

one

Form of Housing

1.3 Apartment Design

BCA CLASS 2
CONSTRUCTION

DESIGN GUIDELINES

FOR SUSTAINABLE HOUSING & LIVEABLE NEIGHBOURHOODS

on behalf of the South Australian Housing Trust



Government of South Australia
SA Housing Authority

1.3 APARTMENT DESIGN

CONTENTS

| | |
|--|----------|
| INTRODUCTION | 4 |
| Background | 4 |
| This design guideline | 5 |
| Low to medium rise building form | 5 |
| High rise building form | 5 |
| Healthy living and community connectivity | 5 |
| BACKGROUND AND HISTORY | 6 |
| Building forms for walk-up flats | 6 |
| Recent developments | 7 |
| Refurbishment | 7 |
| GUIDING PRINCIPLES | 8 |
| QUALITIES OF WELL DESIGNED APARTMENT LIVING | 9 |
| Diversity | 9 |
| Liveability | 9 |
| Context & connecting with the surroundings & wider community | 10 |
| Structure plan | 10 |
| Continuity and enclosure | 11 |
| Community by-laws | 11 |
| Connecting pathways and entrances | 12 |
| Car parking and transport | 12 |
| Internal circulation | 12 |
| Character and sense of place | 13 |
| Features | 13 |
| Consistency and variety | 13 |
| Quality of public realm | 13 |
| Landscape | 14 |
| Safety and security | 15 |
| Open spaces and meeting places | 15 |
| Community infrastructure | 18 |
| Community activities/cultural infrastructure | 18 |
| Noise attenuation | 19 |
| Environmental, social and economic sustainability | 19 |
| Water efficiency | 20 |
| Energy efficiency | 20 |

1.3 APARTMENT DESIGN

| | |
|--|-----------|
| BUILDING FORMS FOR SAHT APARTMENTS | 21 |
| External spaces | 21 |
| On-site car parking requirements | 22 |
| Bicycles and electric scooters (gophers) | 22 |
| Common area access for apartments and walk up flats | 23 |
| Accessibility | 23 |
| Stairs and vertical circulation | 23 |
| Public lighting | 24 |
| Security management | 24 |
| Access from foyer - BCA requirements | 24 |
| Balconies and private open space | 26 |
| Solar clothes drying | 26 |
| Cross flow ventilation | 27 |
| Heating and cooling requirements | 27 |
| Sound transmission between units | 28 |
| Utility metering | 28 |
| Bins | 28 |
| Hot water | 29 |
| Facilities for employees and maintenance | 29 |
| Operation and management | 29 |
| | |
| APARTMENT LIVING UNITS ACCOMMODATION REQUIREMENTS | 30 |
| General requirements | 30 |
| Living unit accommodation requirements | 30 |
| Kitchen design | 30 |
| Appliances | 31 |
| Bedrooms | 31 |
| Floor coverings | 31 |
| Bathrooms | 31 |
| Laundry facilities | 32 |
| Ceiling heights | 32 |

Copyright

Although the SAHT owns copyright on this document on behalf of the Crown, it licenses its contractors to use the latest available version for SAHT design or construction purposes, and grants non-exclusive licences to others, as long as:

- They do not falsely claim copyright in the SAHTs' work;
- They indemnify the SAHT and the government of South Australia against claims arising from the use of SAHTs' work.

INTRODUCTION

Background

Established in July 2018, the SA Housing Authority (SAHA) is a statutory corporation that administers the South Australian Housing Trust (SAHT) Act 1995.

The SAHA consolidates housing-related services and management of the housing stock; including strategy, service delivery, assets and related corporate supports; and plays a key role in enabling and supporting the State's modern, multi-provider housing system and in establishing an environment that promotes shared responsibility and ownership.

The SAHA is committed to providing housing that is socially and environmentally affordable and sustainable. To help achieve this, a suite of design guidelines for sustainable housing and liveable neighbourhoods that are applicable to all types of new residential construction, both rental and affordable have been developed.

