5.12 of the Consultation RIS were reasonable.

Are additional excavation costs required?

75 submissions provided an answer to Question 23. Among them, 42 submissions agreed that additional excavation costs are likely or highly likely, while another 33 submissions pointed to the opposite (chart A.14).

A.14 Likelihood of additional excavation costs



Data source: Consultation Hub.

Arguments put forward in some submissions for additional excavation costs include:^{369, 370, 371}

³⁶⁹ Submission by David Cremona for Meriton, p.2, accessed 8 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

³⁷⁰ Anonymous Submission, answer to Question 21, accessed 8 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

³⁷¹ Andrew Ferris, op.cit., answer to Question 23.

- Increased space or building footprint size will impact on excavation costs
- Class 2 basement, pipes or easement are impacted
- Options 1 to 4 seek a maximum 1:14 rise from front boundary to slab finished level. This would require a lower underlying pad level of finished allotments to change from what is normally produced in land divisions today. The impact of this will mean in most cases that there will be higher costs associated with site excavation and exported material. This would also create the need for the majority of lots to have a more developed stormwater drainage system to drain the surface and roof water to protect the dwelling as there will be less fall to the street kerb and channel.
- Providing adequate flooding mitigation for homes and preventing moisture penetration to the structure of these homes is a key concern for sustainable development and construction.
- This component of works is significant. One example is that the larger car parking spaces required under LHDG Silver would introduce column grid inefficiencies, and possibly mean additional basement parking levels are required. Similarly, the higher parking height requirements under LHDG Gold would require 900mm of additional excavation for a 2-3 basement level development, and increase perimeter shoring wall depths, foundation pile depths, and hydrostatic slab requirements.

By contrast, other submissions argue that little or no additional excavation costs will be incurred for the following reasons:

- Excavation required is invariant to accessibility requirement, so no additional costs
- Most development, especially volume builders, favour flat sites
- Alternative design, for example, access from garage would avoid the need for excavation
- Exemption may be granted to those sloping lots and government planning controls may mean steep sites are not to be developed

Are the excavation cost estimates presented in the Consultation RIS reasonable?

65 submissions answered Question 24, with 34 agreeing that the cost estimates are reasonable and 31 disagreeing (table A.15). Among the 31 submissions not agreeing with the excavation cost estimates, 18 submissions thought that additional excavation costs would be likely or highly likely while 12 submissions considered additional excavation costs unlikely or highly unlikely in their answer to Question 23.

A.15 Count of responses to Q24 breakdown by answer to Q23

Answer to Q23	Answer to Q24			Total
	Yes	No	Not Answered	
Highly unlikely	3	11	3	17
Unlikely	13	7	5	25
Likely	16	10	2	28
Highly likely	2	2	1	5

Answer to Q23	Answer to Q24			Total
	Yes	No	Not Answered	
Not Answered	0	1	127	128
Total	34	31	138	203

Source: Consultation Hub

Some 33 submissions provided some supplementary information in response to the question, including alternative estimates or reasoning. Review of this supplementary information found that only 23 of the 33 submissions do not agree with the estimates in the Consultation RIS.

Among the 33 submissions, 13 submissions do not provide alternative estimates or reasoning, citing no expertise, they are not qualified to comment, not being able to find the table, no position fully established, or not relevant to excavation costs (table A.16).

A.16 Reasons for disagreeing with the excavation cost estimates in Consultation RIS

	Count
Not providing alternative estimate or reasoning	13
no expertise/not qualified	6
not sure	1
can't find the table	2
not assessed	1
not relevant answer	1
not specific	1
position not established	1
Excavation costs over-estimated	12
little or no additional cost	2
excavation required invariant to accessibility	1
alternative design	4
exemption	4
should not be singled out	1
Excavation costs under-estimated	9
not enough	5
site variation	4
Other	3
too many variables	1
hard to estimate	1
industry provided	1

Note: The number of counts is different to the number of submissions as some submissions provided multiple reasons.

Source: Consultation Hub.

Reasons for not agreeing with the excavation cost estimates in the Consultation RIS include:

- costing being provided by industry subcontractors

- site conditions vary dramatically, e.g. location and soil type, and thus not appropriate for an average
- cost estimate is understated – a number of submissions provided very different alternative estimates; for example:
 - bulk and detailed excavation cost \$2 750 without rock excavation and retaining walls only would cost \$60 000 on a 10 to 15 per cent sloping lot³⁷²
 - inadequate cost estimate of the extra excavation, which should be in the range of \$20 000 to \$50 000 per lot
 - It was found that the costs would be between \$36 500 and \$41 000 per apartment pending ground conditions and water table heights. For example, Dee Why city centre would see costs escalate to over \$100 000 per car spot due to the adverse soil conditions and construction implications due to hydrostatic uplift and flood management.
- people with a disability not wanting to live on a sloping lot, so no excavation required
- excavation cost is one of many cost items and should not be singled out
- difficult sites could be exempted under the proposed changes to the NCC, and most volume housing developers favour flat sites for other reasons
- excavation cost could be avoided by careful design and better site preparation, e.g. a driveway to the carport
- a degree of excavation is required for a standard home and is not necessarily an additional cost to be accessible.

Transition cost

Some submissions pointed out that some transition costs for industry were not considered or were underestimated in the Consultation RIS; for example,

- costs in R&D and rework on new designs
- working drawings
- brochures, and
- website updates.³⁷³

There are transition costs associated with reconfiguration and alignment of building footprints and lot dimensions (WA Department of Communities Housing Advisory Unit).³⁷⁴

Changing a standard form design has impacts not only on design costs (around \$5 000 to \$8 000 per design according to AusBuild), but also on construction, marketing and

³⁷² Anonymous Submission 958471840, answer to Question 26, accessed 8 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

³⁷³ Peter Springham, op.cit., answer to Question 21.

³⁷⁴ Coralie Ayres, op.cit., answer to Question 26.

sales.³⁷⁵ Transition of adjusting lot configuration and sizes, to accommodate changes to dwellings will take 3-5 years. Some builders and developers have indicated to Housing Industry Association (HIA) that these transition costs may be higher than physical construction costs.³⁷⁶

Wilson Homes Tasmania pointed out that retraining will be required across the industry – all areas of new housing business staffing units would require retraining. It also noted that there will be more marketing costs as it takes resources and time to raise the awareness of potential customers.³⁷⁷

AusBuild pointed out that the proposed changes to the NCC will apply to dwellings built on land that is currently being purchased and subdivided, and because the planning and approval process takes more than two years, this may create costs where subdivisions have to be altered to meet the proposed requirement.³⁷⁸

By contrast, other submissions argued that transition costs are over-stated:³⁷⁹

- industry players are already incorporating Silver standard and don't have to retrain to understand this standard
- changing regulations/requirements is 'normal' in the building industry and this experience will help reduce transition costs – incorporating regulation changes is part of the job
- transition cost for architects, building designers, builders and certifiers would be minimal as this sector of the industry is well accustomed to changes in building requirements and Development Application permit requirements (ANUHD quoted cases from Murphy Homes on the Sunshine Coast).

Efficiency gains from standardisation

Some submissions argued that the cost of incorporating changes in standards and requirements falls over time as the market innovates to deliver these changes.

For example, as outlined by ANUHD in its submission, cost reductions would be captured by a mandatory scheme for the following reasons:³⁸⁰

- increased efficiencies of scale
- reduced need to develop bespoke solutions
- reduced risk of construction errors, especially for volume builders
- removing the need for different government funders and customers to each specify the accessibility standards to apply to their projects, and

³⁷⁵ Brent Fletcher, op.cit., p.7.

³⁷⁶ Submission by Simon Croft for Housing Industry Association, p.26

³⁷⁷ Sam Plaschke, op.cit., p.6.

³⁷⁸ Brent Fletcher, op.cit., p.5.

³⁷⁹ Margret Ward, op.cit., p.17-18 and p.41.

³⁸⁰ Margret Ward, op.cit., p.17 and p.41.

- efficiency gains from one national standard for builders, regulators and planners to save time as they don't have to use and understand different standards.

This sentiment is echoed in other submissions. ADACAS suggested that the costings do not adequately take account of economies of scale, and the potential savings in manufacturing and retailing costs of, for example, standard sized doors. The majority of cost increases will be largely deflected by mass adoption, and any modest increase in the price of housing will be negligible and absorbed into the cost of the real estate in any case.³⁸¹

One submission provided an example of how economies of scale could help to reduce the construction cost. Palm Lakes Resort in Ballina NSW offers retirement accommodation at Gold Plus in hundreds of standalone dwellings. Common sense design of a suite of floor plans and economies of scale meant construction costs were comparable to the market cost for similar dwellings built elsewhere in suburbia.³⁸²

It was also suggested that the proposed changes may adversely impact industry productivity because currently homes are optimised to reduce costs as much as possible, so deviating from optimisation increases costs.³⁸³

Other costs

A number of submissions suggested other cost items that should be considered in the RIS.

Underground work

Where underground infrastructure (tunnels and sewerage) or water tables prevent additional levels being added to underground carparks, the results will be more apartments without carparks, lowering their value.

Additional costs for entrance requirement

Option 1B for dwelling entrance (one step) has additional requirements such as boundary to door excavation, 1m wide landings, structural components, and a threshold ramp. For some houses that don't have a path (bark, gravel or landscaping items), the requirement for an accessible path would mean more costs.

³⁸¹ Michael Bleasdale, op.cit., answer to Question 21.

³⁸² Submission by John McPherson, answer to Question 13, accessed 8 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

³⁸³ Anonymous Submission 442128431, p.1, accessed 8 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

Waterproofing costs for dwellings

Submissions cited the need for additional items including waterproof door seals, concrete hobs, a grated drain at doorways, low angle slope to balconies and awnings to deal with waterproofing.

Costs to replace framed floors

One submission raised the point that framed floors with required subfloor clearances for termite inspection may no longer be viable under Options 1 to 3 without excavation and significant ramps. The cost of replacing framed floor solutions with slab-on-ground solutions (with associated excavation costs and insulation issues) should be considered.³⁸⁴

Wall cost

Cost of wall reinforcement is too low in the Consultation RIS.

Waterproofing costs for bathroom

Level access showers have drainage issues, and waterproofing for the whole bathroom is required and incurs costs if the shower door is removed.

Costs of removing shower-over-bath design

Shower-over-bath design is not compliant under the proposal. However, some consumers, for example young families with children, need both bath and shower, and the shower-over-bath design is an efficient solution for them. Removing this design would mean they have to have a separate bath built with additional cost.

Granny flat costs

Granny flats are required to be transportable and are currently designed to fit on trucks. Space requirements of the NCC provisions may change this, causing significant re-design costs.³⁸⁵

Compliance costs

The Strata Community Association suggested that increase in accessibility standards requires an increase in compliance cost to avoid “defects” where homes are supplied

³⁸⁴ Anonymous Submission 754879813, answer to Question 21, accessed 8 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

³⁸⁵ Anonymous Submission 946040564, p.1, accessed 8 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

without required features³⁸⁶. AusBuild suggested that additional certifier time would be required.³⁸⁷ Another submission suggested that changes to standard form designs, subdivision layouts and display home requirements would require additional certification and approval and would incur costs.

Maintenance costs

The Strata Community Association pointed out that maintenance costs will be higher because more expensive buildings are generally more expensive to maintain.³⁸⁸

Distributional impacts

Cost of regulation is not evenly distributed. It is higher in smaller markets where the cost of specialist installation/maintenance is higher.

Alternative cost estimates and quantity surveyor issues

Alternative cost estimates

WA Department of Communities Housing Advisory Unit noted internally collected data from the Department's construction of new social and affordable dwellings and renovation works suggest costings vary between \$600 to \$2 500 for LHDG Silver for new builds.³⁸⁹

P2P Housing presented four plans from Murphy Homes and quoted an average additional cost of \$3 000 to achieve Silver.³⁹⁰

One submission estimated total additional costs on a typical lot of 10 to 15 per cent sloping for an average sized house would be between \$235 000 and \$261 192 (table A.17).³⁹¹

A.17 Cost estimates provided by one submission

Item	Cost (\$)
Bulk and detailed excavation (not including rock excavation)	2 750
Additional retaining walls and stormwater drainage	60 000

³⁸⁶ Submission by Shaun Brockman for Strata Community Association, p.9, accessed 8 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

³⁸⁷ Brent Fletcher, op.cit., p.8.

³⁸⁸ Shaun Brockman, op.cit., p.7.

³⁸⁹ Coralie Ayres, op.cit., answer to Question 13.

³⁹⁰ Shane de klerk, op.cit., p.4.

³⁹¹ Anonymous Submission 958471840, answer to Question 26, accessed 8 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

Item	Cost (\$)
Extra cost associated with large garage	18 500
– slab only	6 850
– extra costs over the added cost of the garage slab ^a	11 650
Reinforcing the bathroom and toilet walls	2 296
Installing sub-sill drainage to all sliding doors on the basis that the outdoor areas are level with the main house floor level	2 950
Land cost for larger lot size (100 m2 bigger)	91 666
Bigger house size (38 m2 larger)	83 030
Total	261 192

^a including extra walls, larger garage door, more frame work, larger steel lintels over garage door, extra roofing material

Source: Anonymous Submission 958471840, answer to Question 26

Community Housing Industry Association suggested that:³⁹²

- it costs \$5 400 to \$6 000 to upgrade homes to Silver, with this data being more applicable to ‘units’ (apartments and townhouses)
- the cost to upgrade to Gold is \$27 000 per unit, and
- it costs \$1 500 per dwelling for additional design and certification costs.

A lift can add \$50 000 - \$100 000 to a project. A disabled bathroom costs more than \$410 000 (*as such*) and ramps can add huge costs.³⁹³

One submission provided costings for constructing adaptable housing and accessible housing to Gold level which required increasing the overall house size to accommodate larger bathroom areas and an accessible bedroom. Additional costs to the dwellings were between \$17 000 and \$21 000.

Another submission cited its members analysis which shows proposed changes would cost upward of \$55 000 per apartment. It also cited costings from a developer that the costs would be between \$36 500 and \$41 000 per apartment pending ground conditions and water table heights. For example, Dee Why city centre would see costs escalate to over \$100 000 per car spot due to the adverse soil conditions and construction implications due to hydrostatic uplift and flood management.

The MBA submission provided cost estimates for some elements according to member feedback (table A.18). MBA also provided some comments on the elements which have cost implications:³⁹⁴

- Fly wire/security doors will create a further impact to costs as the landing or accessible area on the approach side will need to be larger
- All hallways will need to be a minimum 1 050mm wide

³⁹² Submission by Wendy Hayhurst for CHIA, p.6-7, accessed 8 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

³⁹³ Anonymous Submission 57608831, answer to Question 13, accessed 8 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

³⁹⁴ Max Rafferty, op.cit., p.11

- All doors will need to be a minimum 870 to 920mm in lieu of 820mm
- Toilets need to be wider and deeper which will impact the designs of the common area in the home
- WC needs skirts and switches, so the toilet suite is measured 900mm clear from walls or skirts and switches
- Straight stairs without winders will make a substantial impact on the useable space of the floor design, and
- Considering required location for additional smoke detectors for future allocation of a non-dedicated bedroom becomes problematic and will add additional cost.

A.18 Cost estimates by MBA to achieve accessibility standards

Item	Cost (\$)
Access via paths and driveways which are not a standard inclusion for most homes	5 000
Entrance door upgrade area	350
Step free entrance	
Consultation fees and building surveyor/certifier fees for performance solution	3 500
Inclusions for grate drain, plumbing work, concreting	1 000
Internal doors	150 each
Bathroom and toilet	
A bathroom with a hobless shower will need to be fully waterproofed, bedded and graded	2 000
Poly marble bases no longer suitable	2 000
Solid blocking or sheeting to bathroom, toilet areas	500
Upgrade to accessible toilet suite from standard	300

Source: MBA submission.

PCA provided a case study to illustrate how building to LHDG Gold requires an increase in overall apartment size and reduces yield and the number of dwellings on a development plot.³⁹⁵

Wilson Homes Tasmania suggested the following elements were missing from the Consultation RIS or required adjustments:³⁹⁶

- addition of the path itself should a car space not be utilised or comply
- excavation, retaining or other siteworks for 1:40 grade parking in lieu of Australian Standards (potentially also affecting dwelling floor levels)
- covered parking to Gold and Gold Plus
- internal (and one entry) doors require 820mm 'clear opening' inferring the use of an 870mm door
- potential floor area increases to allow for shower and toilet requirements
- 'removable' shower imposes significant requirements (waterproofing, falls to floors, additional tiling/vinyl to walls, more floor space in bathroom), and

³⁹⁵ Tim Wheeler, op.cit., p.6-7.

³⁹⁶ Sam Plaschke, op.cit., p.4.

- hobless shower will make obsolete nearly all poly marble shower bases and increase costs on entry level housing.

One submission noted that the step free entrance requirements will impact the choice of structural floor system that can be used, essentially meaning that any raised sub floor or raised slab systems would no longer be viable solutions.

Another submission pointed out cost savings from personal experience: ‘When building our home - we saved expenses due to some modifications – rather than adding costs (i.e. removing walls in bathroom areas to keep the space open).’³⁹⁷

Whole-of-project approach

Some submissions suggested adopting a whole-of-project approach for cost estimation. For example, one submission mentioned the cost implication of car parking requirement:

- The proposed changes of Silver Option would reduce the number of car spots within a basement footprint, thus requiring an additional basement level or bigger basement footprint. Larger car spots would also introduce column grid inefficiencies as typical structural column grid layouts would not align with the superstructure. An engineering review would need to be conducted to see if additional transfer beams/capitals at columns etc. are needed and impact to yield.
- The Gold Option will see an increase in carpark heights from 2.2 to 2.5m. Presuming this is 2.5m clear of services, over 3 basement levels, an additional excavation depth of 900mm would be needed. Whilst this doesn’t seem much, within ‘brown-field’ sites the soil is generally classified as General Solid Waste or at times water charged. An additional 900mm could significantly increase costs, to perimeter shoring wall depths, foundation pile depths, hydrostatic slab requirements as so forth. Again a whole-of-project approach would be required to truly understand the cost and risk implications of this item.

Conflicting and competing requirements

Some submissions suggested, for Class 1a dwellings, that there is considerable concern that the stepless entries and stepless outdoor thresholds will not be in accordance with the NCC and Australian Standards and will require performance solutions: More specifically

- the step free entrances will create substantive issues for water ingress, termite protection and termination of cladding to protect against rising damp;
- the requirements will conflict with local planning requirements that seek to manage dwelling design including
 - limits on cut and fill
 - limits on dwelling heights
 - boundary setbacks from each boundary which create a maximum building footprint, or

³⁹⁷ Anonymous Submission 90458024, answer to Question 13, accessed 9 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

- higher set houses to improve street scape appeal and neighbourhood character
- the proposals do not account for or resolve the impacts on dwellings from other parts of the NCC such as the provision of weep holes and would require more costly and possibly unsustainable slab requirements
- not accounting for the need to ensure flood safety of dwellings and the requirements of local governments and others for increasing freeboard of the slab above street
- requirements for straight stair runs or mandatory ground floor bedrooms may make dwellings difficult or impossible to fit on existing restricted sites.³⁹⁸

Interpretation

A number of submissions questioned the interpretation of the provisions in the proposed change, for example the required clear-opening of doors (the width available to a user) was mis-interpreted as the door leaf (width of the door frame).³⁹⁹

Additional inclusion

One submission suggested that slip resistance should be included in the proposed changes to the NCC. The regulatory focus must be to ensure that products have adequate slip resistance at the end of an economically reasonable life cycle, rather than a momentary satisfaction of the slip resistance condition at the time of handover.⁴⁰⁰

Benefit estimates

Questions 27 – 34 asked respondents their views on the assumptions and approaches used to estimate benefits of the proposed changes to the NCC.

As shown in chart A.19, there are roughly equal numbers of respondents agreeing or disagreeing with the assumptions and approaches taken in the Consultation RIS to estimate the benefits of the proposed changes to the NCC.

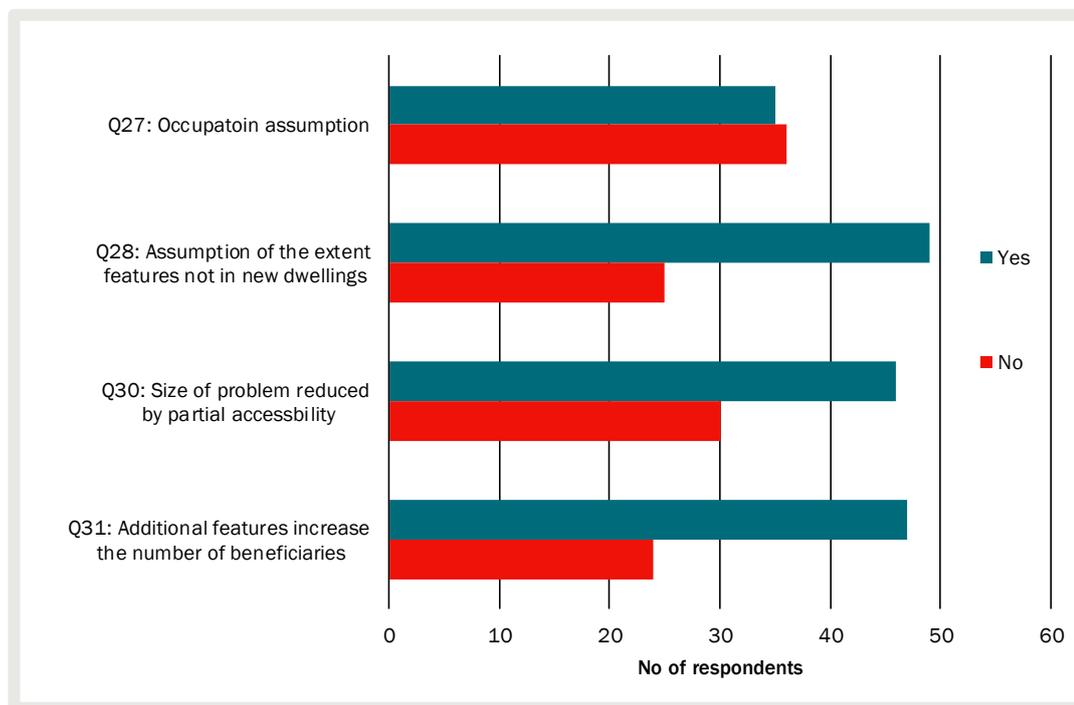
Among those who disagree with CIE's approaches or assumptions, their views are polarised. For example, some claim the benefits are overstated while others argue the opposite.

³⁹⁸ Anonymous Submission 754879813, answer to Question 21, accessed 9 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

³⁹⁹ Anonymous Submission 462974436, answer to Question 13, accessed 9 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

⁴⁰⁰ Submission by Richard Bowman, p.1, accessed 9 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

A.19 Views on the assumptions and approaches to estimate benefits



Data source: Consultation Hub.

'Allocation' of new accessible housing

The Consultation RIS made assumptions about the occupation of accessible housing by owner occupiers and renters. Question 27 asked respondents whether they considered the assumptions to be reasonable.

As shown in chart A.19, some 35 respondents to the questionnaire agreed with the assumptions, while 36 respondents did not. Not many respondents provided further explanation.

One submission questioned the notion of allocation, suggesting it is problematic in a free market where there is an undersupply of a particular product and a dysfunctional market is a consequence. It is also practically unachievable and therefore a flaw in the approach to considering problem reduction.

The extent of features assumed in the baseline

Significantly higher number of respondents agreed with the assumption about the extent to which accessibility features are currently provided in the new dwellings than those disagreeing (49 versus 25) in the answers provided to Question 28 via Consultation Hub.

Some submissions suggested that the Consultation RIS over-stated the extent to which mobility needs are currently being met. Accessibility provided by current policies (e.g. modifications) falls short of LHA benchmarks. In addition, "alternative" policies are not

real alternatives to accessible housing, and thus the size of the problem and the benefits may be understated; for example,⁴⁰¹

- Aged care: about 80 per cent of people don't want to go into aged care
- Social housing is less than 5 per cent of the market and most social housing was built in 1950s-80s and is not accessible
- SDA is an exception because it is generously funded and has a matching program
- Voluntary programs have not worked.

By contrast, others argued that the extent of accessibility features assumed in the baseline may be understated.

PCA questioned the estimate that only 5 per cent of newly constructed housing meets LHDG Silver based on Livable Housing Australia's certification figures, noting under-reporting, suggesting there may be housing that, while being built to a LHCG standard, has never officially sought certification.⁴⁰² PowerHousing Australia suggests that new community housing dwellings are generally built to LHA Silver, based on feedback from their members.⁴⁰³

More supply of accessible housing in new developments appears a result of government incentive programs and/or planning requirements.

Accessible Public Domain noted that many councils require housing developments to include 10 to 20 per cent of units to be accessible, adaptable or LHA design.⁴⁰⁴

Many government projects, such as Build-to-Rent, DHHS and TAC, do provide Options 1 to 3 in their housing, according to Design Matters National.⁴⁰⁵

One submission pointed out that, in general, new homes are already more accessible than older homes. It estimated approximately 10 per cent of new residential apartment building dwellings across NSW met the LHDG requirements through an incentive mechanism.

Another submission also pointed out that some developers are providing up to 10 per cent of units as adaptable or accessible housing, depending upon various council's requirements.

Alexandrina Council in South Australia conducted a community survey in 2016, which found 54 per cent of dwellings are suitable for people with mobility impairments or other forms of disability, and 30 per cent not suitable. The most commonly cited reasons for a home not being suitable were:⁴⁰⁶

⁴⁰¹ Margret Ward, *op.cit.*, p.13-14, p.25 and p.48.

⁴⁰² Tim Wheeler, *op.cit.*, p.4

⁴⁰³ Nicholas Proud, *op.cit.*, p.6

⁴⁰⁴ John Evernden, *op.cit.*, answer to Question 29.

⁴⁰⁵ Submission by Peta Anderson for Design Matters National, answer to Question 29, accessed 9 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

⁴⁰⁶ Sam Priest, *op.cit.*, p.5-6.

- the presence of internal or external steps
- an unsuitable bathroom or toilet, and
- difficulty moving around with mobility devices (commonly due to narrow hallway or doorways).

Partial accessibility

Some but not all of the accessible features of the proposed changes may have already been provided in new dwellings. Stakeholders were asked to comment on whether this partial accessibility would reduce the size of the problem in the baseline (Question 30).

As shown in chart A.19, more respondents agreed that this would reduce the size of the problem than those who disagreed (46 versus 30).

Some submissions pointed out that it may depend on the individual features and the person in need.

Mornington Peninsula Shire acknowledged that while some features may make a difference in particular cases (e.g. enabling a visit by a person who may need access to a toilet with no stairs) such an approach did not present the required scale to increase the liveability of the housing stock.⁴⁰⁷

ANUHD suggested that individual accessibility features do not provide related individual benefits unless a coherent suite of accessibility features is provided.⁴⁰⁸

Post-Polio Victoria highlighted this argument with a case study (Case Study 3) in its previous submission to the ABCB Options Paper:⁴⁰⁹

The cost of the fire door entry might have been \$X, but if the occupier becomes too frail to open it, then no matter how many accessibility features lie in the apartment on the other side of that door, they are useless to the renter, and even the high cost of that desirable feature does not render the whole flat accessible. Or if the lip onto the balcony is too high for the renter to step over with a walker, then there might as well be no balcony. And the shower flooding the entire bathroom floor when it is turned on in its stepless alcove - especially if the tiles become slippery when wet - is useless to an older inhabitant who is very scared of falling, after previously breaking her hip.

More features lead to more beneficiaries

A related question asked respondents if they agree with the assumption that additional features required under accessibility standards in Option 2 and Option 3 would increase the number of beneficiaries compared to Option 1 (Question 31).

As shown in chart A.19, more respondents agreed with the assumption than those who did not (47 versus 24). A number of submissions suggested this was self-evident.

⁴⁰⁷ Cr Sam Hearn, Mayor Mornington Peninsula Shire, op.cit., p.12.

⁴⁰⁸ Margret Ward, op.cit., p.18.

⁴⁰⁹ Barbary Clarke, op.cit., p.6.

Some submissions argued that it is not necessarily the case. For example, more features mean more costs, and ‘the people with most needs may not be able to afford it’.⁴¹⁰

A number of submissions pointed out that Silver and Gold/Gold+ serve different purposes.⁴¹¹ Silver is about visitability while Gold/Gold+ are about accessibility (that is for people to live in). It is therefore not necessarily the case that moving from Silver to Gold/Gold+ would increase the number of beneficiaries.

Benefits reduced proportionately with the cost

To avoid attributing benefits to accessibility features already installed in dwellings under current arrangements, the impact of the proposal in the Consultation RIS was reduced in proportion to those elements assumed prevalent and at weighted average cost. Question 33 asked respondents to provide additional evidence to make the assumption more robust.

Submissions suggest it may also depend on individual circumstance.

‘Without knowing the exact nature of disability to be catered for existing features may be rendered effectively redundant and be required to be removed or modified anyway’ (All Construction Approvals).⁴¹²

As mentioned above, ANUHD, among others, argued that individual accessibility features do not provide related individual benefits unless a coherent suite of accessibility features is provided.⁴¹³ In other words, benefits should not be reduced proportionately with the costs – marginal increase in costs would lead to full realisation of benefits.

Mismatch between undersupply and high willingness to pay

The Consultation RIS identified a mismatch between the amount of accessible housing being built and the apparent willingness of many survey respondents (including households without any persons with limited mobility) to pay above cost for Option 1. Question 34 asked respondents to consider what the explanation might be for this mismatch and whether it is a reflection of the market failure.

A number of submissions (Blind Citizens WA,⁴¹⁴ for example) noted bounded rationality and optimism bias as explanation for the market failure and the mismatch.

⁴¹⁰ Anonymous Submission 1009094404, answer to Question 31, accessed 9 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent.

⁴¹¹ For example, see Margret Ward, op.cit., p.47.

⁴¹² Submission by Harald Weber for All Construction Approvals, answer to Question 33, accessed 9 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

⁴¹³ Margret Ward, op.cit., p.18 and p.46.

⁴¹⁴ Erika Webb, op.cit., answer to Question 34.

Mornington Peninsula Shire noted it is expected to be a factor of market failure associated with the general unaffordability of housing and the lack of standardisation in housing products to match people's ideal level of accessibility.⁴¹⁵

The studies cited by one submission suggested that 'the consumer is relative myopic about the relative importance of accessibility and is willing to trade off these aspects. While they regard accessibility and universal design positively in principle, when making market decisions, it gets prioritised down.'

One submission suggested accessibility features are hypothetically nice to have but actual purchasing decisions are made on perceptions of 'must have'.⁴¹⁶ The mismatch is a reflection of the hypothetical willingness to pay rather than an actual commitment.⁴¹⁷

It might be the case that survey respondents 'do not express their controversial views, but they respond differently when it comes to dollars and if it hurts'.⁴¹⁸

Submissions⁴¹⁹ also distinguished willingness to pay with capacity to pay as a reason for the mismatch. People with the needs may want to pay for the features, but in reality they cannot afford them.

Monopoly was also raised as a factor.⁴²⁰

It was suggested that the mismatch might be due to the misperception that demand is high while the actual demand is low.⁴²¹

The mismatch could also be a result of the demand and costs not being well studied and the market responding accordingly,⁴²² ending up with limited choices.⁴²³

⁴¹⁵ Cr Sam Hearn, Mayor Mornington Peninsula Shire, op.cit., p.13.

⁴¹⁶ Submission by Moshe Gilovitz for Moshe Gilovitz Architect, answer to Question 34, accessed 9 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

⁴¹⁷ Anonymous Submission 506249822, answer to Question 34, accessed 9 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

⁴¹⁸ Anonymous Submission 1009094404, answer to Question 34, accessed 9 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

⁴¹⁹ For example, Jane Scott, op.cit., answer to Question 34.

⁴²⁰ John McPherson, op.cit., answer to Question 34.

⁴²¹ Submission by Ron Lochert, answer to Question 34, accessed 9 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

⁴²² Anonymous Submission 405838978, answer to Question 34, accessed 9 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

⁴²³ Anonymous Submission 628500418, answer to Question 34, accessed 9 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

Under-reporting of the accessible housing in the market is also cited as one factor for this mismatch. Because there is no register of adaptable housing, it is possible that many adaptable units have been built and the purchasers do not know that they have purchased an adaptable unit.⁴²⁴

One submission attributed the mismatch to the survey contents ('flawed and biased and its findings unreliable') and to chronic undersupply of accessible homes in the market.

Another submission questioned the representativeness of the survey sample.⁴²⁵

Benefits underestimated

Most submissions that suggested there was an understatement of benefits in the Consultation RIS stated that this was related to an understatement of the size of the problem (as discussed in detail in the previous section).

Some other submissions pointed out that the benefits may be underestimated because the flow-on impact on other policies is not considered. For example, changes to the NCC⁴²⁶

- may increase benefits of NDIS as NDIS is built on getting people into work⁴²⁷
- avoid costs to implement reforms raised in the Royal Commission on aged care, and
- reduce cost to Home Care Package and Commonwealth Home Support Program.

Benefits overestimated

By contrast, other submissions suggested that the benefits may be overestimated in the Consultation RIS.

One suggested reason for overstatement is that the proposed changes to NCC are not **accessible** and thus the benefits of achieving accessibility are overestimated. For example, HIA notes⁴²⁸

- that proposed changes to NCC are less than the wheelchair standard AS1428.1, and
- that the single step entrance requirement does not meet community needs.

⁴²⁴ Anonymous Submission 552143712, answer to Question 34, accessed 9 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

⁴²⁵ Anonymous Submission 462974436, answer to Question 34, accessed 9 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

⁴²⁶ See Margret Ward, op.cit., p.27 and Hayley Stone, op.cit., p.18

⁴²⁷ This is limited by data reported by AMIDA – only 10 per cent of people with a disability are eligible for NDIS

⁴²⁸ Simon Croft, op.cit., p.2-3.

Advocate groups such as ANUHD and Summer Foundation also noted that the proposed changes have been diluted down so much that they are no longer accessible.⁴²⁹

Another reason for overstatement of benefits is the difference between potential benefits and actual benefits, as noted by HIA. For example, accessibility standards do not require grab rails (only reinforced walls), therefore, the extent to which falls are prevented may be overstated (although acknowledging that a step free path and a flat shower will reduce falls).⁴³⁰

Benefits may be overstated due to using home modification as a proxy for the estimate of the size of the problem. As discussed above, Home Modification Information Clearinghouse noted that home modifications (which are bespoke to users) and universal housing (which is general) may achieve different outcomes. They may be complements rather than substitutes.⁴³¹

A number of submissions suggested that a one-size-fits-all approach cannot capture individual needs and modifications are still required. Some results of the survey in the MDI and Summer Foundation submission appear to support this argument; for example,⁴³²

- although significantly more accessible than mainstream housing, partial inaccessibility was surprisingly high even in specialist disability housing such as group homes (47.1 per cent) and supported residential services (46.2 per cent)
- ability to afford home modifications remains a concern even for those living in accessible homes (47.5 per cent of those with high support needs, and 44.2 per cent of those with low support needs), implying that needs change over time and that more modifications are required accordingly.

An information problem also impacts the realisation of accessibility benefits. People who need or prefer accessible housing need more information on accessibility features in housing. This is not achieved in the proposal and thus impacts the realised benefits.

HIA notes that accessible housing has been offered, but with little uptake.⁴³³ According to Meriton, buyers rarely provide feedback about lack of accessibility features. Inner city apartments are mostly owned/rented by young workers, while older people have higher degrees of ownership than young people and thus better protected against accessibility issues.⁴³⁴

A 2015 Registered Accommodation Association of Victoria (RAAV) member survey to evaluate the performance of AS1428.1 standard found that only 6 members (out of 58

⁴²⁹ For example, see Margret Ward, *op.cit.*, p.31 and Professor Bruce Professor Bruce Bonyhady and Dr Di Winkler, *op.cit.* p.4 and p.21.

⁴³⁰ Simon Croft, *op.cit.* p.13-14.

⁴³¹ Professor Catherine Bridge, *op.cit.*, p.7.

