

NSW LAND AND HOUSING CORPORATION

DESIGN STANDARDS 2014

REVISION 1

NSW DEPARTMENT OF FAMILY & COMMUNITY SERVICES

NSW LAND AND HOUSING CORPORATION

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ENQUIRIES

This document may be accessed from: <http://www.housing.nsw.gov.au/NR/rdonlyres/8F0943B7-7DE4-4518-BE40-972CB8C2924C/0/DesignStandards.pdf> or by writing to the address above.

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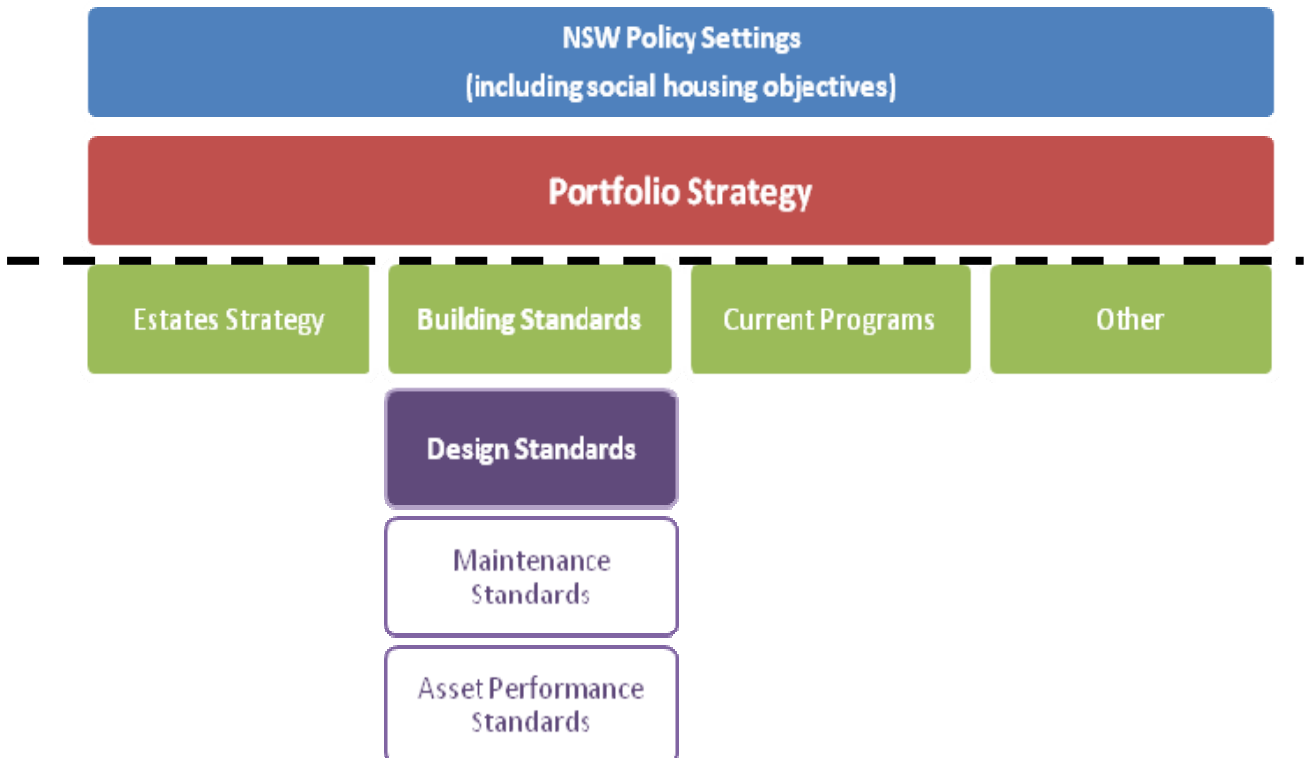
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INTRODUCTION

The LAHC Design Standards

The Design Standards form part of the Building Standards as shown in the diagram below.

The NSW Land and Housing Corporation's Building Standards have been established to meet the LAHC objectives and LAHC Mission.



Hierarchy

1. Portfolio Strategy
2. These Design Standards
3. Component Requirements
4. Reference Specification

Portfolio Strategy

- Sets out expected development yields
- Recognises the LAHC Total Asset Management (TAM) and Heritage Asset Management (HAM) Plans
- Determines if a project is suitable for the use of Alternate Building Systems.
- Determines requests/trials for pre-approvals
- Properties are designed to accommodate a specific disability only when identified
- Recognises HNSW tenancy management policy directions.

Purpose

This document:

- Seeks to encourage design, performance and functional innovation to create new homes
- Applies to all new LAHC housing and major refurbishment of existing housing
- May be taken as a guidance rather than prescriptive requirement for:
 - projects undertaken by the **affordable housing** or **community housing** sector which are **mainly privately funded**, or
 - **Aboriginal Housing Office** projects.

Structure

Section A: Design Principles and Explanations

The Design Principles are non-negotiable criteria which must be met.

Section B: Design Features

Essential aspects of the project can be met by complying with the:

- Performance requirements to meet the Design Principles, or
- 'LAHC Deemed to Satisfy Solution(s)' provisions.

These provide some flexibility to the designer, and articulate what LAHC does and does not want in the supply of its housing.

Section C: Refurbishments

Details approaches for existing social housing stock refurbishments.

Section D: Referenced documents and Background Papers

Section E: LAHC Corporate and Asset Standards Definitions

LAHC objectives

LAHC's primary role is to provide housing for people who cannot meet their own housing needs, and aims to:

- Have safe workplaces and sites
- Become a financially sustainable business
- Be valued by our stakeholders
- Develop the culture, capabilities and systems to deliver our role successfully
- Have a housing portfolio strategy
- Contribute to whole of government reform initiatives.

LAHC Mission

LAHC's role is essentially threefold:

1. planning and building housing that is **fit for purpose**
2. managing our housing portfolio to maintain properties at an acceptable level and **prolonging** their useful life
3. funding and managing tenancy management services delivered by Housing NSW.

A. DESIGN PRINCIPLES

- A1. Compliance with National Code of Construction (NCC)
- A2. Whole of Life Cost effectiveness balanced with innovation
- A3. Functionality
- A4. Energy and Water Sustainability
- A5. Aesthetics and a sense of home

EXPLANATION of PRINCIPLES

- A1. Compliance with National Code of Construction (NCC)**
- All LAHC developments and refurbishments must comply with the NCC performance requirements as a minimum, through either the deemed-to-satisfy solutions or through acceptable alternative solutions.
 - LAHC has some policies which **exceed** NCC requirements, for example window safety. In such situations LAHC policies **must** be complied with and can be found at: <http://www.housing.nsw.gov.au/Forms+Policies+and+Fact+Sheets/Policies/Key+Window+Locks+Policy.htm>
- A2. Whole of Life Cost effectiveness balanced with innovation**
- Achieve directed site yields, reduce operating and maintenance costs, and aim for long-life spans by:
 - utilising cost management throughout the planning and design development process
 - using economic analysis to evaluate construction alternatives, confirming the lowest cost structure that meets the program
 - recognising LAHC's 'designing out maintenance' approach to construction to reduce recurrent maintenance expenditure.
 - LAHC welcomes cost-effective innovative solutions including alternate building systems, finishes and wall systems meeting the performance requirements of the NCC.
- A3. Functionality**
- Dwellings must be fit for purpose and flexible by meeting a variety of household sizes through appropriate space provision and storage.
 - LAHC provides dwellings suitable for later modifications to suit tenants with a disability, whilst meeting the NCC access requirements.
- A4. Energy and Water Sustainability**
- LAHC Buildings must:
 - meet BASIX requirements
 - achieve a 6 star NatHERS rating.
- A5. Aesthetics and a sense of home**
- Projects must contribute positively to the streetscape and neighbourhood as well as recognise tenant needs for security, privacy and safety.
 - **All buildings** must address the design qualities contained in the Residential Flat Design Code.

B. DESIGN FEATURES

B1.0 SITE PLANNING

B1.1 General

The Portfolio Strategy prescribes development yield outcomes for different project sites.

B1.2 Performance Requirements

- a. Plan for separable lots when briefed.
- b. Design to merit assessment criteria.

B1.3 LAHC Deemed to Satisfy Solution(s)

B1.2a - Separable lots achieved by following methods

- Large sites/renewals: master-plan, then divide into separate buildings or clusters, each located on a separate lot for possible subdivision, with their own identities and separate entries.
- Allow each unit within a building to be strata-titled, each having its own connection to services which can be separately metered in the future.

B1.2b - Meeting merit assessment criteria achieved by following methods:

- Incorporate the design principles within the Residential Flat Design Code, (where applicable) particularly:
 - a. Solar access
 - b. Privacy, both inter-tenancy and to/from adjoining sites
 - c. Setbacks
 - d. Overshadowing of neighbours.

B2.0 CAR PARKING

B2.1 General

The level of car parking provision in LAHC developments must ensure resources are not directed to redundant car parking capacity at the expense of providing extra housing on site.

Car ownership rates for social housing tenants are lower than in the general community, though rates vary across Local Government Areas.

B2.2 Performance Requirements

- a. Off street car park provision to be planned efficiently, minimising hard stand, excavation and basement car parking.
- b. Minimise the risk to children from vehicles within the site.
- c. Minimise car parking conflict and anti-social behaviour.