The suite of design guidelines comprise the following:

- 1.1 House Design Guide
- 1.2 Amenity Targets
- 1.3 Apartment Design BCA Class 2 Construction
- 1.4 Housing Accommodation Schedules
- 1.5 Affordable and Market Housing
- 2.1 Land Titling and Service Infrastructure
- 2.2 Design Guidelines for Site Layouts
- 2.3 SAHT Universal Housing Design Criteria
- 2.4 Environmental Sustainability
- 3.1 Neighbourhood Renewal
- 3.2 Row and Terrace House Design
- 4.1 Housing Modifications
- 4.2 Generic Design Guidelines for House Renovations

Designers must understand and incorporate the requirements of these guidelines on all residential projects that involve land and properties owned by the SAHT. These guidelines assist designers in the interpretation of current policies and practices and include applicable features of the Good Design Guide SA historically published by Planning SA.

Some design compromise is acceptable to take into account site constraints and local planning conditions. All designs will be considered by the SAHA on merit. However, the minimum spatial dimensions needed to meet universal housing living requirements are generally not negotiable.

This Design Guideline

In support of new initiatives created by the South Australian Government 30 Year Plan for Greater Adelaide, new forms of apartment housing are being developed. These projects assist in recognition of population pressures that lead to increases in residential densities.

The building types included in this section include walk up flats and apartments that are BCA Class 2 construction.

The BCA is a uniform set of technical provisions for the design and construction of buildings throughout Australia. It covers such matters as structure, fire resistance, access and egress, services and equipment, and energy efficiency as well as certain aspects of health and amenity.

BCA Class 2 Construction
Includes buildings of more than one floor containing two or more sole-occupancy dwelling units, usually described as flats or apartments.

Low to Medium Rise Building Form

This form is principally aimed at the design and development of robust and affordable apartment complexes of two, three and four storey construction. These buildings are relatively simple to construct, with stair access to all levels and a passenger lift can be provided to supplement vertical circulation. Dwellings can also be designed to allow for natural light and ventilation throughout all living areas avoiding the requirements for mechanical ventilation or air-conditioning. These principles were used historically for the construction of a large number of 2 and 3 storey flats, and while some amenity upgrades are needed to meet modern living requirements these buildings have proved to be energy efficient with low running costs.

High Rise Building Form

For taller residential buildings, towers over four stories in height, design and construction is more complex.

Lifts are required for all vertical circulation and stairs become required fire exits. Fire separation requirements between floors and individual dwelling units increase with up to three hours separation required, consequently adding to construction costs. Mechanical services are crucial and more complicated to provide, manage and maintain. Fire fighting and emergency requirements are also more complex and required water pressures can require special provisions. Above around seven stories (25 metres height) internal fire sprinkler systems are required throughout the building.

Healthy Living and Community Connectivity

To encourage healthy living and ensure that there are opportunities for casual social interaction, stair access and foyers can and should be designed as open access. Open access also gives opportunities for individual dwellings to have a screened entry door without the need to address fire separation issues.

BACKGROUND AND HISTORY

Historically the bulk of housing built by the SAHT has been single storey detached or semi detached family dwellings. Nevertheless in the early 1950s the first walk-up flats were built and eventually over 2000 flats in two and three storey groups were developed, comprising mainly one and two bedroom units. Other alternative housing types have included two-storey town houses, group developments comprising 2-bedroom units and small cottage flats.



Walk up flats built in 1995. Portrush Road, Kensington

Building Form for Walk-Up Flats

Generally SAHT apartment development between 1955 and 1980 comprised walk-up-flats of two or three storeys. These projects were set out on large landscaped sites varying from around 32 units up to 148 units at Marion Road, Brooklyn Park known as “Holbrook”.

A range of 1 & 2-bedroom flats were provided, some with balconies. Flats were accessed by means of stairways in enclosed shared foyers with up to 9 flats accessed in a 3-storey ‘T’ plan form. A limited number of two-bedroom two storey town house units were also built and integrated into larger sites. Flats were always configured so that they had front and rear windows to allow some cross ventilation.

Laundries were located separately from the main building with around 4 flats sharing a laundry room and drying line. Carparking has varied from separate lockable garages, open-sided carports through to unsecured open lot carparks.

Issues with older walk up flats include:

- Lack of definition of security in shared spaces;
- Open lot carpark security concern and petty vandalism;
- Sharing of foyers creates management issues; and
- Shared laundry arrangements are a cause for concern and are not popular.