⁴³² Professor Bruce Professor Bruce Bonyhady and Dr Di Winkler, *op.cit.*, Appendix 2, p.5-6 of 44.

⁴³³ Simon Croft, *op.cit.*, p.12 and p.29.

⁴³⁴ David Cremona, *op.cit.*, p.1-2.

respondents) received 7 requests in total for disabled access facilities and 52 received no requests. Member feedback indicated that rooms with full disability access are the last rooms to be rented in a rooming house, and generally receive lower rentals as tenants prefer a standard bathroom.⁴³⁵

The benefits created by accessible housing will be a function of the location of new accessible housing because, for accessible housing to meet its purpose, it must be built close to where people with mobility limitation live (or where they would prefer to live).⁴³⁶

CBA approach

Symmetry in reporting costs and benefits

The submission by Melbourne Disability Institute (MDI) and Summer Foundation included a report prepared by Associate Professor Andrew Dalton and Emeritus Professor Rob Carter from Deakin Health Economics, Deakin University (Dalton and Carter 2020),⁴³⁷ suggesting the costs and benefits should be reported in a symmetric way to avoid bias or confounding. Dalton and Carter (2020a) suggest the Consultation RIS does not provide a symmetrical view of the benefits and costs in that the ‘problem reduction approach’ over-counts the cost side while the ‘willingness to pay’ approach under-counts the benefit side. They go on to suggest that benefits in these two approaches are additive with less overlap: ‘we favour the no overlap/25% overlap results as most items listed are clearly different’.⁴³⁸

Many advocate groups also quoted the Dalton and Carter report in their submissions.

Qualitative analysis

Consultation feedback expressed concern about the Consultation RIS for its lack of qualitative analysis. As pointed out by ANUHD,⁴³⁹

The consultation RIS repeatedly concedes that the available quantitative data are incomplete and unreliable. We share this concern and add that the Consultation RIS does not provide any qualitative analysis in these areas as required.

⁴³⁵ Submission by Berenice Hale for RAAV, p.2-3, accessed 9 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent.

⁴³⁶ Tim Wheeler, op.cit., p.4

⁴³⁷ Dalton, Andrew and Rob Carter 2020a, *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, as Appendix 1 of the submission by Melbourne Disability Institute (MDI) and Summer Foundation to the public consultation.

⁴³⁸ *ibid*, p.6

⁴³⁹ Margret Ward, op.cit, p.11

The MDI and Summer Foundation submission echoes this criticism, '[i]t is notable, however, that they make limited reference to equity considerations and that their analysis does not include any qualitative analysis'.⁴⁴⁰

Discount rate

A key issue raised by many submissions, for example ANUHD, Summer Foundation and MDI which refer to Dalton and Carter (2020a), is that the central case discount rate of 7 per cent is too high. They suggest a rate of at most 3 per cent would be preferable, citing the Australian bond rate and low discount rates used in other studies.

Other approaches suggested

Cost-effectiveness analysis

SGS Economics and Planning suggested a cost-effectiveness analysis (CEA). Their submission noted that, under the CEA approach, 'the desired outcome or end-state is defined. With this outcome established, a range of implementation options can be compared based on their relative costs and effects. This approach, unlike CBA, does not require the benefits to be monetized.'⁴⁴¹

Capability approach

An anonymous submission⁴⁴² argued that a cost-benefit methodology is not the only way to evaluate the provision of minimum standards for accessible housing.

The submission suggested that accessible housing needs to be seen as a human rights and social justice issue, not just an economic issue. The submission proposed that a more appropriate empirical methodology relating to people with disability is the capability approach developed by Sen and Martha Nussbaum (2011). The capability approach can be developed into an alternative evaluative tool which can replace traditional social cost-benefit analysis. A nuanced development "Closing the Gap" empirical methodology that is applied to Aboriginal policy is more appropriate to policy relating to people with disability.

⁴⁴⁰ Profession Bruce Professor Bruce Bonyhady and Dr Di Winkler, op.cit., p.3; Appendix 1, p.9.

⁴⁴¹ Submission by Emily Hobbs for SGS submission, p.2,

⁴⁴² Anonymous Submission 343459347, answer to Question 24, accessed 9 December 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/published_select_respondent

Social-ecological approach

Post-Polio Victoria Inc (PPV)⁴⁴³ suggested that a socio-ecological framework would provide a more balanced perspective on the needs of polio survivors, people living with other disabilities, their families, social networks, and health practitioners.

According to PPV, people who actually have a disability are not the only people who are 'living with disability': their families, carers, and social networks; their healthcare practitioners; legislators, politicians and bureaucrats; and Australian society all join them in that space.

The social-ecological approach 'accounts for the impact of an individual's social and environmental context on their health outcomes'. For instance, inability to access their 'friends' homes' can impact on 'their commitment to continue to build a life full of meaning' and, due to their friends' potential lack of understanding of their physical limitations, to diminished social relationships, or inclusion.

⁴⁴³ Barbary Clarke, op.cit., p.6-7.

B Approach to estimating the safety impacts

People at risk of falls due to inaccessible housing

There is no comprehensive source of data on the extent to which accessibility needs are being met in existing dwellings. The SDAC does not explicitly ask respondents with mobility limitation whether their current residence meets their accessibility needs. Nevertheless, there are some relevant indicators.

One relevant indicator on the extent to which accessibility needs are being met is the level of assistance required moving around the residence. This question is relevant to accessibility features within the home, but not necessarily features relating to entering and leaving the residence (such as level access).

- The 2018 SDAC suggests that around 78 per cent of those identifying as having mobility limitation report having no difficulty moving around the residence (table B.1).
 - In some cases, the disability may not be severe enough to restrict movement around the residence.
 - Alternatively, this could reflect the home environment already meeting any accessibility needs.
- There are around 653 400 people that either require assistance moving around the residence, or have some difficulty.
 - Of these, around 163 100 live in establishments (including aged care facilities, retirement villages or hospitals).
 - The remaining 490 700 live in households.
 - ... Of these, around 167 900 live in dwellings that have been modified because of the resident's condition or age. This could indicate that the dwelling is accessible, but the disability is severe enough that they require assistance or have difficulty anyway. Alternatively, it is possible that the modifications were inadequate, such that the dwelling did not meet the resident's accessibility needs.
 - ... The remaining 322 300 live in dwellings that have not been modified.

B.1 Assistance required moving around residence

Assistance required	Living in households			Total	Total requiring assistance	Share of total
	Dwelling modified	Dwelling not modified				
	'000	'000	'000	'000	'000	Per cent
Always needs help	121.6	32.8	40.1	71.3	194.2	6.5
Sometimes needs help	35.1	58.0	113.0	171.0	205.7	6.9
Does not need help, but has difficulty	6.4	77.1	169.2	248.4	253.5	8.5
Total requiring help or has difficulty	163.1	167.9	322.3	490.7	653.4	21.9
Does not move around residence	9.5	0.0	7.2	4.8	15.6	0.5
Has no difficulty	11.7	309.9	1 992.3	2 301.9	2 313.9	77.6
Total	184.3	477.8	2 321.8	2 797.4	2 982.9	100.0

Source: ABS, Survey of Disabilities, Ageing and Carers, 2018, TableBuilder.

The SDAC survey suggests that for most people with mobility limitation, their residence meets their accessibility needs (at least internally).

A Council on the Ageing (COTA) survey of people over the age of 50 provides some support for these findings. An unpublished analysis of the survey data suggests the following:⁴⁴⁴

- 27.6 per cent of respondents did not think their home would meet their needs in the future (although close to 20 per cent indicated that they did not know)
- of the people who indicated that their home would not meet their needs, around 44 per cent indicated that poor access/accessibility was a reason why
- this implies that only around 12 per cent of people believed their house would not meet their future needs due to poor access/accessibility.

As these survey results are based on future expectations, rather than actual experience they need to be treated with some caution. Many people may not be able to accurately foresee their future accessibility needs.

- **It is assumed that the population at greater risk of falling due to housing that lacks accessibility features are those people that:**
 - **have mobility limitation**
 - **live in households**
 - **live in a dwelling that has not been modified as a result of their age or condition**
 - **either require assistance or have trouble moving around their residence.**

⁴⁴⁴ Bringolf, J. 2015, *Let's Talk About Where You Live*, Incomplete draft based on COTA NSW 2014 survey data for the 50+ Report with a focus on how and where older people are living, unpublished, p. 10.

- **Based on these criteria, the 2018 SDAC survey suggests there were around 325 100 people⁴⁴⁵ that are at higher risk of falls due to inaccessible housing.**

Impact of accessible housing on safety outcomes

Based on the results of several studies on the impact of home modifications (and other interventions) on the number of falls in older people, in the Consultation RIS CIE assumed that the number of falls is between 27 per cent and 46 per cent higher in housing without accessibility features, with a central case estimate of around 37 per cent.

However, CIE also noted the following caveats.

- The results in these studies are driven by occupational therapy interventions in general (which includes home modifications) and not home modifications specifically.
- Some studies find no effect. For example, Day et al (2002)⁴⁴⁶ finds that “home hazard reduction” reduces falls in combination with exercise and vision improvement, but does not have a significant impact in isolation.

There were also several relevant comments from submissions, including the following.

- The submission from the Home Modification Information Clearinghouse noted that unlike universal design features, home modifications are tailored to meet specific needs. Therefore, the results from studies showing the benefits of home modifications are not necessarily a good indicator of the benefits of universal design.
- The HIA submission also questioned the assumptions in relation to safety on several grounds.
 - Excluding studies showing no impact may have introduced bias to the estimate.
 - There is limited evidence to support the assumption that the incidence of falls among those with limited mobility that are younger than 65 are the same as for the 65-74 age bracket.
 - The NCC proposals do not include the installation of handrails in bathrooms (only the reinforcement of walls).

Linking design features to falls

As noted in the HIA submission the features typically provided in home modifications do not necessarily directly align with the features covered by the NCC proposal. The accessible design features included in the NCC proposal could potentially reduce falls:

⁴⁴⁵ Note this differs slightly from the number reported above (322 300). This reflects the procedure whereby TableBuilder randomly adjusts cells to minimise the risk of identifying individuals in aggregate statistics. This means that estimates derived from TableBuilder are not always identical.

⁴⁴⁶ Day, L. Fildes, B. Gordon, B. Fitzharris, M. Flamer, H. and Lord, S. 2002, Randomised factorial trial of falls prevention among older people living in their own homes, *BMJ*, 325:128, <https://www.bmj.com/content/325/7356/128>

- directly by reducing potential tripping hazards — the main features that would reduce tripping hazards are:
 - step-free access
 - hobless shower
- indirectly by allowing the use of aids that reduce falls — for example, allowing use of
 - a wheelchair in the dwelling,
 - showering aids (where the shower is too small), or
 - other aids.

The AIHW reports various data on hospitalised falls (a subset of total falls). In 2016-17, the AIHW reports that:

- around 12 per cent of all hospitalised falls that occurred in the home, occurred in the bathroom⁴⁴⁷
- around 6.3 per cent of all falls were on or from stairs or steps (this is equivalent to around 12 per cent of all falls within the home, but some falls on or from stairs or steps may have occurred outside the home).⁴⁴⁸

This data suggests that it is unlikely that the proposed measures in the NCC proposal would directly reduce falls by 37 per cent as assumed in the Consultation RIS.

Review of empirical evidence

According to Pynoos et. al. (2010), it is estimated that between 35 per cent and 40 per cent of falls result from factors that are related to the environment, although the role of the environment interacts with other factors.⁴⁴⁹ There are a range of environmental factors that can contribute to falls in the home.

- As discussed above, the NCC proposal would remove some environmental risks, including:
 - one or more steps to (and at) the entrance of the dwelling
 - the shower hob (or the need to step into a bathtub).
- Environmental hazards within the home can also include: rugs, worn carpets, clutter etc. These environmental hazards could still exist within an accessible home.

In general, the evidence on the impact of environmental factors on the incidence of falls in homes is mixed.⁴⁵⁰ As noted in the Consultation RIS, the World Health Organisation (WHO) assessed that the strength of evidence that people with functional impairments

⁴⁴⁷ AIHW: Pointer, S. 2019, Trends in hospitalised injury due to falls in older people, 2007-08 to 2016-17, Injury research and statistics series no. 126, Cat No. INJCAT 206, Canberra: AIHW, p. 25.

⁴⁴⁸ *ibid*, p. 25.

⁴⁴⁹ Pynoos, J. Steinman, B.A. and Nguyen, A.Q.D. 2010, Environmental Assessment and Modification as Falls Prevention Strategies for Older Adults, *Clinical Geriatric Medicine*, November 26(4), pp. 633-644.

⁴⁵⁰ *ibid*, pp. 633-644.

have reduced fall and injury rates in homes that have been modified is **moderate** based on a review of the literature.⁴⁵¹

An older (2006) review of the evidence for the (then) Australian Government Department of Health and Ageing by the National Ageing Research Institute concluded that:

“There is growing evidence that home hazard assessment and modification programs may be effective in reducing falls, particularly when undertaken by trained health professionals such as occupational therapists, and when targeting those at increased risk of falls. These approaches are more likely to be effective when combined with strategies to modify risky behaviours, and maximise adherence with recommended hazard modifications. **To date there is no strong evidence that modifications to reduce environmental fall hazards within the home or public areas in isolation are effective in reducing fall rates.** [emphasis added]”⁴⁵²

The implication is that there is limited evidence to suggest that the universal design features would significantly reduce falls. That said, some of the evidence reviewed relates to the efficacy of home assessment and modification programs, rather than home modifications *per se*. One of the reasons why these programs did not significantly reduce falls is the limited uptake of the recommendations, rather than the effectiveness of the recommended modifications *per se*.⁴⁵³

Lord et. al. (2006) reviewed two groups of studies, including the following.⁴⁵⁴

- Six case-control studies that examined the association between environmental hazards and falls.
 - Two of these studies found differences in the prevalence of household hazards between faller and non-faller groups.
 - The remaining four studies found no differences in home hazards between faller and non-faller groups.
- Five prospective cohort studies, in which household hazards are assessed first and falls are monitored subsequently over a defined period.
 - Of the five studies reviewed, none found household hazards to be associated with falls in primary analyses.
 - However, secondary analyses tended to find that (perhaps counter-intuitively), household hazards were more likely to contribute to falls in more active older people.

⁴⁵¹ World Health Organization 2018, *WHO Housing and health guidelines*, chapter seven. Emphasis is in the WHO report (p.71).

⁴⁵² Hill, K. Vratsidis, F., Haralambous, B. Fearn, M. Smith, R. Murray, K. Sims, J. Dorevitch, M. 2004, *An analysis of research on preventing falls and falls injury in older people: Community residential care and hospital settings*, Report to the Australian Government Department of Health and Ageing, Injury Prevention Section by the National Ageing Research Institute, National Falls Prevention for Older People Initiative, p. 26.

⁴⁵³ *ibid*, pp. 22-26.

⁴⁵⁴ Lord, S.R. Menz, H.B. and Sherrington, C. 2006, “Home environment risk factors for falls in older people and the efficacy of home modifications”, *Age and Ageing* 2006; 35-53.

- Five randomised control trials of the impacts of home assessment and modification interventions. The results were also mixed.

Note that the first two groups of studies do not rely on extrapolating from the impacts of home modifications. As such, the general concerns set out in the submission from the Home Modifications Information Clearinghouse are less important for these studies reviewed by Lord et al (2006).

Table B.2 summarises some key studies on the impact of home modifications (and other interventions) on the number of falls.

B.2 Key results of randomised controlled trials that establish that home modifications and other factors reduce falls

Study (location)	Key result ^a	Comment/note
Cumming et al 1999	Falls reduce by 44 per cent.	<ul style="list-style-type: none"> ■ Study for 65yo and above ■ Intervention that drives result: visit and follow-up by occupational therapists, including home modifications ■ Result is for sub-group that had a fall prior to study. No significant impact for sub-group that did not have a fall prior to study. ■ Authors attribute reduction in falls to occupational therapy in general (including home modifications) not to home modifications specifically, because falls outside home also fell
Palvanen et al 2014	Falls are estimated to reduce by 27 per cent.	<ul style="list-style-type: none"> ■ Study for 70yo and above, who have a high risk of falling ■ Intervention that drives result: 12 months, multifactorial falls prevention program: strength and balance training, medical review and referrals, medication review, proper nutrition, home hazard assessment and modifications
Nikolaus & Bach 2003	Falls are estimated to reduce by 37 per cent.	<ul style="list-style-type: none"> ■ Study of subjects admitted from home to geriatric hospital showing functional decline, especially in mobility ■ Intervention that drives result: diagnostic home visit and home intervention (diagnostic home visit, assessing home for environmental hazards, advice about possible changes, offer of facilities for any necessary home modifications, training on the use of technical and mobility aids); an additional home visit after 3 months to reinforce the recommendations
Pighils et al 2011	Falls are estimated to reduce by 46 per cent.	<ul style="list-style-type: none"> ■ Study of subject 70yo and above, with a history of falls in the previous year. ■ Intervention: environmental falls prevention intervention from occupational therapist
Lord et. al. (2006)	Studies find no association or no consistent association between trip hazards and falls	<ul style="list-style-type: none"> ■ Other factors may be significant, for example, removal of environmental hazards such as hallway rugs may reduce falls in older people ■ Notes 3 further studies that do not find a significant reduction in falls resulting from interventions including home modifications

^a The key result taken from each study is the rate of falls in in an environment with home modifications and other factors, relative to not being such an environment. All noted results are statistically significant. Note: In each RCT, the control group generally receives 'normal' treatment, which does not involve occupational therapy and home modifications. The specific interventions that drive the results are noted.

Source: Cumming et al 1999, *Home visits by an Occupational Therapist for Assessment and modification of Environmental Hazards: A Randomised Trial of Falls Prevention*; JAGS 47:1397-1402; Palvanen et al 2014, *Effectiveness of the Chaos Falls Clinic in preventing falls and injuries of home-dwelling older adults: a randomised controlled trial*, *Injury*. 2014 Jan;45(1):265-71. doi: 10.1016/j.injury.2013.03.010; Nikolaus T and Bach M 2003, *Preventing falls in community-dwelling frail older people using a home intervention team (HIT): results from the randomised Falls-HIT trial*, *J Am Geriatr Soc*. 2003 Mar;51(3):300-5; Pighills et al 2011, *Environmental Assessment and modification to prevent falls in older people*, *J Am Geriatr Soc*. 2011 Jan;59(1):26-33. doi: 10.1111/j.1532-5415.2010.03221; Lord et al 2006, *Home environment risk factors for falls in older people and the efficacy of home modifications*, *Age and Ageing* 35:S2, ii55-ii59, doi: 10.1093/ageing/af1088.

- **In summary, there is limited direct evidence on the extent to which universal design features would decrease falls in the home for older people and people with disability.**
- **Other related evidence is mixed.**
- **For the purposes of the CBA, the following assumptions are made.**
 - **As a significant number of studies suggest that environmental factors have a minimal impact on falls, a reasonable lower bound would be to assume that the universal design features on their own could have minimal impact on falls.**
 - **As an upper bound estimate, we use the same impact estimated for the Consultation RIS (i.e. lack of universal design features increases falls by around 37 per cent).**
 - **For the central case, we assume that the lack of universal design features increase falls by around 10 per cent. We consider that the impact of the NCC is more likely to be towards the lower end of the range for the following reasons.**
 - ... **Most (but not all) studies that look at the number of hazards in the home (without other interventions) tend to find that the number of environmental hazards has little to no impact on the number of falls.**
 - ... **Most studies at the upper end of the range tend to include either home assessments (which could assist in removing environmental hazards unrelated to the dwelling design such as rugs, worn carpets, inappropriate furniture placement etc.); or other types of interventions (such as exercises and physio treatment). As such, these studies are likely to overstate the impact of universal design features.**

Estimating the health-related cost of falls

Various studies report the prevalence of falls among older people (typically over the age of 65). At the national level, the AIHW reports the number of hospitalised falls only. There are also several state-based studies that include all falls (including data from NSW, Victoria and Queensland).

Although the way the data is reported across the various reports is not always directly comparable (i.e. based on different time periods, different age brackets etc.), the hospitalisation rates across age groups appear broadly comparable across states (table B.3). This suggests that using data from any of these studies should be broadly representative of national outcomes.

B.3 Hospitalisation rates from falls for older Australians

Age group	NSW	Queensland	Victoria
	Rate per 100 000	Rate per 100 000	Rate per 100 000
65 to 69	841.7	883.0	984.2 ^b
70 to 74	1 222.4	1 227.8	
75 to 79	2 293.6	2 164.6	2 917.0 ^c
80 to 84	4 281.4	4 150.1	
85 to 89	7 390.1	8 209.0 ^a	7 951.9 ^d
90 to 94	11 373.3		
95+	13 582.6		13 279.3
Total	2 744.6	2 548.6	2 597.2

^a Relates to 85+ age group. ^b Relates to 65-74 age group. ^c Relates to 75-84 age group. ^d Relates to 85-94 age group.

Source: Stathakis, V. Gray, S. and Berecki-Gisolf, J. 2015, "Fall-related injury profile for Victorians aged 65 years and older", *Hazard*, Edition No. 80, Summer 2015, Victorian Injury Surveillance Unit, Monash University Accident Research Centre; University of NSW, The Incidence and Cost of Falls Injury Among Older People in New South Wales 2006/07, A Report to NSW Health, September 2010.

Deaths

The approach to estimating the cost to the community of additional deaths from falls due to people with accessibility needs living in inaccessible housing is set out below.

Additional fall related deaths due to inaccessible housing

It is estimated that there could be between around 15 and 27 additional deaths from falls per year as a result of people with accessibility needs living in inaccessible housing, with a central case estimate of around 21 additional deaths per year (table B.4).

These estimates are based on the following.

- The population at risk of falls due to inaccessible housing is as defined above.
- The incidence of falls causing death is based on Victorian data from the 2010-12 period reported by the Victorian Injury Surveillance Unit (VISU) within the Monash University Accident Research Centre (MUARC).⁴⁵⁵
 - Actual data, as reported by VISU, is used for age groups over 65.
 - The incidence of falls causing death among people under the age of 65 with mobility limitations is not reported. It is assumed that the incidence of falls was around the same as for the broader population in the 65-74 year age bracket, as reported by VISU. Adults with disabilities reportedly have the same risk of falling as people in the general population over the age of 65.⁴⁵⁶

⁴⁵⁵ Stathakis, V. Gray, S. and Berecki-Gisolf, J. 2015, "Fall-related injury profile for Victorians aged 65 years and older", *Hazard*, Edition No. 80, Summer 2015, Victorian Injury Surveillance Unit, Monash University Accident Research Centre, p. 6.

⁴⁵⁶ University of Massachusetts Medical School, Eunice Kennedy Shriver Center, <https://shriver.umassmed.edu/news/2015-07-08-130000/shriver-center-studying-falls-prevention-people-intellectual-and-developmental-disabilities>, accessed 12 February 2020.

- As not all falls occur at home, this was adjusted to take into account the fact that 32.8 per cent of falls resulting in death occur in the home.⁴⁵⁷

B.4 Additional deaths from falls due to inaccessible housing

Age group	Population affected ^a	Death rate from falls ^b	Death rate from falls at home ^c	Implied number of falls - baseline	Additional deaths due to inaccessible housing		
					Low estimate ^d	Central case ^e	High estimate ^f
	'000	Rate per 100,000	Rate per 100,000	No.	No.	No.	No.
0 to 14	19.9	10.6	3.5	0.7	0.0	0.1	0.3
15 to 24	14.2	10.6	3.5	0.5	0.0	0.0	0.2
25 to 34	20.3	10.6	3.5	0.7	0.0	0.1	0.3
35 to 44	28.2	10.6	3.5	1.0	0.0	0.1	0.4
45 to 54	48.4	10.6	3.5	1.7	0.0	0.2	0.6
55 to 64	66.6	10.6	3.5	2.3	0.0	0.2	0.9
65 to 74	58.7	10.6	3.5	2.0	0.0	0.2	0.8
75 to 84	44.1	69.6	22.8	10.1	0.0	1.0	3.7
85 to 94	20.7	345.8	113.4	23.5	0.0	2.3	8.7
95+	4.0	1 139.2	373.7	14.9	0.0	1.5	5.5
Total	325.1			57.4	0.0	5.7	21.2

^a Based on 2018 SDAC data. Population at risk of falls due to inaccessible housing defined as people that: have a mobility limitation; either require assistance or have trouble moving around their place of residence; live in a household; and live in a dwelling that has not been modified to meet their needs. ^b Based on data from Victoria from 2010-12 reported in Stathakis, V. Gray, S. and Berecki-Gisolf, J. 2015, p. 6. ^c Adjusted based on 32.8 per cent of falls causing death occurring at home as reported in Stathakis, V. Gray, S. and Berecki-Gisolf, J. 2015, p. 2. ^d Assumes falls are not higher in inaccessible housing. ^e Assumes falls are 10 per cent higher in inaccessible housing. ^f Assumes falls are 27 per cent higher in inaccessible housing.

Source: ABS Survey of Disability, Ageing and Carers 2018, TableBuilder; Stathakis, V. Gray, S. and Berecki-Gisolf, J. 2015, "Fall-related injury profile for Victorians aged 65 years and older", *Hazard*, Edition No. 80, Summer 2015, Victorian Injury Surveillance Unit, Monash University Accident Research Centre, p. 6, CIE.

Valuing deaths and other health-related outcomes

The costs associated with poor health-related outcomes (such as injuries from slips, trips and falls and depression associated with social isolation), include:

- the cost of treatment
- morbidity (and in some cases mortality) costs.

Morbidity costs associated with various health outcomes are typically using the concept of years lost to disability (YLD). This is a measure of the 'healthy' years lost to disability. This is usually measured by applying a disability weight (a measure of the extent to which a medical condition affects a person's quality of life) to the value of a life year (OBPR recommend using a value of around \$213 000 in 2019 dollars — see box B.5) over the duration of the injury/disability.

⁴⁵⁷ Stathakis, V. Gray, S. and Berecki-Gisolf, J. 2015, op.cit., p. 2.

B.5 Valuing human health outcomes

A key concept in establishing a monetary value for lives lost is the value of a statistical life (VSL). This is a notional value that individuals place on reducing the risk of death.

A related concept is the value of a life year (VLY), which refers to the notional value an individual places on each additional year of life. The two concepts are related because the VSL should reflect the discounted value of expected future life years. This implies that the VSL will vary depending on age (and other factors), since younger individuals would be expected to have more life years ahead of them. VSL is usually assumed to refer to the life of a young adult with at least 40 years of life ahead of them.

Abelson (2008) reviewed research into VSL and VLY and international guidelines for life and health values for the Commonwealth Office of Best Practice Regulation. Based on this review, Abelson (2008) recommended that public agencies in Australia adopt:

- a VSL of \$3.5 million (in 2007 dollars) for avoiding an immediate death of a healthy individual in middle age (about 50) or younger
- a constant VLY of \$151 000 (in 2007 dollars) which is independent of age

Inflating to 2019 dollars using the national Consumer Price Index (published by the ABS) this equates to:⁴⁵⁸

- a VSL of \$4.9 million, and
- a VLY of around \$213 000.

The VSL recommended by OBPR of around \$4.9 million is based on avoiding the death of a healthy individual in middle age, with around 40 years of life ahead of them.

However, those at risk of falls are generally older and therefore would be expected to have fewer years of life ahead of them. CIE therefore used lower VSL estimates based on the expected future years of life for individuals in each age cohort.

The VSL estimates (table B.6) are based on the following.

- The average life expectancy for males and females in each age bracket are reported by the ABS.⁴⁵⁹ They are then averaged across males and females (as females are over-represented in falls and have longer life expectancy this will slightly understate the life expectancy and therefore the cost).
- Each year of future life is valued at \$213 000 as recommended by OBPR.

⁴⁵⁸ Australian Government Department of Prime Minister and Cabinet, Office of Best Practice Regulation, *Best Practice Regulation Guidance Note, Value of statistical life*, August 2019.

⁴⁵⁹ ABS 2019, *Life Tables, States, Territories and Australia 2016-2018*, Cat. 3302.0.55.001, <https://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/3302.0.55.001Main+Features12016-2018?OpenDocument>, accessed 15 January 2020.

- Future life years are discounted using a discount rate of 3 per cent, consistent with OBPR advice.

B.6 Estimated value of a statistical life for Australians by age group

Age group	Life expectancy - Male	Life Expectancy - Female	Average Life - average	Age group-specific value of a statistical life ^a
	Years	Years	Years	\$'000
0 to 14	74.05	78.16	76.11	6 541.9
15 to 24	61.75	65.79	63.77	6 202.6
25 to 34	52.10	55.94	54.02	5 831.8
35 to 44	42.56	46.19	44.38	5 343.0
45 to 54	33.28	36.65	34.96	4 711.3
55 to 64	24.46	27.46	25.96	3 917.5
65 to 74	16.36	18.74	17.55	2 959.8
75 to 84	9.46	11.03	10.24	1 910.1
85 to 94	4.70	5.35	5.02	1 009.2
95+	2.65	2.74	2.70	559.5

Source: ABS, Life Tables, States, Territories and Australia 2016-2018, <https://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/3302.0.55.001Main+Features12016-2018?OpenDocument>, accessed 15 January 2020, CIE.

Estimated cost of additional deaths

Bringing together the estimates on the number of additional deaths per year (by age bracket) and the VSL estimates, suggests that the cost to the community from fall-related deaths could range between zero and \$33.8 million, with a central case estimate of \$9.1 million (table B.7).

B.7 Estimate cost to the community from additional fall-related deaths

Age group	Value of statistical life by age	Cost of additional deaths		
		Low estimate	Central case	High estimate
	\$'000	\$ million	\$ million	\$ million
0 to 14	6 541.9	0.00	0.45	1.67
15 to 24	6 202.6	0.00	0.31	1.13
25 to 34	5 831.8	0.00	0.41	1.52
35 to 44	5 343.0	0.00	0.52	1.94
45 to 54	4 711.3	0.00	0.79	2.93
55 to 64	3 917.5	0.00	0.91	3.36
65 to 74	2 959.8	0.00	0.60	2.24
75 to 84	1 910.1	0.00	1.92	7.12
85 to 94	1 009.2	0.00	2.37	8.77
95+	559.5	0.00	0.84	3.09
Total		0.00	9.13	33.77

Note: low, central and high estimates are based on the assumption that falls are not higher, 10 per cent higher and 37 per cent higher, respectively, in inaccessible housing.

Source: CIE estimates.

Cost of medical treatment

Medical treatment costs include the costs associated with:

- hospital admissions
- emergency department attendances (that are not ultimately admitted)
- non-hospital treatment.

Hospital admissions

It is estimated that there could be between an additional zero and 1 431 fall-related hospital admissions per year due to people with accessibility needs living in inaccessible housing, with a central case estimate of 387 additional hospital admissions (table B.8).

These estimates are based on the following.

- The baseline hospital admission rate from falls is based on national-level AIHW data from 2016-17.⁴⁶⁰
 - Actual data, as reported by AIHW, is used for age groups over 65.
 - The incidence of falls resulting in hospital admission among people under the age of 65 with mobility limitations is not reported. As above, it is assumed that the incidence of falls was around the same as for the broader population in the 65-69 year age bracket, as reported by AIHW.
 - AIHW data showing that 51.2 per cent of falls resulting in hospital admission occur in the home.⁴⁶¹ These hospital admission rates were adjusted accordingly.
- When people with accessibility needs live in inaccessible housing, the incidence of falls is estimated to be:
 - no higher under the low estimate scenario
 - 10 per cent higher under the central estimate scenario
 - 37 per cent higher under the high case scenario

⁴⁶⁰ AIHW website, <https://www.aihw.gov.au/reports/injury/trends-in-hospitalised-injury-due-to-falls/data>, accessed 25 January 2021.

⁴⁶¹ Australian Institute of Health and Welfare: Pointer, S. 2019, Trends in hospitalised injury due to falls in older people 2007-08 to 2016-17, Injury research and statistics series no. 126, Cat. No. INJCAT 206, Canberra: AIHW, p. 25.

B.8 Estimated number of additional hospital admissions due to inaccessible housing

Age group	Population affected ^a	Hospital admission rate from falls ^b	Hospital admission rate for falls at home ^c	Estimated hospital admissions - baseline	Additional hospital admissions due to inaccessible housing		
					Low estimate ^d	Central case	High estimate ^e
	'000	Rate per 100 000	Rate per 100 000	No.	No.	No.	No.
0 to 4	7.7	1 122.36	574.65	44	0	4	16
5 to 9	6.6	1 122.36	574.65	38	0	4	14
10 to 14	5.6	1 122.36	574.65	32	0	3	12
15 to 19	8.8	1 122.36	574.65	51	0	5	19
20 to 24	5.4	1 122.36	574.65	31	0	3	11
25 to 29	8.4	1 122.36	574.65	48	0	5	18
30 to 34	11.9	1 122.36	574.65	68	0	7	25
35 to 39	11.5	1 122.36	574.65	66	0	7	24
40 to 44	16.7	1 122.36	574.65	96	0	10	36
45 to 49	23.2	1 122.36	574.65	133	0	13	49
50 to 54	25.2	1 122.36	574.65	145	0	14	54
55 to 59	34.8	1 122.36	574.65	200	0	20	74
60 to 64	31.8	1 122.36	574.65	183	0	18	68
65 to 69	35.7	1 122.36	574.65	205	0	21	76
70 to 74	23.0	1 667.52	853.77	196	0	20	73
75 to 79	25.8	2 834.07	1 451.04	374	0	37	139
80 to 84	18.3	5 150.34	2 636.98	483	0	48	179
85 to 89	13.0	9 136.94	4 678.11	608	0	61	225
90 to 94	7.7	13 425.14	6 873.67	529	0	53	196
95+	4.0	16 453.54	8 424.21	337	0	34	125
Total	325.1			3 868	0	387	1 431

^a Based on 2018 SDAC data. Population at risk of falls due to inaccessible housing defined as people that: have a mobility limitation; either require assistance or have trouble moving around their place of residence; live in a household; and live in a dwelling that has not been modified to meet their needs. ^b Based on hospital admission rates from the community (i.e. excluding residential aged care) in NSW in 2006-07 reported in UNSW, 2010, p. 28. ^c Adjusted based on 47.6 per cent of falls resulting in hospital admission occurring at home as reported in Stathakis, V. Gray, S. and Berecki-Gisolf, J. 2015, p. 2. ^d Based on accessible housing reducing falls by 0 per cent. ^e Based on accessible housing reducing falls by 10 per cent. ^f Based on accessible housing reducing falls by 37 per cent.

Source: ABS Survey of Disability, Ageing and Carers 2018; University of NSW, The Incidence and Cost of Falls Injury Among Older People in New South Wales 2006/07, A Report to NSW Health, September 2010; Stathakis, V. Gray, S. and Berecki-Gisolf, J. 2015, "Fall-related injury profile for Victorians aged 65 years and older", Hazard, Edition No. 80, Summer 2015, Victorian Injury Surveillance Unit, Monash University Accident Research Centre; CIE.

Based on the above estimates of the number of additional hospital admissions due to people with accessibility needs living in inaccessible housing, the estimated cost of additional hospital admissions is between zero and \$31.8 million per year, with a central case estimate of around \$8.6 million per year (table B.9).

- Health care costs are based on the average cost reported in UNSW (2010) inflated to 2019 dollar terms, using the national CPI.⁴⁶²
- Note that these cost estimates include health care costs only; morbidity costs are not included.