B2.3 LAHC Deemed to Satisfy Solution(s)

B2.2a – Off street car park provision achieved by the following methods

- Parking designed in accordance with AS 2890.1-2009 Parking Facilities Part 1: Off Street Car Parking and Part 5: On-Street Parking.
- Keep driveways and cross-overs to the minimum width required to meet these Standards.
- Class 1a dwelling: One enclosed garage, 3000mm wide x 6000mm long maximum). Where reasonably practical ensure for a distance of 5400mm forward of the garage door is at maximum 1:40 grade (1:33 maximum if bitumen).
- Liveable Housing Class 1 dwellings: 1 space per 5 required spaces are to be covered, 3200mm x 5400mm, designed for wheelchair access, with a covered way.
- Seniors Living SEPP developments: 1 space per 5 units meeting AS2890.6 2009 'Parking facilities off street parking for people with disabilities', located as close as possible to dwellings, covered, with good passive surveillance.
- Basement car parking provided where yields are substantially improved.
- Pervious paving for vehicle 'hardstand' areas including parking areas must not impede wheelchair users.

B2.2b – The risk to children minimised by the following methods

- Fencing or other semi-transparent barriers used to prevent unintended access to vehicle areas by young children.
- Driveway lengths minimised. Provide passing bays where long driveways unavoidable.
- A separate pathway for pedestrian access into the site has been provided independent of the vehicle access driveway.
- Vehicle areas and their surrounds are clearly visible to drivers leaving and entering the property, both day and night.
- Class 2 developments: cars must enter and exit onto the street in a forward direction.
- Passive surveillance is achieved from residences and public areas to car parking areas.

B2.2c – Minimising car parking conflict achieved by the following methods

- For dual occupancy dwellings, separate the driveways.
- Access and security arrangements to control unauthorised car parking and malicious damage is in accordance with the project brief.
- Ground floor bedrooms are orientated away from or screened to prevent car headlight intrusions.

B3.0 EXTERNAL COMMON AREAS INCLUDING LANDSCAPING

B3.1 General

Good landscaping designs recognise the site, soils and climate, and can be easily maintained. For Common Area External Lighting: refer **Section B10.2c**.

B3.2 Performance Requirements

- a. Meet the access requirements of the NCC.
- b. Assist visitors to find their way through the site with appropriate signage.
- c. Common areas are low maintenance and usable by all tenants.
- d. Provide a sense of security for tenants.

B3.3 LAHC Deemed to Satisfy Solution(s)

B3.2a – Meeting the access requirements of the NCC achieved by the following methods

- Meet the requirements for access for people with a disability in Table D3.1 of the NCC.
- Ground floor dwellings in multi-unit developments having a direct street frontage also to have an accessible path of travel to the common areas.
- Paths:
 - Maximum 1:20 gradient
 - Integral slip resistant surfaces
 - Class 1 dwellings: 1000mm min clear width
 - Class 2 developments: 1200mm min clear width
 - Circulation routes are direct.
- Ramps:
 - Maximum 1:14 gradient with landings in accordance with AS1428-2009
 - Minimise use of ramps and retaining walls, and integrate into landscape design
 - Integral slip resistant surfaces
 - 'Switchback' ramps into buildings have landings suitable for ambulance trolleys.
- Steps, where unavoidable:
 - 300mm going and 150mm riser, maximum, with no projecting nosing
 - Steps finish and start with full steps and do not 'disappear' because of cross falls
 - Handrails provided both sides.
- **Do not** provide podium level lobby entries above the footpath accessed only by stairs.
- **Do not** compromise dwelling privacy and security if providing access to dwellings via external verandas.

B3.2b – Assisting visitors achieved by the following methods

- Signage design:
 - In accordance with the LAHC Component Requirements
 - Site maps to have clear typography and appropriately coloured symbols
 - Signage within lobbies and at entrance areas appropriately sized and reconfigurable
 - Combine pictograms and/or Braille in accordance with NCC.
- Signage identifies:
 - Street address
 - Block numbers
 - Location of any public on-site facilities
 - Bus stops, taxi ranks
 - Parking restrictions.
- Dwellings with direct frontage to the street to have their own numbered letterbox. All letterboxes preferably integrated into front fence.

B3.2c – Low maintenance and usability achieved by the following methods

- Soft Landscaping:
 - Usable flat outdoor areas slopes: between 1:20 and 1:100
 - Slopes for turf and garden beds: 1:10 maximum
 - Overland flow paths directed away from buildings
 - Prevent wet walls: paths and landscaping must not be above building floor levels
 - Garden bed widths: 1000mm minimum. Minimise turf areas generally. Pave up to boundary where distance to building is less than 1500mm
 - Weed matting (non-plastic type) under all private courtyard garden beds
 - Plant and shrub species: indigenous flora and/or xeriscape garden types, readily available in local nurseries, all to approval. Trees adjacent to building: mature height 3.0m max with non-invasive root systems. Refer **Section D**
 - Shade trees near car spaces: crown must allow good surveillance from dwellings.
 - Street tree species are consistent with Council's requirements
 - Make provision for raised garden beds or small sections of vertical gardens for gardeners with mobility issues.
- Water Sensitive Urban Design (WSUD) measures to be considered.
- Open space is 'attached' to individual dwellings as much as possible, using low and high fences, with planting placed inside these fences. See **B4.0 Dwellings**.
- Maintenance contractors must be able to access common open space without passing through the private open space of a dwelling.
- Common use drying lines, if briefed: one max for 1-11 dwellings, two max for 12-20 dwellings, three min thereafter, screened from the street. Provide wheelchair access and appropriate sized paved area under.
- Waste and Recycling Storage areas: sized to Council requirements, located no more than 30m from each dwelling, and within easy access to collection points on street. Wheelchair access from each block and appropriate sized paved area provided.
- Seating, garden beds and any covered areas are useable for most of the year, screened for wind protection and for privacy from the street. BBQ's provided when briefed.
- External shade structures are roofed, providing year-round weather protection. Exposed frames and posts constructed of suitably finished steel, not timber.
- **Do not** use piped watering systems for gardens or lawns.
- **Do not** use coloured concrete to waste and recycling storage area paving.
- **Do not** place garden beds against buildings. Provide paved path where suitable.
- **Do not** lay turf in private courtyards/private open space.
- **Do not** use concrete edging around garden beds.
- **Do not** render and paint concrete block retaining walls.
- **Do not** use advanced tree species.
- **Do not** use noxious or allergenic plant species.
- **Do not** plant trees and shrubs in lawns.

B3.2d – Providing a sense of security for tenants achieved by the following methods

- Incorporate Crime Prevention through Environmental Design (CPTED) principles, especially through passive surveillance and fencing measures.
- Rear and side boundary fences: 1800mm high, with rails spaced to prevent a child from climbing.
- Front (where directed) and side boundary (to cut off) fence: consistent with streetscape and to Council requirements. If no Council requirement, fencing is 900-1200mm semi-transparent, with 900mm wide clear pedestrian gate, 2700mm min width vehicle gates.
- Corner blocks must have 900-1200mm semi-transparent perimeter fencing fronting streets/laneways.
- **Do not** use 'spear points' fencing where impaling is possible.

B4.0 DWELLINGS

B4.1 General

LAHC Dwelling sizes are sufficient but not excessive spaces.

B4.2 Performance Requirements

- Dwellings must provide cooking, bathing, sleeping, eating and entertaining spaces; have year round thermal comfort, incorporate passive solar design techniques; reduce the need for artificial lighting and ventilation; have sufficient furniture and circulation space; and provide privacy.
- Balconies and outdoor spaces are to be safe, prevent falls, give privacy and are of a useful size and configuration.
- Connection to the National Broadband Network (NBN) required.
- Internal finishes are to be hard wearing, robust, easily cleaned and repairable.
- Dwellings suitable for a variety of tenancy health and mobility needs when briefed.

B4.3 LAHC Deemed to Satisfy Solution(s)

B4.2a – Dwelling performance achieved by the following methods

- Dwellings internal area: as per **B4.3 Table 1**.
- Room combinations: as per **B4.4 Table 2**.
- Furniture: sizes as per **B4.4 Table 4**. Does not include circulation spaces.
- Corridors: **1000mm wide** clear width minimum. Minimise corridor lengths.
- Ceiling heights: Class 1 – ground floor 2700mm, 2400mm for upper floors. Class 2 - all habitable rooms 2700mm nominal.
- Sunlight: Class 2 dwellings - 3 hours min of sunlight to the living rooms and private open spaces of 70% of dwellings between 9am and 3pm. In very high density areas reduced sunlight hours to be supported by modelling. Class 1 dwellings - refer **SECTION B.10**.
- Do not** design with split floor levels or floor plates with small changes in levels.
- Do not** use roof lights or skylights. Sky tubes used sparingly, appropriate to any bushfire prohibitions.
- Fixed highlight windows may be used to provide light and privacy.
- Do not** use remote winder mechanisms to operate windows.
- Acoustic privacy between units and common areas as per NCC.