Anne Close, Christie Downs



Dr Kent's Paddock, Kent Town

1.3 APARTMENT DESIGN

Recent Developments

In more recent times other options have been developed including:

- Laundry facilities included within bathroom areas;
- Open stair tower and deck access in small developments;
- Two level units accessed from the uppermost floor level; and
- Direct access ground floor units with upper levels provided with a shared access stair.

Recent apartments have been provided with individual balconies and some with ground floor units provided with a private open space.

Examples include:

- various 1 & 2 bed walk-up flats and townhouse units in Logan St, Adelaide;
- eight storey building with a lift in Ifould Street, Adelaide; and
- seventeen storey building with lifts in Waymouth Street, Adelaide.

Refurbishment

The SAHT has also revisited existing older sites with refurbishment schemes to address deficiencies and upgrade ageing infrastructure. An example is a 106 unit development at Fullarton known as “Stow Court”, where ground floor units have been provided with separate stepless entrances to meet the needs of ageing residents.

Additionally the site stormwater is harvested and stored in 2 large underground tanks at the Fullarton Road end of the site, for reuse for landscape watering.



Upgraded 1950s walk up flats with new separate ground floor entrances at Stow Court, Fullarton

GUIDING PRINCIPLES

Apartment housing should be designed to meet the needs of a diverse range of households, incorporating a mix of dwelling unit sizes and tenures catering for families, couples, youth and children, with some dwellings designed to accommodate older and residents with a disability all with appropriate levels of storage space, external and internal fittings.

The provision of adaptable or universal dwelling designs should:

- enable residents to age in place; and
- enable housing designs to be integrated with and responsive to adjoining land uses and amenity.

Housing should be designed in a manner that invites residents to be involved in the maintenance of public/communal and semi-private open spaces. All housing should be managed in a way that does not preclude normal household or family living and functioning such as by the inclusion of non-family provisions in Body Corporate By-Laws.

Larger developments should be easily accessed with several points of entry and exit available. The relationship between built form and the landscape can enhance the quality of living environment for residents on the site and encourage visitor use and pedestrian movement through the site, thereby providing casual surveillance for safety and security.

Aspects of building design, such as location of windows, design of lift lobbies, staircases and circulation space can maximise the benefit of the landscape amenity by providing views, cooling of the building and ground level in summer and solar access in winter.

Developments should be designed to be welcoming:

- On large sites the provision of well-located commercial and retail uses (offices, deli, small supermarket, café) on-site to support residents and adjoining residents/workers in the locality for the vitality of mixed uses;
- Incorporate spaces that are memorable and which promote a sense of place;
- Located close to transport, services and employment opportunities to enable residents to fully participate in social and economic life;
- Foster community development and encourage residents to participate in community life;
- Safe and secure places in which to live and visit;
- Encourage active and healthy lifestyles; and
- Maximise acoustic privacy for all residents and prevent disturbances from external noise sources.

Public open spaces accessible to the population they serve and on-site provisions should vary in area and function according to the quality and extent of public open space in the vicinity.



Figure 1 Renewal SA sketch proposal for Bowden Village showing mix of dwelling types and sizes and well distributed open space

QUALITIES OF WELL DESIGNED APARTMENT LIVING

Diversity

Housing should be designed to ensure it is tenure blind so as not to distinguish between different residences and occupants. The density and residential mix of housing sizes and tenures should aim to meet the strategic and local targets of the area.

Internal distribution of dwelling types across the site and within buildings will facilitate integration and social mix while ensuring that particular households are appropriately located (e.g. residents with a disability located close to entrances and facilities). Tenures are to be distributed across the site in small groups and where appropriate no more than 3 dwellings for social or public housing tenants in one group or no more than 4 dwellings for families in social or public housing. Particular care should be taken to ensure that rental and social housing for families is not co-located with smaller (non-family) apartments for sale.

Affordable and rental housing should provide low maintenance internal and external fittings and fixtures, self finishing materials and avoid the use of imported items that are difficult to maintain, such as light fittings with non-standard globes. Window coverings and furnishings, where and if provided, should be robust and easy to maintain. Refer to the SAHT fixtures and fittings schedule for detailed requirements.

Where possible all dwellings should:

- Comply with the design guideline *2.3 SAHT Universal Housing Design Criteria*; and
- Adapt a range of dwelling sizes to suit a diverse range of households including provision for units with three and more bedrooms, with larger units located for families at the ground level.