B.9 Estimated cost of additional hospital admissions due to inaccessible housing

Age group	Average cost per hospital admission ^a	Cost of additional hospital admissions due to inaccessible housing		
		Low estimate	Central case	High estimate
	\$	\$ million	\$ million	\$ million
0 to 4	17 107	0.00	0.08	0.28
5 to 9 y	17 107	0.00	0.06	0.24
10 to 14	17 107	0.00	0.06	0.20
15 to 19	17 107	0.00	0.09	0.32
20 to 24	17 107	0.00	0.05	0.20
25 to 29	17 107	0.00	0.08	0.31
30 to 34	17 107	0.00	0.12	0.43
35 to 39	17 107	0.00	0.11	0.42
40 to 44	17 107	0.00	0.16	0.61
45 to 49	17 107	0.00	0.23	0.84
50 to 54	17 107	0.00	0.25	0.92
55 to 59	17 107	0.00	0.34	1.27
60 to 64	17 107	0.00	0.31	1.16
65 to 69	17 107	0.00	0.35	1.30
70 to 74	22 517	0.00	0.44	1.64
75 to 79	22 918	0.00	0.86	3.17
80 to 84	26 418	0.00	1.27	4.72
85 to 89	27 217	0.00	1.66	6.12
90 to 94	25 120	0.00	1.33	4.92
95+	22 296	0.00	0.75	2.78
Total		0.00	8.60	31.84

^a Based on average costs reported in UNSW (2010, p. 33) inflate to 2019 dollars using the national CPI.

Note: low, central and high estimates are based on the assumption that falls are not higher, 10 per cent higher and 37 per cent higher, respectively, in inaccessible housing.

Source: University of NSW, The Incidence and Cost of Falls Injury Among Older People in New South Wales 2006/07, A Report to NSW Health, September 2010; CIE.

Emergency department attendance

In some cases, people who have a fall attend an emergency department (ED) at a hospital but are not actually admitted.

⁴⁶² University of NSW 2010, *The Incidence and Cost of Falls Injury Among Older People in New South Wales 2006/07*, A Report to NSW Health, September 2010, p. 33.

Using a similar approach as above, it is estimated that there could be between zero and an additional 821 fall-related ED attendance per year due to people with accessibility needs living in inaccessible housing, with a central case estimate of 222 additional ED attendance (table B.10).

These estimates are based on the following.

- The ED attendance rate from falls is taken from NSW data for people living in the community from 2006-07 reported in a UNSW report to NSW Health.⁴⁶³
 - Actual data, as reported by UNSW, is used for age groups over 65.
 - The incidence of falls resulting in ED attendance among people under the age of 65 with mobility limitation is not reported. As above, it is assumed that the incidence of falls was around the same as for the broader population in the 65-69 year age bracket, as reported by UNSW.
 - As not all falls occur at home, these ED attendance rates were adjusted based on Victorian data showing that 56.3 per cent of falls resulting in ED presentations occur in the home.⁴⁶⁴
- As above, when people with accessibility needs live in inaccessible housing, the incidence of falls is estimated to be:
 - no change under the low estimate scenario
 - 10 per cent higher under the central estimate scenario
 - 37 per cent higher under the high estimate scenario (see above).

B.10 Estimated number of additional emergency department attendances due to inaccessible housing

Age group	Population affected ^a	ED attendance rate from falls ^b	ED attendance rate from falls at home ^c	Estimated ED attendances - baseline	Additional ED attendances due to inaccessible housing		
					Low estimate ^d	Central case	High estimate ^f
	'000	Rate per 100 000	Rate per 100 000	No.	No.	No.	No.
0 to 4	7.7	975.8	549.4	42.3	0.0	4.2	15.7
5 to 9	6.6	975.8	549.4	36.3	0.0	3.6	13.4
10 to 14	5.6	975.8	549.4	30.8	0.0	3.1	11.4
15 to 19	8.8	975.8	549.4	48.3	0.0	4.8	17.9
20 to 24	5.4	975.8	549.4	29.7	0.0	3.0	11.0
25 to 29	8.4	975.8	549.4	46.1	0.0	4.6	17.1
30 to 34	11.9	975.8	549.4	65.4	0.0	6.5	24.2

⁴⁶³ University of NSW 2010, *The Incidence and Cost of Falls Injury Among Older People in New South Wales 2006/07*, A Report to NSW Health, September 2010, p. 28.

⁴⁶⁴ Stathakis, V. Gray, S. and Berecki-Gisolf, J. 2015, "Fall-related injury profile for Victorians aged 65 years and older", *Hazard*, Edition No. 80, Summer 2015, Victorian Injury Surveillance Unit, Monash University Accident Research Centre, p. 2.

Age group	Population affected ^a	ED attendance rate from falls ^b	ED attendance rate from falls at home ^c	Estimated ED attendances - baseline	Additional ED attendances due to inaccessible housing		
					Low estimate ^d	Central case	High estimate ^f
	'000	Rate per 100 000	Rate per 100 000	No.	No.	No.	No.
35 to 39	11.5	975.8	549.4	63.2	0.0	6.3	23.4
40 to 44	16.7	975.8	549.4	91.7	0.0	9.2	33.9
45 to 49	23.2	975.8	549.4	127.4	0.0	12.7	47.2
50 to 54	25.2	975.8	549.4	138.4	0.0	13.8	51.2
55 to 59	34.8	975.8	549.4	191.2	0.0	19.1	70.7
60 to 64	31.8	975.8	549.4	174.7	0.0	17.5	64.6
65 to 69	35.7	975.8	549.4	196.1	0.0	19.6	72.6
70 to 74	23.0	968.1	545.0	125.4	0.0	12.5	46.4
75 to 79	25.8	1 314.9	740.3	191.0	0.0	19.1	70.7
80 to 84	18.3	1 591.4	896.0	164.0	0.0	16.4	60.7
85 to 89	13.0	2 166.7	1 219.9	158.6	0.0	15.9	58.7
90 to 94	7.7	3 707.6	2 087.4	160.7	0.0	16.1	59.5
95+	4.0	6 117.0	3 443.9	137.8	0.0	13.8	51.0
Total	325.1			2 219.0	0.0	221.9	821.0

^a Based on 2018 SDAC data. Population at risk of falls due to inaccessible housing defined as people that: have a mobility limitation; either require assistance or have trouble moving around their place of residence; live in a household; and live in a dwelling that has not been modified to meet their needs. ^b Based on emergency department attendance rates from the community (i.e. excluding residential aged care) in NSW in 2006-07 reported in UNSW, 2010, p. 28. ^c Adjusted based on 56.3 per cent of falls resulting in emergency department attendance occurring at home as reported in Stathakis, V. Gray, S. and Berecki-Gisolf, J. 2015, p. 2. ^d Based on accessible housing reducing falls by 0 per cent. ^e Based on accessible housing reducing falls by 10 per cent. ^f Based on accessible housing reducing falls by 37 per cent.

Source: ABS Survey of Disability, Ageing and Carers 2018; University of NSW, The Incidence and Cost of Falls Injury Among Older People in New South Wales 2006/07, A Report to NSW Health, September 2010; Stathakis, V. Gray, S. and Berecki-Gisolf, J. 2015, "Fall-related injury profile for Victorians aged 65 years and older", Hazard, Edition No. 80, Summer 2015, Victorian Injury Surveillance Unit, Monash University Accident Research Centre; CIE.

Based on the above estimates of the number of additional emergency attendances due to people with accessibility needs living in inaccessible housing, an additional cost of between zero million and \$2.6 million per year is estimated, with a central case estimate of around \$0.7 million per year. Health care costs are based on the average cost reported in UNSW (2010) inflated to 2019 dollar terms, using the national CPI.⁴⁶⁵

⁴⁶⁵ University of NSW 2010, *The Incidence and Cost of Falls Injury Among Older People in New South Wales 2006/07*, A Report to NSW Health, September 2010, p. 33.

B.11 Estimated cost of additional emergency department attendances due to inaccessible housing

Age group	Average cost per ED attendance ^a	Cost of additional ED attendance due to inaccessible housing		
		Low estimate	Central case	High estimate
	\$	\$ million	\$ million	\$ million
0 to 4	2 832	0.00	0.01	0.04
5 to 9	2 832	0.00	0.01	0.04
10 to 14	2 832	0.00	0.01	0.03
15 to 19	2 832	0.00	0.01	0.05
20 to 24	2 832	0.00	0.01	0.03
25 to 29	2 832	0.00	0.01	0.05
30 to 34	2 832	0.00	0.02	0.07
35 to 39	2 832	0.00	0.02	0.07
40 to 44	2 832	0.00	0.03	0.10
45 to 49	2 832	0.00	0.04	0.13
50 to 54	2 832	0.00	0.04	0.15
55 to 59	2 832	0.00	0.05	0.20
60 to 64	2 832	0.00	0.05	0.18
65 to 69	2 832	0.00	0.06	0.21
70 to 74	4 366	0.00	0.05	0.20
75 to 79	4 237	0.00	0.08	0.30
80 to 84	3 581	0.00	0.06	0.22
85 to 89	3 343	0.00	0.05	0.20
90 to 94	3 522	0.00	0.06	0.21
95+	3 140	0.00	0.04	0.16
Total		0.00	0.71	2.63

^a Based on average costs reported in UNSW (2010, p. 33) inflated to 2019 dollars using the national CPI.

Note: low, central and high estimates are based on the assumption that falls are not higher, 10 per cent higher and 37 per cent higher, respectively, in inaccessible housing

Source: University of NSW, The Incidence and Cost of Falls Injury Among Older People in New South Wales 2006/07, A Report to NSW Health, September 2010; CIE.

Non-hospital treatment

There may also be medical costs where people have a fall, but do not attend a hospital. Using a similar approach as above, it is estimated there could be between zero and an additional 4 896 fall-related non-hospital treatments provided per year due to people with accessibility needs living in inaccessible housing, with a central case estimate of 1 323 non-hospital treatments per year (table B.12). These estimates are based on the following.

- The non-hospital treatment rate from falls is taken from NSW data for people living in the community from 2006-07 reported in a UNSW report to NSW Health.⁴⁶⁶
 - Actual data, as reported by UNSW, is used for age groups over 65.
 - The incidence of falls resulting in non-hospital treatment among people under the age of 65 with mobility limitation is not reported. As above, it is assumed that the incidence of falls was around the same as for the broader population in the 65-69 year age bracket, as reported by UNSW.
 - The proportion of falls in the home resulting in non-hospital medical treatment was not reported. However, the total non-hospital treatment rate was adjusted based on the Victorian data showing that 56.3 per cent of falls resulting in ED presentations occur in the home.⁴⁶⁷
- As above, when people with accessibility needs live in inaccessible housing, the incidence of falls is estimated to be:
 - not higher under the low estimate scenario
 - 10 per cent higher under the central estimate scenario
 - 37 per cent higher under the high estimate scenario (see above).

B.12 Estimated number of additional non-hospital treatments due to inaccessible housing

Age group	Population affected ^a	Non-hospital treatment rate from falls ^b	Non-hospital treatment rate from falls at home ^c	Estimated non-hospital treatment - baseline	Additional non-hospital treatments due to inaccessible housing		
					Low estimate ^d	Central case	High estimate ^f
	'000	Rate per 100 000	Rate per 100 000	No.	No.	No.	No.
0 to 4	7.70	5 480.35	3 085.43	238	0	24	88
5 to 9	6.60	5 480.35	3 085.43	204	0	20	75
10 to 14	5.60	5 480.35	3 085.43	173	0	17	64
15 to 19	8.80	5 480.35	3 085.43	272	0	27	100
20 to 24	5.40	5 480.35	3 085.43	167	0	17	62
25 to 29	8.40	5 480.35	3 085.43	259	0	26	96
30 to 34	11.90	5 480.35	3 085.43	367	0	37	136
35 to 39	11.50	5 480.35	3 085.43	355	0	35	131
40 to 44	16.70	5 480.35	3 085.43	515	0	52	191
45 to 49	23.20	5 480.35	3 085.43	716	0	72	265
50 to 54	25.20	5 480.35	3 085.43	778	0	78	288

⁴⁶⁶ University of NSW 2010, *The Incidence and Cost of Falls Injury Among Older People in New South Wales 2006/07*, A Report to NSW Health, September 2010, p. 28.

⁴⁶⁷ Stathakis, V. Gray, S. and Berecki-Gisolf, J. 2015, "Fall-related injury profile for Victorians aged 65 years and older", *Hazard*, Edition No. 80, Summer 2015, Victorian Injury Surveillance Unit, Monash University Accident Research Centre, p. 2.

Age group	Population affected ^a	Non-hospital treatment rate from falls ^b	Non-hospital treatment rate from falls at home ^c	Estimated non-hospital treatment - baseline	Additional non-hospital treatments due to inaccessible housing		
					Low estimate ^d	Central case	High estimate ^f
	'000	Rate per 100 000	Rate per 100 000	No.	No.	No.	No.
55 to 59	34.80	5 480.35	3 085.43	1 074	0	107	397
60 to 64	31.80	5 480.35	3 085.43	981	0	98	363
65 to 69	35.70	5 480.35	3 085.43	1 102	0	110	408
70 to 74	23.00	5 990.53	3 372.67	776	0	78	287
75 to 79	25.80	7 808.49	4 396.18	1 134	0	113	420
80 to 84	18.30	8 014.45	4 512.14	826	0	83	306
85 to 89	13.00	18 702.50	10 529.51	1 369	0	137	506
90 to 94	7.70	16 130.17	9 081.29	699	0	70	259
95+	4.00	54 601.06	30 740.40	1 230	0	123	455
Total	325.10			13 232	0	1 323	4 896

^a Based on 2018 SDAC data. Population at risk of falls due to inaccessible housing defined as people that: have a mobility limitation; either require assistance or have trouble moving around their place of residence; live in a household; and live in a dwelling that has not been modified to meet their needs. ^b Based on non-hospital treatment rates from the community (i.e. excluding residential aged care) in NSW in 2006-07 reported in UNSW, 2010, p. 28. ^c Adjusted based on 56.3 per cent of falls resulting in emergency department attendance occurring at home as reported in Stathakis, V. Gray, S. and Berecki-Gisolf, J. 2015, p. 2. ^d Based on accessible housing reducing falls by 27 per cent. ^e Based on accessible housing reducing falls by 37 per cent. ^f Based on accessible housing reducing falls by 46 per cent.

Source: ABS Survey of Disability, Ageing and Carers 2018; University of NSW, *The Incidence and Cost of Falls Injury Among Older People in New South Wales 2006/07*, A Report to NSW Health, September 2010; Stathakis, V. Gray, S. and Berecki-Gisolf, J. 2015, "Fall-related injury profile for Victorians aged 65 years and older", *Hazard*, Edition No. 80, Summer 2015, Victorian Injury Surveillance Unit, Monash University Accident Research Centre; CIE.

Based on the above estimates of the number of additional non-hospital treatments avoided due to people with accessibility needs living in inaccessible housing, it is estimated an additional cost of between zero and \$2.2 million per year, with a central case estimate of around \$0.6 million per year (table B.13). Health care costs are based on the average cost reported in UNSW (2010) inflated to 2019 dollar terms, using the national CPI.⁴⁶⁸

⁴⁶⁸ University of NSW 2010, *The Incidence and Cost of Falls Injury Among Older People in New South Wales 2006/07*, A Report to NSW Health, September 2010, p. 33.

B.13 Estimated cost of additional non-hospital treatments due to inaccessible housing

Age group	Average cost per non-hospital treatment ^a	Cost of additional non-hospital treatments due to inaccessible housing		
		Low estimate	Central case	High estimate
	\$	\$ million	\$ million	\$ million
0 to 4 years	399	0.00	0.01	0.04
5 to 9	399	0.00	0.01	0.03
10 to 14	399	0.00	0.01	0.03
15 to 19	399	0.00	0.01	0.04
20 to 24	399	0.00	0.01	0.02
25 to 29	399	0.00	0.01	0.04
30 to 34	399	0.00	0.01	0.05
35 to 39	399	0.00	0.01	0.05
40 to 44	399	0.00	0.02	0.08
45 to 49	399	0.00	0.03	0.11
50 to 54	399	0.00	0.03	0.11
55 to 59	399	0.00	0.04	0.16
60 to 64	399	0.00	0.04	0.14
65 to 69	399	0.00	0.04	0.16
70 to 74	469	0.00	0.04	0.13
75 to 79	524	0.00	0.06	0.22
80 to 84	499	0.00	0.04	0.15
85 to 89	576	0.00	0.08	0.29
90 to 94	450	0.00	0.03	0.12
95+	377	0.00	0.05	0.17
Total		0.00	0.58	2.15

^a Based on average costs reported in UNSW (2010, p. 33) inflate to 2019 dollars using the national CPI.

Note: low, central and high estimates are based on the assumption that falls are not higher, 10 per cent higher and 37 per cent higher, respectively, in inaccessible housing

Source: University of NSW, *The Incidence and Cost of Falls Injury Among Older People in New South Wales 2006/07*, A Report to NSW Health, September 2010; CIE.

Morbidity costs

The Consultation RIS did not estimate the morbidity costs associated with falls. However, some submissions noted that the morbidity costs associated with falls can be significant. For example, the submission from Occupational Therapy Australia noted that a fall can impair an older person's long-term mobility and independence, often irreversibly and is detrimental to the individual's quality of life.⁴⁶⁹

Morbidity costs depend on multiple factors, such as the type of injury and the duration of disability. An AIHW and Flinders University study on hospitalised injury due to falls in

⁴⁶⁹ Submission by Madison Silver for Occupational Therapy Australia, p. 6.

older people provides information on the types of injuries for hospitalised fall-related injury cases. Around 52 per cent of hospitalised injuries are fractures and the report also provides detail on the location of the fracture.⁴⁷⁰ Putting this information together gives the share of injuries shown in table B.14. The table includes more than 85 per cent of all hospitalised injuries (the remaining injuries were not specified).

CIE applies disability weights from a study based on patient-reported data from a multinational dataset covering injuries from various causes (not just falls).⁴⁷¹ Disability weights were calculated at intervals of 3 months, 6 months and 12 months post injury.

- An annualised disability weight was based on a weighted-average of the disability weights at each time period.
- The study assumed that weights calculated 12 months post injury represented both:
 - the degree of residential disability at 12 months; and
 - the expected lifelong disability.

Putting this information together and applying OBPR's preferred VLY estimate of \$213 000 per year⁴⁷² implies that the weighted average morbidity cost of each hospitalised fall is around

- \$30 289 in the first year post injury
- \$27 794 per year in subsequent years (table B.14).

Note that extrapolating the composition of injuries from falls around the house from over 65s to younger cohorts could significantly overstate the morbidity of younger cohorts. In general, it would be reasonable to expect that younger people (either with or without mobility issues or both compared to older cohorts with similar conditions) could suffer less severe injuries from falls around the house than older cohorts. However, CIE did not identify any comparable data for the younger age groups.

B.14 Morbidity costs for fall-related injuries

Injury	Share of injuries from falls (%)	Annualised disability weight	Long-term disability weight	Annualised cost (\$ per year) ^a	Long-term annual cost (\$ per year) ^a
Head fracture	3.6	0.158	0.143	33 654	30 459
Neck fracture	1.0	0.187	0.170	39 831	36 210
Thorax fracture	5.4	0.185	0.179	39 405	38 127

⁴⁷⁰ AIHW: Pointer, S. 2019, Trends in hospitalised injury due to falls in older people, 2007-08 to 2016-17, Injury research and statistics series no. 126, Cat. No. INJCAT 206, Canberra: AIHW, pp. 14-15

⁴⁷¹ Gabbe, B.J. Lyons, R.A. Simpson, P.M. Rivara, F.P. Ameratunga, S. Polinder, S., Derrett, S. and Harrison, J.E. 2016, Disability weights based on patient-reported data from a multinational injury cohort, World Health Organisation Bulletin, November 2016 94(11): 806-816C.

⁴⁷² Australian Government Department of Prime Minister and Cabinet, Office of Best Practice Regulation, Best Practice Regulation Guidance Note, Value of statistical life, August 2019.

Injury	Share of injuries from falls (%)	Annualised disability weight	Long-term disability weight	Annualised cost (\$ per year) ^a	Long-term annual cost (\$ per year) ^a
Abdomen, lower back, lumbar spine and pelvis fracture	6.5	0.205	0.194	43 665	41 322
Shoulder and upper arm fracture	5.9	0.153	0.142	32 589	30 246
Elbow and forearm fracture	6.3	0.081	0.070	17 253	14 910
Wrist and hand fracture	0.9	0.085	0.070	18 105	14 910
Hip and thigh fracture	16.9	0.281	0.273	59 853	58 149
Knee and lower leg fracture	4.7	0.188	0.172	40 044	36 636
Ankle and foot fracture	0.7	0.163	0.142	34 719	30 246
Dislocation	1.5	0.189	0.170	40 257	36 210
Soft-tissue injury	3.2	0.090	0.058	19 170	12 354
Open wound	12.9	0.091	0.076	19 383	16 188
Intracranial injury	5.9	0.197	0.186	41 961	39 618
Superficial injury	9.7	0.100	0.076	21 300	16 188
Total/weighted average	85.2			30 289	27 794

^a Applies a VLY of \$213 000 per year based on OBPR guidelines.

Source: AIHW: Pointer, S. 2019, Trends in hospitalised injury due to falls in older people, 2007-08 to 2016-17, Injury research and statistics series no. 126, Cat. No. INJCAT 206, Canberra: AIHW, pp. 14-15; Gabbe, B.J. Lyons, R.A. Simpson, P.M. Rivara, F.P. Ameratunga, S. Polinder, S., Derrett, S. and Harrison, J.E. 2016, Disability weights based on patient-reported data from a multinational injury cohort, World Health Organisation Bulletin, November 2016 94(11): 806-816C; Australian Government Department of Prime Minister and Cabinet, Office of Best Practice Regulation, Best Practice Regulation Guidance Note, Value of statistical life, August 2019, CIE.

Based on the above disability weights and the average life expectancy for each age cohort, the lifetime morbidity cost of injuries is shown in table B.15. In general, these morbidity costs are relatively high, particularly for younger age cohorts. To a large extent, this reflects:

- the assumption that the level of residual disability at 12 months post-injury reflects the expected lifelong disability
- that the level of permanent disability is estimated to be only slightly lower than the level of disability in the first-year post-injury.

While these may be reasonable estimates for older age groups, it is less clear that injuries from falls around the house would cause the same level of permanent disability for younger age groups.

B.15 Estimated lifetime morbidity cost by age cohort

Age group	Life expectancy (years)	Lifetime morbidity cost (\$)
0 to 4	81.04	872 309
5 to 9	76.13	859 130
10 to 14	71.16	843 670
15 to 19	66.21	825 876
20 to 24	61.33	805 530
25 to 29	56.45	782 095
30 to 34	51.59	755 111

Age group	Life expectancy (years)	Lifetime morbidity cost (\$)
35 to 39	46.77	724 199
40 to 44	41.99	688 932
45 to 49	37.28	648 902
50 to 54	32.65	603 805
55 to 59	28.14	553 488
60 to 64	23.77	497 852
65 to 69	19.55	436 909
70 to 74	15.55	371 689
75 to 79	11.87	304 396
80 to 84	8.62	238 572
85 to 89	5.97	180 218
90 to 94	4.08	135 431
95+	2.70	101 168

Source: ABS, Life Tables, States, Territories and Australia 2016-2018, <https://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/3302.0.55.001Main+Features12016-2018?OpenDocument>, accessed 15 January 2020, CIE estimates.

Given the relatively high morbidity costs implied by these estimates, it is assumed that these are incurred for hospitalised injuries only. Applying these estimates to the estimated number of additional hospitalisations (see table B.8 above) suggests the morbidity cost from falls could be in a range between zero and \$500 million, with a central case estimate of around \$135.1 million (table B.16).

B.16 Estimated lifetime morbidity cost from falls

Age group	Average lifetime morbidity cost (\$)	Lifetime morbidity cost from hospitalised falls - low estimate (\$ million)	Lifetime morbidity cost from hospitalised falls - medium estimate (\$ million)	Lifetime morbidity cost from hospitalised falls - high estimate (\$ million)
0 to 4	872 309	0.00	3.86	14.28
5 to 9	859 130	0.00	3.26	12.06
10 to 14	843 670	0.00	2.71	10.05
15 to 19	825 876	0.00	4.18	15.45
20 to 24	805 530	0.00	2.50	9.25
25 to 29	782 095	0.00	3.78	13.97
30 to 34	755 111	0.00	5.16	19.11
35 to 39	724 199	0.00	4.79	17.71
40 to 44	688 932	0.00	6.61	24.46
45 to 49	648 902	0.00	8.65	32.01
50 to 54	603 805	0.00	8.74	32.35
55 to 59	553 488	0.00	11.07	40.95
60 to 64	497 852	0.00	9.10	33.66
65 to 69	436 909	0.00	8.96	33.16
70 to 74	371 689	0.00	7.30	27.01

Age group	Average lifetime morbidity cost (\$)	Lifetime morbidity cost from hospitalised falls - low estimate (\$ million)	Lifetime morbidity cost from hospitalised falls - medium estimate (\$ million)	Lifetime morbidity cost from hospitalised falls - high estimate (\$ million)
75 to 79	304 396	0.00	11.40	42.16
80 to 84	238 572	0.00	11.51	42.60
85 to 89	180 218	0.00	10.96	40.55
90 to 94	135 431	0.00	7.17	26.52
95+	101 168	0.00	3.41	12.61
Total		0.00	135.11	499.92

Note: low, central and high estimates are based on the assumption that falls are not higher, 10 per cent higher and 37 per cent higher, respectively, in inaccessible housing

Source: CIE estimates.

C Approach to estimating the costs of additional care

The impact of accessible housing on care received

Although there is some qualitative evidence of inaccessible housing features increasing both formal and informal care needs, there is limited quantitative evidence. The main quantitative evidence on the impact of an accessible home environment is an Australian study comparing the self-reported amount of formal and informal care received by 157 older people and people with disability (average age of 72) living in the community before and after home modifications funded through Home and Community Care (HACC) Program (Carnemolla and Bridge 2019).⁴⁷³

A key issue is whether it is appropriate to extrapolate these findings based on the impacts of home modifications to the features included in the NCC proposal.

- Home modifications may not fully meet some accessibility needs,⁴⁷⁴ as some features can be difficult (or prohibitively expensive) to retrofit. This implies that estimates based on home modifications may under-estimate the benefits of universal design.
- On the other hand, a submission from the Home Modification Information Clearinghouse (prepared by Professor Catherine Bridge, a leading expert on accessibility and a co-author of the relevant paper) argued that universal housing design is not a direct substitute for home modifications because home modifications are tailored to the specific needs of the individual. It is possible that the benefits of home modifications that are tailored to the specific needs of the individual may be more effective than the proposed NCC changes for some people.

The features of modifications HACC participants received in the sample that do not closely align with the features provided under the NCC proposal are presented in table C.1. Those modifications that may be a close substitute for the features to be provided under the NCC proposal are highlighted in blue. Of particular concern, a significant share of the modifications are grab rails and hand rails, which are not provided under the NCC proposal.

⁴⁷³ Carnemolla, P. and Bridge, C. 2019, 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*.

⁴⁷⁴ See for example, submission from the Australian Network for Universal Housing Design, p. 36.

C.1 Type of modifications

Type of modifications	Number of modifications		Share of sample receiving modification	
	No.	Per cent	No.	Per cent
Bathroom modifications				
Major bathroom modification	55	35.0		
Grab rail in shower	36	22.9		
Grab rail in bath	7	4.5		
Hand held shower	16	10.2		
Shower screen removed	3	1.9		
Grab rail in toilet	17	10.8		
Access modifications				
Ramp	27	17.2		
Step modification	7	4.5		
Lift	5	3.2		
Widen doorway/remove wall	15	9.6		
Front/rear handrail entrance	54	34.4		
Kitchen/laundry				
Kitchen/laundry modification	7	4.5		

Note: Where participants received major bathroom modifications, they were not included in the count for other, itemised bathroom modifications. Kitchen and laundry modifications refer to cabinet height/design changes, widening of work areas or mounting of appliances for easier access.

Source: Carnemolla, P. and Bridge, C. 2019, 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, p. 7.

Although the relevance of the findings in Carnemolla and Bridge (2019) to the NCC proposal is questionable, CIE did not identify any other studies that quantify the impact of accessible housing on the amount of care received.

Formal care

Carnemolla and Bridge (2019) found that there was a statistically significant reduction in both the amount of formal care and informal care received following home modifications. The amount of formal care received decreased by around 0.3 hours per week on average or around 15.6 hours per year (table C.2). Carnemolla (2015) provides a further disaggregation between time spent assisting with mobility around the house, showering and bathing, and toileting.

C.2 Additional formal care needs due to inaccessible housing

	Before modification (Hours per week)	After modification (Hours per week)	Change (Hours per week)	Additional care per year (Hours per year)	Cost of additional care (\$ per year) ³
Moving about the house	1.1	0.9	- 0.2	10.4	676
Bathing and showering	0.9	0.8	- 0.1	5.2	338

	Before modification (Hours per week)	After modification (Hours per week)	Change (Hours per week)	Additional care per year (Hours per year)	Cost of additional care (\$ per year) ^a
Toileting	0.1	0.1	0.0	0.0	0
Total	2.1	1.8	- 0.3	15.6	1 014

^a Formal care is valued at \$65 per hour, based on NDIS rates.

Source: CIE estimates based on: Carnemolla and Bridge (2019) and Carnemolla (2015); NDIS website, <https://www.ndis.gov.au/providers/price-guides-and-pricing>, accessed 24 May 2020.

A submission argued that these estimates are based on older Australians with a gradually deteriorating condition and may significantly underestimate the benefits of universal design for people with significant mobility issues.⁴⁷⁵

- The submission argued that showering and dressing an individual once per day can take 2-3 hours and some NDIS packages provide 24 hour per day care.
- A case study provided in the MDI and Summer Foundation submission also showed that care costs of around \$25 000 per year (funded through the NDIS) could be avoided through an accessible bathroom rather than a shower over a bathtub (see summary provided in the main body of the report – box 3.25 on page 86).

CIE broadly shares this concern that Carnemolla and Bridge's sample may not be representative of the impacts of a broader cohort. However, the impact of accessible housing on care needs is an under-researched topic. CIE has not been able to identify any other studies that quantify these impacts and no stakeholders have provided any supporting quantitative evidence.

It seems likely that the average estimates from Carnemolla and Bridge (2019) would underestimate the impact of inaccessible housing on formal care needs in cases such as those outlined above. On the other hand, it is not clear that specific examples provided in submissions are any more representative of the average savings that would be achieved through accessible housing. For example, CIE applies the estimated reduction in formal care needs to **all** people that receive assistance with showering/bathing from a formal care provider once per week or more (excluding those living in modified dwellings) — a cohort of around 36 700 people (see below). People in wheelchairs (where care needs and costs may be greater) make up around 19 per cent of this cohort.

Notwithstanding concerns over the representativeness of Carnemolla and Bridge's sample, in CIE's view applying an estimate from a quantitative study based on a sample of 157 people is a more robust approach than applying the estimated savings from a single case study.

Under the NDIS Price Catalogue, the hourly rate for assistance with daily life varies depending on the type of assistance provided, location (non-remote, remote, very remote) and when the service is provided (time of day, weekend/weekday/ public holiday). At \$65 per hour (broadly representative of the factors of the various NDIS rates⁴⁷⁶) the

⁴⁷⁵ Anonymous submission 284174932 https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/view_respondent?_b_index=60&uuId=284174932

⁴⁷⁶ NDIS website, <https://www.ndis.gov.au/providers/price-guides-and-pricing>, accessed 24 May 2020.

additional cost of formal care for those undertaking daily care activities, would be around \$1 014 per year for each person (based on accessible housing reducing formal care needs by 0.3 hours per week or 15.6 hours per year — see above).

Informal care

Carnemolla and Bridge (2019) found that the amount of informal care received decreased by around six hours per week on average or around 312 hours per year (table C.3). The largest reduction related to assistance moving around the dwelling. Note that relatively few of the ‘access features’ aligned with the features that would be provided at certification under the NCC proposal (see table 4.1 in chapter four for details).

Valuing voluntary labour is inherently subjective as there is no observable market wage rate. Nevertheless, from a CBA perspective it is important to recognise that voluntary labour has a value, even though friends and relatives are willing to provide care for no payment.

In the Consultation RIS, CIE valued informal care at the minimum wage. However, several stakeholders argued that a higher value should be placed on unpaid labour.⁴⁷⁷

Conceptually, the task is to measure the ‘opportunity cost’ of the additional time spent caring for a friend or relative with disability as a result of inaccessible housing. The ‘opportunity cost’ of labour reflects the value of the alternative use of the carer’s time. Alternative uses of a carer’s time could include: paid employment, other domestic tasks or leisure activities.

Some submissions argued that care responsibilities prevent some carers from participating in the labour market.

- Building Designers Association of Australia argued that the impacts on informal carers resulting from their reduced opportunity to engage in paid work should be included in the analysis.
- Carers WA argued that informal carers may wish to participate in the workforce but are limited by the care they need to provide to a family member who does not have access to suitable housing. The Carers WA submission also referred to a recent report by Carers Australia and Deloitte Access Economics on the value of informal care. This report notes that there are substantial differences in the employment outcomes for carers relative to non-caregiving Australians.

Where the alternative use of a carer’s time is paid employment, the opportunity cost of their time is the wages foregone. As argued in one submission, an average wage rate would be an appropriate indicator of the opportunity cost of labour in these circumstances. However, it is not clear that paid employment is the most likely alternative use of time for a significant proportion of carers. Research found that taking into account the individual characteristics of caregivers, the impact of caring for an

⁴⁷⁷ See for example, anonymous submission 284174932, accessed 13 November 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/view_respondent?_b_index=60&uuId=284174932.

elderly or disabled person on labour force outcomes is small to non-existent.⁴⁷⁸ This implies that paid employment is not necessarily the most likely alternative use of the additional time spent caring.

Another approach to valuing unpaid labour is the replacement cost approach. Under this approach, unpaid labour is valued based on the market value of paid labour performing similar tasks. Consistent with this approach, it is reasonable to value informal care, based on the wage rate of an aged care worker. This is currently around \$22.85 per hour (Sydney).⁴⁷⁹ Note that this is significantly lower than NDIS rates, as preferred by some stakeholders. However, the NDIS rates would include profit on labour costs, and administrative costs for a service provider which have been considered in the cost of formal care, but would be inappropriate where care is provided by family and friends.

Under these assumptions, the cost of additional informal care is estimated at around \$7 129 per person per year across all of the below activities (table C.3).

C.3 Additional informal care needs due to inaccessible housing

Activity	Before modification (Hours per week)	After modification (Hours per week)	Change (Hours per week)	Additional care per year (Hours per year)	Cost of additional care (\$ per year)
Moving about the house	8.5	5.0	- 3.5	182.0	4 159
Bathing and showering	2.7	1.0	- 1.7	88.4	2 020
Toileting	1.7	0.9	- 0.8	41.6	951
Total	12.9	6.9	- 6.0	312.0	7 129

^a Formal care is valued at \$22.85 per hour, based on the average wage of an aged care worker.

Source: CIE estimates based on: Carnemolla and Bridge (2019) and Carnemolla (2015); Payscale website, https://www.payscale.com/research/AU/Job=Aged_Care_Worker/Hourly_Rate/999a3db7/Sydney, accessed 29 October 2020.

How many people require additional care due to inaccessible housing?

The accessibility features covered by the proposed changes to the NCC are most likely to benefit people that require assistance (always or sometimes):

- moving around the house
- showering and bathing
- toileting.

As the SDAC survey does not explicitly identify whether dwellings have relevant accessibility features, CIE infer the relevant population based on their response to various

⁴⁷⁸ Leigh, A. 2010, "Informal Care and Labor Market Participation", *Labour Economics*, 17(1), p. 140-149.

⁴⁷⁹ Payscale website, https://www.payscale.com/research/AU/Job=Aged_Care_Worker/Hourly_Rate/999a3db7/Sydney, accessed 29 October 2020.

survey questions. CIE also makes the following exclusions in its estimate of people that may require additional care as a result of inaccessible housing.

- Those living in housing that has already been modified due to disability or age. This implicitly assumes that modified housing is already accessible. Although some submissions suggested that home modifications may not provide all of the features covered by the NCC proposal, home modifications are more likely to be tailored to the specific needs of the individual, rather than the generic set of features provided under the NCC proposal.
- People who receive the relevant type of care less than once per week — for people receiving infrequent care, it is less likely that accessible housing would significantly reduce the amount of care received.