B4.3 Table 1 Dwelling Floor Areas

Bedroom Category	Property Type/Program	Net Floor Area m ² (Note 1)	
		Min	Max (Note 2)
Studio Apartment	Liveable Housing (See Note 3)	30	35
1 bed	Unit villa	42	45
	Liveable Housing unit / villa /	50	55 (Note 4)
2 bed	Unit / villa /cottage	60	65
	Liveable Housing unit / villa /cottage	70	75 (Note 4)
	Townhouse	75	80
3 bed	Unit / villa / cottage	80	85
	Liveable Housing unit / villa / cottage	95	100 (Note 4)
	Townhouse	100	105
	Liveable Housing Townhouse	105	110
4 bed (Note 5)	Townhouse / cottage	120	125
	Liveable Housing townhouse / cottage	125	135
5 bed (Note 5,6)	Townhouse / cottage	140	150
	Liveable Housing townhouse / cottage	150	160
6 bed (Note 5,6)	Townhouse / cottage	155	170
	Liveable Housing townhouse / cottage	165	180

NOTES to Table 1

1. "Net Floor Area" See *Gross Floor Area* definition in **Section E**.
2. Floor areas may exceed the maximum area by **2m² maximum** to achieve a more efficient floor plan **AND AS A CONSEQUENCE** cheaper construction. Other than for travel distance compliance to meet the NCC, further exceeding these limits require General Manager, Strategy, approval. **Do not** articulate the dwelling's external walls solely to meet size maxima.
3. All Studio apartments are to be designed as Liveable Housing units to accommodate 1 person. Consider built in furniture in addition to wardrobe and kitchenette.
4. Development standards in the Affordable Rental Housing SEPP prescribe **minimum** "non-refusable" gross floor areas of 50m²/70m²/95m² for 1, 2 and 3 bedrooms respectively.
5. Units of more than 3 bedrooms may use these sizes as a guide.
6. Consider duplex/'The Big House' approach on corner sites providing two or more separately tenanted dwellings.
7. Housing for Seniors and People with a Disability and Seniors' dwellings (SEPP HSPD) projects must meet the circulation sizes required by the SEPP. Use Table 1 as a guide.

B4.2b – Balconies and private outdoor spaces performance achieved by the following methods

- Balconies and Private Open Space dimensional requirements to **B4.5 Table 3**. See **Section B9.2c** for deemed to satisfy solutions for balcony design and finishes.
- Balconies, verandas and courtyards have weather protection, 1:100 minimum falls away from building; prevent water from ponding and water ingress into dwelling.
- Balconies give casual surveillance of the site, provide privacy and controlled contact with passing pedestrians and visitors, and resist unauthorised entry.
- Rear garden courtyards for ground floor units paved with coloured, not stencilled concrete, with grated drains. 1 metre wide (minimum) border planting only. No turf.
- **Do not** use pavers or stepping stones.

B4.2c – Connection to the NBN achieved by the following methods

- Provide for NBN connection and services including basic conduits and ancillary items for fibre optic cables in accordance with NBN Company requirements.
- NBN infrastructure supports telephone and high speed internet services over the NBN.
- If NBN is available, separate telephone line is not required.
- If NBN is not available, dwelling will require a separate telephone point and a data outlet.
- Conduit provision for future cabling as directed.

B4.2d – Internal finishes performance achieved by the following methods

- Internal wall finishes must be impact, moisture and mould resistant.
- Stud framed walls with impact resistant plasterboard acceptable where soil tests indicate that full brick not feasible or project has TAFE training involvement.
- Texture paint finish to concrete slab soffits with cast in light points. Ceiling/wall junctions finished with plasterboard 90mm coved cornice.
- Steel door frames for entry and internal doors. Internal doorframes in studio units where forming part of an aluminium window wall excepted.

B4.2e – Dwellings suitability for tenants achieved by the following methods

- Liveable Housing features incorporated as per **Section B11**, including external landings.
- Class 1 or 2 dwellings designed as briefed for people with a mobility disability: obtain a registered Occupational Therapist's report on tenant-specific needs rather than relying on generic AS1428.1 provisions.
- Stair flights with quarter landings acceptable if furniture removal is possible. No winders.

- Secure scooter storage provided for 1:10 of dwellings, located near lifts or lobbies, in basement car parking or inside the dwelling. Recharging points within dwelling.
- Bicycle spaces at minimum 1:10 dwellings.

B4.4 Table 2 Room combinations by bedroom category

Bedroom Category	Living Room	Kitchen/Dining	Bathroom with WC	Additional WC	Laundry
Studio Apartment	Yes	Combined with living	Yes	No	Combined with bathroom.
1 - bed 2 - bed	Yes	Combined with living	Yes	No	Combined with bathroom.
3 - bed	Yes	Combined or separate space from living space	Yes	Yes	Combined with additional WC, or in laundry cupboard.
4 - bed or more	Yes.	Separate space from living.	Yes	Yes	Combined with additional WC, or in laundry cupboard.

B4.5 Table 3 Balconies and private open space requirements

Item	Bedroom Category							Comments
	Studio	1	2	3	4	5	6	
BALCONIES: Primary ¹ Minimum (m ²)	6		10					Provide 2nd balcony for 3 or more bedroom dwellings.
Minimum depth (m)	2		2					Balcony design must be modelled to ensure required solar access for the dwellings below is achieved.
Private Open Space (POS) Ground Floor Dwellings Minimum (m ²)	15		25	35	40	50	60	Grade 1:100 minimum away from building.
POS minimum dimension	3		4					

¹ From SEPP 65 Residential Flat Design Code:

- Provide primary balconies for all apartments with a minimum depth of 2 metres.
- Developments which seek to vary from the minimum standards must demonstrate that negative impacts from the context - noise, wind, - can not be satisfactorily mitigated with design solutions.
- Provide scale plans of balcony with furniture layout to confirm adequate, useable space when an alternate balcony depth/shape is proposed.

B4.4 Table 4 Furniture Schedule

Room Type	Beds	Furniture	Plan dimensions (mm)
Main bedroom	All dwellings	Queen size double bed (mattress)	1550 x 2050 (min)
		Wardrobe – full height with full height opening door sets. Sliding doors preferred.	600 x 1800 (min) Studio – 600 x 1200
		2 x bed side tables (1 only in Studio apartments)	450 x 450
Second bedroom in SL SEPP housing (*Can also be furnished with 2 single beds, as below)		King size single bed (mattress)	1100 x 2050 (min)
		Wardrobe - (as above)	600 x 1200 (min)
		1 x bedside table	450 x 450
Additional bedrooms		2 x single beds	900 x 2050
		Wardrobe - (as above)	600 x 1200 (min)
		2 x bed side table	450 x 450
Living room	Studio	1 armchair only 1 x coffee table	900 x 900 armchair 600 diam. coffee table
	1-2 bed dwellings	2 x 2 seat sofas OR 1 x 2 seat sofa & 2 x armchairs	900 x 1800 sofa 900 x 900 armchair
		Low shelf unit	450 x 1200
	3 bed dwellings	1 x 2 seat sofa	900 x 1800
		1 x 3 seat sofa	900 x 1950
		Low shelf unit	450 x 1800
	4-6 bed dwellings	1 x 2 seat sofa	900 x 1800
		1 x 3 seat sofa	900 x 1950
		2 x low shelf units	450 x 1800
Dining	Studio	Dining table, 2 chairs.	900 x 600
	1 bed dwellings	Dining table, 3-4 chairs	900 x 900 table
	2 bed dwellings	Dining table, 6 chairs	900 x 1200 table
	3 bed dwellings	Dining table, 8 chairs	900 x 1800 table
	4-6 bed dwellings	Dining table, 8 chairs	900 x 1800 table
Balconies, Private Open Space	All dwellings	As per Dining Room (above), with 2 chairs fewer for all but Studio	
Additional built-in storage cupboards	All dwellings	Broom/garden cupboard (Preferably near kitchen)	600 x 450 deep with shelf at 1200 above floor
	0 - 2 bed dwellings	Linen cupboard (can be incorporated into main bedroom wardrobe)	600 x 450 deep, with 4 (min) equally spaced shelves
	3 - 6 bed dwellings	Linen cupboard – full height	800 x 450 deep with 4 (min) equally spaced shelves

*Check against SEPP SL
Furniture sizes exclude circulation spaces.

B5.0 LIVING AND DINING AREAS

B5.1 General

- Open plan dwellings provide greater flexibility for furniture and circulation
- Keyed window locks to all opening windows.

B5.2 Performance Requirements

- Sufficient space for the furniture and services is provided for the intended number of occupants and visitors.
- Ensure acoustic and visual privacy between private and entertaining areas.
- Eliminate trip hazards throughout and outside of the dwelling.

B5.3 LAHC Deemed to Satisfy Solution(s)

B5.2a – Sufficient space for the furniture and services is achieved by the following methods

- Living area sizes: as set out in **B5.4 Table 5**
- Living room width: 3600mm minimum
- Dining Room width: 2700mm minimum, 3000mm minimum if providing access to an outdoor space
- Dining area sized for the household plus two visitors (one visitor for studio)
- Refer **B4.5 Table 3** for Balcony area
- Refer **B4.4 Table 4** for Furniture Schedule
- Electrical services: 1 x Light point per room, 1 x telephone/data outlet and 1 x TV aerial in either living or dining space, 2 x double general purpose electrical outlets (2GPOs) living room, 1 x 2GPO dining area, with one single GPO to be near the telephone/data outlet. Refer **B4.2c** for NBN requirements.

B5.4 Table 5 Total Living Area by bedroom category.

Bedroom Category	0	1	2	3*	4	5	6	Comments
Min m ²	20	25	27	30	30	33	36	Minimums <u>may</u> be adequate for Liveable Housing dwellings - test against furniture schedule.
Includes the following functions	Living, Dining, Kitchenette & bed but excludes storage, entry & bathroom.	For 1 - 3 bedroom dwellings it is acceptable for the Kitchen and Dining to be included in the total Living Area			Possibly two Living areas. Living Area excludes Kitchen.			*3 bedroom dwellings: total Living area may be separated into Living and Kitchen/Dining areas.