There should be a sufficient number of dwellings suitable for families in order to support provision of adequate outdoor spaces and amenities for families and children. Dwellings of size to attract families should be provided and located where they overlook communal outdoor spaces such as play areas. They should be located away from non-residential uses where a mixed use of development is proposed and where heavily used traffic routes exist.

Liveability

Housing should provide adequate private and communal storage facilities of a minimum size of 2.3m² internal space in addition to clothes and linen storage.

Recommended standards for room sizes are contained in the design guideline *1.4 Housing Accommodation Schedules* and Adelaide City Council Development Plan, and should vary according to the estimated number of people accommodated as well as the number of bedrooms.

Context and Connecting with the Surroundings and Wider Community

Prior to the design stage undertake a contextual assessment to show how the design responds to its physical and natural context including:

- the value of existing vegetation;
- local pattern of building and streets;
- location of other land uses;
- traffic and pedestrian/cycle routes and bus stops;
- proximity to local open space and facilities;
- key views;
- barriers to natural surveillance in the vicinity;
- maximising connectivity with surrounding areas;
- public space;
- landscape and topography; and
- identified character and local vision or strategy.

In addition prepare a site opportunities map to summarise an assessment of on-site:

- Surveillance;
- Street edges;
- Retention of vegetation; and
- Linkages to surrounding areas.

High density housing development is to be encouraged where access to public transport, services and facilities is adequate. The design should:

- demonstrate how the development complements the local network of public spaces, existing streets and paths;
- limit overlooking and overshadowing of private open space and windows of living areas where practicable;
- vary building heights to avoid limiting views from balconies of adjoining dwellings; and
- provide legible routes within the site for navigable ways through the use of signs, waymarkers and maps, landmarks and focal points, views, lighting, and works of art.

Structure Plan

Provide a structure of buildings and spaces within the development to relate to others in the surrounding area in terms of:

- site layout
- movement routes within site
- existing street patterns in surrounding area, and
- provide networks of public spaces.

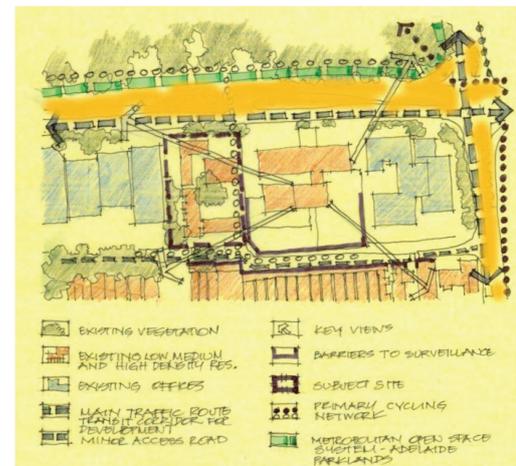


Figure 2 Sustainable Housing Guidelines report, Contextual Assessment

1.3 APARTMENT DESIGN

Continuity and Enclosure

Streets and other public/communal and semi-public spaces should be enclosed with buildings and trees of a scale appropriate to the space. Public streets, footpaths and open spaces are to be overlooked by buildings providing casual surveillance.

Active ground level frontages can be achieved by the siting of ground level dwellings with entrances facing internal and external streets. Continuous frontages to open space and streets should be incorporated. Ground level dwellings must be set back from streets and footpaths to provide for ground level private open space, with permeable fences up to 2 metres for privacy where facing internal roads and a maximum of 1.5 metres where facing external roads.

Permeable fencing with lockable gates are to be used enclosing semi-private open spaces within the development for use by residents and guests. No fencing should restrict the movement of public and residents in communal areas.

Gated communities are to be avoided with the exception of high density CBD sites where all communal areas are semi-private and accessible only by residents and guests.

Community By-Laws

To achieve Socially Inclusive Management the Body Corporate must provide a resident/tenant/owner education program on waste minimisation and energy efficiency.