Furthermore, not all assistance with mobility tasks occurs in the home. For example, some people require assistance with mobility tasks away from the home. It is therefore appropriate to include only the proportion that indicated they need assistance moving around the place of residence (either always or sometimes). A significant number of people who either: ‘do not need assistance moving around the place of residence, but have difficulty’ or ‘has no difficulty moving around the place of residence’ also receive assistance with mobility tasks. However, the assistance received mostly relates to mobility away from home. It is therefore less likely that an accessible home would significantly reduce the amount of assistance these people receive.

Table C.4 summarises the criteria used to estimate the number of people that could be receiving additional care due to inaccessible housing.

C.4 Estimating the number of people affected

Assistance received	Formal care	Informal care
Moving around the house	<ul style="list-style-type: none"> ■ People with mobility limitation ■ Always or sometimes require assistance moving around the house ■ Live in a household ■ Excludes people living in modified housing ■ Receives formal assistance with mobility tasks once per week or more frequently 	<ul style="list-style-type: none"> ■ People with mobility limitation ■ Always or sometimes require assistance moving around the house ■ Live in a household ■ Excludes people living in modified housing ■ Receives informal assistance with mobility tasks once per week or more frequently
Showering and bathing	<ul style="list-style-type: none"> ■ Always or sometimes require assistance showering or bathing ■ Live in a household ■ Excludes people living in modified housing ■ Receives formal assistance with self-care tasks once per week or more frequently 	<ul style="list-style-type: none"> ■ Always or sometimes require assistance showering or bathing ■ Live in a household ■ Excludes people living in modified housing ■ Receives informal assistance with self-care tasks once per week or more frequently
Toileting	<ul style="list-style-type: none"> ■ Always or sometimes require assistance toileting 	<ul style="list-style-type: none"> ■ Always or sometimes require assistance toileting

Assistance received	Formal care	Informal care
	<ul style="list-style-type: none"> ▪ Live in a household ▪ Excludes people living in modified housing ▪ Receives formal assistance with self-care tasks once per week or more frequently 	<ul style="list-style-type: none"> ▪ Live in a household ▪ Excludes people living in modified housing ▪ Receives informal assistance with self-care tasks once per week or more frequently

Source: CIE.

Based on these criteria, the number of people estimated to be receiving additional care (by activity) is shown in table C.5. Note that some people receive multiple types of care and therefore some people may be double-counted in the measures shown below. However, as the additional care being received across each activity is to be estimated separately, this approach will not double-count the additional care being received (i.e. the amount of additional care received by activity is additive).

C.5 Number of people receiving care

Type of care	People receiving informal care ('000)	People receiving formal care ('000)
Moving about the house	111.5	21.3
Bathing and showering	182.7	36.1
Toileting	83.3	18.5

Source: CIE based on ABS, 2018 Survey of Disabilities, Ageing and Carers, TableBuilder

D Approach to estimating the avoidable cost of home modifications

Avoidable home modifications

Not all home modifications would be avoidable if dwellings were built to comply with universal design principles. Under universal design principles, dwellings are designed to meet a broad range of needs, rather than the specific needs of people with disability.

The ABS's SDAC provides data on the types of modifications made to the dwellings of people with disability. However, not all of the modifications identified in the SDAC could be avoided if the dwelling is designed to comply with universal design principles. It is assumed that a sub-group of these modifications (structural modifications, ramps, toilets, baths and laundries, kitchens and doors widened) would not be needed if dwellings had been designed to comply with universal design principles (table D.1).

D.1 Avoidable modifications

Modifications that could be avoided if dwellings complied with universal design principles	Modifications that would still be needed even if the dwelling complied with universal design principles
<ul style="list-style-type: none"> ▪ Structural changes ▪ Ramps ▪ Toilet bath or laundry, kitchen ▪ Doors widened 	<ul style="list-style-type: none"> ▪ Hand rails & Grab rails ▪ Remote controls ▪ New or changed heating/air conditioning ▪ Install home automation ▪ Telemonitoring system ▪ Other change to dwelling.

Note: Modification types are taken from SDAC survey.

Source: CIE.

Number of avoidable home modifications

To estimate the number of dwellings that have avoidable modifications annually, CIE compares the number of people who live in dwellings with avoidable modifications in 2018 with 2015, based on SDAC data (table D.2).

- The 2015 SDAC does not report the number of dwellings with kitchen modifications. However, 2018 data suggests there are relatively few dwellings with a kitchen modification only (i.e. most dwellings with a kitchen modification have also had other modifications).
- The SDAC data suggests that there were around 33 000 more people living in modified dwellings in 2018, compared to 2015. However, this does not take into account the fact that over the 3 year period between surveys, some people that were

living in accessible housing may have moved out of a modified dwelling, due to death or other reasons (i.e. the churn). Furthermore, when a modified dwelling is vacated, it is unlikely that the new resident will have the same accessibility needs. A simple comparison between the survey periods is therefore likely to understate the number of home modifications over the period. To take this into account, the following adjustments are made.

- It is assumed that 3.6 per cent of people living in modified dwellings die every year (based on the average mortality rates for the age profile living in modified dwellings). It is assumed that all others remain in their modified dwelling.
 - It is assumed that when a modified dwelling becomes vacant, the new residents do not have the same accessibility needs.
- With these adjustments, it is estimated that around 22 000 dwellings are modified annually to meet the accessibility needs of the resident(s) (table D.2).

D.2 Number of dwellings modified

Number of dwellings modified	Number of modified dwellings – 2015 ('000)	Number remaining in previously modified dwelling ^a ('000)	Number of modified dwellings – 2018 ('000)	Estimated number of modified dwellings over period ('000)	Estimated number of dwellings modified annually ('000)
Total	311.60	279.1	346.20	67.06	22.35
Total (ex kitchens)	311.60	279.1	344.50	65.36	21.79

^a Assumes a mortality rate of 3.6 per cent per year.

Source: CIE based on ABS Survey of Disabilities, Ageing and Carers 2015 and 2018, TableBuilder.

The unit cost of avoidable home modifications

Key factors that will drive the cost of home modifications include:

- the type of dwelling (i.e. Class 1a or Class 2)
- the type of modifications (i.e. what aspects of the dwelling are modified)
- the extent of the modifications (i.e. to what standard the dwelling is modified).

DCWC has estimated cost of retro-fitting accessible design features, in line with requirements for Option 1 and Option 2, for both Class 1a (separate houses and townhouses) and Class 2 dwellings (apartments).⁴⁸⁰ These estimates are used to derive unit costs for each of the potentially avoidable modifications.

For each element, DCWC estimate scenarios which includes homes that require no modification to meet LHDG standards (for some elements) and homes where retrofitting is not practicable. As the aim is to calculate the average cost of modifications that actually proceed, these scenarios are ignored.

⁴⁸⁰ DCWC 2020, *NCC Accessible Housing Sundry Cost Advice, Letter to Kieran O'Donnell*, 15 December 2020 and associated spreadsheets

DCWC's cost estimates vary significantly depending on whether a dwelling is modified to meet Option 1 or Option 2. It is assumed that:

- the modifications made by non-wheelchair users would meet Option 1 costs
- the modifications made by wheelchair users would meet Option 2 costs.

Based on the above information, it is estimated that the weighted average cost of home modifications made to Class 1a dwellings is around \$18 281 for non-wheelchair users and around \$49 706 for wheelchair users (table D.3).

D.3 Weighted average cost of modifications for Class 1a dwellings

Modification	Non-wheelchair users: Share of modifications with relevant feature ^a (per cent)	Non-wheelchair users: Unit cost ^b (\$)	Wheelchair users: Share of modifications with relevant feature ^c (per cent)	Wheelchair users: Unit cost ^d (\$)
Structural changes	16	27 483	29	34 504
Ramps	29	10 500	72	10 800
Toilet, bath or laundry modifications	78	13 412	87	31 822
Kitchen modifications	5	7 500	17	7 500
Doors widened	4	12 670	24	13 070
Weighted average	n.a.	18 821	n.a.	49 706

^a Based on the modifications made by non-wheelchair users living in Class 1a dwellings reported in SDAC (2018). Weights add to more than 100 per cent because many dwellings have multiple modifications. ^b Based on DCWC's estimates of the cost of relevant changes to meet Option 1. ^c Based on the modifications made by wheelchair users living in Class 1a dwellings reported in SDAC (2018). Weights add to more than 100 per cent because many dwellings have multiple modifications. ^d Based on DCWC's estimates of the cost of relevant changes to meet Option 2.

Note: It is assumed that the modifications made by non-wheelchair users meet Option 1 for the relevant design elements and the modifications made by wheelchair users meet Option 2 for the relevant design elements.

Source: CIE estimates based on: ABS, 2018 Survey of Disabilities, Ageing and Carers, TableBuilder; DCWC 2020, NCC Accessible Housing Sundry Cost Advice, 15 December 2020 and associated spreadsheets

For Class 2 dwellings, it is estimated that the weighted average cost of home modifications for non-wheelchair users is around \$20 260 and around \$36 292 for wheelchair users (table D.4).

D.4 Weighted average cost of modifications for Class 2 dwellings

Modification	Non-wheelchair users: Share of modifications with relevant feature ^a (per cent)	Non-wheelchair users: Unit cost ^b (\$)	Wheelchair users: Share of modifications with relevant feature ^c (per cent)	Wheelchair users: Unit cost ^d (\$)
Structural changes	12	25 492	50	31 692
Ramps	50	10 500	0	10 800
Toilet, bath or laundry modifications	92	10 221	57	29 464
Kitchen modifications	5	7 500	50	7 500
Doors widened	16	13 000	0	13 550

Modification	Non-wheelchair users: Share of modifications with relevant feature ^a (per cent)	Non-wheelchair users: Unit cost ^b (\$)	Wheelchair users: Share of modifications with relevant feature ^c (per cent)	Wheelchair users: Unit cost ^d (\$)
Weighted average	n.a.	20 260	n.a.	36 292

^a Based on the modifications made by non-wheelchair users living in Class 2 dwellings reported in SDAC (2018). Weights add to more than 100 per cent because many dwellings have multiple modifications. ^b Based on DCWC's estimates of the cost of relevant changes to meet Option 1. ^c Based on the modifications made by wheelchair users living in Class 2 dwellings reported in SDAC (2018). Weights add to more than 100 per cent because many dwellings have multiple modifications. ^d Based on DCWC's estimates of the cost of relevant changes to meet Option 2.

Note: It is assumed that the modifications made by non-wheelchair users meet Option 1 for the relevant design elements and the modifications made by wheelchair users meet Option 2 for the relevant design elements.

Source: CIE based on: ABS, 2018 Survey of Disabilities, Ageing and Carers, TableBuilder; and DCWC 2020, NCC Accessible Housing Sundry Cost Advice, 15 December 2020 and associated spreadsheets

According to Young People in Nursing Homes National Alliance (YPINH), retrofitting homes with basic visitability, adaptability and accessible features would cost \$19 400,⁴⁸¹ which is in line with the estimated costs of retrofitting to Option 1 (Silver) (\$18 821 for Class 1a and \$20 260 for Class 2 – see tables D.3 and D.4).

⁴⁸¹ Young People In Nursing Homes National Alliance, Monash University Department of Architecture 2015, *Shaping the Future Today: Transforming Housing Policy for Australians with Disability*, Melbourne, p.20

E Approach to estimating the avoidable cost of moving house

The cost of moving home

In the Consultation RIS, it is assumed that the cost of each avoidable move was around \$2 500, based on the estimated cost of removalists (stamp duties were explicitly excluded because these are a transfer between a home purchaser and the government).

In general, most of these costs are only incurred where the move involves selling the previous home and buying a new one. Where a move involves moving between rental properties, most of these costs are not incurred.

One indicator of whether a move involved buying and selling a home is whether the mover is an owner-occupier or a renter, although this is an imperfect measure because people can move between these groups (i.e. a renter can become an owner-occupier or vice versa). Nevertheless, it is assumed that:

- moves involving owner-occupiers involved buying and selling a home
- moves involving renters do not involve buying and selling a home.

Indicative costs of moving home for owner-occupiers and renters are shown in table E.1.

E.1 Cost of each additional move

	Estimated cost for owner-occupier (\$)	Estimated cost for renter (\$)
Agent's commission ^a	16 149	0
Marketing fees	6 000	0
Auctioneer costs	800	0
Conveyancing fees ^b	3 000	0
Removalist costs	2 500	2 500
Total	28 449	2 500

^a Assumes agent's commission of 2 per cent of the weighted average median price across capital cities (around \$807 471). ^b Includes conveyancing fees for both the sale of the previous home and the purchase of the new home.
Source: CIE estimates

The estimated agent's commission is based on an average 2 per cent commission⁴⁸² applied to the weighted average house price across capital cities, which is around

⁴⁸² See: <https://www.realestate.com.au/advice/how-much-does-it-cost-to-sell-a-house/>, accessed 18 November 2020; and <https://www.realestate.com.au/advice/hidden-costs-buying-home/>, accessed 18 November 2020.

\$807 471 (table E.2). The weights were derived from SDAC data, based on the state composition for people who indicated they moved as a result of their age or disability.

E.2 Weighted average price

State/territory	Weights (%)	Median house price (\$)
NSW	31	1 142 212
Victoria	19	901 951
Queensland	28	577 664
Western Australia	8	537 013
South Australia	6	542 947
Tasmania	6	530 570
ACT	1	788 621
Northern Territory	0	509 452
Total	100	807 471

Source: ABS, 2018 Survey of Disabilities, Ageing and Carers, TableBuilder, CIE.

As per the Consultation RIS, it is assumed that the average financial cost of removalists is around \$2 500.⁴⁸³

The remaining costs were mostly based on recent estimates published on a real estate website.⁴⁸⁴ Some relatively minor costs, such as pest inspections and mortgage transfer fees, are excluded.

Estimating the number of avoidable moves

According to SDAC data, there were around 309 000 people with limited mobility who have had to move house at least once due to their age or disability, although not all of these moves were necessarily related to the accessibility of their previous home.

SDAC also reports the main reason for moving house (table E.3).

- There were 76 100 people who indicated that the main reason they moved was directly related to the accessibility or safety of their previous dwelling. These reasons include:
 - ‘Safer environment’, and
 - ‘To a dwelling more suitable for condition(s)’.
- A further 154 200 gave reasons potentially related to the accessibility of the previous dwelling, including:
 - ‘Due to own age or condition’
 - ‘To improve own health’

⁴⁸³ See for example: https://www.openagent.com.au/blog/how-much-moving-cost?at=v5&utm_expid=.6ZprDALXQh2rpM05ZARdBA.1&utm_referrer=https%3A%2F%2Fwww.google.com%2F, accessed 23 January 2020.

⁴⁸⁴ See <https://www.realestate.com.au/advice/how-much-does-it-cost-to-sell-a-house/>, accessed 18 November 2020.

- ‘To live with family or friends’.
- The remaining reasons appear unrelated to the accessibility of the previous dwelling, including:
 - ‘To save money or cheaper’
 - ‘To live closer to family’
 - ‘For more or better personal care at new home’
 - ‘To be closer to medical or support services or facilities’
 - ‘To be closer to other services or facilities (e.g. work, services, leisure)’
 - ‘Family changes or house too big’
 - ‘Carer move or different carer’
 - ‘For other reasons’

E.3 Main reasons for moving

Reasons for moving	Profound	Severe	Moderate	Mild	Total
	'000	'000	'000	'000	'000
Reasons directly related to accessibility of previous dwelling					
Safer environment	4.5	3.5	1.4	7.2	16.8
To a dwelling more suitable for condition(s)	16.3	17.1	10.4	15.6	59.3
Total directly related	20.8	20.6	11.8	22.8	76.1
Reasons potentially related to accessibility of previous dwelling					
Due to own age or condition	40.9	29.7	15.0	30.9	116.4
To improve own health	4.8	4.3	5.4	10.3	21.9
To live with family or friends	5.3	2.7	0.0	5.6	15.9
Total potentially related	51.0	36.7	20.4	46.8	154.2
Total directly or potentially related	71.8	57.3	32.2	69.6	230.3
Reasons unrelated to accessibility of previous dwelling					
To save money or cheaper	1.1	1.9	2.3	2.7	7.3
To live closer to family	1.2	1.7	1.1	1.4	8.6
For more or better personal care at new home	1.2	0.0	1.4	3.2	5.0
To be closer to medical or support services or facilities	3.9	4.9	2.8	4.9	14.2
To be closer to other services or facilities (eg work, services, leisure)	3.2	1.5	0.7	2.2	8.4
Family changes or house too big	3.4	3.1	1.6	7.6	13.7
Carer moved or different carer	0.0	0.0	0.0	0.0	1.7
For other reasons	5.2	6.9	4.6	4.5	22.0
Other reasons for moving	19.2	20.0	14.5	26.5	80.9
Total	91.0	77.3	46.7	96.1	311.2

Source: ABS, Survey of Disabilities, Ageing and Carers, 2018, TableBuilder.

Unpublished analysis of the COTA survey also found that 9.5 per cent of respondents over the age of 50 indicated that the main reason for their most recent move was ‘My property was not accessible/no longer suited’.⁴⁸⁵

- **For the purposes of the CBA,**
 - **a conservative assumption would be based on the number of people who reported moving for reasons directly related to the accessibility of their previous residence. This is around 76 100 people (and in many cases their families).**
 - **A less conservative assumption would be based on the number of people who reported moving for reasons either directly or potentially related to the accessibility of their previous residence. This is around 230 300 people (and in many cases their families).**

As some of these people have had to move more than once, the number of additional moves will be greater than the number of people who have had to move as a result of their disability or age. The average number of times these people have moved is not known.

Around 75-80 per cent of the people who have had to move as a result of disability or age have moved only once. In general, one would expect that the proportion of people would decline with each additional move, suggesting that most of the remaining people are likely to have moved 2 or 3 times as a result of disability or age.

- **To estimate the number of additional moves, it seems reasonable to assume that on average, people who have moved more than once due to disability or age have, on average, moved 2.5 times (i.e. 2-3 times on average).**

Furthermore, not all of the additional moves happen every year. SDAC does not report the year since the last move. However, of those people with limited mobility who had had to move as a result of their disability or age, the average time period since the accident happened or main condition occurred is around 16.6 years (table E.4).

- **To estimate the average number of avoidable moves per year, the estimated number of additional moves is therefore divided by the average time since the accident happened or main condition occurred (around 16.6 years).**

E.4 Number of years since accident happened or main condition occurred

Age range	Number of people ('000)	Weight (%) ^a	Mid-point of range (years)
0 to 4	59.9	20.2	2.0
5 to 9	56.7	19.1	7.0
10 to 14	42	14.1	12.0
15 to 19	32.5	10.9	17.0
20 to 24	30.4	10.2	22.0

⁴⁸⁵ Bringolf, J. 2015, *Let's Talk About Where You Live*, Incomplete draft based on COTA NSW 2014 survey data for the 50+ Report with a focus on how and where older people are living, unpublished, p. 14.

Age range	Number of people ('000)	Weight (%) ^a	Mid-point of range (years)
25 to 29	15.2	5.1	27.0
30 to 34	18.9	6.4	32.0
35 to 39	11.3	3.8	37.0
40 +	30.1	10.1	42.0
Don't know	7.2	n.a.	n.a.
Total/weighted average	308.9		16.6

^a Weightings exclude the number of people who don't know the number of years since accident happened or main condition occurred. Source: ABS, 2018 Survey of Disabilities, Ageing and Carers, TableBuilder, CIE.

Based on the assumptions outlined above, a lower bound estimate of the number of additional moves per year due to inaccessible housing is around 6 400 (table E.5).

E.5 Estimated number of additional moves per year – lower bound estimate

People	Moved once (‘000)	Moved more than once (‘000)	Total avoidable moves ^a (‘000)	Avoidable moves per year ^b (‘000)
Owner-occupiers	30.5	4.6	42.0	2.5
Renters	25.3	15.6	64.3	3.9
Total	55.8	20.2	106.3	6.4

^a Assumes that those that have moved more than once have moved 2.5 times on average. ^b Total avoidable moves divided by 16.6 (reflecting the average number of years since the accident happened or main condition occurred (see table E.4 above).

Source: ABS, 2018 Survey of Disabilities, Ageing and Carers, TableBuilder, CIE.

The upper bound estimate suggests that there could be an additional 17 300 moves per year as a result of inaccessible housing (table E.6).

E.6 Estimated number of additional moves per year – upper bound estimate

People	Moved once (‘000)	Moved more than once (‘000)	Total avoidable moves ^a (‘000)	Avoidable moves per year ^b (‘000)
Owner-occupiers	97.9	11.9	127.7	7.7
Renters	76.6	33.1	159.4	9.6
Total	174.5	45.0	287.0	17.3

^a Assumes that those that have moved more than once have moved 2.5 times on average. ^b Total avoidable moves divided by 16.6 (reflecting the average number of years since the accident happened or main condition occurred (see table E.4 above).

Source: ABS, 2018 Survey of Disabilities, Ageing and Carers, TableBuilder, CIE.

F Longer stays in hospital or transition care

Evidence on delayed discharge from hospital

There are various international studies that examine various reasons and consequences of delayed discharge from hospitals. The National Health Service systematically reports data on delayed transfers of care in English hospitals, including the reason for the delay. However, given differences in health systems and the characteristics of the housing stock, English and other international data is unlikely to be a good indicator of the extent of the problem in Australia. CIE is not aware of any similar datasets for Australia.

There are a small number of Australian studies that identify the causes of delayed discharge from various types of care (summarised in table F.1).

F.1 Summary of Australian literature on the causes of delayed discharge

Study	Approach	Key findings relevant to the RIS
New et. al. (2013)	Sample of 360 patients admitted into two inpatient rehabilitation units in Melbourne to examine the occurrence of discharge barriers, their causes and the duration of unnecessary hospitalisation	<ul style="list-style-type: none"> ■ Over the study period, 21 per cent of all bed days were occupied by patients deemed to have a discharge barrier. ■ The causes of the discharge barrier included the following causes that are directly related to the accessibility of the dwelling, including: <ul style="list-style-type: none"> – Accommodation (patient has no available suitable accommodation options), which accounted for 9.1 per cent of all additional unnecessary days in hospital. – Home modifications (patient waiting for home modifications that are essential to ensure safe access and care at home after discharge), which account for 22.6 per cent of all additional unnecessary days in hospital.
Salonga-Reyes and Scott (2016)	Sample of 406 patients admitted into non-acute maintenance care in a tertiary hospital in Brisbane was used to examine causes and effects of discharge delays.	<ul style="list-style-type: none"> ■ Delays accounted for 90 per cent of non-acute occupied bed days. ■ Among the causes of delay most relevant to this RIS were: <ul style="list-style-type: none"> – Wait for beds in residential aged care facility (43.8 per cent of occupied bed days) – Wait for delivery of home equipment (2.0 per cent of occupied bed days) – Wait for home modifications (0.5 per cent of occupied bed days)
Ou, Chen and Santiano (2009)	A sample of 1958 in a tertiary referral hospital in NSW was used to estimate the reasons and determinants of delay in acute care general ward patients.	<p>Causes listed were mostly not relevant to accessible housing. Identified causes most relevant included:</p> <ul style="list-style-type: none"> ■ Post-hospital problem (8.2 per cent), including: <ul style="list-style-type: none"> – Awaiting equipment (1.1 per cent) – Lack of carer support (3.0 per cent)

Study	Approach	Key findings relevant to the RIS
		<ul style="list-style-type: none"> – Awaiting community nursing (0.8 per cent) – Awaiting allied health (4.0 per cent) ■ Alternative care problems (4.3 per cent), including: <ul style="list-style-type: none"> – Awaiting rehabilitation placement (2.5 per cent) – Awaiting respite care (2.1 per cent).

Source: New, P.W. Jolley, D.J. Cameron, P.A. Olver, J.H. and Stoelwinder, J.U. 2013, A prospective multicenter study to discharge from inpatient rehabilitations, *Medical Journal of Australia*, 198 (2), pp. 104-108; Salonga-Reyes, A. Scott, I.A. 2017, Stranded: causes and effects of discharge delays involving non-acute in-patients requiring maintenance care in a tertiary hospital general medicine service, *Australian Health Review*, 41, CSIRO Publishing, pp. 54-62; Ou, L. Chen, J. and Santiano, N. 2009, Discharge delays in acute care: Reasons and determinants of delay in general ward patients, *Australian Health Review*, August 2009, Vol 33 No. 3, pp. 513-521.

From this limited Australian evidence base, the following inferences are drawn.

- Around 6.7 per cent of bed days in **rehabilitation** care (see box F.2 for definitions) can potentially be attributed to a lack of accessible housing, based on the following findings from New et. al. (2013):
 - Over 21 per cent of all bed days were occupied by patients deemed to have a discharge barrier.
 - Together, accommodation (patient has no available suitable accommodation options) and home modifications (patient waiting for home modifications that are essential to ensure safe access and care at home after discharge) account for 31.7 per cent of additional/unnecessary bed days.⁴⁸⁶
- Around 1.8 per cent occupied bed days in maintenance care can potentially be attributed to a lack of accessible housing, based on the following findings from Salonga-Reyes and Scott (2017).
 - 90 per cent of bed days in maintenance care are due to discharge delays.
 - 2.0 per cent of delays were due to waiting for home modifications.
- CIE did not identify any reliable evidence to suggest that housing issues are delaying discharge from hospital acute care.⁴⁸⁷

⁴⁸⁶ New, P.W. Jolley, D.J. Cameron, P.A. Olver, J.H. Stoelwinder, J.U. 2013, “A prospective multicenter study to discharge from inpatient rehabilitations”, *Medical Journal of Australia*, **198** (2), pp. 104-108.

⁴⁸⁷ Ou, L. Chen, J. and Santiano, N. 2009, “Discharge delays in acute care: Reasons and determinants of delay in general ward patients”, *Australian Health Review*, August 2009, **33** (3), pp. 513-521.

F.2 Relevant types of care

- **Acute care** — care in which the intent is to perform surgery, diagnostic or therapeutic procedures in the treatment of illness or injury.⁴⁸⁸
- **Sub-acute care** — specialised multidisciplinary hospital-based care in which the primary need for care is optimisation of the patient’s functioning and quality of life. A person’s functioning may relate to their whole body or a body part, the whole person, or the whole person in a social context, and to impairment of a body function or structure, activity limitation and/or participation restriction and comprises the following care types:⁴⁸⁹
 - **Rehabilitation care** — care to improve the functioning of a patient with an impairment, activity limitation or participation restriction due to a health condition.
 - **Palliative care** — care to optimise the quality of life of a patient with an active and advanced life-limiting illness.
 - **Geriatric evaluation and management care** — care to improve the functioning of a patient with multi-dimensional needs, associated with age related medical conditions. Some examples of conditions in GEM care patients include a tendency to fall, incontinence, reduced mobility and cognitive impairment. The patient may also have complex psychosocial problems.
 - **Psychogeriatric care** — care to improve the functional status, behaviour and/or quality of life for an older patient with significant psychiatric or behavioural disturbance. The disturbance is caused by mental illness, age related organic brain impairment or a physical condition.
- **Non-acute care (also referred to as maintenance care)** — hospital-based care to support patients with an impairment, activity limitation or participation restriction due to a health condition.
- **Transition care** — care to help patients recover after a hospital stay. It provides short-term specialised care and support to help the patient regain functional independence and confidence sooner, and avoid the need for longer term care and support services. Care is tailored to the patient’s specific needs and goals, and can be delivered in an aged care home, the patient’s own home, out in the community, or a mix of these locations, as the needs change with your recovery.⁴⁹⁰

⁴⁸⁸ Australian Institute of Health and Welfare website, <https://www.aihw.gov.au/reports-data/myhospitals/content/glossary>, accessed 21 January 2020.

⁴⁸⁹ IHPA website, <https://www.iHPA.gov.au/what-we-do/subacute-and-non-acute-care>, accessed 20 January 2020.

⁴⁹⁰ Australian Government, My aged care website, <https://www.myagedcare.gov.au/short-term-care/transition-care>, accessed 20 January 2020.

Estimating the size of the problem

To estimate the size of the problem, the following approach is used.

- Estimate the total cost of the relevant types of care. This includes:
 - Sub-acute care (excluding palliative care)
 - Non-acute hospital care
 - Transition care.
- It is then assumed that the following proportions of these costs can be attributed to the problem of a lack of accessible housing.
 - 6.7 per cent of sub-acute care based on the findings of New et. al. 2013 (although this study only related to rehabilitation care)
 - 1.8 per cent of maintenance care based on the findings of Salonga-Reyes and Scott (2017)
 - As there are no studies on the extent to which lack of accessible housing increases the need for transition care, CIE applies the estimate relating to maintenance care.

G Approach to estimating the costs associated with inability to visit family and friends

Estimated incidence of loneliness due to inaccessible housing

A lack of accessible housing contributes to social isolation and loneliness where people with a mobility limitation are unable to visit friends and family because their homes are inaccessible. Housing accessibility issues could also contribute to loneliness in people with limited mobility where their own dwelling does not meet their accessibility needs. However, here the focus is only on loneliness caused by an inability to visit family and friends. To the extent that their own dwelling does not meet their accessibility needs and contributes to loneliness in people with limited mobility, these impacts would be broadly included in the general quality of life impacts.

The SDAC data also provides some insights into the number of people affected by an inability to access the houses of family and friends.

- In 2018, there were around 113 700 people who reported having difficulty accessing another person's house over the past year. This is the most direct measure of the number people that may have been unable to visit friends and/or relatives due to inaccessible housing. However, this measure would understate the true impact, as many people with mobility limitation would avoid visiting friends and relatives if they know (or suspect) they will be unable to access the house.
- 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.
- In total, up to 422 400 people were not able to access the home of a friend or relative. As noted above, this is likely to be an upper bound estimate because some people may have avoided visiting family or friends for reasons related to their disability, but unrelated to the accessibility of the house.

A relevant indicator of social isolation is the frequency of contact with family/friends living outside the dwelling. Despite having had trouble accessing someone else's house and/or avoiding visiting friends and relatives, most people within this group nevertheless see family and friends that live outside the household relatively frequently.

- More than 60 per cent of people who had difficulty accessing another person's house or avoided visiting other people because of their disability still saw a family member or friend who lived outside the house in the last week.

- More than 80 per cent of these people had contact with family and friends in the last month.
- Around 60 400 people had not had contact with family/friends not living in the same household in the last month (table G.1). Although there does not appear a formal definition of social isolation based on the frequency of contact with family and friends, this group appears to have minimal contact with people outside the dwelling.

G.1 Frequency of contact with family or friends

Frequency	People who had difficulty accessing another person's house	People who avoided visiting other people	Total	Share
	'000	'000	'000	Per cent
Every day	14.7	27.3	40.3	9.5
In the last week	58.8	177.2	219.0	51.8
In the last month	19.1	84.0	95.3	22.6
In the last quarter	8.8	36.6	42.4	10.0
Has not seen family or friends not living in same household in the last 3 months	3.2	12.7	15.9	3.8
Has no family or friends	0.0	2.1	2.1	0.5
Not applicable	7.4	0.0	7.4	1.8
Total	113.7	339.9	422.4	100.0

Source: ABS, Survey of Disabilities, Ageing and Carers, 2018, TableBuilder.

As noted above, feelings of loneliness are not necessarily directly related to the frequency with which people see their social networks. Feelings of loneliness are subjective and some people can feel lonely even if they see their family and friends frequently. Perhaps a better (albeit still imperfect) measure of loneliness is whether people **want** more contact with their family and friends.

Of the people who were identified as either having had trouble accessing someone else's house and/or had avoided visiting family and friends, around 191 500 (or around 45 per cent) wanted more contact with their family and friends (table G.2).

G.2 Share of identified population who would like to see family and friends more often

Level of mobility limitation	Want more contact with family/friends	Total identified population	Share wanting more contact with family/friends
	'000	'000	Per cent
Profound	43.0	100.0	43.0
Severe	50.1	114.6	43.7
Moderate	43.8	82.5	53.1
Mild	61.6	127.7	48.2
Total	191.5	423.0	45.3

Source: ABS, Survey of Disabilities, Ageing and Carers, 2018, TableBuilder.

The proportion of people that want more contact with family and friends (and may therefore be vulnerable to loneliness) is higher among people who may have been unable to visit family and friends due to access issues, compared with the broader population of people with limited mobility. The proportion is around 26.5 per cent for others with mobility limitation (i.e. those that did not report that they had difficulty accessing the house of another person, did not report that they had avoided visiting a friend), which is consistent with the proportion of Australians that feel lonely, as reported above (around 25 per cent).

G.3 Share of people with a mobility limitation that want more contact with family/friends

People with a mobility limitation	Want more contact with family/friends	Total	Share
	'000	'000	Per cent
Relevant people	191.5	423.0	45.3
Others with mobility limitation	677.8	2 559.3	26.5
All people with mobility limitation	869.3	2 982.3	29.1

Source: ABS, Survey of Disabilities, Ageing and Carers, 2018, TableBuilder.

This data supports the proposition that inaccessible housing may be contributing to loneliness by preventing people from visiting family and friends. Noting that some in this group may have been lonely even if they had been able to access the home of their friends or relatives.

- Using the 25 per cent of the population (see above) as a benchmark implies that around 105 800 may have suffered from loneliness anyway.
- This implies that approximately an additional 85 800 people with limited mobility may be suffering from loneliness as a result of an inability to visit family and friends due to inaccessible housing (table G.4).

G.4 Estimated cost of loneliness due to a lack of accessible housing

	Identified population ^a	Share that want more contact with family/friends	People that want more contact with family/friends
	'000	Per cent	'000
Actual estimates	423.0	45.3	191.5
Implied baseline	423.0	25.0	105.8
Cost due to lack of accessible housing			85.8

^a The identified population is based on 2018 SDAC data using TableBuilder. The identified population includes: people with a mobility limitation; and indicated they did not leave the house as often as they would like due to their own condition or age; or indicated they had difficult accessing another person's house over the past year; or had avoided visiting people due to their condition. ^b Based on the share of the identified population that indicated they want more contact with family/friends. ^c The baseline share of the population that suffer from loneliness is based on a 2018 survey by the Australian Psychological Society and Swinburne University of Technology. Source: ABS Survey of Disabilities, Ageing and Carers, 2018, TableBuilder data; Australian Psychological Society and Swinburne University of Technology, 2018, Australian Loneliness Report: A survey exploring the loneliness levels of Australians and the impact on their health and wellbeing, p. 5; McDaid, D. Park, A.L. and Fernandez, J.L. Reconnections Evaluation Interim Report, Personal Social Services Research Unit (PSSRU), London School of Economics, June 2016, p. 30; CIE.

The cost of loneliness

Loneliness is associated with a range of health impacts, including:

- an increase in GP consultations
- unplanned hospital admissions
- increased attendance at an Emergency Department
- an increase in self-harm
- an increase in depression
- an increase in coronary heart disease
- an increase in stroke
- an increase in dementia.

One way the cost of loneliness to the community has been measured in the literature is through these health impacts. Although CIE did not identify any Australian studies estimating the economic costs of loneliness, there are several UK studies. In particular:

- McDaid et. al. estimated the avoidable costs of loneliness could be around £1 700 (2015 values) per person in net present value terms over ten years.⁴⁹¹
 - The discount rate used in the net present value calculation is not reported. However, using a 7 per cent discount rate, this equates to around £226 per year.
 - Converted to 2019 Australian dollar terms, this is around \$417 per year.
- For those who are lonely most of the time, these costs are estimated at around £6 000 per person in net present value terms over ten years.⁴⁹²
 - Assuming a 7 per cent discount rate, this equates to around 798 per year.
 - Converting to 2019 Australian dollar terms, this is around \$1 471 per year.

The above estimates are used as low and high estimates, with the midpoint used as the central case estimate.

⁴⁹¹ McDaid, D., Park, A.L. and Fernandez, J.L. 2016, *Reconnections Evaluation Interim Report*, Personal Social Services Research Unit (PSSRU), London School of Economics, June 2016, p. 30.

⁴⁹² McDaid, D., Park, A.L. and Fernandez, J.L. 2016, *Reconnections Evaluation Interim Report*, Personal Social Services Research Unit (PSSRU), London School of Economics, June 2016, p. 30.