B5.2b – Acoustic and visual privacy achieved by the following methods

- Quiet/private and noisy areas within the dwelling are suitably separated
- A door is considered suitable separation.

B5.2c – Trip hazard elimination achieved by the following method

- Small changes in floor levels between floor finishes and at sliding door tracks to be eliminated.

B6.0 BEDROOMS

B6.1 General

- Keyed window locks to all operable windows.

B6.2 Performance Requirements

- a. Main or only bedroom has sufficient space for the furniture and wardrobe storage requirements for two adults.
- b. Subsequent bedrooms need to accommodate two children (**not in bunk beds**).
- c. Ventilation, light, views, aspect and acoustic privacy recognise that bedrooms may be occupied for extended periods.

B6.3 LAHC Deemed to Satisfy Solution(s)

B6.2a – Sufficient space in Main or only bedroom achieved by the following methods

- Design the room to accommodate the furniture and wardrobe requirements as per **B4.4 Table 4 Furniture Schedule**
- Minimum dimension: 3000mm (clear of wardrobe)
- 1 x Light point, and 2 x 2GPOs. 1 x telephone/data outlet (main bedroom only). 1 x 2GPO to be near the telephone/data outlet.

B6.2b – Accommodating two children achieved by the following methods

- Design subsequent bedroom(s) to accommodate the furniture and wardrobe requirements as per **B4.4 Table 4 Furniture Schedule**
- Minimum dimension: 3000mm (clear of wardrobe)
- 1 x Light point, and 2 x 2GPOs.

B6.2c – Healthy living conditions within bedrooms achieved by the following methods

- Adopt the design guidelines for ventilation, light, acoustic privacy and privacy as per the Residential Flat Design Code.
- **Fixed** highlight windows can be used where additional light and privacy required.

B7.0 KITCHEN

B7.1 General

- The Kitchen is to be sized proportionate to the occupancy of the dwelling.
- Keyed window locks to all opening windows.

B7.2 Performance Requirements

- Provide efficiently planned space for hygienically storing, preparing and cooking food, washing up, storing utensils, appliances and plates, as well as disposing of waste, removing steam, and keeping food under refrigeration.
- Provide hot and cold water and sufficient electrical outlets.
- Ensure that kitchens do not present a safety hazard.

B7.3 LAHC Deemed to Satisfy Solution(s)

B7.2a – Efficiently planned spaces achieved by the following methods

- Kitchen benches: as set out in **B7.4 Table 6**
- Arrangement: 'L' shaped or straight run benches along one wall acceptable for 0 - 3 bedroom dwellings.
- Workspace: an unencumbered bench space of 800mm min between cooktop and sink.
- 300mm minimum clear length of bench provided both sides of the cooktop and the sink.
- Natural ventilation and day lighting: windows to be operable and easily accessible.
- **Do not** use double hung type windows over benches or cooktop.
- **Do not** use upright stoves.
- Windows positioned to overlook children's play area if appropriate.
- All sink sizes and appliances: refer **Component Requirements**.
- Rangehoods: ducted to outside air wherever possible and recirculating type otherwise.
- Splashbacks: tiled, sealed against benchtop, extending from benchtop to underside overhead cupboards/shelves/range hood.

B7.2b – Adequate services for the kitchen achieved by the following methods

- 1 x Light point, 2 x 2GPOs plus 1 x GPO each for rangehood, cooktop and fridge.
- Hot and cold water to be provided to the sink. **No thermostatic mixing valves.**

B7.2c – Safety achieved by the following methods

- Circulation routes and Entry areas do not run through kitchen.
- Position refrigerator and pantry at kitchen entry.
- Child-proof medicine cupboard to be provided.
- Floor finishes are slip resistant and level with adjacent surfaces.

B7.4 Table 6 Kitchen Benches, overhead cupboards, fridge and Pantry size

Bedroom Category	0	1	2	3	4	5	6	Comments
Pantry	450mm wide		600mm wide		800mm wide			Nominal 600mm deep with 300mm wide shelving
Benches, minimum lineal Metres, measured from the centreline of the floor cupboards (600mm deep)	2.0	2.2	2.4	2.7	3.0			Measurement excludes oven/cooktop but includes cupboard under sink.
Overhead cupboards	To suit bench layout. (300mm deep)							Over head cupboard over fridge space. Overhead cupboard to have bulkheads to ceilings.
Fridge space width	700 mm	800mm						Allows for air circulation

B8.0 WET AREAS

B8.1 General

- Group wet areas and locate close to bedrooms.
- Keyed window locks to all opening windows.

B8.2 Performance Requirement

- a. Bathrooms to be as compact as possible, fully waterproofed, ventilated and minimise trip and slip hazards.

B8.3 LAHC Deemed to Satisfy Solution(s)

B8.2a – Efficiently planned bathrooms achieved by the following methods

- Waterproofing extends under whole wet area floor and up side walls to the height of tiling.
- Bathrooms have operable window.
- Bathrooms tiled to nominally 1200mm high including laundry recess, 1800mm high in shower recess and meet the performance requirements of the LAHC Component Requirements.
- **Do not** install **combination** 3 in 1 fan / light / heat fixtures.
- Level threshold at door.
- Shower:
 - 900mm x 900mm internally minimum
 - Locate showers on external wall and away from bathroom door
 - Curtain on fixed hanging rod minimum
 - Do not use glazed screen walls
 - Do not place showers or windows over baths
 - Do not install hobs to showers.
- Toilet:
 - The toilet pan centreline is located 450mm – 460mm away from the corner.
- Separate toilets:
 - In larger dwellings additional separate toilets (other than those in a separate laundry) to have a small hand basin
 - Toilets in a separate laundry must allow the laundry to be used whilst toilet occupied.
 - One row of skirting tile
 - Wall basin to have minimum two rows splashback tiles.
- Vanity cabinet unit:
 - Do not use wall hung cabinets.
- Mirrored wall cabinet:
 - 0 - 2 bed dwellings: single door cabinet
 - 3 or more bed dwellings: double door cabinet
 - Mounted 300mm above vanity/basin.
- Bath:
 - Do not install baths to studio, 1 or 2 bedroom units
 - 1 bath to all 3, 4, 5 & 6 bed dwellings. Min 1500mm long.
- Laundry space in bathroom:
 - 800mm x 800mm space allowed for tenant's washing machine.
- Separate Laundry additional requirements:
 - Laundry cupboards have hinged, not bi-fold doors.
 - A min 80mm floor waste.
 - Splashback of two rows of tiles minimum over tub, 1 row skirting tile.
 - In all Laundries: non masonry walls sufficiently reinforced to support wall mounted dryer (tenant) and 1 x 2GPO.

B9.0 BUILDING ENVELOPE AND EXTERNAL ELEMENTS

B9.1 General

- LAHC requires new construction to be built with low maintenance materials.
- Design to 'best practice' rather than to minimum standards.
- For courtyards and private open space sizes refer **B4.5 Table 3 Balconies and private open space requirements**.
- For external spaces refer **B3.0 External Common areas including Landscaping**.

B9.2 Performance Requirements

- a. The building fabric must be robust, weatherproof, protected from damage and prevent bird nesting and unsightly staining.
- b. The building fabric must control light, heat, cold, noise and air, withstand imposed loads and provide a comfortable internal environment for the occupants.
- c. Balconies must provide visual privacy and screen any drying lines.
- d. Lobbies and entries are protected from the elements, prevent unauthorised entry and are pleasant and secure. Internal circulation spaces allow for furniture removal and wheelchair movement.
- e. All access to plant and equipment must be safe for service personnel and protected from unauthorised access.

B9.3 LAHC Deemed to Satisfy Solution(s)

B9.2a – Building envelope performance achieved by following methods

- Roof framing to bear on internal walls only when trusses are not practical.
- Roof design to minimise valleys and gable ends requiring painting.
- All roof penetrations are flashed with proprietary flashing units and sealed to prevent roof leaks.
- All external window and glazed door suites: refer **Component Requirements**.
- LAHC provides heavy duty screen doors for front and rear entry doors in Class 1 dwellings, and **only** to doorways leading onto private balconies in Class 2 dwellings.
- **Do not** install security screen doors with 3 point locking.
- Rain water goods, awnings and balconies, including balustrades and concrete soffits to have integral or factory/formwork applied finish.
- Protect downpipes from impact. Bases to discharge into upturns with concrete plinths/aprons clear of turfed areas.
- Detail the installation of sun screens, awnings and balustrade elements to allow future maintenance or replacement without significantly disturbing major structural fabric.
- Sealed recycled hardwood battens, powdercoated aluminium or high UV resistant synthetic products acceptable for fixed screens.
- Feature elements installed to areas of greatest effect must not contribute to unsightly staining.
- **Do not** position flat roof terraces over habitable rooms.
- **Do not** drain roof into box gutters.
- **Do not** use double glazed windows.
- **Do not** render & paint surfaces that will require extensive scaffolding for future repainting.
- **Do not** powdercoat over perforated ferrous panels.
- **Do not** have ledges in external walls where vermin and birds can congregate.