H Premature or inappropriate entry into residential aged care

Incidence of people inappropriately or prematurely admitted to aged care

There were:

- around 176 300 people with mobility impairment in residential aged care in 2018 (including homes for the aged and cared retired/aged accommodation) according to SDAC data
- 182 705 permanent aged care places funded by the Australian Government as at June 2019, according to AIHW data.⁴⁹³

Entry into residential care can be a complex decision, taking into account a range of factors. There is limited evidence on the incidence of people being admitted to residential aged care inappropriately or prematurely. Residential aged care is generally to address care needs beyond accessibility. However, it is possible that some proportion of these aged care residents may have prematurely entered aged care, where their previous home no longer meets their changing accessibility needs and they are unable to secure alternative accommodation that meets their needs. Even where an individual has some care needs, home-based care may be possible with accessible housing.

Based on the limited information available, it is estimated that there could be between 2 660 and 6 023 additional people in residential aged care due to a lack of accessible housing, with a central case estimate of 4 140 (table G.1). Details of the approach to estimating the number of additional people in residential aged care is provided below.

H.1 Additional people in residential aged care due to a lack of accessible housing

Age group	Low estimate	Central case	High estimate
	No.	No.	No.
Older people (65+ years)	2 660	4 140	6 023
Younger people (<65 years)	107	137	176
Total	2 767	4 277	6 199

Source: CIE estimates.

⁴⁹³ Australian Institute of Health and Welfare website, <https://www.gen-agedcaredata.gov.au/Resources/Access-data/2019/September/Aged-care-data-snapshot%E2%80%942019>, accessed 22 December 2019.

Older people inappropriately or prematurely admitted to aged care

Some stakeholders suggested it was unlikely that there would be a large number of inappropriate or premature entrants into residential aged care.

- Prospective entrants into government-funded residential aged care places undergo an assessment by an Aged Care Assessment Team (ACAT). ACATs assess the physical, psychological, medical, restorative, cultural and social needs of frail older people to help them and their carers to access appropriate levels of support. Evidence suggests that a range of factors influence the ACAT's recommended long-term care setting, including age, availability of informal care, health conditions and assistance needs.⁴⁹⁴
- There has also been a policy shift towards assisting people to stay at home, rather than enter aged care.

The AIHW reports that in 2018-19, there were 163 047 aged care assessments.⁴⁹⁵ Among the issues considered as part of these assessments are any difficulties completing daily tasks and activities around the home and any issues relating to home and personal safety (i.e. issues relating to the accessibility of the home).

- In around 75 per cent of cases, the recommended long-term living arrangement was the private residence or other residential arrangements within the community (including independent living within a retirement village, supported community accommodation, boarding houses and other community settings) (chart H.2). This implies that the client's existing dwelling was assessed as being generally suitable (although it is still possible that more accessibility features could improve the ease of entering/leaving or moving around the dwelling and reduce the risk of falls and care needs).
- In most of the remaining cases, the recommended long-term living arrangement was residential aged care. However, it is not clear to what extent lack of accessibility features within the existing dwelling contributed to that recommendation.

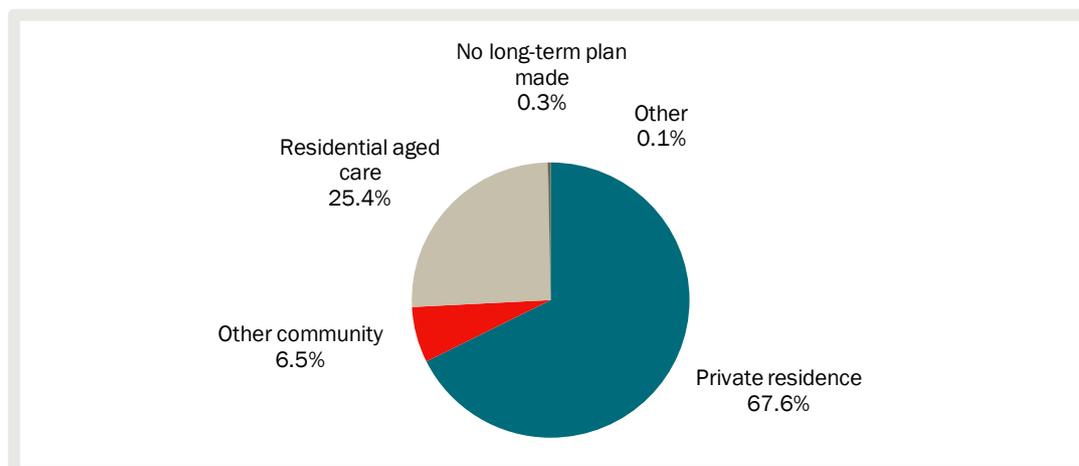
Although the number of places in residential aged care has grown over the past decade, the number of places per 1 000 people aged 70 years and over declined from around 87 to around 76 over the same timeframe (chart H.3). This reflects the greater focus on home-based care, rather than residential care.

There have been several studies that have modelled the extent to which factors contribute to entry into residential aged care, using Australian data. These studies provide useful insights because they use statistical techniques to estimate the impact of each relevant factor, with all other factors held constant.

⁴⁹⁴ Jukic, M. and Temple, J.B. 2018, Recommended long term care settings following aged care assessments in Australia, *PLOS One*.

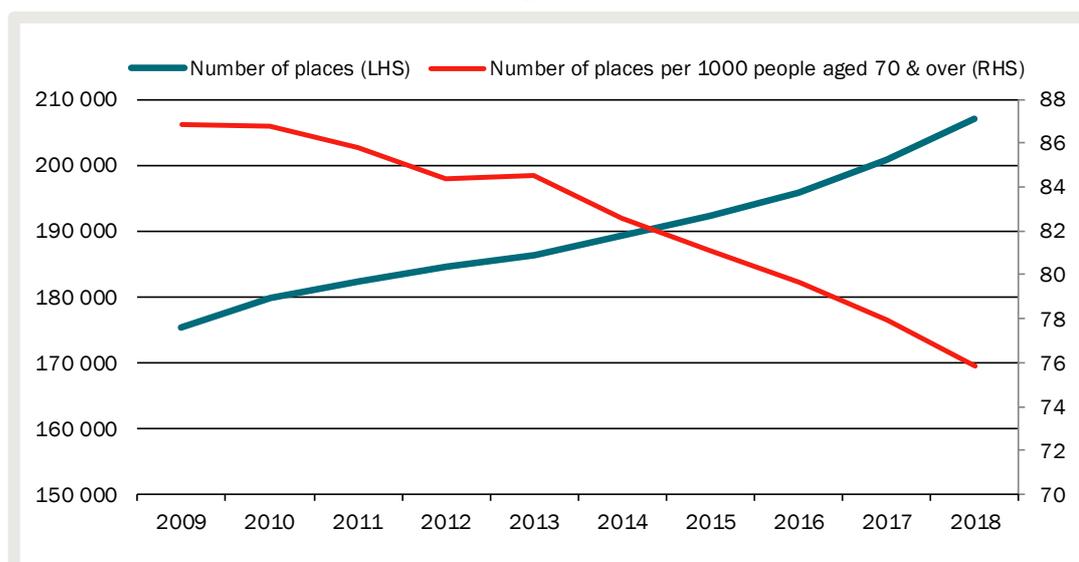
⁴⁹⁵ Australian Institute of Health and Welfare website, <https://www.gen-agedcaredata.gov.au/Resources/Access-data/2019/September/Aged-care-data-snapshot%E2%80%94942019>, accessed 22 December 2019.

H.2 Recommended long-term living arrangement from aged care assessments



Data source: Australian Institute of Health and Welfare website, <https://www.gen-agedcaredata.gov.au/Resources/Access-data/2019/September/Aged-care-data-snapshot%E2%80%942019>, accessed 22 December 2019.

H.3 Operational number of residential aged care places, Australia-wide



Source: PC Report on Government Services 2019, Chapter 14: Aged Care, Tables 14A.13-14.

Of most relevance, Jukic (2017)⁴⁹⁶ used SDAC (2012) data to estimate the extent to which various factors (including age, assistance needs and specific conditions) affect the probability (or odds) of being in residential aged care. Jukic (2017) and Jukic and Temple (2018)⁴⁹⁷ also used similar models with alternative data sources (such as ACAT assessment data) to estimate the extent to which various factors contribute to the recommended long-term care setting. However, the model using SDAC data is most

⁴⁹⁶ Jukic, M. 2017, *Modelling Residential Aged Care in Australia: Entry and Exit*, A thesis submitted for the degree of Doctor of Philosophy of the University of Melbourne

⁴⁹⁷ Jukic, M. and Temple, J.B. 2018, Recommended long term care settings following aged care assessments in Australia, *PLOS One*.

relevant for the CBA because it focuses on the number of people in residential aged care, rather than number of new admissions.

The odds ratio for each variable represents the odds that a person will be in aged care with the relevant variable (i.e. when a person has a particular need or condition), compared to the odds of being in residential aged care without the relevant need or condition (table H.4).

- An odds ratio of 1 would imply that a person experiencing this variable has the same likelihood of being in residential aged care as those without the relevant need or condition, holding other characteristics constant.
- An odds ratio of less than 1 implies that it is less likely that those with the relevant need or condition will be in residential aged care.
- An odds ratio greater than 1 implies that it is more likely that those with the relevant need or condition will be in residential aged care.

H.4 Logistic model of probability of being in aged care – 2012

Variable	Odds ratio	P>z	95% confidence interval	
			Lower bound	Upper bound
Age	1.204	0.000	1.136	1.276
Age square	0.999	0.003	0.998	0.999
Married	0.206	0.000	0.165	0.257
Needs help with emotional/cognitive tasks	2.888	0.000	2.112	3.948
Needs help to cope with emotions	2.105	0.000	1.525	2.906
Needs help with understanding	1.955	0.002	1.281	2.985
Needs help with communication	4.310	0.000	3.148	5.901
Needs help with dressing	1.781	0.001	1.275	2.487
Needs help with mobility about residence	2.684	0.000	2.076	3.468
Needs help with toileting	4.371	0.000	3.273	5.836
Head injury	0.580	0.003	0.404	0.831
Dementia	2.541	0.000	1.818	3.551
Diabetes	0.719	0.043	0.522	0.989
Schizophrenia	3.859	0.002	1.612	9.241
Depression	3.172	0.000	2.392	4.206
Retardation	0.433	0.094	0.162	1.154
Epilepsy	2.853	0.013	1.244	6.541
Multiple Sclerosis	2.167	0.028	1.087	4.321
Paralysis	4.786	0.000	2.591	8.841
Heart Disease	1.653	0.000	1.283	2.130
Urinary	1.593	0.052	0.996	2.549
Constant	1.115	0.000	1.420	9.340
Number of resident records				9 787
Pseudo R ²				0.799

Source: Jukic, M. 2017, Modelling Residential Aged Care in Australia: Entry and Exit, A thesis submitted for the degree of Doctor of Philosophy of the University of Melbourne, p. 132.

The accessibility of the residence (or previous residence for those that have already moved into aged care) is not one of the variables included in the various models. The variable that is mostly closely related to housing accessibility is whether an individual ‘needs help with mobility about residence’.

One submission argued that the focus on people who need help moving around their place of residence excludes conditions that would be assisted by the proposed provisions (such as toileting, dementia, multiple sclerosis, paralysis and heart disease). The proposed NCC provisions would help with the functional need (i.e. ‘needs help with mobility about residence’), rather than the underlying condition per se. The conditions identified in the submission (such as dementia, multiple sclerosis, paralysis and heart disease) may in many cases co-exist with ‘needs help with mobility about residence’. The statistical model disentangles the impact of the functional need (i.e. ‘needs help with mobility about residence’) from the underlying condition.

The modelling results suggest that ‘needs assistance moving around a residence has a statistically significant impact on the odds of being in residential aged care. All else being equal, for those that need assistance moving around the residence, the odds of being in residential aged care are around 2.7 times higher than for those without a need for assistance moving around the residence. This could be interpreted as evidence that inaccessible housing is contributing to additional people being in residential aged care.

Based on 2018 SDAC data, the probability/odds of being in residential aged care are relatively low (less than 1 per cent) for those over the age of 65 that do not need assistance moving around the residence, but much higher for those that need assistance (including those that do not move around the residence) (table H.5). However, as noted above, those that need assistance moving around the residence often have a range of other risk factors, unrelated to the dwelling, that also contribute to being in residential aged care.

H.5 Probability/odds of being in residential aged care – 2018

Assistance required	In residential aged care	Total	Probability of being in aged care	Odds of being in aged care
	'000	'000	Per cent	
Does not need assistance	15.9	1 676	0.95	0.0096
Needs assistance	154.4	266	58.11	1.3872
Total	170.3	1 941.2	8.77	0.0962

Source: ABS, 2018 Survey of Disabilities, Ageing and Carers, TableBuilder.

The SDAC data and the modelling results can be used to infer the number of additional people that may be in residential aged care as a result of the need for help with moving around the residence as follows (see table G.6).

- The odds (0.0096) of being in residential aged care for those that do not need assistance moving around the residence are used as a baseline. This implies a baseline of around 2 500 people (out of the 266 000 people in total) who need assistance with mobility would have been in residential aged care anyway (i.e. even if they did not need assistance with mobility). This is less than 1 per cent of the total.

- The odds ratio reported above is then applied to estimate the odds of being in residential aged care for those who need assistance moving around the residence, **all other variables being equal**. The central case odds ratio (2.684), as well as the lower (2.076) and upper (3.468) bounds of the 95 per cent confidence interval are applied.
- The difference between the number of people estimated to be in residential aged care implied by the odds estimated above and the baseline can be interpreted as the impact of needing help with mobility around the place of residence.
 - This implies that there are between 2 660 and 6 023 additional older Australians in residential aged care as a direct result of needing help with mobility around the place of residence, with a central case estimate of 4 140 additional people.
 - Note that this estimate is far less than the 154 400 people with mobility needs that were reported to be in residential aged care in 2018. This implies that the remaining people were in residential aged care due to other factors unrelated to their need for help moving around the place of residence.

H.6 Estimated number of people in residential aged care due to needing help with mobility

Level of mobility limitation	Odds	Probability (Per cent)	Estimated number of people (Persons)	Attributable to mobility needs (Persons)
Baseline (people without mobility needs)	0.0096	0.9490	2 521	n.a.
Lower bound estimate (People with mobility needs)	0.0199	1.9501	5 182	2 660
Central case (People with mobility needs)	0.0257	2.5070	6 661	4 140
Upper bound estimate (People with mobility needs)	0.0332	3.2157	8 544	6 023

Source: CIE estimates

- **Many people who need help moving around their place of residence can remain at home if their home has the necessary accessibility features. One possible interpretation of the fact that some people are estimated to be in residential aged care as a direct result of their need for assistance moving around their home is that this is due to their residence lacking relevant accessibility features.**
- **Under this interpretation, the additional people that are in residential aged care as a result of their need for help moving around their place of residence can be attributed to a lack of accessible housing.**
- **This implies that between 2660 and 6023 additional people – with a central case estimate of 4140 additional people – are in residential aged care as a result of inaccessible housing.**

Younger people in residential aged care

According to the COAG Disability Reform Council Quarterly report there were 5 468 people under the age of 65 living in residential aged care in the December quarter 2019.

Some stakeholders believe it is inappropriate for anyone under the age of 65 to be in residential aged care. According to the Royal Commission into the Quality and Safety of Aged Care:

“For younger people with disability, their friends stop dropping by and rarely visit over time. It is an isolating and daunting experience. It is not a life.”⁴⁹⁸

Minimising the number of younger people in residential aged care is an important focus of the Australian Government.⁴⁹⁹ In March 2019, the Government announced it had developed a national action plan that included a target of halving the number of younger people under the age of 65 entering aged care by 2025. A new strategy to support this target is currently being finalised.⁵⁰⁰

The number of people under the age of 65 in residential aged care (and new entrants under the age of 65) has been declining over recent years as the number of NDIS participants has increased (chart H.7).⁵⁰¹

- The number of residents under the age of 65 has decreased from 6 243 at 31 March 2017 to 5 468 at 30 September 2019, a 12 per cent decrease.
- The number of new entrants into residential aged care under the age of 65 has decreased from 536 in the June quarter 2017 to 386 in the September quarter 2019, a decrease of around 28 per cent.

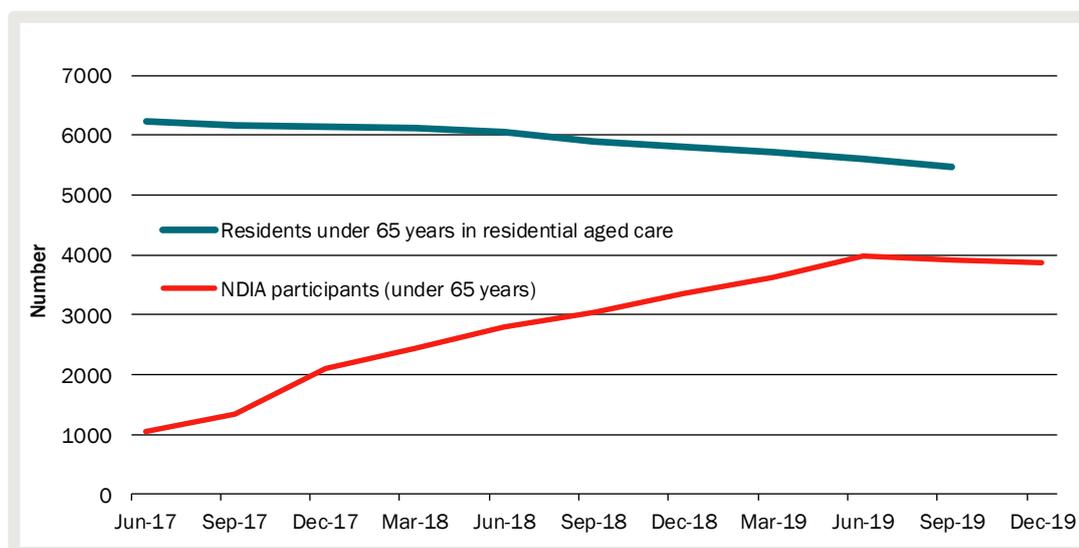
⁴⁹⁸ Royal Commission into Aged Care Quality and Safety 2019, *Interim Report: Neglect*, Volume 1, October 2019, p. 4.

⁴⁹⁹ Department of Social Services website, <https://www.dss.gov.au/disability-and-carers/programmes-services/for-people-with-disability/younger-people-with-disability-in-residential-aged-care-initiative>, accessed 17 February 2020.

⁵⁰⁰ NDIA 2019, *COAG Disability Reform Council Quarterly Report*, December 2019, p. 27.

⁵⁰¹ *ibid*, pp. 26-27.

H.7 Number of people under the age of 65 in residential aged care



Data source: COAG Disability Reform Council Quarterly Report, December 2019, pp. 26-27.

The national action plan, *Younger People in Residential Aged Care – Action Plan*, notes that younger people with disability often have complex health needs and identifies the following reasons why younger people are living in aged care facilities:

- difficulty in accessing appropriate health supports in other settings
- the lack of suitable housing - the national action plan identifies a significant gap in the market for highly specialised disability accommodation.

The national action plan also notes:

“Younger people with a disability have been directed to aged care due to a lack of suitable alternative housing and supports. One support that may accommodate the needs of younger people in aged care is SDA...[However, there] is currently a shortfall in the availability of SDA for younger people who require this level of support. The SDA market is not yet mature, with limited supply, lack of demand data for potential investors, and significant lead-time required for construction of new stock.”⁵⁰²

Key elements of the national action plan are to:

- improve the ability of younger NDIS participants in aged care to access SDA; and
- to encourage the development of a vibrant SDA market.

It is therefore reasonable to expect that the number of younger people in residential aged care will decline as the SDA market develops.

- **There are no data specifically on the number of younger people in residential aged care that would have been able to remain living in the community if more private (non SDA) accessible housing were available.**
- **In the absence of better information, similar shares as for older people, implied by the modelling studies outlined above, are assumed. Under this assumption, between 1.95 per cent and 3.22 per cent of younger people in residential aged**

⁵⁰² Australian Government, *Younger People in Residential Aged Care – Action Plan*, pp. 4-5.

care may have been able to live in the community if more accessible housing were available, with a central case estimate of 2.51 per cent.

- Based on 5 468 younger Australians currently in residential aged care (as at September 2019) this implies between 107 and 176 of these people may have been able to live in the community if more accessible housing were available, with a central case estimate of 137.

Impact of inappropriate or premature entry into residential aged care

The impact of inappropriate or premature or inappropriate entry into residential aged care includes:

- reduced wellbeing for those people inappropriately or prematurely entering residential aged care
- additional financial costs associated with residential aged care (relative to other care models).

Reduced wellbeing for premature or inappropriate entrants

As noted above, residential aged care is not the preferred outcome for many older Australians (as well as younger people that are admitted to residential aged care). The ongoing Royal Commission into Aged Care Quality and Safety (see box H.8) noted that:

“People do not usually enter aged care willingly. They often do so with great trepidation. They fear loss of autonomy, of individuality, of control over their own lives.”⁵⁰³

H.8 Royal Commission into Aged Care Quality and Safety

A Royal Commission into Aged Care Quality and Safety was established on 8 October 2018. The Royal Commission has gathered evidence through a range of methods including: public hearings; notices requiring the production of documents, things, information or statements in writing; public submissions; community forums; expert roundtable discussions; service visits; and research conducted by both the Royal Commission staff and commissioned from external providers.

The Commissioners delivered an interim on 31 October 2019 a will provide a final report by 26 February 2021.⁵⁰⁴

⁵⁰³ Royal Commission into Aged Care Quality and Safety 2019, *Interim Report: Neglect*, Volume 1, October 2019, p. 4.

⁵⁰⁴ Royal Commission into Aged Care Quality and Safety website, <https://agedcare.royalcommission.gov.au/Pages/default.aspx>, accessed 23 December 2020.

The wellbeing of people in residential aged care (relative to remaining at home) is likely to be at least partly related to the quality of the care received. In the interim report of the Royal Commission, the Commissioners stated:

“The Royal Commission has heard compelling evidence that the system designed to care for older Australians is woefully inadequate. Many people receiving aged care services have their basic human rights denied. Their dignity is not respected and their identity is ignored. It most certainly is not a full life. It is a shocking tale of neglect.”⁵⁰⁵

The Royal Commission concluded that sub-standard care (care that does not meet relevant quality standards or other legislative obligations, or which otherwise does not meet community expectations) is widespread and is more serious than had been anticipated.⁵⁰⁶ Discussions with the Disability Discrimination Commissioner also highlighted that people in closed care systems are vulnerable to neglect, abuse and exploitation.

It is reasonable to expect further reforms to address the safety and quality issues in response to the Royal Commission’s recommendations (although the specific recommendations are not yet known).

One study from AIHW on consumer experiences with residential aged care presents a much more positive view of the quality of care provided in residential aged care facilities.⁵⁰⁷ For most questions, more than 90 per cent of responses were positive, although responses across all questions were slightly less positive for those with restricted mobility. The responses for the remaining questions were mostly more than 80 per cent positive. Responses from people with restricted mobility on ‘staff to talk to’ was the only question with a positive response rate less than 80 per cent.

The findings of the Royal Commission suggest that there may nevertheless be a significant number of people that receive sub-standard care. However, there is currently no publicly available data from the Royal Commission on the proportion of residential aged care users that have receive sub-standard care. The impact of inappropriate or premature entry into residential aged care could be very high for people who receive sub-standard care (and even higher for those that are the victim of violence or abuse).

CIE also notes recent aged care reforms, including:⁵⁰⁸

- a new set of 8 Aged Care Quality Standards that became effective in July 2019
- the establishment of the Aged Care Quality and Safety Commission to protect and enhance the safety, health, well-being and quality of life of people receiving aged care.

That a significant number of people in residential aged care receive sub-standard care (including instances of neglect, violence and abuse) is clearly an important issue. However, this reflects current failings of the aged care system, rather than residential

⁵⁰⁵ Royal Commission into Aged Care Quality and Safety 2019, *Interim Report: Neglect*, Volume 1, October 2019, p. 12.

⁵⁰⁶ *ibid*, p. 5.

⁵⁰⁷ Australian Institute of Health and Welfare, 2019, *Consumers’ experience of residential aged care Australia 2017-19*, p. 30.

⁵⁰⁸ Australian Institute of Health and Welfare, 2019, *op.cit.*, p. 1.

aged care as a type of care. Changes to the NCC can address this issue only to the extent that it may forestall some people entering residential aged care.

Furthermore, one would hope that the issues identified by the Royal Commission are addressed in the years ahead. CIE has therefore not tried to specifically quantify the costs associated with sub-standard care (although sub-standard care may be partly reflected in the increased incidence of depression — see below).

That said, even if the quality of care is of an acceptable standard in all residential aged care facilities, many older Australians in residential aged care would have preferred to have remained at home if that were possible.

In the Consultation RIS, the loss of wellbeing associated with inappropriate or premature entry into residential aged care, based on reported higher rates of depression among permanent aged care residents relative to older Australians living in the community was estimated.⁵⁰⁹ However, as acknowledged by the AIHW, this could reflect people in residential aged care generally having more complex care needs.⁵¹⁰

Since the Consultation RIS was completed, the Royal Commission released a report that estimates the ‘willingness to pay’ a co-contribution to facilitate remaining in their own home using a stated preference survey. This was interpreted as a ‘willingness to pay’ to avoid moving into residential care.⁵¹¹ This is a more direct estimate of the loss of wellbeing associated with moving into residential aged care and is used in the RIS.

- **The average co-contribution amount respondents were willing to pay to avoid moving into residential aged care was \$184 per week, equating to \$9 568 per year.** ⁵¹²

Cost impact of inappropriate or premature entry into residential aged care

The cost impacts estimated below relate specifically to older people in residential aged care. Cost impacts may be somewhat different for younger people, reflecting the different services available to different age groups and possibly some other impacts. However, younger people make up a relatively small share of the total.

Government subsidies associated with residential aged care are significantly higher than other types of care.

- AIHW reports that the average annual Australian Government subsidy per client for residential aged care was estimated at \$69 114 in 2018-19.
- By contrast, the average cost for Home Care is around \$23 140 in 2018-19.

⁵⁰⁹ Australian Institute of Health and Welfare 2013, Depression in residential aged care 2008-2012, Aged Care Statistics Series Number 39, p. 6.

⁵¹⁰ Australian Institute of Health and Welfare 2013, op.cit., p. 6.

⁵¹¹ Ratcliffe, J. Chen, G. Cleland, J. Kaambwa, B.Khadka, J. Hutchison, C. and Milte, R. Australia’s aged care system: assessing the views and preferences of the general public for quality of care and future funding: A research study for the Royal Commission into Aged Care Quality and Safety, Research Paper 6, July 2020, p. 3.

⁵¹² *ibid.*

However, this does not take into account client contributions. This could significantly distort the relative cost of different types of care. Furthermore, if someone is inappropriately or prematurely admitted into residential aged care, it is not clear:

- what their care needs would be if they remained at home (i.e. it is not clear if they would need a Home Care Package)
- the extent to which residential aged care costs substitute for other costs or are additional (for example, if a partner or other family members of the person inappropriately or prematurely admitted into residential aged care remain in the family home, accommodation-related costs in residential aged care are additional).

Estimating the additional resource costs of inappropriate or premature entry into residential aged care is therefore not straightforward. It is estimated that these costs could be around \$33 645 per person per year (table H.9).

H.9 Estimated additional financial cost of residential aged care per person

Estimated additional costs	
	\$ per person
Total annual cost of residential aged care per person	96 951 ^a
Less: accommodation and daily living-related expenses	33 152 ^b
Less: Home care package	23 141 ^c
Less: Informal care	7 013
Additional cost of residential aged care	33 645

^a See ACFA (2019, p. 77). ^b See ACFA (2019, p. 78). ^c Data published by AIHW.

Source: Aged Care Financing Authority, *Seventh report on the Funding and Financing of the Aged Care Industry*, July 2019, pp. 77-78; AIHW, CIE.

The Aged Care Funding Authority reports that in 2017-18, total expenses per resident per day in residential aged care is \$265.62.⁵¹³ This equates to \$96 951 per year (based on 365 days).

Based on estimates from the University of Queensland for the Royal Commission, this is below the efficient cost of meeting the highest level of quality currently available (achieved by the top 11 per cent of facilities) for a small-sized facility (less than 30 beds), but broadly consistent with meeting the current standard. It is, however, well above the efficient cost of providing the highest level of quality currently available in a large facility (table H.10).⁵¹⁴

⁵¹³ Aged Care Financing Authority 2019, *Seventh report on the Funding and Financing of the Aged Care Industry*, July 2019, p. 77.

⁵¹⁴ University of Queensland 2020, *The cost of residential aged care*, Royal Commission into Aged Care Quality and Safety, Research Paper 9, August 2020, pp. 3-5.

H.10 Efficient costs of residential aged care by level of quality

Quality level	Small-sized facility (\$ per bed day)	Larger facility (\$ per bed day)
Q1: Met all accreditation standards, had no issues or complaints, higher customer experience rating, and a lower utilisation of high-risk medicines (around 11 per cent of facilities)	274	235
Q2: Low failure of meeting accreditation standards, a moderate level of customer experience ratings, potentially suboptimal use of high-risk medicines and a low number of complaints and issues (78 per cent of facilities)	267	224
Q3: Lower customer experience rating, a higher failure of meeting accreditation standards, and higher number of complaints and issues (1.1 per cent of facilities)	261	234

Source: University of Queensland, The cost of residential aged care, Royal Commission into Aged Care Quality and Safety, Research Paper 9, August 2020, pp. 3-5.

The distribution across small and large facilities is not known, but on average, it seems likely that current costs would be sufficient to provide the highest level of quality currently available (assuming the facility operates efficiently). Nevertheless, the report notes that if the Australian community and the Royal Commission aspire to achieve a higher quality in the future than even the highest quality facilities have achieved historically, funding levels may need to be much higher.⁵¹⁵

The above estimate includes all costs associated with care, accommodation, food and other daily living expenses. As some costs would have been incurred had the aged care resident remained in their home, not all of these costs are additional. In the Consultation RIS, it was assumed that accommodation and daily living expenses in residential aged care (amounting to around \$32 102 per year) would be broadly the same as at home.

One submission suggested that this may overstate the cost of staying at home because family members may continue to live in the family home (implying that the residential aged care costs are all additional); and it is unlikely that daily living costs are broadly the same in a residential aged care facility as they are at home.

There is no data on the living arrangements of aged care residents prior to entering aged care. It is therefore not known whether people entering aged care left other family members living in the family home. The marital status of aged care residents may be a reasonable (albeit imperfect) indicator of their living arrangements prior to entering aged care.

- Only around 20 per cent of aged care residents are married.⁵¹⁶ This could suggest that these aged care residents left their spouse living in the family home, implying that residential aged care costs are all additional.
- The remaining 80 per cent of aged care residents were mostly widowed (53 per cent), single (10 per cent), divorced (7 per cent), had unknown marital status (7 per cent) or

⁵¹⁵ University of Queensland, The cost of residential aged care, Royal Commission into Aged Care Quality and Safety, Research Paper 9, August 2020, p. 5.

⁵¹⁶ Borotkanics, R. Rowe, C. Georgious, A. Douglas, H. Makeham, M. and Westbrook, J. 2017, Changes in the profile of Australians in 77 residential aged care facilities across New South Wales and the Australian Capital Territory, Australian Health Review, 41, p. 615.

were separated (2 per cent).⁵¹⁷ This could suggest that these aged care residents came from single person households, implying reduced accommodation costs at home will offset accommodation costs in aged care and other related expenses (at least partly).

This information suggests that it is reasonable to assume that residential aged care costs will be offset by reduced home-based accommodation and other expenses for most aged care residents.

To test the assumption that accommodation and other daily expenses are broadly similar in residential aged care and the home, CIE reviewed the available evidence on expenses incurred by single person households over the age of 65. Based on the information available, it is estimated that annual living expenses would be around \$33 000 per year, broadly consistent with the cost in residential aged care (table H.11).

- Although many older Australians own their own home outright (i.e. are not paying off a mortgage or paying rent), median rents are used as a proxy for accommodation costs. The weighted average rent for a house across capital cities is around \$443 per week or around \$23 052 per year.
- The remaining expenses reflect only weekly living expenses that would be avoided by living in residential aged care based on the ABS Household Expenditure Survey for a single person household over the age of 65.⁵¹⁸

H.11 Estimated annual expenses

Expenses	Weekly expenses (\$ per week)	Annual expenses (\$ per year)
Rent	443	23 052
Food and non-alcoholic beverages	87	4 549
Rate payments	29	1 525
House and content insurance	14	718
Repairs and maintenance	16	837
Energy	25	1 323
Household consumables	22	1 148
Total	638	33 152

Source: ABS, Household Expenditure Survey, 2015-16, <https://www.abs.gov.au/statistics/economy/finance/household-expenditure-survey-australia-summary-results/latest-release#data-download>, accessed 13 November 2020.

The remaining costs were as per the Consultation RIS.

- It is assumed that someone entering residential aged care would have required home support had they remained at home and accordingly \$23 141 is subtracted based on the average cost of a Home Care Package. Data from AIHW indicates that very few people enter residential aged care without first using other aged care programs.
- It is also assumed that people remaining in the home require some informal care. These costs were estimated at around \$7 000 per year based on:

⁵¹⁷ *ibid.*

⁵¹⁸ ABS website, <https://www.abs.gov.au/statistics/economy/finance/household-expenditure-survey-australia-summary-results/latest-release#data-download>, accessed 13 November 2020.

- an estimated 6.92 hours of informal care per week, based on the estimates from Carnemolla and Bridge (2019)⁵¹⁹, received by people in accessible homes (although it is not clear whether these estimates are representative of the amount of formal care provided to people at risk of entering residential aged care)
- consistent with CIE’s estimates of the cost of additional informal care, this is valued at the average wage rate for an aged care worker of around \$22.90 per hour.

⁵¹⁹ Carnemolla, P. and Bridge, C. 2019, 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.

I Quality of life impacts

Quantifying quality of life impacts through willingness to pay

The stated preference survey conducted for the Consultation RIS was used to estimate the likely quality of life impacts, taking into consideration the double counting with other elements of the size of problem identified and quantified separately.

WTP for accessible housing

A stated reference survey was conducted as part of the Consultation RIS of a representative sample of 2 062 Australian households. See appendix K for more details in the survey design and data analysis.

The survey included a component designed to estimate willingness to pay (WTP) for accessibility features at the point of purchasing or renting a new home. Statistical models were estimated using the full survey samples. Estimates of average WTP derived from these models are reported in table I.1.

I.1 Average WTP for accessibility features

Accessibility feature	Silver	Gold
	\$	\$
Getting in and out	1,050	1,050
Moving around indoors	813	1,230
Living with limited mobility on same level as an entrance	57	297
Minimal modification required for ageing in place	0	875
Total	1,919	3,451

Source: CIE.

Number of people with reduced quality of life due to inaccessible housing

The number of people who may be impacted by inaccessible housing is derived from SDAC data.

People living in dwellings that have been modified to meet their accessibility needs are excluded on the basis that their inclusion would risk double-counting (i.e. the cost of the modifications have been included separately, and for those people the size of the problem is about the cost of modifying their homes rather than the poor quality of life).

The accessibility features are helpful for people who have difficulty with one or more relevant activities (i.e. mobility around the home, showering and bathing and toileting). CIE therefore uses TableBuilder to identify the number of people that always require

assistance with the activity, sometimes needs assistance, and do not need assistance but have difficulties. Using this approach, it is estimated that around 554 400 people could experience improved quality of life from accessible housing (table I.2).

I.2 Estimated number of people experiencing reduced quality of life

	Number ('000)
Always needs assistance with mobility around dwelling, showering/bathing, or toileting	149.9
Sometimes needs assistance with showering and bathing, showering/bathing, or toileting	171.7
Do not need assistance, but has difficulty	232.8
Total	554.4

Source: ABS, 2018 Survey of Disabilities, Ageing and Carers, TableBuilder, CIE.

Quantifying quality of life impacts

The stated preference survey and analysis are household based. Assuming that each household has only one person with difficulties in these activities, it is estimated that the total benefit of making their home accessible could be between \$1.1 billion and \$1.9 billion per year (table I.3).

I.3 Willingness to pay for accessible housing

	Silver	Gold
WTP (\$ per year per household)	1,919.0	3,451.0
Number of households impacted ('000) ^a	554.4	554.4
Total impact (\$ million)	1,063.9	1,913.2

^a Assuming each household has only one family member having difficulty in moving about home, toileting or showering

Source: CIE estimates based on WTP survey and SDAC data

It should be noted that this estimate of WTP for accessible housing includes a range of impacts which have been identified and quantified separately to avoid overlapping. For example, as suggested by Dalton and Carter in their supplementary report, privately borne costs and inconvenience (or disutility) such as costs associated with loneliness, care related costs, home modifications and moving may overlap with the WTP estimates.⁵²⁰ These items amount to \$1.6 billion and \$1.9 billion per year (see table I.4), implying there is no additional quality of life impact.

⁵²⁰ Dalton, A. and R. Carter 2020b, *Economic advice prepared to assist with responses to the Consultation Regulation Impact Statement on minimum accessibility standards for housing in the National Construction Code: Supplementary information prepared for the Melbourne Disability Institute, University of Melbourne and the Summer Foundation*, p.4, in Melbourne Disability Institute and Summer Foundation, *Accessible Housing the Way Forward: Supplementary information provided to the Australian Building Codes Board Consultation RIS*.

I.4 Private cost due to inaccessibility

	Low	Central	High
	\$m	\$m	\$m
Costs associated with unable to visit	35.7	80.9	126.1
Home modification cost	599.6	599.6	599.6
Informal carer related costs	911.9	911.9	911.9
Cost of moving	81.5	161.9	242.3
Sub-total	1,628.8	1,754.4	1,879.98

Source: CIE.

Dalton and Carter (2020a, b) also argue that there is possibly no overlap between WTP and the problem reduction approach. If no overlap is assumed, the above WTP estimate could be viewed as a maximum upper bound measurement of the quality of life impact.

Quantifying quality of life impacts through QALYs

A common way that 'quality of life' changes are incorporated into economic analysis is through estimating changes in quality-adjusted life years (QALYs). QALYs are calculated by multiplying life years by an index of utility, also referred to as health-related quality of life (HRQoL) or multi-attribute utility (MAU) instrument. Utility represents the strength of a person's preference for a health state on a scale from 0 (representing death) to 1 (representing good health).⁵²¹ There are various MAU instruments that have been developed and validated for use with specific populations.

Various studies have established a qualitative link between accessible housing (mostly based on home modifications, rather than universal design) and quality of life and wellbeing. However, Carnemolla and Bridge (2016)⁵²² is the only study identified that directly measures the changes in the quality of life.

Carnemolla and Bridge (2016) used the same sample to estimate the change in care received (see above). As such, the same caveats apply in relation to:

- the representativeness of the sample for people with disability in the broader community
- the appropriateness of extrapolating the improvements in HRQoL achieved by home modifications (which were specifically targeted at meeting the individual's needs) to universal housing design.

The recipients of home modifications completed a questionnaire to assess their current HRQoL (i.e. after home modifications) and were also asked to recall their quality of life before home modification. HRQoL was measured using the AQoL-4D instrument, one

⁵²¹ Assessment of Quality of Life website, <https://www.aqol.com.au/index.php/allfaqs>, accessed 1 November 2020.

⁵²² Carnemolla, P. 2015, *Measuring non-shelter effects of housing design: A mixed-methods exploration of home modifications, care-giving and health-related quality of life*, PhD thesis, University of New South Wales,

of several Assessment of Quality of Life (AQoL) instruments developed by the Centre for Health Economics and Monash University. AQoL-4D is the shortest AQoL instrument (based on 12 questions) covering the following dimensions:⁵²³

- Independent living (including: self-care, household tasks and mobility)
- Relationships (including: friendships, isolation and family role)
- Mental health (including: sleeping, worrying and pain)
- Senses (including: seeing, hearing and communication).

AQoL-4D is based on Australian populations and has been validated for older community-dwelling Australians.⁵²⁴

- **Carnemolla and Bridge (2016) found that on average, the home modifications improved the AQoL-4D index from 0.30 to 0.42, an improvement of 0.12.**

Note that despite the significant improvement in the AQoL-4D index, the quality of life of the sample of home modification recipients remained well below the national average and the average for the relevant age cohort.

Valuing quality of life improvements

There are different views on whether it is appropriate to monetise changes in HRQoL based on changes in utility indexes. For example, the AQoL website argues that the approaches used to convert life years or lives into dollar benefits (typically either the 'human capital' or 'willingness to pay' approach) are problematic.⁵²⁵

Nevertheless, the AQoL website acknowledges that in principle, a dollar value could be attached to each QALY [derived from the AQoL instrument] for the purposes of cost-benefit analysis.⁵²⁶ Furthermore, OBPR guidance material encourages these impacts to be incorporated into cost-benefit analysis in RISs by assigning a monetary value to lives lost and the impacts of injury, disease and disability.⁵²⁷

As discussed in appendix B, the Value of a Life Year (VLY) represents the value of a year of life free of injury, disease and disability. OBPR recommends using VLY of \$213 000 in 2019 dollars in RISs.⁵²⁸

⁵²³ Assessment of Quality of Life website, <https://www.aqol.com.au/documents/charts/equation-aqol-4d-structures.pdf>, accessed 1 November 2020.

⁵²⁴ Carnemolla, P. 2015, *Measuring non-shelter effects of housing design: A mixed-methods exploration of home modifications, care-giving and health-related quality of life*, A thesis in fulfilment of the requirement for the degree of Doctor of Philosophy, Faculty of Built Environment, University of New South Wales, pp. 83-84.

⁵²⁵ Assessment of Quality of Life website, <https://www.aqol.com.au/index.php/allfaqs>, accessed 1 November 2020.

⁵²⁶ *ibid.*

⁵²⁷ Australian Government, Office of Best Practice Regulation, Best Practice Regulation Guidance Note: Value of statistical life, August 2019.

⁵²⁸ *ibid.*

- **The above information implies that the quality of life impacts of living in inaccessible housing could be valued at around \$25 560 per person (i.e. 0.12 x \$213 000).**

Using a VLY of \$213 000 implies that each QALY is also valued at \$213 000. It is important to note that this is significantly higher than the benchmarks often used in cost utility analysis.

Number of people with reduced quality of life due to inaccessible housing

As discussed previously, there is no definitive data on the number of people with reduced quality of life because their housing does not meet their accessibility needs. The number of people affected are therefore inferred from SDAC data.

Carnemolla (2015) suggested that the main improvement in the HRQoL of recipients of home modifications was related to improved independence. This is also consistent with Andrich et. al. (1998), which found that home modifications led to quality of life improvements and attributed the direct cause to a reduction in care needed.⁵²⁹

It is therefore assumed that those most likely to be experiencing reduced HRQoL as a result of living in housing that does not meet their accessibility needs are those currently requiring assistance with either:

- mobility around the home
- showering and bathing
- toileting.

It also seems likely that those most likely to be experiencing a significantly reduced HRQoL due to their home not meeting their accessibility needs are those requiring the most assistance. The focus is therefore on those **always** requiring assistance who live in households. Those 'sometimes requiring assistance' and who "do not require assistance, but have difficulty' could also potentially experience lower quality of life if their home does not meet their accessibility needs. However, the fact they do not always require assistance suggests the dwelling itself has less of an impact on their independence.

People living in dwellings that have been modified to meet their needs have also been excluded on the basis that their inclusion would risk double-counting (i.e. the cost of the modifications have been included separately).

As some people require assistance with more than one relevant activity (i.e. mobility around the home, showering and bathing and toileting), it is important to avoid double-counting. TableBuilder was therefore used to identify the number of people that always require assistance with each activity. Double-counting was avoided by then subtracting those that would have been counted twice (i.e. those that always require assistance with multiple relevant activities). Using this approach, there were around 147 500 always requiring assistance with either: mobility around the house, showering and bathing or toileting (table I.5).

⁵²⁹ Carnemolla, P. 2015, op.cit., p. 67.

I.5 Estimated number of people experiencing reduced quality of life

	Number ('000)
Always needs assistance with mobility around dwelling	40.1
Always needs assistance with showering and bathing	51.0
Always needs assistance with toileting	122.5
Total (including double-counting)	213.6
Less: Always needs assistance with mobility and showering/bathing	24.9
Less: Always needs assistance with mobility and toileting	15.3
Less: Always needs assistance with showering/bathing and toileting	41.2
Add: Always needs assistance with mobility, showering/bathing and toileting	15.3
Total	147.5

Source: ABS, 2018 Survey of Disabilities, Ageing and Carers, TableBuilder, CIE.

Mental health impacts

As a cross check for the estimates of overall quality of life impacts, a separate estimate for the mental health impacts of inaccessible housing, which is a component of the quality of life impacts, is presented.

In their joint submission, the MDI and the Summer Foundation presented results from a survey of people with disability and older people. The survey found different outcomes of mental health and wellbeing between people living in accessible and inaccessible homes (table I.6).

I.6 Mental health and wellbeing impacts of accessibility

Outcome	People with low support needs living in accessible home	People with low support needs living in inaccessible home	People with high support needs living in accessible home	People with high support needs living in inaccessible home
Worsened (%)	15.6	50.0	16.6	71.7
No impact (%)	24.4	34.7	23.3	16.2
Improved (%)	60.0	15.3	60.1	12.1
Total (%)	100.0	100.0	100.0	100.0
Count (person)	45	176	163	414

Source: MDI and Summer Foundation submission, appendix 2, Table 19

The survey suggests that on average accessible housing could avoid worsening mental health conditions for about 49 per cent of people with accessibility needs living in inaccessible homes, or improve conditions for about 47 per cent of people.

It should be noted that the survey was not conducted based on random sampling and thus the statistical inference (that is the representativeness and statistical significance) could not be established. Moreover, the mental health outcome was a subjective, qualitative assessment (that is worsening or improving) rather than a quantified measurement.

With these limitations in mind, the survey results may be used to calculate some indicative impacts on mental health of inaccessible housing, with additional information drawn from other sources.

To support this qualitative assessment of mental health situation, findings from Carnemolla and Bridge (2016) is used. Carnemolla and Bridge (2016) found that the mental health dimension of Assessment of Quality of Life (AQoL) index changed from 0.82 pre-home modification to 0.87 post-modification.⁵³⁰

Several studies suggest that the average mental health cost in Australia is around \$4 000 per capita per year, for example:

- A report commissioned by the Royal Australian & New Zealand College of Psychiatrists (RANZCP) and the Australian Health Policy Collaboration estimated in 2014 that the cost of severe mental illness in Australia was \$56.7 billion per year, including the direct economic costs of severe mental illness arising from the use of health and other services, as well as indirect costs due to lost productivity because people are unable to work.⁵³¹
- In December 2016, the National Mental Health Commission stated that the cost of mental ill-health in Australia each year was around \$4 000 per person, or \$60 billion in total.⁵³²
- The 2018 KPMG and Mental Health Australia report, *Investing to Save*, estimated that mental ill-health in the workplace costs an average of \$3 200 per employee with mental illness, and up to \$5 600 for employees with severe mental illness. Overall, it was estimated that the cost of workplace mental ill-health in Australia was \$12.8 billion in 2015–16.⁵³³

It is noted that some studies measure severe mental illness, implying that the average mental health cost might be overstated for the general population. With this in mind, the average mental health cost of \$4 000 per person per year suggests the accessible housing could avoid mental health costs of around \$1 111 per person.⁵³⁴

⁵³⁰ Carnemolla, P. and C. Bridge 2016, 'Accessible housing and health-related quality of life: Measurements of wellbeing outcomes following home modification', *International Journal of Architectural Research*, **10**(2), p.38-51. Table 3, p.46

⁵³¹ Victoria Institute of Strategic Economic Studies 2016, *The economic cost of serious mental illness and comorbidities in Australia and New Zealand*, report prepared for the Royal Australian & New Zealand College of Psychiatrists and the Australian Health Policy Collaboration, <https://www.ranzcp.org/files/resources/reports/ranzcp-serious-mental-illness.aspx>

⁵³² The National Mental Health Commission 2016, *Economics of Mental Health in Australia*, 08 December 2016, <https://www.mentalhealthcommission.gov.au/news/2016/december/economics-of-mental-health-in-australia>

⁵³³ KPMG and Mental Health Australia 2018, *Investing to Save: The economic benefits for Australia of investment in mental health reform*, 1 May 2018, <https://mhaustralia.org/publication/investing-save-kpmg-and-mental-health-australia-report-may-2018>

⁵³⁴ Using the change in mental health index in Carnemolla and Bridge (2016) study and the average mental health cost: \$4,000 x (0.87–0.82)/(1–0.82)

It could be argued that people with disability and older Australians have worse mental health conditions than the general Australian population, implying that the average mental health cost for these people may be higher than \$4 000 per year.

Compared to Australian norms, the AQoL for people with mobility disability and older people in the Carnemolla and Bridge (2016) study is 0.30 and 0.42, respectively, before and after home modification, which is significantly lower than the Australian population norm (0.81) and other categories of people, for example:⁵³⁵

- Australian population norm for age 70 to 79 (0.78)
- Australian population with 'Poor' general mental health condition (0.35) and people with 3 or more current mental health conditions (0.47), and
- Australian population with 'Poor' general physical health condition (0.41) and people with 3 or more current health conditions (0.59).

However, there is no data on the average mental health cost for people with mobility disability and older Australians. One way is to scale the average mental health cost using the mental health dimension of the AQoL score ($uD_{\text{mental health}}$) for people with mobility disability and older Australians and for the Australian population. The former could be provided by the Carnemolla and Bridge (2016) study, but the latter is not available from the Australian population norms study.

Another scaling could be to use the overall AQoL score for people with mobility disability and older Australians and for the Australian population.

As mentioned above, the Australian population norm AQoL score is 0.81 and the AQoL score for people with mobility disability and older Australians before home modification is 0.30. The difference suggests that the average mental health cost could be as high as \$14 736.8 per year on average.⁵³⁶

This average mental health cost is certainly an overestimate for people with mobility disability and older Australians as it is higher than the annual cost for most categories of mental disorder except two – major depressive disorder (\$15 700) and suicide attempt (\$14 950).⁵³⁷ As shown in chart I.7, it is also higher than the average cost for people with any mental disorder (\$10 805).

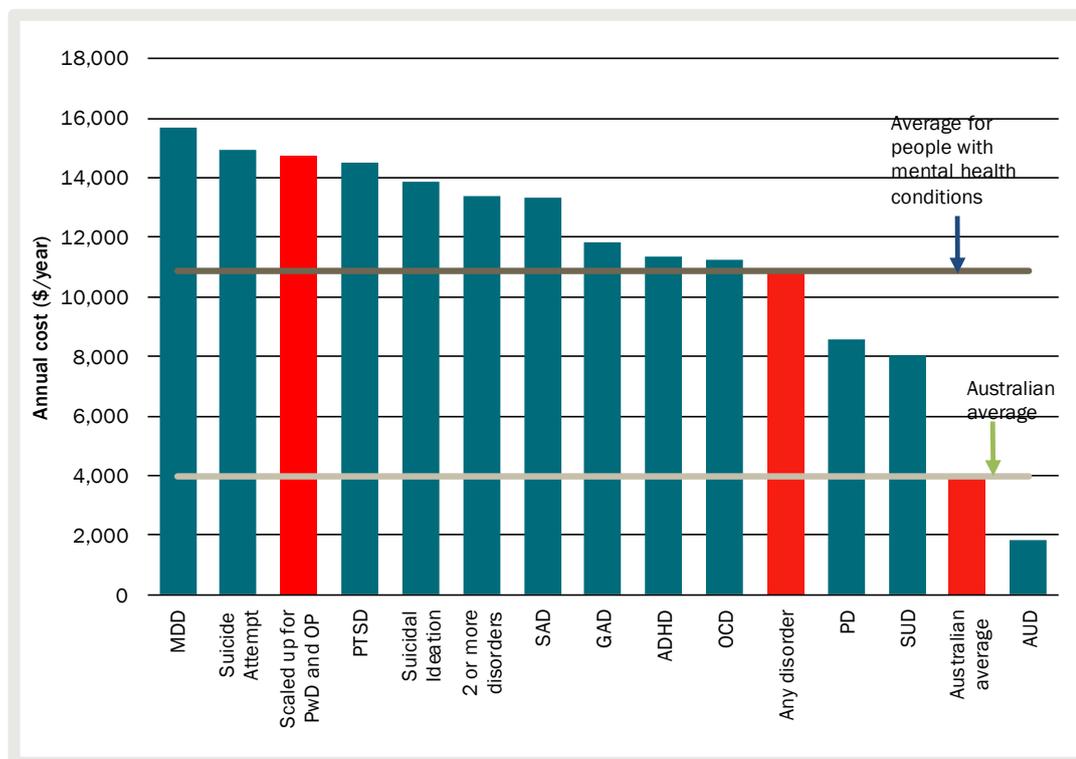
It is therefore more reasonable to assume the average cost for people with mental health disorders as the upper bound estimate of mental health cost for people with accessibility needs. This suggests that the upper bound mental health impact of accessible housing is \$3 014 per year.

⁵³⁵ Hawthorne, G., S. Korn and J. Richardson 2013, 'Population norms for the AQoL derived from the 2007 Australian National Survey of Mental Health and Wellbeing', *Australian and New Zealand Journal of Public Health*, 37(1), p.7-16.

⁵³⁶ $\$4,000 * (1-0.30)/(1-0.81) = \$14,736.8$

⁵³⁷ McCallum, S.M., P.J. Batterham, A.L. Calcar, M. Sunderland and N. Carragher 2019, 'Reductions in quality of life and increased economic burden associated with mental disorders in an Australian adult sample', *Australian Health Review*, 2019, 43, p.644-652, Table 3.

1.7 Annual mental health cost for different conditions



Note: AUD – alcohol use disorder; SUD – substance use disorder; PD – panic disorder; OCD – obsessive-compulsive disorder; ADHD – attention deficit hyperactivity disorder; GAD – generalised anxiety disorder; SAD – social anxiety disorder; PTSD – post-traumatic stress disorder; MDD – major depressive disorder; PwD – people with disability and OP – older people.

Data source: McCallum et al (2019), Table 3.

As discussed previously, there is no definitive data on the number of people with reduced mental health and wellbeing because their housing does not meet their accessibility needs. CIE therefore infers the number of people affected from SDAC data.

Carnemolla (2015) suggests that the main improvement in the HRQoL of recipients of home modifications was related to improved independence. This is also consistent with Andrich et. al. (1998), which found that home modifications led to quality of life improvements and attributed the direct cause to a reduction in care needed.⁵³⁸

It is therefore assumed that those most likely to be experiencing poorer mental health and wellbeing as a result of living in housing that does not meet their accessibility needs are those currently requiring assistance with either:

- mobility around the home
- showering and bathing
- toileting.

Specifically, it is assumed that those **always** requiring assistance in table I.2 have a higher average mental health cost equivalent to the average of people with mental health

⁵³⁸ Carnemolla, P. 2015, *Measuring non-shelter effects of housing design: A mixed-methods exploration of home modifications, care-giving and health-related quality of life*, PhD thesis, University of New South Wales, p. 67.

conditions, while others (i.e. those ‘sometimes requiring assistance’ and ‘do not require assistance, but have difficulty’) have a lower average mental health cost than the general public.

With these assumptions, it is then estimated that the total mental health impact of accessible housing is between \$423.7 million and \$440.9 million per year (table I.8).

I.8 Estimated mental health impact of accessible housing

Outcome	Number of People with needs	Avoided worsening	Gained improvement
Difference in people with/without accessible housing (% , %)		48.93	47.02
People sometimes need assistance or have difficulty (person, \$/person, \$/person)	404,500	1,111	1,111
Subtotal of mental health impact for people sometimes need assistance or have difficulty (\$ million)		219.9	211.3
People always need assistance (person, \$/person, \$/person)	149,000	3,014	3,014
Subtotal of mental health impact for people always need assistance (\$ million)		221.0	212.4
Total mental health impact (\$ million)		440.9	423.7

Source: CIE estimate.

The following qualification for these estimates should be noted:

- These estimates are indicative as the data on which they are based are indirect and subject to statistical scrutiny and the calculations are made through scaling and adjustment, and
- They tend to overestimate the impact because the average mental health cost for people who always need assistance is assumed to be the same for people with mental health conditions.

J The impacts of accessible housing on employment outcomes

This appendix focuses on the employment and productivity impacts of inaccessible housing on people with mobility-related disability. The assessment of employment and productivity impact on carers has been discussed in appendix C.

Employment outcomes for people with mobility-related disability

If people with mobility-related disability had the same employment outcomes as the broader economy, there would have been around an additional 300 000 people employed full-time and an additional 18 000 people employed part-time in 2018 (table J.1). The lower employment rate for those with mobility limitation is mostly (around 95 per cent of the total) related to lower participation rates, rather than the higher unemployment rate.

J.1 Potential increase in employment

Level of employment	Actual employment outcomes for people with mobility limitations ('000)	Hypothetical scenario based on same labour market outcomes as the broader community ('000)	Difference ('000)
Employed full-time	267.0	566.3	299.3
Employed part-time	232.8	250.5	17.7
Unemployed	63.5	47.1	- 16.4
Not in labour force	765.9	465.2	- 300.7
Total	1 329.2	1 329.2	0.0

Source: CIE estimates.

From a CBA perspective, the net benefits of additional employment would reflect the value-added by the additional labour resources, less the opportunity cost of that additional labour.

- The value-added from the additional labour is likely to be reflected in wages. Average weekly total cash earnings for all employees reported in the May 2018 release of the ABS Employee Earnings and Hours publication converted to an annual rate is used as an indicative estimate of wages.⁵³⁹

⁵³⁹ Data from 2018 was used to align with 2018 data used elsewhere. This is also the most recent release of this publication.

- Average weekly cash earnings for full-time employees was around \$1 699 per week, or around \$88 358 per year.
- Average weekly cash earnings for part-time employees was around \$668 per week, or around \$34 752 per year.
- Even though the additional labour is not currently employed, it still has an opportunity cost (i.e. people would presumably not work for free). The reservation wage reflects the minimum amount required to encourage people to work and is a measure of the opportunity cost of labour.⁵⁴⁰ The reservation wage would vary across individuals and is not observable. However, for the purposes of these calculations a reservation wage equivalent to the minimum wage of \$19.84 per hour, or \$753.40 per week is used.

Based on this approach, the net cost of lost employment opportunities could be around (table J.2):

- \$49 161 per year for additional full-time employment
- \$19 335 per year for additional part-time employment.

J.2 Net cost of lost employment opportunities for people with mobility limitations

Employment	Weekly wages (\$ per week)	Less: reservation wage (\$ per week)	Weekly surplus (\$ per week)	Annual surplus (\$ per year)
Full-time	1 699	754	945	49 161
Part-time	668	296	372	19 335

Source: ABS, Employee Hours and Earnings, May 2018, Department of Social Services website, https://www.dss.gov.au/sites/default/files/documents/08_2018/online_rates_-_20_september_-_pdf_version.pdf, accessed 11 November 2020; CIE.

Bringing this information together suggests that the total cost of lost employment opportunities for people with mobility limitations could be in the order of \$15.1 billion per year (table J.3).

J.3 Indicative benefits

	Additional employment	Annual increase	Annual impact
	'000	\$ per year	\$ billion
Full-time	299.3	49 161	14.7
Part-time	17.7	19 335	0.3
Total	317.0		15.1

Source: CIE estimates.

However, not all of these impacts would be due to inaccessible housing. Based on the available evidence inaccessible housing makes a relatively small contribution to lower levels of employment observed for people with limited mobility.

⁵⁴⁰ See NSW Treasury, NSW Government Guide to Cost-Benefit Analysis, Policy and Guidelines Paper TPP 17-03, March 2017, p. 32.

Linkages between accessible housing and employment outcomes

As discussed in the Consultation RIS, there is limited evidence on the impacts of accessible housing on employment outcomes. Several government reports note the importance of housing to support employment and wellbeing and assist people on their path to self-reliance.⁵⁴¹ These comments have been generally made in relation to housing assistance more generally, rather than specifically to accessible housing for people with disability, although the observation is clearly as relevant to people with disability as it is to recipients of housing assistance.

A submission⁵⁴² referred to a paper by the London School of Economics, which reported that “people with unmet need for accessible housing are estimated to be four times more likely to be unemployed or not seeking work due to sickness/disability than disabled people without needs or whose needs are being met”.⁵⁴³ This finding was based on analysis of data from the English Housing Survey taking into account the following characteristics: age, gender, type of impairment, household composition, educational qualifications, savings and geographical region.

This finding suggests an association between accessible housing and employment outcomes. However, this study does not establish whether unmet accessibility needs **causes** poor employment outcomes (i.e. correlation is not causation). While it is possible that a causative relationship does exist, there are also other plausible explanations as follows.

- The authors report that they held constant the **type** of impairment, household composition, educational qualifications, savings and geographical region). However, it is not clear whether they have been able to hold constant the **severity** of the impairment with the data available. Someone with a more severe impairment may have greater accessibility needs and therefore more likely to have unmet needs and also may be less likely to be employed (i.e. more severe impairments may cause both poor employment outcomes and unmet accessibility, rather than unmet accessibility needs causing poor employment outcomes).
- Alternatively, the causation may run the other way; people that are employed may be better able to afford to meet their own accessibility needs (such as through modifications) and therefore may be less likely to have unmet needs.

A submission from the MDI and Summer Foundation included a survey by Dr Wiesel. A significantly higher proportion of respondents living in inaccessible housing indicated

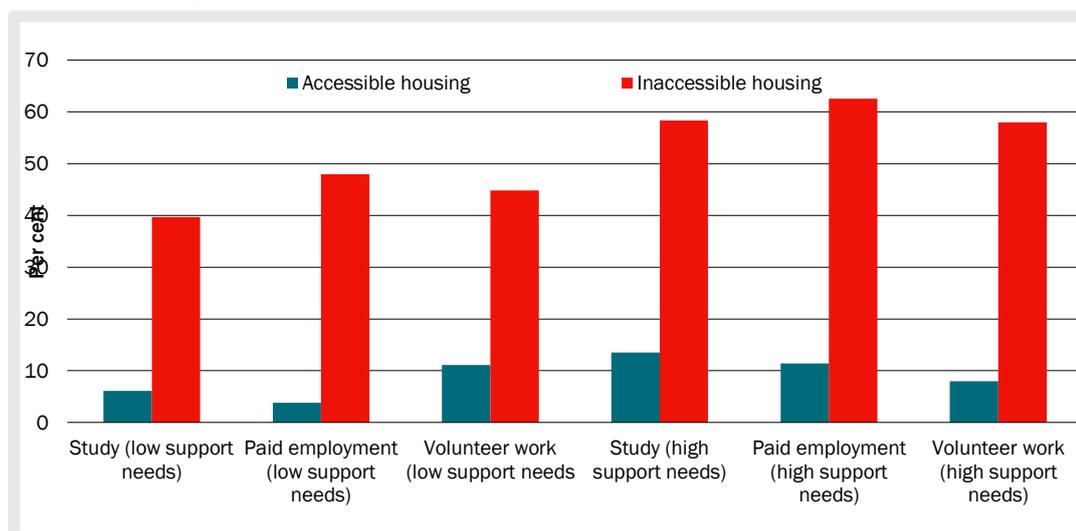
⁵⁴¹ See for example, Commonwealth of Australia, 2015, *A New System for Better Employment and Social Outcomes*, Report of the Reference Group on Welfare Reform to the Minister for Social Services, Final Report, p. 24.

⁵⁴² Anonymous submission 284174932, accessed 13 November 2020, https://consultation.abcb.gov.au/engagement/consult-ris-accessible-housing/consultation/view_respondent?_b_index=60&uuId=284174932

⁵⁴³ Provan, B. Burchardt, T. and Suh, E. *No Place Like Home*, Quality of life and opportunity for disabled people with accessible housing needs, London School of Economics and Political Science and Centre for Analysis of Social Exclusion, CASE Report 109, p. 14.

that housing design limited their ability to work, study and volunteer, compared with respondents living in accessible housing (chart J.4).

J.4 Share of respondents indicating design of home limits ability to study and work



Data source: Wiesel, I. *Lived experience and social, health and economic impacts of inaccessible housing*, prepared for the Melbourne Disability Institute, University of Melbourne and the Summer Foundation, 18 August 2020, as Appendix 2 of the submission by Melbourne Disability Institute (MDI) and Summer Foundation. p. 21.

More than one-third of respondents indicated that a lack of accessible housing had: prevented them from taking a job; reduced their hours of work; reduced their productivity at work; or led to losing or giving up a job (table J.5).

J.5 Accessible housing and employment outcomes

Has a lack of accessible housing ever:	Count	Share of sample (%) ^a
Prevented you from taking a job	160	16.9
Reduced your hours of work	168	17.7
Reduced your productivity at work	194	20.5
Led to losing or giving up a job	120	12.7
Total	327	34.5

^a Presented as a share of the total sample, rather than the share of the subset of respondents that indicated a positive response to one of the four questions as in the report.

Note: Based on a sample of 948 respondents with sufficient data.

Data source: Wiesel, I. *Lived experience and social, health and economic impacts of inaccessible housing*, prepared for the Melbourne Disability Institute, University of Melbourne and the Summer Foundation, 18 August 2020, as Appendix 2 of the submission by Melbourne Disability Institute (MDI) and Summer Foundation. p.21.

Although the survey evidence suggests a link between accessible housing and employment outcomes, it is not clear what inferences on the broader population of people with accessibility needs can be drawn from this survey evidence (see discussion in chapter two).

The MDI and Summer Foundation submission identified four primary ways through which housing design features can reduce productivity and work opportunities for people with mobility restrictions.

- Housing design features can limit the ability of some people with disability to work from home.
- A lack of accessible housing limited the ability of some people with disability to move closer to employment opportunities.
- Fatigue from living in an inaccessible home and the additional time and energy spent on self-care and homecare reduces productivity, motivation, self-confidence and capacity to work, study and volunteer.
- Inaccessible housing increases reliance on paid and unpaid support with personal and domestic activities, limiting ability to take on employment.

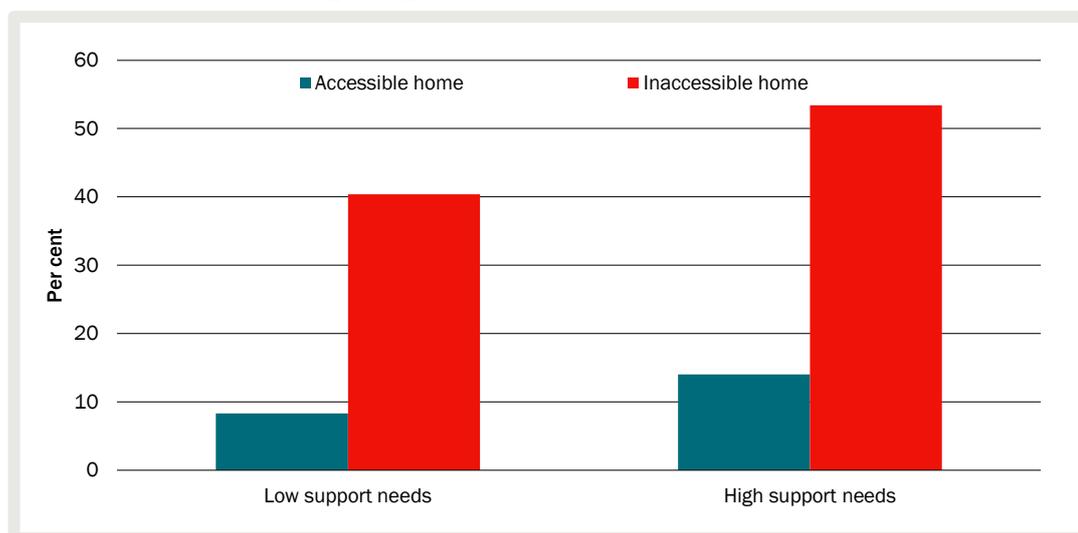
These mechanisms broadly aligned with the qualitative evidence presented in the LSE paper mentioned above.

Ability to work from home

With a greater proportion of the workforce working from home due to the COVID-19 pandemic, the ability to work from home has recently become a more important consideration for many people.

The survey by Dr Wiesel suggested a link between accessible housing design and an ability to work from home. In particular, a significantly higher share of people living in inaccessible housing indicated that the design of their home limited their ability to work from home, compared with people living in accessible housing (chart J.6).

J.6 Extent to which housing design limits ability to work from home



Data source: Wiesel, I. Lived experience and social, health and economic impacts of inaccessible housing, prepared for the Melbourne Disability Institute, University of Melbourne and the Summer Foundation, 18 August 2020, as Appendix 2 of the submission by Melbourne Disability Institute (MDI) and Summer Foundation.

A number of submissions provided insights into the lived experience of the challenges that people with disability face in working from home (see box J.7). This evidence suggests that some people with disability require additional space to enable them to work

from home. Having insufficient space appears to have been a key barrier that has prevented some people from working productively at home.

J.7 Lived experiences — ability to work from home

- A case study from the Summer Foundation and Melbourne Disability Institute — Jack’s story — provides evidence of housing features restricting the ability to work from home. Jack lives in a group home that has been purpose built for people with spinal injuries and is therefore fully accessible. Jack needs a high, adjustable table, multiple computer screens, a microphone for dictation and adequate space for his wheelchair to enable him to work from home. As his bedroom is too small, this is set up in a shared space. Jack worries about the impact on his flatmates and is looking at options to live on his own. However, he has not been able to find a SDA home close to his workplace.⁵⁴⁴
- Other comments on housing accessibility impacts on work and study include the following.⁵⁴⁵
 - Limited facilities to provide room for study materials, laptop etc.
 - Study rooms not modified in any way.
 - Lack of desk and physical space limits ability to work.
 - Lack of space for ergonomic accessible work desk.

Although people with disability have faced challenges working from home, it is unclear to what extent the design features covered by the NCC proposal would directly improve the capacity to work from home. As discussed above, a lack of sufficient space appears to have been a key barrier.

- The NCC proposal does not explicitly provide for workspaces.
- The NCC proposal requires additional space in some areas of a home, but generally not the areas where people are working from home. In some cases, additional space requirements in ‘functional areas’ of the house (such as bathrooms, hallways, kitchens and laundries) could reduce the space available in the sorts of areas where people work (such as living spaces and bedrooms), where the constraints of the lot (and potentially planning restrictions) prevent the footprint of the dwelling expanding to comply with the proposed NCC requirements.

Mobility constraints and location effects

The MDI and Summer Foundation identified the inability of people with limited mobility to move closer to employment opportunities as one of the ways that a lack of accessible housing contributes to poor employment outcomes.

⁵⁴⁴ Wiesel, I. *Lived experience and social, health and economic impacts of inaccessible housing*, prepared for the Melbourne Disability Institute, University of Melbourne and the Summer Foundation, 18 August 2020, as Appendix 2 of the submission by Melbourne Disability Institute (MDI) and Summer Foundation to the public consultation. p. 25.

⁵⁴⁵ Wiesel, I. *op.cit.*, p. 23.

There is qualitative evidence from submissions that a lack of accessible housing close to work has restricted some people's ability to work or the hours they have been able to work. Box J.8 reports the lived experiences of people with disability associated with finding accessible housing close to work.

J.8 Lived experiences — accessible housing close to work

- One submission noted that living in a home with proper access reduces the time to get ready and gives her more employment options further from home.⁵⁴⁶
- One of the case studies from the Summer Foundation and Melbourne Disability Institute — Andrea's story — provides evidence of the location of housing that met her accessibility needs restricting her ability to study or work. Andrea's family was forced to move home to meet her accessibility needs. However, their new home was further away from public transport, which will restrict her ability to travel independently to study or work.⁵⁴⁷
- Respondents to the Melbourne Disability Institute survey identified a lack of accessible housing close to employment opportunities as an issue affecting some people with a disability. Reported comments included the following.⁵⁴⁸
 - “I chose a house that was accessible but when work relocated the drive was quite far. Expensive by taxi but to find another accessible housing precluded a desire to move closer to work”
 - “Due to a lack of even minimal accessible housing I have to spend all my disposable income travelling to work in a taxi because no accommodation was closer”
 - “Location of houses a long distance away from my 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.”