B9.2b – Good building envelope performance achieved by following methods

- All operable windows must have keyed locks and give 100mm restricted opening.
- All window controls to be between 1000mm – 1200mm above floor level.
- Louvre windows are permissible if gap between blades is maximum 100mm.

- Sun control and thermal comfort: refer to **Table 7 in Section 10 and B4.2a**

B9.2c – Good balcony design achieved by following methods

- Balconies have a nominal grade 1:100 away from building.
- Upturns or other methods employed to prevent water falling onto balconies below.
- Surface water outlets are grated and supplemented with overflow spitters that throw water away from building foundations.
- Screen balcony mounted clothes drying lines.
- Where two balconies are provided, install clothes line on secondary balcony.
- Balustrades minimum 1100mm high, and prevent climbing.
- Balustrades design must prevent people sitting on them and the placing of flower pots.
- Balustrades predominately solid with limited open sections. Glazing to balustrades to be minimised.
- Balustrades and balconies engineered and certified compliant to AS1170 for live loads associated with social gatherings.
- Where balconies have a step down from living area, the balustrade height is to account for any future raised/suspended finish.
- **Do not** use pool type fencing.

B9.2d - Lobby and circulation performance achieved by the following methods

- Common rooms, entry foyers, lobbies, stairwells and circulation spaces have visual connection to the outside, natural light and provide space for residents to talk without blocking entries and lobbies, whilst allowing others to pass.
- Entry Lobby doors have access control. Intercoms as per brief.
- All entry doors to have a minimum 1350mm x 1350mm external covered porch
- Ceiling, floor and wall linings are impact resistant, able to conceal minor scratches and marks, easily cleaned, vandal resistant and do not include difficult to source replacement elements.
- Ceramic floor tiles and walls to have matching 200mm minimum skirting tiles.
- Passenger lifts: designed to Housing NSW Guideline for Passenger Lift Installation in Residential Buildings up to 7 Storeys in height, June 2009. Refer **Section D**.
- Artworks commissioned or acquired for the project positioned in foyers, lobbies, corridors, near letterbox areas or common rooms are protected from theft and incidental wear and tear.
- Refer **B4.2e for bicycle and scooter storage requirements**.

B9.2e – Safe access to plant and equipment achieved by following methods

- Roof-mounted plant and equipment unable to be accessed safely from the ground is be accessible from walkways, platforms and access ladders and stairs to AS1657.
- **Do not** install roof anchors. Where applicable design for provision for fixing roof anchors.

B10.0 ENERGY AND WATER SUSTAINABILITY

B10.1 General

- LAHC requires systems that reduce energy and water costs for LAHC and tenants.

B10.2 Performance Requirements

- Meet BASIX requirements without the benefit of the star and water ratings of washing machines, dishwashers, fridges, clothes washers, clothes dryers or air conditioning.
- Achieve a 6 star NatHERS rating for 75% of dwellings, 5 Star for remainder.
- Common area lighting is to be vandal resistant, energy efficient and minimise glare to occupants and neighbours.
- Finishes and fittings must contribute to safe indoor air quality.

B10.3 LAHC Deemed to satisfy provisions

B10.2a - BASIX achieved by following methods

- Adopt the design responses as listed by climate zone in **B10.4 Table 8**.
- Hot water:
 - Individual gas hot water system where town gas available
 - Liquefied gas **not** to be used
 - If natural gas is not available install an individual electric boosted solar hot water system or an electric water heater.
- Water use:
 - 4 star WELS taps and toilets and 3 star WELS rated shower heads.
 - Rainwater tanks to meet BASIX requirements.
 - A Watermark certified diversion device to enable rainwater supply to be bypassed with potable water for each dwelling with internal rainwater supply (toilet and/or washing machine).
 - Individual water meters for each dwelling.

B10.2b - 6 star NatHERS achieved by following methods

- The number of single aspect dwellings with a southerly aspect (south west to south east) limited to a maximum of 10% of dwellings.
- Sun control: fixed and/or moveable sun screening and eaves to meet Section J of the NCC.
- External cavity brick walls and ceilings are insulated. Insulation must not permit moisture to bridge cavity.
- Install combination light/ceiling fan in Living room/Living area only.
- Draught and water stop seals installed to all external doors.
- Locally produced, low embodied energy, renewable building material and materials that can be recycled used wherever possible.
- **Do not** use double glazed windows.

B10.2c - Common area lighting performance achieved by following methods

- Internal Common Area Lighting: photocells for all internal common area lighting with sufficient daylight levels.
- Ensure internal signage illuminated appropriately.
- Emergency luminaires and 24/7 non-emergency luminaires (including car parks): LED with inbuilt occupancy sensors that provide low level lighting when areas are unoccupied.
- External Common Area Lighting: photocells for all external common area lighting. Pole or wall mounted energy efficient luminaires with good colour rendering that complying with AS4282 for minimal obtrusiveness of outdoor lighting. Use Type C floodlights and AS 1158.3.1 Type 4 or 6 luminaires to reduce light spill.
- Direct and locate lights to minimise dark spots.

- Ensure external signage illuminated appropriately.
- **Do not** use bollard lighting.
- **Do not** use timers.
- Solar Power: solar photovoltaic system when common area power needs calculated to exceed 10kWh during daytime hours (7am to 7pm). Must have a net meter. See **Section E**.

B10.2d – Good indoor air quality achieved by following methods

- Windows are located to promote effective natural cross ventilation.
- Use low or zero Volatile Organic Compound (VOC) paints, adhesives, sealants, carpet and vinyl.

B10.4 Table 7 CLIMATE VARIATIONS

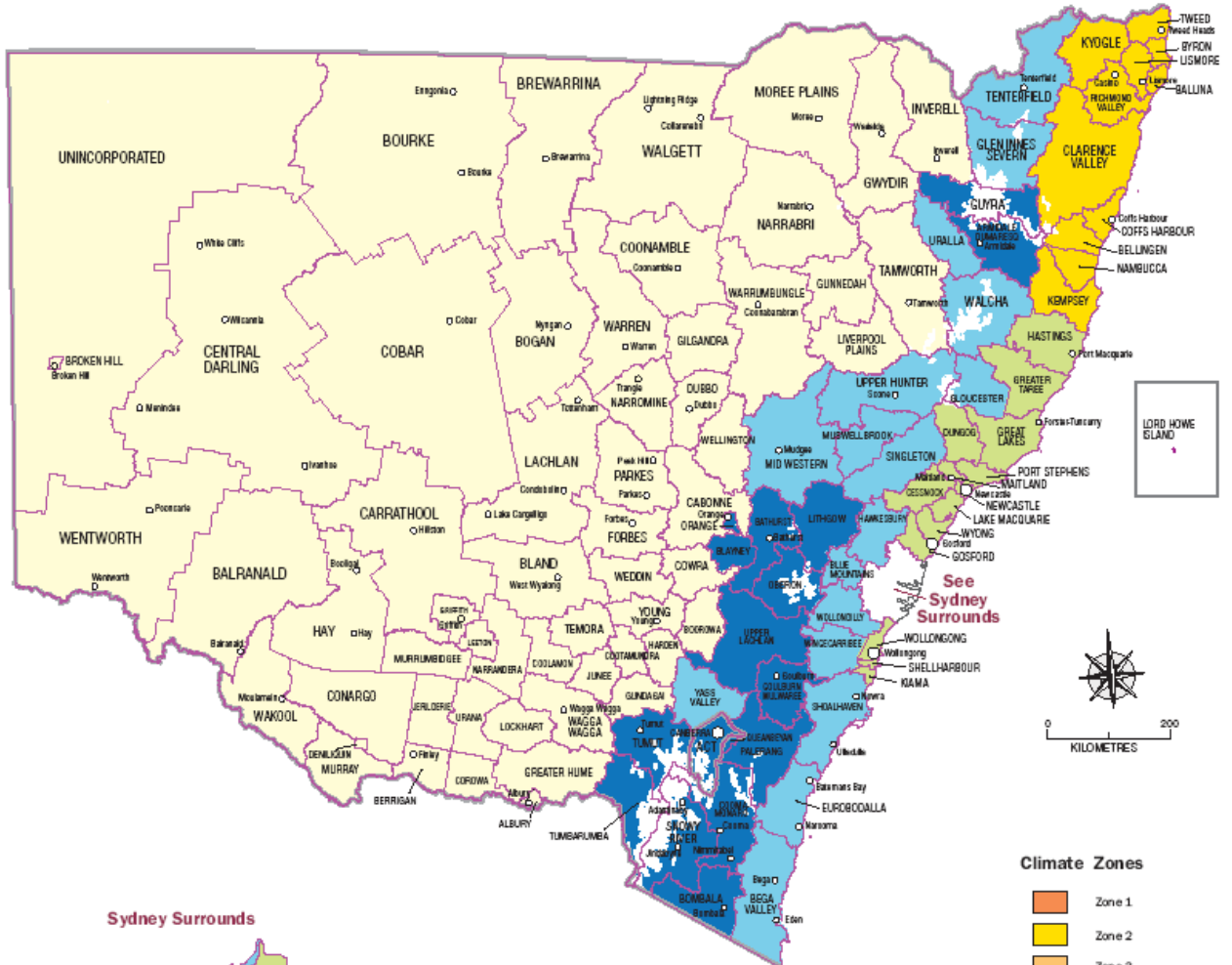
Climatic Zone	Description	Location	Design responses. Also refer to Section J of the NCC for sun shading
Zone 2	Warm humid summer, mild winter	North Coast	Covered outdoor space adjacent to living area. Roof and wall materials to be predominantly of light colours. No black roof tiles. Ceiling fan in living room.
Zone 4	Hot dry summer, cool winter	Western Plains	Covered outdoor space adjacent to living area. Provide gas bayonet in living area against an external wall that is suitable for a future flued gas appliance. Roof and wall materials to be predominantly of light colours. Ceiling fan in living room.
Zone 5	Warm temperate	Coastal Sydney & Central Coast	Ceiling fan in living room
Zone 6	Mild temperate	Western Sydney, South Coast & Tablelands	Provide gas bayonet in living area against an external wall that is suitable for a future flued gas appliance. Ceiling fan in living room.
Zone 7 & 8	Cool temperate & Alpine	Great Dividing Range & Alpine	Provide one flued gas heating appliance to a living area. If gas is not available, provide a fixed energy efficient electric heater, region specific. Carpet to all rooms excluding kitchen and wet areas, region specific.
* As defined in the NCC, see NSW map for Variations for Climate Zone (following page).			

Design responses need to respond to climatic variations across the State. Provisions shown in this table can be used in other regions, unless 'region specific' is stated.



VARIATIONS BY CLIMATE ZONE

NEW SOUTH WALES



Climate Zones

- Zone 1
- Zone 2
- Zone 3
- Zone 4
- Zone 5
- Zone 6
- Zone 7
- Zone 8

Local Government Area boundary

Sydney Surrounds



Sydney Urban



Building Australia's Future

www.abcb.gov.au

BCA 2009

Developed from a map produced by the Bureau of Meteorology

B11.0 LIVEABLE HOUSING FEATURES

B11.1 General

- LAHC requires new social housing to have '**Liveable Housing features**' (previously known as Universal Design), which will reduce the need for future costly modifications such as wall removals or widening of doors, and reduce trips and falls in the home.
- LAHC will construct dwellings to suit a specific physical disability on a 'as needs' basis.
- **The National Construction Code (NCC) does NOT REQUIRE internal areas of Class 1 or Class 2 dwellings to be designed to AS1428.**
- However, the NCC has an impact on Class 2 building access, especially to common areas.
- Projects subject to the Seniors Living SEPP **MUST** follow that SEPP's requirements.
- In multi-storey unit developments with Liveable Housing units on the ground floor, replicate the lower unit's floor plan upstairs if the upper unit is the same bedroom category as the unit below.

B11.2 Performance Requirements

- LAHC aims to achieve within each annual program a minimum of 50% of new dwellings designed with the following 16 performance requirements:
 - a. **Dwelling access**
There is a safe and continuous pathway from the street entrance and/or parking area to a dwelling entrance.
 - b. **Dwelling entrance**
There is at least one level entrance into the dwelling to enable occupants to easily enter and exit the dwelling.
 - c. **Car parking**
Where the parking space is part of the dwelling access it should allow a person to open the doors fully and easily move around the vehicle.
 - d. **Internal doors and corridors**
Internal doors and corridors enable comfortable and unimpeded movement between spaces.
 - e. **Toilet**
The ground (or entry) level has a toilet to support easy access for occupants and visitors.
 - f. **Shower**
The bathroom and shower is designed for easy and independent access for all home occupants.
 - g. **Reinforcement of bathroom and toilet walls**
The bathroom and toilet walls are built to enable grab rails to be safely and economically installed post construction.
 - h. **Kitchen space**
The kitchen area is designed for easy and independent access for all home occupants and supports easy adaptation.
 - i. **Laundry space**
The laundry space is designed to support ease of movement between fixed benches and other fixtures.
 - j. **Ground (or entry level) bedroom space**
There is space on the ground (or entry) level that can be used as a bedroom.
 - k. **Internal stairs**
Where installed, stairways are designed to reduce the likelihood of injury and also enable future installation of additional handrails.
 - l. **Switches and power points**
Light switches and power points are located at heights that are easy to reach for all home occupants.

m. Door and tap hardware

Home occupants are able to easily and independently open and close doors and safely use tap hardware.

n. Family/Living room access to external areas

Wheelchair access to external recreational spaces required.

o. Window sills

Window sills are installed at a height that enables home occupants to view outdoor spaces.

p. Flooring

Floor coverings are slip resistant to reduce the likelihood of slips, trips and falls.

B11.3 LAHC Deemed to Satisfy Solution(s):

B11.2a - Dwelling access achieved by:

- Class 1 dwellings: **1000mm** minimum clear wide direct path access from street to front door at maximum 1:20 gradient, or AS1428.1 compliant ramps or step ramps can be accommodated on the site economically at a later date on an 'as needs' basis.
- Class 2 dwellings: access as per the NCC to the entrance doorway.

B11.2b - Dwelling entrance achieved by:

- **920mm** entrance door giving a minimum clear opening width of **850mm**.
- Porch area of **1350mm x 1350mm** minimum available outside of the entrance door, with no threshold step, and graded 1:40 away from the door, or with a 450mm deep ramp threshold at 1:8 maximum.
- Entrance doors have overhead weather protection from an awning or eaves overhang.
- Any door closers have adjustable force or suitable delay close mechanisms.
- Opening clearances to be achieved at balcony and courtyard doors as a minimum.
- Maintain termite protection.

B11.2c - Car Parking achieved by:

- The garage in a Class 1 dwelling is a minimum 3200mm wide x 5400mm deep clear, with 2500mm vertical clearance.
- Any internal door from the garage gives a minimum clear opening width of **850mm**, with level transition threshold.

B11.2d - Internal doors and corridors achieved by:

- Internal doors to at least 1 bedroom, the kitchen/living/dining areas (if any) and to at least one bathroom with a toilet having liveable housing features give a minimum clear opening width of **850mm**
- Internal corridors/passageways providing access to the entrance doorway and doorways referred to above have a minimum clear width of **1200mm**.
- Remainder of corridors (if any) **1000mm** wide, clear of skirtings, architraves. Corridor lengths minimised.
- Level transition and threshold (maximum vertical tolerance of **5mm** between abutting surfaces is allowable provided the lip is rounded or bevelled).

B11.2e - Toilet achieved by:

- The toilet within the ground (or entry) level bathroom is positioned between 450mm – 460mm from the nearest wall as measured from the centre line of the toilet pan.
- Where toilet is located in a separate room, **1200mm** clear width between walls is provided
- In all situations **1200mm** clear circulation space forward of the toilet pan exclusive of the swing of the door.

B11.2f - Shower achieved by:

- The bathroom has a slip resistant, hobless (step free) shower recess, located on the ground (or entry) level, of dimensions **900mm x 900mm**; with a clear space **1200mm x 1200mm** forward of the shower recess entry.
- Shower to be positioned on outside wall, away from bathroom door.
- Showers to have shower hose fixed by slider hook on a vertical grab rail.
- Shower screens **Not preferred**. If used: easily removed at a later date without damaging tiles and waterproofing.
- Grated trench drain full width of shower recess positioned so as not to be damaged by screen removal.
- Minimum **80mm** diameter floor wastes to serve the remainder of the bathroom.

B11.2g - Reinforcement of bathroom and toilet walls achieved by:

- Walls (other than solid masonry or concrete) around the shower, bath (if provided) and toilet are reinforced to provide a fixing surface for the safe installation of grab rails.
- The fastenings, wall reinforcement and grab rails combined are able to withstand **1100N** of force applied in any position and in any direction.
- Shower vertical slider rail functions as a grab rail and is installed at construction.

B11.2h - Kitchen space achieved by:

- The kitchen space has at least **1200mm** clearance in front of fixed benches and appliance; and slip resistant flooring.
- Floor finishes extend under kitchen cabinets to enable cupboards to be removed without affecting the flooring.

B11.2i - Laundry space achieved by:

- The laundry space has **1200mm** minimum clearance in front of fixed benches and appliances; and slip resistant flooring. This space can overlap clearance spaces for showers and toilets in combined bathroom/laundries.
- Floor finishes extend under laundry cabinets to enable cupboards to be moved without affecting the flooring.
- If the laundry has direct access to the outside, the external door is to be as **B11.2b** and have an accessible path of travel to the clothes line.

B11.2j - Ground (or entry level) bedroom space achieved by:

- One bedroom on the ground or entry level is **11m² minimum, excluding** any wardrobe, with one wall a minimum length **3000mm**, having a minimum path of travel of at least **1000mm** along one side of the bed.
- Provide two-way light switches at door entry and at 1000mm off floor at bedhead position.

B11.2k - Internal stairs achieved by:

- Stairways in dwellings have a minimum clear width of **1000mm**, of straight design (quarter turn acceptable, but no winders); be positioned alongside a load-bearing wall for each flight; and have a continuous handrail on at least one side of the stairway.
- Landing areas of 1200mm x 1200mm provided at the top and base of the stairway.
- Steps provide a slip resistant tread finish as specified in the NCC.

B11.2l - Switches and power points achieved by:

- Light switches: positioned in a consistent location between 900mm - 1100mm above the finished floor level; and horizontally aligned with the door handle at the entrance to a room.
- Two-way light switches in all bedrooms.
- Power points: installed not lower than 300mm above the finished floor level.

B11.2m - Door and tap hardware achieved by:

- Doorways: lever handles or 'D' pull style door hardware installed at between 900mm - 1100mm above the finished floor.
- Basins, sinks and tubs: lever or capstan style taps with a central spout.