The Productivity Commission refers to the ability to move closer to employment as a 'mobility constraint' (albeit in the context of social housing).⁵⁴⁹ As illustrated in some of the examples in box J.8, a corollary of the 'mobility constraint' is a 'location effect', where some people with mobility impairments may not be located close to employment opportunities. This also limits the ability of some people to work.

⁵⁴⁶ Jane Scott, op.cit.

⁵⁴⁷ Wiesel, I., op.cit., p. 19

⁵⁴⁸ Wiesel, I., op.cit., p. 24.

⁵⁴⁹ Productivity Commission, *Housing Assistance and Employment in Australia*, Productivity Commission Research Paper — Volume 1: Chapters, April 2015, pp. 50-51.

Mobility constraints

There is evidence to suggest that people with disability move less frequently than other members of the community. 2016 Census data suggests that 62 per cent of people with a need for assistance with core activities (not specifically mobility) were living at the same address as they were 5 years ago, compared with 51 per cent of people without a need for assistance with core activities. It is plausible that this is at least partly related to a lack of accessible housing.

According to the Wiesel survey (see above):⁵⁵⁰

- 17 per cent of respondents to the MDI survey indicated that a lack of accessible housing had prevented them from taking a job
- 13 per cent of respondents indicated that a lack of accessible housing had led to losing or giving up a job
- 18 per cent of respondents indicated that a lack of accessible housing had reduced their hours of work.

Note that the survey results do not necessarily imply that these respondents are **currently** not employed or are working fewer hours as a result of inaccessible housing as the question was phrased as “has a lack of accessible housing ever...”.⁵⁵¹

While results from the UK cannot necessarily be extrapolated to the Australian context, a UK survey found that a significantly smaller proportion of people with unmet housing needs reported that a lack of accessible housing had prevented them from undertaking employment-related activities (table J.9).

J.9 Impact of unmet needs

As a result of an unmet need have you:	Share of responses (%)
Avoided applying for a job, training or higher education opportunity because of concern around finding housing that met access needs in the area	7
Not been able to live in an area you/they want to live in because of an inability to find housing that met access needs in the area	5
Turned down a job offer, training or higher education opportunity because of an inability to find housing that met access needs in the area	4
Applied to a job offer, training or higher education opportunity primarily because of housing that met mine/their access needs in the area	4
None of the above	83

Source: Provan, B. Burchardt, T. and Suh, E. No Place Like Home, Quality of life and opportunity for disabled people with accessible housing needs, London School of Economics and Political Science and Centre for Analysis of Social Exclusion, CASE Report 109, p. 45.

Empirical evidence from Australia suggests that moving can improve employment outcomes for unemployed people, although the impact may be relatively small. For example, descriptive analysis of HILDA (Household, Income and Labour Dynamics) data (2006) showed that unemployed people who move are more likely to find

⁵⁵⁰ Wiesel, I., op.cit., p. 21.

⁵⁵¹ Wiesel, I., op.cit., p. 21.

employment than unemployed persons who do not move (54.5 per cent of unemployed people who moved found employment, compared with 48.7 per cent of unemployed people who did not move).⁵⁵² Bill and Mitchell (2006) found that moving is not especially beneficial for the unemployed.⁵⁵³

It should also be noted that people looking for work (i.e. the unemployed) make up a relatively small share of those with mobility-related disability that are not employed (around 7.6 per cent). A much larger share does not participate in the labour market at all.

Overall, it is plausible that a lack of accessible housing is making some contribution to poorer employment among people with mobility limitation through the ‘mobility constraint’. However, there is limited supporting evidence and the impacts are unlikely to be large.

Location effects

Although there is qualitative evidence of people with mobility limitations having trouble finding accessible housing close to employment opportunities (see box J.10 above), there is little quantitative evidence. Furthermore, the evidence that is available suggests these impacts are likely to be small.

Previous Productivity Commission research found little evidence of links between location and employment, although this was a general finding, not specifically related to people with mobility-related disability.⁵⁵⁴ It is possible that location effects have a more significant impact on employment for people with mobility-related disability than for the general community given the need for accessible transport.

The evidence from SDAC also suggests that location effects are unlikely to be significant. According to 2018 data:

- there were around 7 200 working age people with a mobility-related disability for whom transport problems (or too far to travel) is given as a reason why they have difficulty finding work (around 0.9 per cent of the working age people with mobility-related disability who were not employed), and
- transport problems (or too far to travel) was the **main** reason for having difficulty finding work for around 1 500 people (0.2 per cent of the total number of working age people with a mobility-related disability who were not employed).

If transport problems (or distance, e.g. too far to travel) are identified as the main reason for having difficulty finding work, then the extent to which the NCC proposal would

⁵⁵² Mitchell, W. 2008, *Mobility and Low-paid Workers*, Report commissioned by the Australian Fair Pay Commission, Centre for Full Employment and Equity, December 2008, p. 46.

⁵⁵³ Bill, A. and Mitchell, W. 2006, *Great Expectations – migration and labour market outcomes in Australia*, Working Paper No. 06-08, Centre of Full Employment and Equity, University of Newcastle, p. 24.

⁵⁵⁴ Productivity Commission, *Housing Assistance and Employment in Australia*, Productivity Commission Research Paper — Volume 1: Chapters, April 2015, pp. 50-51.

address any location effects is also unclear. During consultations, multiple stakeholders stressed the need for housing that is **affordable** and well-located, as well as accessible. Accessible housing is no good to them if they cannot afford it.

- Greenfield housing tends to be located on urban fringes and may not be located close to employment opportunities. On the other hand, it is more likely that new infill housing would be located close to employment opportunities.
- It is not clear that new housing that is built close to employment opportunities would necessarily be affordable. Access to jobs and services is a key driver of house prices and is likely to attract a significant premium. As noted previously many households containing members with disability have below-average incomes.

Nevertheless, based on SDAC estimates of the number of people with mobility-related disability for whom transport problems (or distance of travel) is a reason (or the main reason) for having trouble finding employment, the value of the lost employment opportunities due to a lack of accessible housing near employment opportunities could be in the order of \$72 million to \$345 million per year, most likely at the lower end of that range (table J.10). Key assumptions underpinning this estimate include the following.

- This estimate assumes that all of the people who reported that transport problems (or too far to travel) was either the main reason or a reason for having difficulty finding work would be able to find work if more accessible housing was available.
- This employment would be additional (i.e. more people with mobility limitations in employment would not displace other workers).
- The net benefit (i.e. value-added less the opportunity cost of labour) of each additional person employed would be \$35 268 per year, based on the weighted average of the full-time and part-time average weekly cash earnings (from May 2018) scaled up to an annual wage.

J.10 Upper bound estimate of the loss of employment opportunities due to a lack of accessible housing close to employment opportunities

	Number of people (No.)	Annual impact (\$ million)
Low estimate	1 500	52.9
High estimate	7 200	253.9

Source: CIE based on ABS.

This estimate is likely to be significantly over-estimated because it is unclear whether new housing that would be built under a revised NCC would necessarily be located close to employment opportunities (see discussion above).

Fatigue and support needs

According to the MDI and Summer Foundation submission:

- Fatigue from living in an inaccessible home and the additional time and energy spent on self-care and homecare reduces productivity, motivation, self-confidence and capacity to work, study and volunteer

- Inaccessible housing increases reliance on paid and unpaid support with personal and domestic activities, limiting ability to take on employment.

This implies that these factors could potentially:

- reduce the number of people with mobility limitations that are employed, and
- reduce the productivity of those that are employed.

Submissions provided examples of the lived experience of people who were restricted in their ability to work due to fatigue and/or support needs associated with living in inaccessible housing or for whom living in inaccessible housing had affected their productivity (box J.11).

J.11 Lived experiences – limitations on ability to work from inaccessible housing

- A case study from the Summer Foundation and Melbourne Disability Institute — Rowena’s story — provides evidence of housing features contributing to fatigue and limiting her ability to work.⁵⁵⁵ Rowena suffers from chronic fatigue syndrome and various features of her home sap her energy and limit her ability to work. The features specifically referred to include:
 - one flight of stairs at the entry/exit
 - the height of shelves in the kitchen.

- The submission from the Summer Foundation and Melbourne Disability Institute also provides various relevant quotes from survey respondents that provide evidence that inaccessible housing increases fatigue and limits the ability of some people with disability to work.⁵⁵⁶

“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.”

“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 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

⁵⁵⁵ Wiesel, I., op.cit., p. 25.

⁵⁵⁶ Wiesel, I., op.cit., pp. 23-24.

other typical household chores once I get inside after work. This takes a significant toll on the extent to which I can be productive during a workday.”

Potential impacts on labour force participation

A low participation rate for working age people with limited mobility is the main factor leading to low levels of employment. As shown in chapter three, the participation rate for working age people with limited mobility is around 42 per cent, compared with 67 per cent among the broader community.

It is not clear to what extent inaccessible housing contributes to low participation rates among working age people with limited mobility, compared with other barriers to employment. According to the Australian Human Rights Commission, some possible barriers Australians with disability may experience in gaining and keeping employment include:⁵⁵⁷

- discriminatory attitudes and behaviours during recruitment, and in the workplace, from employers and others
- low levels of awareness of rights at work
- lack of availability of jobs
- lack of assistance in finding, securing and maintaining employment
- difficulty in accessing skills training and education
- potential reduction or loss of the Disability Support Pension as a result of increased employment
- difficulty experienced in accessing flexible work arrangements
- health issues
- difficulty in negotiating reasonable adjustments/accommodation in the workplace
- lack of availability of accessible transport, technology in the workplace and workplace design.

SDAC provides data on specific employment restrictions and the reasons why people are not looking for work; however, none of the restrictions/reasons given relate specifically to housing (this in itself could be indicative that accessibility of housing may not be a significant factor).

Nevertheless (as noted above), around 467 400 people are reported as being permanently unable to work. It seems unlikely that more accessible housing would increase participation in the labour force for this group of people.

Excluding people who are reported as being permanently unable to work, the participation rate for working age people with limited mobility is close to the participation rate for the broader community. This suggests that accessible housing is unlikely to be having a significant impact on the participation rate.

⁵⁵⁷ Australian Human Rights Commission website, <https://humanrights.gov.au/our-work/9-barriers-employment>, accessed 23 December 2020.

Potential impacts on hours worked

SDAC data shows that a significantly higher share of those with limited mobility who are employed work part time (around 47 per cent) relative to the broader population (around 31 per cent). If the proportion of people employed with limited mobility was consistent with the broader population, there would be an additional 79 500 people working full-time (table J.12).

J.12 Additional people that could potentially work full-time

Employment	Actual number ('000)	Implied number based on proportions in the broader population ('000)	Difference ('000)
Full-time	267.0	346.5	79.5
Part-time	232.8	153.3	-79.5
Total	499.8	499.8	0.0

Source: CIE estimates.

Evidence on the number of people that have reduced their hours due to inaccessible housing includes the following.

- The Wiesel survey reported that around 18 per cent of respondents had reduced their hours of work due to inaccessible housing. However, as noted above, this is likely to be a significant over-estimate of the proportion of people for whom inaccessible housing is **currently** reducing their hours of work for the following reasons.
 - The survey asked whether inaccessible housing had ever reduced hours worked (rather than whether inaccessible housing was **currently** reducing hours worked)
 - The survey sample could potentially be biased towards people experiencing greater accessibility problems due to the sampling method.
- SDAC suggests that only around 12 per cent of people employed part-time with limited mobility are not able to move around their place of residence without difficulty (or assistance). This suggests a maximum of around 12 per cent may have reduced their hours due to inaccessible housing. This implies up to 9 540 people may have reduced their hours due to inaccessible housing

There is no clear evidence on the extent to which people reduced their hours of work due to inaccessible housing. As a potential indicator of the impact of fatigue due to inaccessible housing on the hours worked, CIE applies the difference between the net surplus for a full-time worker and a part-time worker estimated above (around \$29 826 — see table J.2 above).

- **This information implies a net cost of people working fewer hours due to inaccessible housing could be up to \$284.5 million per year. This is based on:**
 - **9 540 working age people with limited mobility working fewer hours due to inaccessible housing (based on 12 per cent of people with limited mobility who work part-time but do not work full-time due to inaccessible housing — the upper bound suggested by SDAC data); and**
 - **a net cost of \$29 826 per person.**

This is an indicative estimate only and is likely to be a significant over-estimate for the following reasons.

- As noted above, the assumed 12 per cent of working aged people with limited mobility is likely to be an upper bound estimate.
- The extent to which people reduced their hours due to inaccessible housing is not known. CIE's assumption implicitly assumed they reduced their hours from full-time to less than half the time, which is likely to be the upper end of a plausible range.

Potential impact on productivity

As reported above, 20 per cent of respondents to the Wiesel survey reported that a lack of accessible housing had reduced their productivity at work.⁵⁵⁸ This could potentially be a significant over-estimate of the number of people currently experiencing reduced productivity due to inaccessible housing because the survey question was phrased as: "Has a lack of accessible housing ever...". (and due to CIE's concerns over the representativeness of the survey sample).

According to the SDAC survey close to 90 per cent of employed people with mobility limitation had no trouble moving around their place of residence. It seems unlikely that home accessibility issues would be affecting work productivity of these people. This leaves a maximum of around 11 per cent for whom a lack of accessible housing could potentially be affecting their productivity at work.

With around 500 000 people with mobility limitation employed in 2018 (based on the SDAC survey), this implies up to around 50 000 people for whom inaccessible housing is hampering their productivity.

CIE is not aware of any quantitative evidence of the extent to which inaccessible housing reduces productivity at work. For this reason, as an indicator of the potential scale of the productivity impacts, CIE estimates the potential benefits of an assumed 10 per cent productivity improvement. Note that there is no basis for this 10 per cent productivity improvement so this estimate is indicative of the potential scale only.

Assuming that the value-added of the people with mobility limitation reflects average weekly cash earnings for all rates of pay, this implies that:

- The value-added of each affected full-time worker would be lower by around \$8 836 per year (based on 10 per cent of the annual wage of \$88 360)
- The value-added of each affected part-time worker would be lower by around \$3 475 per year (based on 10 per cent of the annual part-time wage of \$34 750)

This information suggests that the benefits of a 10 per cent productivity improvement could be around \$350 million per year (table J.13). However, this is likely to be an over-estimate of the actual impacts for the following reasons:

⁵⁵⁸ Wiesel, I., op.cit., p. 21.

- 10 per cent is likely to be an implausibly large productivity impact given the fact that the average labour productivity growth in Australia is around 2 per cent with the highest being 5 per cent in 1998-99.⁵⁵⁹
- 11 per cent of all employed people with a mobility limitation is likely to be an upper bound estimate of the proportion of people for whom inaccessible housing is currently reducing their productivity for the following reasons.
- It is not clear that the features provided under the various NCC options would address all of the fatigue issues currently being experienced. For example, those fatigue issues experienced in Rowena's case study in box J.11.
- The features specifically referred to in Rowena's case study may still be a feature of many homes, even under the NCC proposal:
 - Rowena's case study refers to stairs being a feature that saps her energy. However, many dwellings will still have internal stairs under the NCC proposal. Dwellings that currently have a flight of stairs to the entrance (including apartments above the ground floor in 3-storey walk-up blocks and houses on steeply sloping lots) are likely to be exempt from the step-free access requirement.
 - Rowena's case study also refers to the height of shelves in the kitchen. However, shelf height is not covered by the NCC proposal.
- Another case study refers to features that drain the energy of someone with chronic fatigue syndrome and limit her ability to work.⁵⁶⁰

J.13 Indicative estimate of the impact of a 10 per cent productivity improvement

Employment	Number of people employed ('000)	Estimated number with lower productivity ('000) ^a	Impact of 10% productivity improvement	Total impact (\$ million)
Full-time	267.0	29.4	8 836	259.5
Part-time	232.8	25.6	3 475	89.0
Total	499.8	55.0		348.5

^a Based on 20 per cent of the total as implied by the Melbourne Disability Institute Survey.

Source: CIE estimates.

Interpretation of available evidence

Some submissions provided qualitative evidence that a lack of accessible housing may be reducing employment opportunities and productivity for some working aged people with limited mobility. The impact of accessible housing appears to be under-researched and there is little specific quantitative evidence on the potential magnitude of these impacts.

⁵⁵⁹ ABS 2019, *Estimates of Industry Multifactor Productivity: Updates estimates of multifactor productivity (MFP) for the 16 industries defined to comprise the market sector from 1994-95*, <https://www.abs.gov.au/statistics/industry/industry-overview/estimates-industry-multifactor-productivity/latest-release>

⁵⁶⁰ See the case study of domestic and work trade-offs for CFS sufferer in MDI and Summer Foundation submission (p.20)

As such, CIE was unable to estimate with any certainty the potential employment and productivity impacts.

Submissions identified several ways that a lack of accessible housing could be leading to relatively poor employment outcomes among working age people with mobility-related disabilities, as well as reducing productivity.

- Based on qualitative evidence presented in submissions, people with mobility limitations appeared to face challenges working from home due mostly to limited space. CIE was generally not convinced that the NCC proposal would materially address this issue.
- Qualitative evidence also suggested a lack of accessible housing close to employment opportunities is another way inaccessible housing reduces employment. The objective evidence available suggests that these impacts are likely to be relatively modest.
- Finally, qualitative evidence provided in submissions suggests that fatigue and additional care needs as a result of inaccessible housing features is reducing productivity for some people with limited mobility.

Overall, and with the caveats above, these employment-related impacts could be quite significant, possibly in the order of several hundred million dollars per year, suggesting a similar magnitude to some of the other cost categories.

K Willingness to pay survey method and results

Introduction

This stated preference study was undertaken for the Australian Building Codes Board (ABCB) for the purpose of informing cost-benefit analysis (CBA) of options for increasing the accessibility of residential buildings in Australia. CBA is a systematic approach to weighing up the costs and benefits of alternative policy options in a common metric. Key steps in a CBA of changes in the accessibility of residential buildings include developing an understanding of the values placed by Australians on accessibility features in their own home as well as altruistic values placed on improvements in outcomes for people with limited mobility. These values, which correspond to the maximum amount that individuals would be willing to pay for an improvement or the minimum amount they would be willing to accept as compensation for a degradation, can be used to inform estimates of the economic benefits of policy options as part of the CBA. The purpose of this study is to estimate these values.

Professor Riccardo Scarpa from University of Waikato was engaged in a peer review role to provide technical advice in relation to the survey method, estimation of willingness to pay (WTP) and application of those estimates to the cost-benefit analysis. The approach set out in this appendix was informed by Professor Scarpa's advice.

Research method

Community preferences for accessible housing features are expressed at least to an extent through their home purchasing and renting decisions. A lack of data on accessibility features for past property sales means it is difficult to use these decisions to understand preferences. Furthermore, these decisions may not reveal the community's willingness to pay for the provision of accessible housing features for other members of the community.

One approach to quantifying the values members of the community place on accessibility features in their own home and in the wider housing stock is through a stated preference survey designed to measure the WTP of different members of the community for different outcomes. This is the approach taken in this study.

CIE conducted two choice exercises consecutively within the same questionnaire:

- asking the respondent to imagine they are at the point of purchasing or renting their next home and asking the respondent to choose between dwellings with differing combinations of accessibility features at different prices/rents, and
- asking the respondent to choose between sets of housing outcomes for people with limited mobility generally.

The former exercise used a choice modelling (also known as a conjoint analysis or discrete choice experiment) approach. Under this technique, consumers respond to a carefully constructed survey instrument designed to elicit preferences. The overall choice modelling technique is well established in marketing and economic research fields. To date, however, there has not been a comprehensive national choice modelling study of demand for accessible housing in Australia that allows consideration of the policy issues now at hand. This component of the study captures the net private benefits or costs of:

- if the respondent has a person with limited mobility in their household, the accessibility and useability of the dwelling
- if the respondent does not have a person with limited mobility in their household, the ability to remain in the home if someone in their household suffers from limited mobility in the future
- any disamenity from accessibility features, and
- ability to entertain visits from friends and family with limited mobility.

The second exercise captures altruism and WTP for better outcomes for others. CIE used a single 'contingent valuation' question for each respondent, offering an improved accessible housing outcome at a specified increase in rates/taxes. The increases in rates/taxes would be varied across respondents, allowing CIE to identify the distribution of WTP across the population.

The survey instrument was designed to meet best-practice in stated preference research. It comprised the following:

- a welcome, with instructions and information about privacy
- screening questions to ensure representative samples that exclude respondents with potential conflicts of interest
- questions about mobility limitations within the respondent's household
- factual information about accessibility features and questions about the accessibility features of the respondent's current home
- questions about attitudes towards accessibility features
- questions about the nature of the respondent's next home
- instructions about the choice questions
- six discrete choice experiment (DCE) questions – discussed in further detail below
- description of a proposed policy option and a 'cheap talk' script to limit hypothetical bias by reminding respondents of the consequentiality of the survey and their budget constraint
- a contingent valuation (CV) question – discussed in further detail below
- debriefing questions about the motivation behind and approach taken by the respondent to the DCE and CV questions, and
- further questions about the respondent's characteristics.

The questionnaire was developed through several stages of review and testing, including:

- review and input from the ABCB office and stakeholder consultations in response to the questionnaire structure included in the Issues Paper, and

- a pilot wave of survey fieldwork.

Discrete choice experiment questions

There are several important decisions that must be made when designing a DCE. These include:

- the features or attributes to be included in the choice tasks and how those attributes should be defined
- the number of alternatives to be included in each choice task
- the number of questions to be answered by each respondent
- the levels that the attributes can take in the questions
- the combinations of attribute levels in each question (that is, the experimental design), and
- the information, instructions and/or questions used to prepare respondents for the choice.

Housing attributes

The attributes included in the DCE were:

- Price/rent
- Getting in and out
- Moving around indoors
- Living with limited mobility on same level as an entrance
- Modification that would be needed to make home suitable for ageing in place
- Total size of home compared to similar homes
- Amount of space used for: corridors, bathroom, kitchen, laundry
- Amount of space used for: living areas and bedrooms

These attributes were chosen to focus on the outcomes for people with or concerned about limited mobility.

For respondents indicating they would be likely to buy their next home, the cost attribute was defined as the purchase price. For other respondents, the cost attribute was defined as the weekly rent.

Alternatives per task

Each DCE question comprised two alternative homes. Although decision making is often reference-dependent, CIE decided against including the current home as a status quo option, as it would introduce the added complication of the value placed on sentimental attachment and avoided moving costs. These values, along with the fact that many respondents consider a move within the next five years as unlikely, mean that a status quo option would likely attract a large number of choices, which would detract from the experiment's ability to isolate the trade-offs respondents are willing to make between

price and accessibility features. To isolate these trade-offs, the survey asked respondents to imagine they were choosing between two homes at the point of their next home purchase/rent decision. Feedback from pretesting indicated that larger choice tasks involving three or more homes would be too complex.

Number of questions per respondent

The questionnaire included six choice tasks. The risk of respondents dropping out of self-administered questionnaires increases with the number of choice tasks presented. The number of respondents required to obtain statistically significant estimates of WTP reduces with the number of choice tasks presented to each respondent. A sequence of six choice tasks per respondent was judged to strike an appropriate balance between these two considerations.

Attribute levels

The attribute levels used in the DCE questions are set out in table K.1. Prices/rents were calculated using a reference price calculated as the midpoint of the price range that the respondent indicated they would expect to pay for their next home. Most of the price levels were designed below the reference price to ensure they lay within the respondent's budget constraint. In Wave 2 of the survey fieldwork, different price levels were used depending on whether the respondent had indicated in a qualitative question they would prefer a home with at least some accessibility features. Analysis of data from Wave 1 indicated that WTP varied considerably with the response to this qualitative question. To improve the efficiency of the experimental design, this qualitative question was used as a filtering question to allocate respondents to one of two different designs, each with price levels that covered the range of WTP estimated from Wave 1 data for the best and worst combinations of attribute levels.

K.1 Attribute levels used in discrete choice experiment

Attribute	Levels
Price / Rent	Wave 1: Reference price/rent x 0.868, 0.884, 0.892, 0.896, 0.898, 0.899, 0.9, 0.901, 0.902, 0.904, 0.908, 0.916, 0.932, 0.964, 1.028 Wave 2: Respondents indicating a preference for at least some accessibility features: Reference price/rent x 0.7, 0.85, 0.89, 0.897, 0.903, 0.91, 0.95, 1.1 Other respondents: Reference price/rent x 0.902, 0.938, 0.947, 0.949, 0.951, 0.953, 0.962, 0.998
Getting in and out	Several steps Single step Step-free
Moving around indoors	Regular spaces – Suitable for some mobility aids Wide spaces – Suitable for most mobility aids, but not wheelchairs

Attribute	Levels
	Extra-wide spaces – Suitable for all mobility aids, including wheelchairs
Living with limited mobility on same level as an entrance	Unsuitable – No toilet or shower on entry level Suitable for short visits – Toilet, but no shower on entry level Suitable for living or overnight visits – Toilet, shower and bedroom on entry level
Modification that would be needed to make home suitable for ageing in place	Significant Minimal
Total size of home compared to similar homes	Same 5% larger
Amount of space used for: Corridors, bathroom, kitchen, laundry	40% 45% 50%
Amount of space used for: Living areas and bedrooms	Calculated as 100% minus the level for the attribute above

Source: CIE.

Experimental design

To conduct a DCE, the analyst needs to assign combinations of attribute levels to the various alternatives and questions. These combinations are referred to as the experimental design. The experimental design has a direct impact on the statistical significance of estimates of WTP. If some information about preferences is known, it is possible to generate an experimental design that can elicit statistically significant estimates of WTP from a smaller number of respondents than a randomly generated design.

The experimental design used in the first wave of fieldwork comprised two separate four-block designs – one in which the ‘total size of home’ attribute was held constant across alternatives and one in which it was not. This approach was taken for the initial design to manage risks raised in pretesting that the total size attribute would dominate the choice decision process.

Information on preferences gathered in the first wave of fieldwork was used to generate a design for the second and main wave of fieldwork. The approach minimised the statistical confidence intervals around the estimates of WTP derived from responses to the questions in the design.⁵⁶¹

⁵⁶¹ Two designs were combined for the main wave of fieldwork – one for blocks 1-8 and another for blocks 9-16. The designs were generated to minimise D-error (Scarpa and Rose 2008). The prior parameter estimates used to generate the efficiency criteria were based on estimates of WTP from basic multinomial logit models run on the data collected in the first wave of fieldwork. Constraints were included in the design search to preclude illogical alternatives and to set ranges for the number of times each attribute level could appear in the design.

The second and main wave of fieldwork used a design with 16 blocks of six questions, with each respondent answering only one block assigned using least-fill logic. The reason for using multiple blocks was to improve design efficiency and limit the impact of any single choice task on the results.

K.2 Example of choice question

The screenshot shows a survey interface for 'Pureprofile' with a progress bar at 88%. The question is titled 'QCBInfo' and compares two dwellings, Dwelling A and Dwelling B, across several attributes. The attributes and their values are as follows:

	Dwelling A	Dwelling B
Price	\$665,000	\$628,000
Getting in and out	Step-free	Single step
Moving around indoors	Wide spaces Suitable for most mobility aids, but not wheelchairs	Regular spaces Suitable for some mobility aids
Living with limited mobility on same level as entrance	Suitable for short visits Toilet, but no shower on entry level	Unsuitable No toilet or shower on entry level
Modification that would be needed to make home suitable for ageing in place	Significant	Significant
Total size of home compared to similar homes	5% larger	Same
Amount of space used for:		
Corridors, bathroom, kitchen, laundry	45%	40%
Living areas and bedrooms	55%	60%
If these were my only options, I would choose:	<input type="radio"/>	<input type="radio"/>

At the bottom of the interface, there are 'Back' and 'Next' buttons, and footer text: 'Powered by Pureprofile', 'Tech Support', and 'Take me back to Pureprofile'.

Source: CIE.

Contingent valuation question

Respondents were shown an accessibility standard, described in terms of the attributes used in the DCE, and told that the proportion of the housing stock meeting this standard is currently very low and is expected to remain low and that it is not enough to provide accessible homes for all Australians with disability who use a mobility aid (around 5 per cent of households). Respondents were also told:

As a result, some people with limited mobility have difficulty finding an accessible home and instead live in unsuitable housing with a carer. This can lead to health risks from slips, trips and falls and places extra demands on carers.

Some people with limited mobility also experience social isolation due to difficulty visiting homes of friends and family.

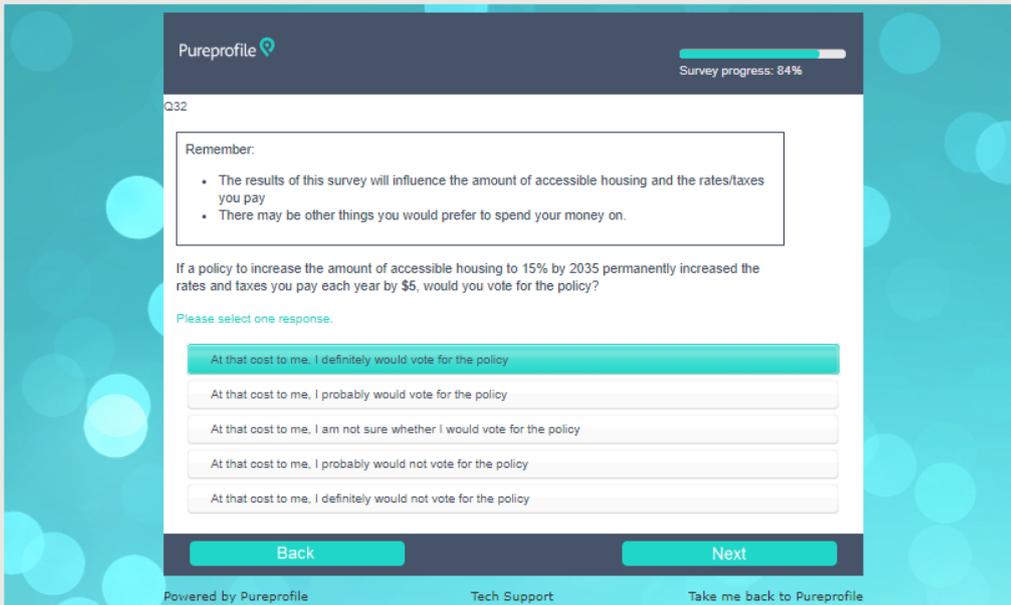
Without additional government action, the proportion of housing in Australia that meets the accessibility standard is expected to remain below 5%.

Governments have a range of ways to increase the amount of accessible housing, including building regulations, incentives schemes, land-use planning and public housing. The share of accessible housing could be increased to 15% of overall housing by 2035, which would greatly improve the chances of Australians with limited mobility finding suitable homes.

However, this would come at a cost that would need to be covered by an increase in rates and taxes.

Respondents were then asked a closed-ended, dichotomous-choice contingent valuation question, the form of which is shown in figure K.3. The cost level shown in the question varied across respondents. In Wave 1 fieldwork, the cost levels were \$5, \$20, \$50 and \$200. Analysis of Wave 1 data suggested there could be a ‘fat tail’ problem, with 17 per cent (5 of 41) of respondents shown the \$200 cost indicating they would definitely vote for the policy. In Wave 2 fieldwork, the vector of levels was revised to \$5, \$20, \$100 and \$500 to manage the risk of this problem. A certainty scale was used to mitigate yeasaying bias in accordance with best-practice from the field of environmental valuation. Reminders (a ‘cheap talk’ script) about consequentiality and budget constraints were included to mitigate hypothetical bias.

K.3 Example of contingent valuation question



The screenshot shows a survey interface for Pureprofile. At the top, it says 'Pureprofile' and 'Survey progress: 84%'. The question is labeled 'Q32'. Below the question, there is a 'Remember:' section with two bullet points: 'The results of this survey will influence the amount of accessible housing and the rates/taxes you pay' and 'There may be other things you would prefer to spend your money on.' The question text is: 'If a policy to increase the amount of accessible housing to 15% by 2035 permanently increased the rates and taxes you pay each year by \$5, would you vote for the policy?'. Below the question, it says 'Please select one response.' and there are five radio button options: 'At that cost to me, I definitely would vote for the policy', 'At that cost to me, I probably would vote for the policy', 'At that cost to me, I am not sure whether I would vote for the policy', 'At that cost to me, I probably would not vote for the policy', and 'At that cost to me, I definitely would not vote for the policy'. At the bottom, there are 'Back' and 'Next' buttons. The footer includes 'Powered by Pureprofile', 'Tech Support', and 'Take me back to Pureprofile'.

Source: CIE.

The cost attribute was defined as an ongoing payment to reflect the ongoing nature of the costs involved in the policy options. The survey chose a broad payment vehicle of taxes and rates. Alternative, more specific vehicles, such as an increase in the price of new homes, were problematic since they are seen to be avoidable by significant proportions of the population.

Debriefing

Respondents were asked, on a scale of 1 to 10, how much their decision was based on outcomes for other people. The purpose of this question is to enable WTP to be scaled to the altruism-only component to avoid double-counting with WTP for accessibility features in the respondent’s own home.

Debriefing questions were also included on the reasons for their answer to the CV question and the extent to which they believed the survey would affect government action on accessible housing and on the rates and taxes they pay.

The sample

Recruitment

The fieldwork was conducted in December 2019 and January 2020. All respondents were sampled through the Pureprofile online panel and were compensated for their time through Pureprofile's rewards system.

Overall, 2 062 respondents completed the questionnaire. There were 66 incomplete responses. Other respondents were screened out because either:

- they did not hold an Australian citizenship or permanent resident visa;
- they or someone else in their household work for the Australian Building Codes Board; or
- the quotas for their age, gender or location categories had already been filled.

Quotas were set using Australian Bureau of Statistics data Cat. No. 3235.0 Table 3 and Cat. No. 3101.0 Table 8.

Characteristics

The sample was representative of the national population of people aged 18 years and over in terms of age, gender and location. People speaking languages other than English at home and the highest-income households were under-represented, while households with income in the range \$78 000 to \$104 000 per year were over-represented. CIE used raking to generate poststratification weights based on the language, income and age characteristics of the target population. The reweighted sample characteristics are very close to those of the target population, which provides confidence that results can be generalised to the population.