B11.2n - Family/Living room space achieved by:

- Facilitate step free entry into and out of the dwelling to porches balconies and verandas.
- For Class 1 dwellings – additional rear barrier-free access to the backyard is required. Refer **B11.2b**.

B11.2o - Window sills achieved by:

- Window sills on the ground (or entry) level in living areas and bedroom spaces positioned between 300mm and 1000mm above the finished floor level to facilitate natural surveillance.
- Window controls: easy to operate with one hand and are located within easy reach from either a seated or standing position.
- Sill heights from kitchen, bathroom and utility spaces: in accordance with Council requirements relating to overlooking of neighbouring properties.

B11.2p - Flooring achieved by:

- Tiled floors generally throughout dwellings (Zone 7 or 8 exempt).
- All floor coverings have a level transition between adjoining surfaces, with a maximum vertical tolerance of 5mm provided the lip is rounded or bevelled.

C. REFURBISHMENTS

C1.0: General

- Some LAHC properties have been identified as having heritage significance. Permissible interventions to these properties are set out in the LAHC Heritage Asset Management (HAM) Plan.
- The business case for refurbishments must demonstrate that the refurbishment delivers higher dwelling yields and lower project cost than a demolition and new build could deliver.
- Refurbishments are to address more than just maintenance - they are intended to extend the useful life of the building, improve the amenity of the grounds and facilities and integrate with tenant directed service provision.
- Reconfiguring dwellings requires particular skills to ensure projects remain feasible.

C1.1: Principles

C1.1.1 Design Principles A1-A5 apply.

C1.1.2 Respect the design integrity and detailing of the existing building. Assume all buildings are significant.

C1.1.3 Address any structural repairs appropriately and improve the amenity of the buildings and grounds.

C1.2.0 Performance Requirements

- Provide components, landscaping and services equal to new construction.
- Ensure refurbishments meet acceptable fire safety levels.
- Increase circulation in and around the site and into the dwellings for the mobility and visually impaired visitor and resident.
- Reduce any anti-social behaviour within the grounds by increasing levels of security and passive surveillance.
- Design, locate and furnish new Common Rooms (where briefed) appropriately for the number of tenants within the development, **WITHOUT** reducing dwelling units.
- Ensure refurbished dwellings can be furnished appropriately for the intended occupancy level of the dwelling.

C1.3 LAHC Deemed to Satisfy Solution(s)

C1.2a - Components and services performance achieved by:

- Product selections conform to the LAHC Component and Requirements document.
- New technologies and replacement components provide extended service life with no detrimental effects to other building elements or structure, and **do not** increase future maintenance liabilities.
- Buildings recorded in HOMES as having Heritage classification A, B or C1 use 'like for like' replacements/upgrades and perform to current service life standards.
- Installations such as 'green roofs' are to be 'stand alone' systems (tubs, troughs etc) **not** integral/built off the flat roof membrane.
- Key lock window restrictors are fixed so as not to affect the water penetration resistance of the window or negate the window manufacturer's warranty.
- Landscaping: refer to **B3.0 External Common areas including landscaping**.

C1.2b - Fire safety levels achieved by:

- Designers must consult with the LAHC State-wide Programs Team for advice regarding implementing LAHC's Fire Risk Management Plan Implementation Manual (FRMPIM).

C1.2c - Increased access for mobility requirements achieved by:

- Meet the performance requirements of **B3.0** Landscaping and Common areas.
- Internal circulation areas are bright and attractive, naturally lit and with views to the outside, especially from a wheelchair.
- Hardstand, paths and paving areas are trip free, and pedestrian paths accommodate wheelchair and scooters.
- For medium and high rise refurbishments lifts provided serve a minimum 6 to 40 maximum dwellings above the ground floor, at a nominal \$30,000 maximum per unit served. Lifts are to extend to any tenant accessed underground car parking and/or rooftop areas.
- Where lifts are installed, all units served have the liveable housing feature of a step free entry as a minimum, with the additional features of a wider entry door, wider corridors, step free shower and toilet space as feasible within the project budget.
- Lift installations are located and inter-connected by accessible pathways and corridors to provide an alternate lift in case of a lift breakdown.
- For 3-7 storeys use Machine-Room-Less (MRL) lifts. Refer to Housing NSW Guideline for Passenger Lift Installation in Residential Buildings up to 7 Storeys in height, June 2009. **Refer Section D.**
- Access and manoeuvring areas for Emergency services vehicles are clearly demarcated.

C1.2d - Reduced anti-social behaviour within the site achieved by:

- CPTED principles have been considered into the early stages of design, especially at building and dwelling entrances, common areas and passive recreation areas.
- Unwanted movement into and through the site is controlled through the installation of appropriate fencing, screening, gates and paths.
- Directional signage is prominent, clear and consistent with any existing signage.
- Security window screens (if approved for installation) meet the relevant Australian Standards. Fixings are into brick joints not into the bricks.
- Waste collection facilities are located close to street frontages, in multiple locations and away from residential accommodation living and outdoor areas.

C1.2e - Common Room performance achieved by:

- Extensions to the building or new stand alone Common Rooms are **not** to reduce existing residential accommodation.
- New works are sympathetic to the existing buildings in materials, scale and colours, without reducing the opportunity to clearly express the new space(s).
- Common Rooms capture any pleasant views, winter midday sun, exclude summer sun and are screened from unfavourable breezes.
- The Common Room is accessed as per the NCC and incorporates Liveable Housing features as applicable.
- Entries to any Common Room or common space allow intending users to look into the room prior to entering.
- Provide a wheel chair accessible bathroom in accordance with NCC, and a Kitchen sized as per a 2 bedroom Liveable Housing dwelling.
- The Common Room sized at approximately 1.5m² per tenant, minimum main room size of 36m², minimum room dimension 4 metre.
- In addition, external agency visits, programs and consultations rooms (where briefed) are able to accommodate 4 people each, accessible from the Common Room and with external access. Privacy and observation needs are obtained by glazing and blinds. Any power, water and drainage provisions are to be confirmed for each of the offices.

- Internal and external key pad access to Common Room and offices as briefed.
- The position of loose furniture and tables, pin and notice boards are to be shown on the drawings.
- Provide safe areas for children to play, connected to the Common Room(s), with outside areas suitably fenced.
- Bathroom, stores, kitchen and office spaces: 1 Light point each minimum.
- One external light per entry.
- Offices: 1 telephone/Data outlet (NBN) point, 2 x 2GPOs.
- Main room space: 4 x 2GPOs, 1 x telephone/data (NBN)
- Kitchen: 2 x 2GPOs above benches plus 1 x GPO each for range hood, cooktop and fridge. Wire in oven.
- Bathroom: 1 x GPO and 1 x exhaust fan.
- Common Rooms utilise natural ventilation supplemented with ceiling fans.
- **Do not** supply air conditioning.

C1.2f - Furnishing performance achieved by:

- Kitchen, laundry, bathroom, living areas, bedrooms and storage areas configured as close as practical to new construction for the appropriate bedroom category.
- Furniture arrangements, circulation and service points must be approved.
- Existing service lines and structure disturbed as little as possible.
- 1 Light point per bathroom, corridors, living, kitchen and bedroom. One external light at each external entry.
- 1 telephone/data (NBN) outlet either in living or bedroom, 1 x TV Aerial, 2 x 2GPOs and 1 x ceiling fan in living area (where ceiling level is 2700mm or higher); 2 x 2GPOs in each bedroom; 2 x 2GPOs in kitchen above benches plus 1 x GPO each for range hood, cooktop and fridge; 1 x 2GPO bathroom/laundry.

D REFERENCED DOCUMENTS & BACKGROUND PAPERS

Referenced Documents

- National Construction Code Series (NCC) Building Code of Australia 2013
- State Environmental Planning Policy No 65—Design Quality of Residential Flat Development. NSW legislation
<http://www.legislation.nsw.gov.au/maintop/view/inforce/epi+530+2002+cd+0+N>
- Livable Housing Design Guidelines © 2nd Edition, Livable Housing Australia 2012
<http://www.livablehousingaustralia.org.au/>
- Australian Institute of Architects NSW 'Take 6—Beyond Beige: improving architecture for older people and people with disabilities' Garlick, B et.al(eds) Royal Australian Institute of Architects, ACT March 2008
- Housing NSW Fire Risk Management Implementation Plan can be obtained by contacting State-wide Programs Unit
- Department of Infrastructure, Planning and Natural Resources 'Housing for Seniors or People with a Disability – a guide for councils and applicants' May 2004 for the SEPP (Seniors Living) 2004
- Australian Building Codes Board 'Condensation in Buildings' Information Handbook 2013.

Technical Reports prepared by Land and Housing Corporation

- 'Housing NSW Guidelines for Passenger Lift Installation in Residential Buildings up to 7 Storeys in Height', June 2009.
- Technical Review and Development of Specification for Rainwater Tanks and Associated Infrastructure, September 2010.
- 'Advice on Shrubs and Climbers to plant' and 'Draft Vegetation Management Guidelines'.

Background Papers prepared by Land and Housing Corporation

The following papers are useful for background information:

- History of Public Housing Design
- Siting and Housing
- Ideas for Boarding House Style Accommodation
- The Big House
- Model Cottages
- Country Houses
- Rehabilitation for Older Houses
- Social Housing for Older Residents
- Garbage Chute Design and further notes.

Further Reading

Good Design Fundamentals – built environment – Design Council 2009 at:

<http://www.designcouncil.org.uk/knowledge-resources/guide/good-design-fundamentals>

Active by Design – the design of buildings and public spaces to increase physical activity: <http://www.designcouncil.org.uk/knowledge-resources/guide/active-design-designing-places-healthier-lives>

ACT Crime Prevention & Urban Design – Resource Manual, 2000, Wendy Sarkissian and ACT Planning and Land Management. CPTED advice.

E LAHC CORPORATE & ASSET STANDARDS DICTIONARY

ARHSEPP - State Environmental Planning Policy (Affordable Rental Housing) 2009 Amended May 2011	The purpose of the State Environmental Planning Policy is to encourage the provision of affordable rental housing. http://www.planning.nsw.gov.au/en-au/deliveringhomes/planningforaffordablehousing/affordablerentalhousing.aspx
Australian Standards AS 1428	The AS 1428, Design for Access and Mobility series, provides design requirements for buildings encompassing the specific needs of people with disabilities. AS1428.1—2009 is referenced by The Access to Premises Standard to establish circulation spaces around and through doorways OF PUBLIC BUILDINGS and Common Areas of Class 2 buildings, but not inside Class 1 & 2 dwellings.
Australian Standards AS 4299	AS 4299 Adaptable Housing to be used ONLY for dwellings designed to SEPP HSPD – Housing for Seniors and People with a Disability and Seniors’ projects
Boarding House room	Boarding house accommodation are self-contained living units of one room with own bathroom and kitchenette with access to common room(s) and other facilities.
Building	A roofed structure enclosing space and recognisable as a complete and distinct entity. A building may contain ‘blocks’ being partially separated, recognisable entities within the building.
Building Sustainability Index (BASIX)	Introduced by the NSW Government, BASIX, the Building Sustainability Index, ensures homes are designed to use less potable water and be responsible for fewer greenhouse gas emissions by setting energy and water reduction targets for houses and units.
Building Code of Australia (BCA)	Refer National Construction Code (NCC).
Community Housing	‘Community housing’ is rental housing for low to moderate income or special needs households, managed by not-for-profit community based organisations whose operations, in the main, have been at least partly subsidised by government (usually through funds provided under NRAS and NAHA
Component Requirements	As a long-term manager of residential property the performance requirements of selected components that are of particular interest to NSW LAHC are listed in this document. Component Requirements (PDF, 1MB)
Crime Prevention Through Environmental Design (CPTED)	CPTED is a theory that when development is appropriately designed it can reduce the likelihood of crimes being committed. By introducing such measures it is anticipated that this will assist in minimising the incidence of crime and contribute to perceptions of increased public safety.
Disability (Access to Premises - Buildings) Standard	Refer Building Code of Australia/NCC, above. A copy of the Premises Standards and related documentation can be obtained from the website of the Attorney-General’s Department at http://www.ag.gov.au/
Flats (also known as Residential Flat Buildings)	“3 or more storeys (not including levels below ground level provided for car parking or storage, or both, that protrude less than 1.2 metres above ground level), and with 4 or more self-contained dwellings (whether or not the building includes uses for other purposes, such as shops)”. - SEPP 65 Definition.

Gross Floor Area (the equivalent to Net Floor Area)	As defined in NSW Department of Planning and Environment's 'Standard Instrument' at http://www.legislation.nsw.gov.au/maintop/view/inforce/epi+155+2006+cd+0+N
Liveable Housing Features	'Liveable Housing Features' replaces 'Universal Housing'. The 16 features listed in Section 11 were selected from Livable Housing Australia's <i>Livable Housing Design Guidelines (LHDG)</i> © 2 nd edition to suit LAHC's current purposes. The LHDG can be viewed at: http://livablehousingaustralia.org.au/pdf/Livable_Housing_Design_Guidelines_Web.pdf
Merit Assessment	A Development Assessment path which considers whether the development is consistent with the strategy component of the local plan and objectives of the zone, community submissions, key likely impacts of the development, possible adverse impacts on adjoining or adjacent land and a public interest test. http://whitepaper.planning.nsw.gov.au/development-assessment/merit-assessment/
Multi-dwelling housing	Means 3 or more dwellings (whether attached or detached) on one lot of land (not being an individual lot in a strata plan or community title scheme) each with access at ground level, but does not include a Residential Flat Building.
Multi-unit housing	Residential Flat Buildings mainly Class 2 as per NCC.
NatHERS – Nationwide House Energy Rating Scheme	NatHERS is administered by the Commonwealth government and provides a framework that allows various computer software tools to rate the energy use and thermal comfort of Australian homes on a scale of 1-10.
National Broadband Network (NBN)	The National Broadband Network (NBN) is a national wholesale-only, open-access data network and is under development in Australia. Fixed line and wireless broadband connections are sold to retail service providers (RSP), who then sell Internet access and other services to consumers. http://en.wikipedia.org/wiki/National_Broadband_Network
National Construction Code (NCC)	BCA now referred to as The National Construction Code - Volumes 1& 2 - Building Code of Australia (NCC). The goals of the BCA are to enable the achievement and maintenance of acceptable standards of structural sufficiency, safety (including safety from fire), health and amenity for the benefit of the community now and in the future. NCC was aligned to the Access Code in the Disability (Access to Premises- Buildings) Standards - known as the Premises Standard. Compliance with State and Territory building law and the access provisions of the NCC would mean compliance with the Premises Standards and hence the DDA.
Net metering	Generated electricity that is in excess of energy need is exported to the grid and the meter continuously samples both generated and consumed electricity. http://www.energy.nsw.gov.au/sustainable/renewable/solar/solar-scheme/questions . For small scale Solar PV Generators see http://www.energy.nsw.gov.au/_data/assets/pdf_file/0004/409468/Fact-sheet-small-scale-renewables.pdf
POS – Private Open Space	Allocated private area adjoining a dwelling providing safe and secure recreational area for ground floor apartments, villas and townhouses, separated from common area landscaping by low fencing, screening or walls.
Project Brief	The Project Brief originates from Portfolio Strategy, setting out requirements (amongst other items) for numbers of dwelling, bedroom categories, target percentage of dwellings with Liveable Housing features, lifts, security, heritage issues etc.

Reference Specification	NSW LAHC has developed its own construction specification for low to medium rise residential developments. This may also be used for high-rise residential developments.
Residential Flat Design Code	The purpose of the State Environmental Planning Policy - SEPP 65 - Design Quality of Residential Flat Development is to improve the design quality of residential flat development of over three storeys and 4 or more self contained dwellings. The Residential Flat Design Code gives guidance on how to achieve the objectives of good design. It applies to medium to high rise developments i.e. three storeys or more. http://www.planning.nsw.gov.au/StrategicPlanning/Designqualityofresidentialflatbuildings/ResidentialFlatDesignCode/tabid/158/language/en-AU/Default.aspx
Seniors Living Urban Design Guidelines 2004	Produced by the then Department of Infrastructure Planning and Natural Resources (DIPNR), being mandatory for projects under the Affordable Rental Housing SEPP ARHSEPP and originally a support document for development using the SEPP HSPD (see below). It would normally apply to low rise developments ie two storeys or less
SEPP HSPD – Housing for Seniors and People with a Disability and Seniors’ dwellings.	Also known as Seniors Living SEPP. The purpose of the State Environmental Planning Policy is to encourage the provision of housing which meets the needs of seniors or people with disabilities in land zoned low density residential. This SEPP currently calls up AS4299 Adaptable Housing Standard. See also Liveable Housing Design above.
Standards and Tolerances - Construction	Guide to Standards and Tolerances in residential building work. http://www.fairtrading.nsw.gov.au/ftw/Tenants_and_home_owners/Home_building_and_renovating/The_building_process/Guide_to_standards_and_tolerances.page 2007 Edition
Studio apartment	Class 1 – single storey dwelling, often in a row or a Class 2 dwelling similar to a small motel room with bedroom and living areas combined and having own kitchen/kitchenette and bathroom facilities. (Previously referred to as a ‘bedsitter’).
Terrace	BCA Class 1a dwelling – 1 or more storeys tall, one of a row of attached dwellings on own allotment and fronting a public road. No shared common area.
Townhouse	BCA Class 1a dwelling – 2 or more storeys tall, has own entrance and private yard, generally shares common areas such as driveways and gardens.
Universal Design	See Liveable Housing Features (above).
Unit	BCA Class 2 or 3 – sole occupancy units in a multistorey building or low, medium or high rise buildings.
Villa	BCA Class 1a – single storey, has own entrance, shares common areas such as gardens, often having a private yard and car parking and generally shares a common driveway.
Water Sensitive Urban Design (WSUD)	Water sensitive urban design offers an alternative to the traditional conveyance approach to stormwater management. It seeks to minimise the extent of impervious surfaces and mitigate changes to the natural water balance, through on-site reuse of the water as well as through temporary storage.
WELS	WELS is Australia's water efficiency labelling scheme that requires certain products to be registered and labelled with their water efficiency in accordance with the standard set under the national Water Efficiency Labelling and Standards Act 2005. See http://www.waterrating.gov.au/about-wels
Xeriscape garden	A landscaping method developed especially for arid and semiarid climates that utilizes water-conserving techniques (as the use of drought-tolerant plants, mulch). <i>Merriam-Webster.com</i> . Merriam-Webster, n.d. Web. 11 Nov. 2013. < http://www.merriam-webster.com/dictionary/xeriscape >.

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