K.4 Characteristics of sample, reweighted sample and target population

Indicator/Question	Item/Answer	Sample No. (No.)	Sample (per cent)	Reweighted sample (per cent)	Target population (per cent)
Survey duration	Median (minutes)	10.77			
Wave of fieldwork	Wave 1	163			
Wave of fieldwork	Wave 2	1 899			
Age	18 to 19 years	64	3.1%	3.2%	3.2%
Age	20 to 29 years	373	18.1%	18.6%	18.6%
Age	30 to 39 years	397	19.3%	18.5%	18.5%
Age	40 to 49 years	320	15.5%	16.8%	16.8%
Age	50 to 59 years	326	15.8%	15.8%	15.7%
Age	60 to 69 years	282	13.7%	13.2%	13.2%
Age	70 to 79 years	199	9.7%	8.8%	8.8%
Age	80 years or over	101	4.9%	5.1%	5.1%
Gender	Male	1 043	50.6%	50.6%	49.6%

Indicator/Question	Item/Answer	Sample No. (No.)	Sample (per cent)	Reweighted sample (per cent)	Target population (per cent)
Gender	Female	1 009	48.9%	49.0%	50.4%
Gender	Non-binary	6	0.3%	0.2%	0.0%
Gender	Prefer not to say	4	0.2%	0.2%	0.0%
Location	NSW Metro	425	20.6%	22.1%	20.9%
Location	VIC Metro	407	19.7%	21.3%	19.9%
Location	QLD Metro	202	9.8%	9.9%	9.9%
Location	SA Metro	120	5.8%	5.4%	5.4%
Location	WA Metro	175	8.5%	8.4%	8.2%
Location	TAS Metro	24	1.2%	0.9%	0.9%
Location	ACT Metro	36	1.7%	1.8%	1.7%
Location	NT Metro	6	0.3%	0.3%	0.6%
Location	NSW Regional	233	11.3%	10.0%	11.0%
Location	VIC Regional	125	6.1%	6.0%	6.0%
Location	QLD Regional	214	10.4%	9.6%	10.2%
Location	SA Regional	34	1.6%	1.6%	1.6%
Location	WA Regional	32	1.6%	1.4%	2.1%
Location	TAS Regional	26	1.3%	1.2%	1.2%
Location	ACT Regional		0.0%	0.0%	0.0%
Location	NT Regional	2	0.1%	0.1%	0.4%
Language other than English spoken at home?	No, English only	1 763	85.5%	72.7%	72.7%
Language other than English spoken at home?	Yes	299	14.5%	27.3%	27.3%
Tenure type	Owned outright or with a mortgage	1 355	65.7%	66.2%	67.3%
Tenure type	Being rented or occupied rent-free	678	32.9%	32.4%	31.8%
Tenure type	Other (please specify)	29	1.4%	1.4%	1.0%
Household composition	Couple/family without children at home	667	32.3%	31.5%	27.0%
Household composition	Couple/family with children at home	612	29.7%	30.8%	31.9%
Household composition	One parent family	124	6.0%	5.7%	11.3%
Household composition	Group household	167	8.1%	8.0%	4.3%
Household composition	Single person household	426	20.7%	20.4%	24.4%
Household composition	Cared accommodation (e.g. nursing home, aged care hostel)	5	0.2%	0.2%	
Household composition	Other	61	3.0%	3.4%	1.2%
Income	Less than \$41,600 per year (less than \$800 per week)	528	25.6%	27.3%	27.3%

Indicator/Question	Item/Answer	Sample No. (No.)	Sample (per cent)	Reweighted sample (per cent)	Target population (per cent)
Income	\$41,600 - \$78,000 per year (\$800 - \$1,500 per week)	499	24.2%	22.1%	22.1%
Income	\$78,000 - \$104,000 per year (\$1,500 - \$2,000 per week)	353	17.1%	11.3%	11.3%
Income	\$104,000 - \$156,000 per year (\$2,000 - \$3,000 per week)	304	14.7%	16.0%	16.0%
Income	More than \$156,000 per year (more than \$3,000 per week)	186	9.0%	13.9%	13.9%
Income	Do not wish to answer	192	9.3%	9.3%	

^a Sample characteristic is gender, whereas population characteristic is sex.

^b Income is household income, except for respondents in group households or cared accommodation. In those cases, income is personal income. Population targets are adjusted to account for this distinction and proportion of respondents not reporting income.

Source: CIE.

Roughly 30 per cent of respondents' households included at least one person with temporary or permanent mobility limitation.

K.5 Mobility limitation characteristics

Question	Answer	Reweighted sample (per cent)
Q1	Yes, I have a temporary (fewer than 6 months) mobility limitation	4.6%
Q1	Yes, I have an ongoing mobility limitation	11.9%
Q1	Yes, another person in my household has a temporary (fewer than 6 months) mobility limitation	6.5%
Q1	Yes, another person in my household has an ongoing mobility limitation	11.8%
Q1	No	69.5%
Q1	Prefer not to say	0.9%
Q2	Yes, I have a temporary (fewer than 6 months) personal care limitation	3.5%
Q2	Yes, I have an ongoing personal care limitation	8.7%
Q2	Yes, another person in my household has a temporary (fewer than 6 months) personal care limitation	5.5%
Q2	Yes, another person in my household has an ongoing personal care limitation	9.2%
Q2	No	76.3%
Q2	Prefer not to say	1.2%
Q3	Cane	6.0%
Q3	Crutches	6.3%
Q3	Walking frame	9.1%
Q3	Walking stick	10.6%
Q3	Wheelchair (manual)	4.7%
Q3	Wheelchair (electric)	3.1%

Question	Answer	Reweighted sample (per cent)
Q3	Scooter/gopher	2.9%
Q3	Modified car or car aid	2.5%
Q3	Other	3.1%
Q3	None	3.3%
Q3	Prefer not to say	0.2%
Q4	Has no difficulty moving around with the use of a mobility aid, but cannot easily walk 200 metres, cannot use stairs wit	12.4%
Q4	Has difficulty moving around, even with the use of a mobility aid, but doesn't need assistance from a carer	8.1%
Q4	Sometimes needs assistance from a carer to move around, even with the use of a mobility aid	6.3%
Q4	Always needs assistance from a carer to move around, even with the use of a mobility aid	2.3%
Q4	Prefer not to say	0.4%
Q5	Yes	29.6%
Q5	No	63.8%
Q5	Unsure	6.6%

Note:

- Q1: Does anybody in your household have difficulty, use aids or require assistance with moving around the home, moving away from home, or getting into or out of a bed or chair?
- Q2: Does anybody in your household have difficulty, use mobility aids or require assistance with personal care, including tasks such as showering, bathing, dressing or eating?
- Q3: Which aids, if any, are used by people in your household?
- Q4: Thinking about the person in your household whose mobility is most limited, what is the extent of their mobility limitation?
- Q5: Do you have a family member or friend with limited mobility who visits you or would visit you if your home was accessible?

Source: CIE.

Attitudes towards accessible housing

Around half of respondents indicated they considered accessibility to some extent when choosing their current home and 70 per cent indicated they would prefer their next home to have at least some accessibility features.

K.6 Attitudes towards accessible housing

Question	Answer	Reweighted sample (per cent)
Q1	It was an important consideration	20.2%
Q1	It was a minor consideration	28.5%
Q1	I did not consider it at all	51.3%
Q2	Prefer homes with all accessibility features described in this survey	29.7%
Q2	Prefer homes with some accessibility features described in this survey	40.3%

Question	Answer	Reweighted sample (per cent)
Q2	Prefer homes without accessibility features	5.3%
Q2	Have no preference	24.8%
Q3	The ease of access and use now	36.7%
Q3	To avoid/delay the need to move later	33.3%
Q3	To receive visits from family and friends with limited mobility	23.7%
Q3	The look and feel of the features	13.1%
Q3	Other (please specify)	2.1%
Q4	I dislike the look and feel of the features	2.4%
Q4	I prefer larger living areas and bedrooms	2.1%
Q4	I prefer steeply sloped blocks	0.9%
Q4	Other (please specify)	0.1%

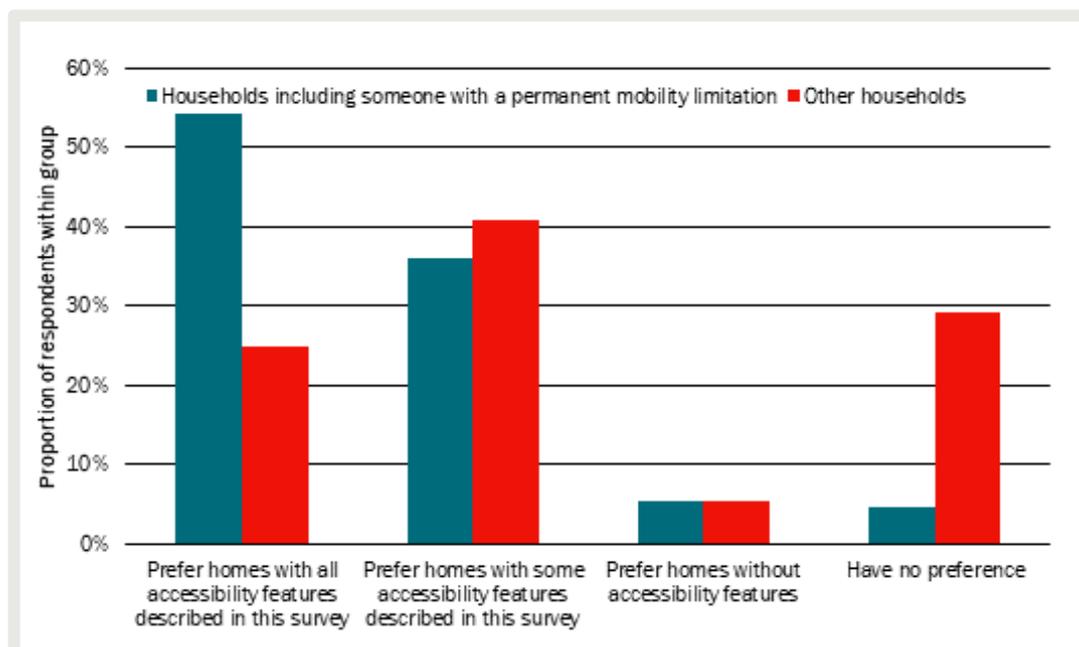
Note:

- Q1: To what extent did you consider accessibility when choosing your current home?
- Q2: If you were buying/renting a new home now, would you...
- Q3: What is your main reason for preferring accessibility features?
- Q4: What is your main reason for preferring homes without accessibility features?

Source: CIE.

Households containing someone with mobility limitation were more likely than other households to prefer a home with all of the accessibility features described in the survey. However, more than half of households that do not contain a person with mobility limitation indicated they would prefer their next home to include at least some accessibility features.

K.7 Preference for accessibility features by current mobility limitation status



Source: CIE.

Characteristics of the existing housing stock

Most existing homes have a toilet (85 per cent) and a shower (75 per cent) on the same level as an entrance. Around 80 per cent of homes have either no stairs or a straight stairway. Other accessibility features are less common. A step-free entrance and a step-free shower are both reported by around one third of respondents. Roughly one fifth of respondents thought there would be sufficient space for turning a wheelchair in all corridors, bathroom, kitchen and laundry spaces in their home. Around 13 per cent thought that their door openings were wider than most other homes.

K.8 Accessibility features in the existing housing stock

Feature question	Specification/Answer	Reweighted sample (per cent)
Q1	no steps between street/parking and the entrance	31.6%
Q1	a single step between street/parking and the entrance	34.1%
Q1	several steps between street/parking and the entrance	34.2%
Q2	door openings similar to other homes	82.1%
Q2	door openings wider than most other homes	12.6%
Q2	Don't know	5.3%
Q3	All of these spaces are large enough	20.7%
Q3	Some of these spaces are large enough	54.3%
Q3	None of these spaces are large enough	20.4%
Q3	I can't make an educated guess	4.7%
Q4	Step-free shower entry	28.9%
Q4	Hob/kerb shower entry	36.1%
Q4	Stepped shower entry	24.8%
Q4	Shower over bath	13.9%
Q4	Don't know	1.5%
Q5	Yes	84.8%
Q5	No	13.4%
Q5	Don't know	1.7%
Q6	Yes	74.6%
Q6	No	23.2%
Q6	Don't know	2.2%
Q7	Straight stairs	12.4%
Q7	Stairs with a half/quarter turn	17.7%
Q7	Curved/spiral stairs	4.4%
Q7	No stairs	67.6%

Note:

- Q1: Path to entrance
- Q2: Door opening width
- Q3: Would you say your current home has enough space for turning a wheelchair in corridors, bathrooms, kitchen and laundry? (If unsure, please make an educated guess)

- Q4: Shower entry
- Q5: Does your current home have a toilet on the same level as an entrance?
- Q6: Does your current home have a shower on the same level as an entrance?
- Q7: Which type of indoor stairs, if any, does your current home have?

Source: CIE.

Willingness to pay for accessibility features in own home

In consultation with the peer reviewer, Professor Riccardo Scarpa, CIE tested a range of models for different techniques and specifications, which were not ultimately used in the final model, including:

- Models estimated in WTP-space, which would not achieve convergence due to flat log-likelihood functions
- Mixed logit models, which did not appear to capture the bi-modal nature of the distribution of preferences, despite the inclusion of interactions with respondent characteristics to shift the means of random parameters
- Interactions between the price variable and various thresholds related to the respondent reference price and to price itself (a quadratic term), some of which were significant but caused sign reversals and outliers when calculating WTP at an individual respondent level
- Pooling buyers and renters in the same model, with appropriate interaction terms, which was abandoned given the likelihood of differences in scale between the two groups
- Interactions between the accessibility features, which tended to be insignificant, noting that the ‘modifications’ feature is effectively an interaction indicating the provision of all three of the other accessibility features in the model.

The choice questions included prices calculated as a function of the midpoint of the price range in which the respondent indicated they would be shopping for a new home. To overcome concerns about endogeneity, CIE used an instrumental variable. The price variable included in the final model measures the prices shown in the choice options as a proportion of the reference price midpoint predicted for each respondent using the ordinary-least squares regressions shown in table K.9. The upper and lower bounds of the 95 per cent confidence intervals of the predictions were used to test sensitivity. CIE use the upper bound in the central model as a conservative approach given the potential for hypothetical bias to inflate WTP estimates.

K.9 Models for predicting respondent reference prices

Variable	Renters (Coef.)	Renter (Z value)	Buyers (Coef.)	Buyers (Z value)
Age	2.09	4.17	-1 056	-1.31
Age squared	-0.02	-4.46	22	2.75
NSW regional	-47.58	-8.07	-273 329	-29.73
Victoria metropolitan	-30.24	-5.75	-149 886	-20.27

Variable	Renters (Coef.)	Renter (Z value)	Buyers (Coef.)	Buyers (Z value)
Victoria regional	-101.03	-13.69	-354 320	-30.83
Queensland metropolitan	-57.34	-9.29	-272 443	-28.31
Queensland regional	-51.56	-8.29	-321 848	-34.95
South Australia metropolitan	-78.48	-9.56	-264 691	-24.43
South Australia regional	-93.89	-7.47	-404 450	-20.16
Western Australia metropolitan	-108.55	-15.28	-295 817	-31.45
Western Australia regional	-95.10	-7.31	-397 572	-19.52
Tasmania metropolitan	1.67	0.10	-337 678	-15.59
Tasmania regional	-119.77	-7.98	-490 538	-22.47
Australian Capital Territory	-30.29	-2.33	-292 504	-15.84
Northern Territory	-128.59	-6.46	-310 902	-6.57
Owner-occupier	-59.38	-16.74	118 978	17.08
Detached dwelling	17.71	5.14	56 183	9.56
Couple with children	42.69	8.25	-10 756	-1.77
Single parent	3.80	0.57	-67 950	-5.28
Group household	6.40	1.07	6 048	0.50
Single person household	-24.36	-5.16	-20 454	-2.74
Other household	-32.45	-3.91	-45 962	-2.72
Income: \$41,600 - \$78,000 per year	62.85	14.80	79 840	10.14
Income: \$78,000 - \$104,000 per year	142.94	24.91	177 760	20.82
Income: \$104,000 - \$156,000 per year	103.74	15.35	260 590	29.12
Income: More than \$156,000 per year	254.94	28.58	460 690	46.88
Income: Do not wish to answer	43.36	7.55	224 918	20.99
Constant	268.70	21.14	522 572	26.01
Model fit: Individuals	10 680		14 064	
Model fit: R-squared	0.228		0.344	

Note: Dependent variable in the renters model is the midpoint of the range in weekly rent indicated by the respondent. Dependent variable in the buyer model is the midpoint of the range in purchase price indicated by the respondent.

Source: CIE.

The distribution of preferences for accessibility features across respondents appears to be bi-modal, with some people liking the features and others being neutral towards or even disliking the features. To capture this distribution, CIE use latent class multinomial logit models, which estimate indirect utility functions for a user-specified number of classes along with class membership probabilities.

CIE's central models estimated on the full samples of buyers and renters respectively are set out in table K.10 and table K.11. Respondents carefully considered the attributes described in the questions, as evidenced by the relatively large Z values (a Z value of around 2 indicates that at the 95 per cent confidence level one can say the coefficient is statistically different from zero).

A high-level examination of the two classes suggests that Class 1 represents respondents who prefer accessibility features and Class 2 represents respondents who do not. Class 2 is much more price sensitive and prefers a smaller share of floor space to be used for

corridors, kitchen, bathroom and laundry. The average class probabilities are roughly 50-50.

Consistent with CIE's expectations, the class membership parameters indicate that older respondents and respondents from households containing a person with a permanent mobility limitation more likely hold Class 1 preferences.

K.10 Renter model of housing choice

Variable	Class 1 (Coef.)	Class 1 (Z value)	Class 2 (Coef.)	Class 2 (Z value)
Price/rent as proportion of predicted reference value	-0.9159	-1.69	-10.670	-8.15
Price/rent * low income (dummy =1 if household income <\$41 600 p.a.)	-1.7835	-2.60	-27.127	-3.10
Getting in and out: Single step (dummy)	0.6358	5.99	0.189	1.79
Getting in and out: Step-free (dummy)	1.0035	8.58	0.205	1.83
Moving around indoors: Wide spaces (dummy)	0.2412	3.27	0.208	2.54
Moving around indoors: Extra-wide spaces (dummy)	0.4389	4.92	0.092	1.00
Living on same level as entrance: Suitable for short visits (dummy)	0.9266	10.72	0.082	0.87
Living on same level as entrance: Suitable for living or overnight visits (dummy)	1.5161	11.04	-0.150	-1.31
Modification that would be needed: Minimal (dummy)	0.1840	0.87	0.404	1.91
Total size of home compared to similar homes: 5% larger (dummy)	0.1104	1.89	0.093	1.46
Space used for corridors, bathroom, kitchen, laundry: 45% (dummy)	-0.0205	-0.27	-0.092	-1.12
Space used for corridors, bathroom, kitchen, laundry: 50% (dummy)	-0.0808	-1.02	-0.152	-1.75
Class membership parameters: Age (years)	0.0581	9.27		
Class membership parameters: Household with permanent mobility limitation (dummy)	1.1912	4.85		
Class membership parameters: Constant	-2.6752	-7.68		
Model fit: Log likelihood	-3229			
Model fit: Choice observations	5334			
Model fit: Individuals	889			

Source: CIE.

K.11 Buyer model of housing choice

Variable	Class 1 (Coef.)	Class 1 (Z value)	Class 2 (Coef.)	Class 2 (Z value)
Price/rent as proportion of predicted reference value	-1.5597	-2.61	-5.320	-9.38
Price/rent * low income (dummy =1 if household income <\$41 600 p.a.)	-2.0394	-2.18	-5.388	-2.66
Getting in and out: Single step (dummy)	1.1819	8.83	0.123	1.53
Getting in and out: Step-free (dummy)	1.6405	10.99	0.270	3.14
Moving around indoors: Wide spaces (dummy)	0.3749	4.39	0.229	3.73

Variable	Class 1	Class 1	Class 2	Class 2
	(Coef.)	(Z value)	(Coef.)	(Z value)
Moving around indoors: Extra-wide spaces (dummy)	0.5377	5.35	0.140	2.05
Living on same level as entrance: Suitable for short visits (dummy)	1.4574	13.70	0.133	2.00
Living on same level as entrance: Suitable for living or overnight visits (dummy)	2.6255	15.19	0.037	0.41
Modification that would be needed: Minimal (dummy)	0.4764	1.80	0.415	2.71
Total size of home compared to similar homes: 5% larger (dummy)	0.1677	2.49	0.141	3.03
Space used for corridors, bathroom, kitchen, laundry: 45% (dummy)	-0.0225	-0.25	-0.135	-2.33
Space used for corridors, bathroom, kitchen, laundry: 50% (dummy)	0.0367	0.43	-0.195	-3.13
Class membership parameters: Age (years)	0.0594	10.48		
Class membership parameters: Household with permanent mobility limitation (dummy)	0.8085	3.92		
Class membership parameters: Constant	-2.9803	-9.67		
Model fit: Log likelihood	-4092			
Model fit: Choice observations	7032			
Model fit: Individuals	1172			

Source: CIE.

Estimates of average WTP were derived from this model by calculating WTP at a respondent level using unconditional class probabilities and taking a weighted average accounting for the poststratification weights. The estimates from the models suggest that buyers are willing to pay a higher proportion of housing costs for accessibility features than are renters. The attributes that matter most to Australians are having amenities on the same floor as an entrance (noting that this feature is present in most of the existing housing stock) and a step-free entrance.

K.12 Average willingness to pay as a proportion of reference price

Change in housing features	Renter model (per cent)	Buyer model (per cent)
Getting in and out: 'Several steps' to 'Single step'	8.2	18.9
Getting in and out: 'Several steps' to 'Step-free'	12.4	27.5
Moving around indoors: 'Regular space' to 'Wide spaces'	3.9	8.4
Moving around indoors: 'Regular space' to 'Extra-wide spaces'	5.5	9.7
Living on same level as entrance: 'Unsuitable' to 'Suitable for short visits'	10.9	23.1
Living on same level as entrance: 'Unsuitable' to 'Suitable for living or overnight visits'	16.2	39.0
Modification that would be needed: 'Significant' to 'Minimal'	4.4	12.3
Total size of home compared to similar homes: 'Same' to '5% larger'	1.8	4.3
Space used for corridors, bathroom, kitchen, laundry: 40% to 45%	-0.8	-2.0
Space used for corridors, bathroom, kitchen, laundry: 40% to 50%	-1.8	-1.9

Source: CIE.

Estimates of WTP for accessibility features are higher than CIE's prior expectations, particularly for buyers (as distinct from renters). It is prudent to check the results against reference points from real markets, particularly given the hypothetical and inconsequential nature of the choice exercise and the fact that it focused on a relatively small subset of features for a very high-priced and infrequently purchased good.

CIE checked the WTP estimates for owner-occupiers with estimated costs of retrofitting the features. The WTP estimates for single step or step-free access, relative to several steps, and the estimates for amenities at entrance level were significantly (in some cases, an order of magnitude) higher than the estimated cost of retrofitting the features.

This result could be caused by:

- respondents failing to consider the possibility of purchasing a home without these features at a relatively low price and undertaking a retrofitting exercise
- respondents over-estimating the costs of retrofitting
- respondents rationally factoring in high non-financial costs of retrofitting associated with time, emotional stress and risk, or
- respondents over-stating their true WTP.

The home purchase choice appears more susceptible than rental home choice to potential hypothetical bias, since it involves large sums of money and is a transaction that is conducted infrequently. It is also linked to the enhanced social status associated with home ownership. Home purchase decisions involve not only consideration of one's own use value, but also speculative expectation on capital gains, expectations about others' preferences and future supply and demand and how those factors may impact on the future sale price of the property. It is not possible for CIE to disentangle these confounding effects on the implied value estimates.

For these reasons, CIE's view is the renter model provides the best estimates of the use value of the accessibility features because it is less confounded by other effects. CIE derive use values for owner-occupiers from the renter estimation results by accounting for the impact of demographic differences between owners and renters on both the reference price and WTP as a proportion of the reference price. In particular, CIE calculate a reference price for owner-occupiers by applying the rental reference price model to each respondent's characteristics and calculate unconditional class membership probabilities (and WTP) using their age, mobility and income characteristics. Their WTP is estimated to be higher than renters' WTP because they tend to be older and shopping for more expensive rental properties (an average reference price of \$337 per week compared to \$307 per week).

The estimates of average use values for accessibility features for buyers and renters are provided in table K.13. The table also provides estimates of the estimated values for respondents in a household with at least one person with permanent mobility limitation.

K.13 Estimates of average willingness to pay by tenure type and mobility status

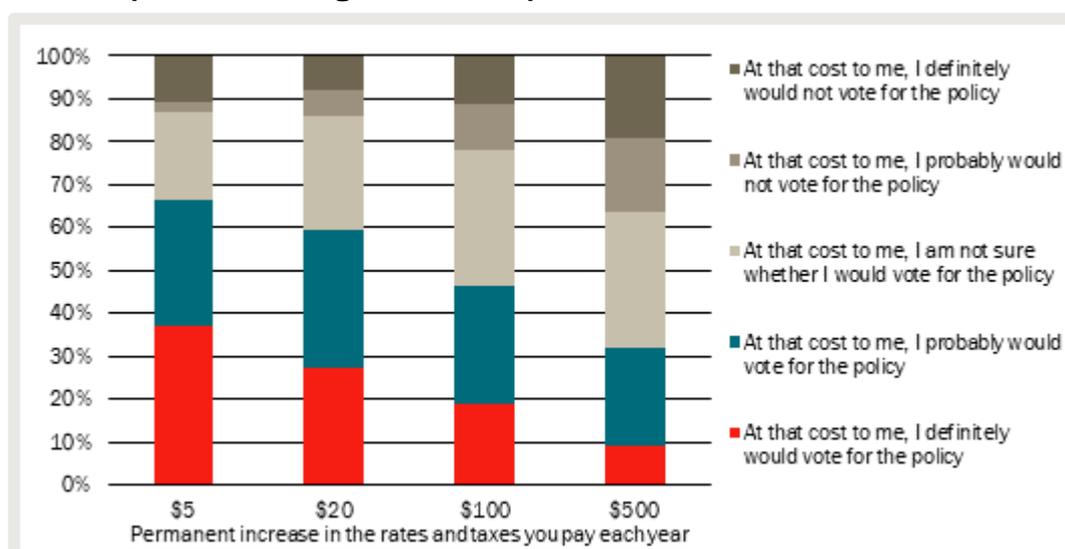
Change in housing features	Buyers (\$ per week)	Renters (\$ per week)	Buyers with mobility limitation (\$ per week)	Renters with mobility limitation (\$ per week)
Getting in and out: 'Several steps' to 'Single step'	32.63	25.22	42.96	39.74
Getting in and out: 'Several steps' to 'Step-free'	49.02	37.96	65.65	60.99
Moving around indoors: 'Regular space' to 'Wide spaces'	15.94	12.21	19.39	17.57
Moving around indoors: 'Regular space' to 'Extra-wide spaces'	21.51	16.66	28.78	26.73
Living on same level as entrance: 'Unsuitable' to 'Suitable for short visits'	42.45	32.97	58.18	54.35
Living on same level as entrance: 'Unsuitable' to 'Suitable for living or overnight visits'	62.01	48.42	88.72	83.72
Modification that would be needed: 'Significant' to 'Minimal'	18.59	14.08	20.39	17.90
Total size of home compared to similar homes: 'Same' to '5% larger'	7.23	5.54	8.82	8.00
Space used for corridors, bathroom, kitchen, laundry: 40% to 45%	-3.30	-2.48	-3.33	-2.85
Space used for corridors, bathroom, kitchen, laundry: 40% to 50%	-7.49	-5.68	-8.36	-7.39

Source: CIE.

Willingness to pay to improve housing outcomes for others

Responses to the CV question resulted in a downward-sloping demand curve, with around 37 per cent of respondents asked at the \$5 cost level indicating they would definitely vote for the policy, compared with 9 per cent of respondents asked at the \$500 cost level.

K.14 Responses to contingent valuation question



Source: CIE.

There was negligible correlation between cost and the extent to which respondents considered others, with average consideration of others of 7.0, 7.1, 7.1 and 7.0 across the \$5, \$20, \$100 and \$500 cost levels. There is therefore no need to apply a scaling factor for extent of consideration of others to individual observations in the calculation of WTP and one can instead apply the scaling factor to the final calculation of average WTP.

The Turnbull lower bound of expected mean WTP is \$58 per year after accounting for the sample reweighting. This is a conservative estimate calculated by treating ‘probably yes’ responses as ‘no’ votes, consistent with the approach typically used for certainty scales in environmental valuation where ‘yea saying’ is a concern. A less conservative approach in which ‘probably yes’ votes are treated as ‘definitely yes’ votes at the next-lowest level in the cost vector gives a Turnbull lower bound expected mean WTP of \$100 per year.

Multiplying the \$58 figure discussed above by the survey completion rate of 97 per cent and the average extent to which responses were based on consideration of others of 71 per cent gives an adjusted estimate of average WTP of \$40 per year.

Allocation of accessible housing

People with mobility limitation are more likely to live in homes with accessibility features. CIE’s survey shows that existing rental homes are more likely to have a step-free or single-step entrance and wider door openings, but are less likely to have amenities at entrance level, if they are occupied by someone with limited mobility. Using estimates of WTP as a weight for individual features, we find that the likelihood of a household having accessibility features is 26 per cent higher if that household contains a member with mobility limitation (see table K.15). If a person with a mobility limitation is moving into a rental home and 10 per cent of the rental stock is accessible, we estimate that there is a 12.6 per cent (26 per cent higher than 10 per cent) probability the person will move into an accessible dwelling.

K.15 Increased likelihood of accessibility features in homes occupied by at least one person with a mobility limitation

Accessible feature	Households without mobility limitation (n=414)	Households with mobility limitation (n=94)	Likelihood ratio	Weight (based on WTP)	Weight * likelihood ratio
	per cent	per cent			
No steps or a single step between street/parking and the entrance	57	79	1.39	0.29	0.41
Door openings wider than most other homes	8	30	3.63	0.07	0.26
Some or all corridors, bathrooms, kitchen and laundry have enough space for turning a wheelchair	66	66	1.00	0.07	0.07
Step-free shower entry	19	24	1.26	0.00	0.00

Accessible feature	Households without mobility limitation (n=414)	Households with mobility limitation (n=94)	Likelihood ratio	Weight (based on WTP)	Weight * likelihood ratio
	per cent	per cent			
Toilet on the same level as an entrance	83	74	0.90	0.38	0.35
Shower on the same level as an entrance	70	67	0.96	0.18	0.17
No indoor stairs or straight indoor stairs	85	72	0.85	0.00	0.00
Total				1.00	1.26

Source: CIE.

Features provided in the baseline

In order to account for the accessibility features provided in the baseline, WTP for different features under different options are weighted by the non-impact scenario weightings assumed by DCWC (2020).

DCWC (2020) provides weightings of zero impact scenario for each accessible feature for the following archetypes:

- volume built house
- custom built house
- townhouse
- three-storey or less apartment with walkups, and
- apartments with four- or more storeys.

These archetypes account for 32 per cent, 24 per cent, 15 per cent, 2 per cent and 27 per cent, respectively, of total new built dwellings. Applying these shares to the zero-impact weightings of each feature for relevant archetypes gives the average shares of features provided in the baseline (table K.16).

K.16 Average share of accessible features provided in the baseline

Accessible feature	Silver (%)	Gold (%)	Gold+ (%)
Step free access path	45.1	28.2	28.2
Step free access to outdoor area	0.0	0.0	18.4
Dwelling entrance	26.1	6.2	6.2
Internal doors and corridors	20.0	2.8	2.8
Toilet	9.8	1.2	1.2
Shower	8.5	2.7	2.7
Reinforcement of bathroom and toilet walls	5.0	5.0	5.0
Internal stairways	0.0	1.5	1.5
Kitchen space	0.0	53.0	38.1

Accessible feature	Silver (%)	Gold (%)	Gold+ (%)
Laundry space	0.0	30.8	14.8
Space on entry level suitable for bedroom	0.0	0.0	0.0
Light switches	0.0	0.0	0.0
Door handles	0.0	0.0	0.0
Window sills	0.0	0.0	5.0

Source: CIE estimate based on DCWC weightings.

The WTP study has estimated WTP for some broader features – getting in and out, moving around indoors, living on same level as entrance. The WTP for these broad features are then mapped into the 13 proposed features in the NCC using the weighted construction cost of providing each feature estimated by DCWC. Table K.17 presents the average WTP (\$ per week) for each of the accessible features.

K.17 Average WTP for accessible features

Accessible feature	Silver (\$/week)	Gold (\$/week)	Gold+ (\$/week)
Step free access path	48.3	50.6	21.0
Step free access to outdoor area	0.0	0.0	37.5
Dwelling entrance	15.0	12.7	4.9
Internal doors and corridors	5.4	28.6	23.8
Toilet	9.0	32.3	26.3
Shower	1.5	29.2	23.8
Reinforcement of bathroom and toilet walls	2.5	4.2	3.4
Internal stairways	0.0	2.9	2.4
Kitchen space	0.0	9.6	18.0
Laundry space	0.0	7.3	14.4
Space on entry level suitable for bedroom	0.0	0.0	0.0
Light switches	0.0	0.0	0.0
Door handles	0.0	0.0	0.0
Window sills	0.0	0.0	1.9
Total	81.8	177.3	177.3

Source: CIE estimates.

Multiplying the shares in table K.16 by the average WTP in table K.17 and summing up, gives the weighted average share of accessible features provided in the baseline:

- 34.1 per cent of Silver features on average have been provided in the baseline
- 13.9 per cent of Gold features on average have been provided in the baseline, and
- 13.6 per cent of Gold+ features on average have been provided in the baseline.

Debriefing questions

Respondents that did not indicate they would definitely or probably vote for the policy to increase accessible housing were asked the reason for their decision. The most common reasons given were that governments should deliver the outcomes without imposing a cost on the respondent and a concern that governments may not deliver the outcomes. There is a question as to whether the responses to the valuation question by these respondents should be excluded as ‘protest responses’ that are not a true measure of the respondent’s preferences over delivered outcomes. CIE prefers to retain these responses, as excluding them may bias the results where there is correlation between underlying WTP and mistrust of governments.

K.18 Reasons for not voting for the policy to increase accessible housing

Answer to question: What were the main reasons for your decision?	Sample reweighted (per cent)
I would prefer to spend my money on something else	27.4%
The question was confusing	6.5%
I didn’t have enough information about the policy	21.5%
I’m concerned that governments might put taxes up without improving accessible housing	37.3%
I think governments should improve accessible housing without increasing taxes	41.5%
Other peoples’ housing should not be my problem	15.7%
Other (Please specify:)	6.3%

Source: CIE.

Roughly six in ten respondents believed the survey would be at least somewhat likely to affect government action on accessible housing and the rates and taxes they pay. Models run with and without the respondents that did not believe the survey would be consequential did not find a dramatic difference in stated preferences. The estimated mean WTP was slightly higher for respondents indicating they believed the survey would be at least somewhat likely to affect the rates and taxes they pay.

K.19 Consequentiality of the survey

Question	Answer	Sample reweighted (per cent)
Q1	I believe it is very likely the survey will affect government action	13.3%
Q1	I believe it is somewhat likely the survey will affect government action	42.4%
Q1	I don’t think the survey will affect government action	44.3%
Q2	I believe it is very likely the survey will affect my rates and taxes	13.9%
Q2	I believe it is somewhat likely the survey will affect my rates and taxes	44.2%
Q2	I don’t think the survey will affect my rates and taxes	41.9%

Note:

- Q1: To what degree do you expect the results of this survey will affect government action on accessible housing?
- Q2: To what degree do you expect the results of this survey will affect your rates and taxes?

Source: CIE.

Peer review of stated preference research

The expert peer reviewer of the survey method and data analysis, Professor Riccardo Scarpa, provided the following statement on the research.

K.20 Expert statement from Professor Riccardo Scarpa



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11th, March, 2020

Peer Review: Australian Building Codes Board stated preference study

To whom it may concern,

I write to communicate my involvement as an expert of the New Zealand Institute of Business Research of the Waikato Management School in the peer review of the study undertaken by the Centre for International Economics. I was involved in relation to the stated choice survey development, administration and data analysis and interpretation. I engaged in consultation and dialogue with Dr. Benjamin McNair from the beginning of this endeavor and at several stages of advancement in the conduction of this study. In particular, I reviewed the technical details of all of the experimental designs for the stated choice surveys and the bid design for the contingent valuation survey. I found the resulting designs employed in each survey to be well grounded in the theory and current practice of experimental design for stated choice data collection and administration.

I was also involved in evaluating the various model estimation procedures. In that context I was able to independently replicate all results and help conduct an adequate specification search that led to the selected models used to obtain WTP estimates in the report. I reviewed the congruence of the interpretation of the statistical model results for policy recommendation and found it robust and coherent with my understanding of these models. During several meetings with Dr. McNair we jointly developed alternative approaches to data analysis to address issues of simultaneity evident in the data, which led to an instrumental variable approach. We both agreed this approach to be more suitable for the underlying data and purpose of the model. We also discussed the robustness of assumptions necessary to jointly model renters' and buyers' choices and agreed to proceed with different models for each sub-group, as we assess the required assumptions for joint modelling to be too stringent. In terms of interpretation of the WTP estimates we agreed that those from renters would appear to be more suitable for a variety of reasons described in detail in the report.

With the information in my possession I am satisfied that the report fully meets the state of practice in commercial consultancy environments in nonmarket valuation studies via stated choice. In fact, the techniques used in this study go beyond commonly established practice and include approaches at the forefront of the discipline, which many, including myself, would consider state of the art. Overall I am very satisfied with the quality of the report and the supporting data analysis and specification search, which in my opinion made an excellent use of the resources made available for the study.

Sincerely yours,

Riccardo Scarpa



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