By-Laws for Community Title development are to be prepared by the SAHA in consultation with Community Housing bodies involved to ensure that there are no anti-family provisions, or anti-sustainability provisions which:

- restrict the use of balconies;
- limit the use of open space;
- minimise common property areas of communal space;
- restrict the type of households to non-family households;
- limit resident/tenant involvement in the maintenance and design of open spaces particularly at entrances to individual dwellings at ground level and entrances to groups of units in high-rise buildings and entering into high cost landscape maintenance contracts;
- exclude normal activities by 'gated' communities signage;
- limit normal behaviour of children;
- provide for negative signage;
- discourage households to individualise their dwellings and entrances with planter boxes and decorative elements;
- discourage clothes drying in private open spaces; and
- exclude small pets particularly for older residents.

Connecting Pathways and Entrances

Developments are encouraged to facilitate pedestrian and cyclist movement across and through the site for residents of all ages and abilities through provision of lit pathways with a minimum width of 1200mm connecting buildings, facilities and services at grade and minimum 2.5 metres wide where adjacent to high-rise building entrances or at intersections.

Entrances to buildings and ground level individual dwellings should remain visible from the public realm, close to car parking, illuminated, with weather protection and allowing for personalisation of approaches by landscaping, window boxes etc where they serve a separate dwelling at ground level.

Vehicular and pedestrian movement where practicable should be separate at entries to the site and ground level entrances to dwellings and/or apartment buildings. Pathways should be integrated with landscaping and provide lighting to the appropriate Australian Standard for priority pedestrian routes.

Car Parking and Transport

In suburban areas car ownership is high and for house renters a car is often the resident's most valuable asset, so both shelter and security for the cars is crucial. However the provision of secure parking on larger residential sites has proved both problematic and expensive to provide.

It is anticipated that in inner city areas and where public transport and community facilities are readily available, car parking requirements can be reduced.

In the State 30 Year Plan for Greater Adelaide proposals for Transit Orientated Developments (TODS) reinforce a strong relationship between the availability of good public transport and increased density of residential development and reduce the need for car parking requirements.

Internal Circulation

Allow for generous, well designed staircases with views of (or open to) access corridors and the external environment to encourage increased activity as a desirable and pleasant alternative to using lifts.

Corridors, stairs and lifts should be wide enough to move large furniture items to apartments.

Core circulation spaces to serve groups of dwellings on each floor with a maximum of 8-12 units on each level.



Active Frontages, high density housing, Canberra
Source: Wendy Bell



Cycle parking in urban renewal, Tübingen, Germany
Source: Wendy Bell



High density housing, Canberra
Source: Wendy Bell

1.3 APARTMENT DESIGN

Character and Sense of Place

Provide for frequent encounters amongst residents by widening of pathways, corridors and lobbies at entrances to units and where paths intersect or approach units at ground level.

All buildings to maximise active frontages at ground level, with regularly spaced entrances to groups of units in high-rise buildings and for all dwellings at ground level facing pedestrian routes and internal roads and external streets.

Features

Provide attractive community focal points such as semi-private central open space focusing on existing character trees or new trees on the site.

Facilitate arts, cultural and education projects that bring residents together and provide opportunities for artistic and cultural expression.

Consistency and Variety

Housing is to be designed with:

- active frontages that include windows, doorways, balconies and the like;
- varied building forms and colours; and
- varied and visually interesting spaces, with landscape opportunities.

Quality of Public Realm

Create a sense of wellbeing and amenity:

- incorporate furniture (tables and chairs for all age and mobility groups) and facilities (barbeques, drink fountains, waste bins, water and power outlets etc) that encourage social interaction in communal and semi-private open spaces; and
- create a community focal point oriented around existing natural features such as mature trees.



*Active frontages,
high density housing, Canberra
Source: Wendy Bell*

1.3 APARTMENT DESIGN

Landscape

The use of a Landscape Architect at the context assessment and design stages will ensure that all ground level facilities, movement routes, planting, lighting and furniture are well located and designed and that sufficient areas and spaces are provided for personalisation of landscape by residents:

- roof gardens should be considered for their ability to insulate buildings and for plants to cool and improve the quality of the surrounding air;
- existing vegetation should where possible be retained to contribute to the enhancement of the micro-climatic conditions as deciduous trees in particular will provide summer shade and winter solar access;
- grassed areas should be provided to encourage casual use of the open space and for children's play;
- the retention of existing landscaping and designing for future landscaping should value the:
 - amenity provided by existing trees;
 - green infrastructure in mitigating climate change impacts;
 - interface between built form and landscape; and
 - ground level open space including grassed areas.
- the economic value of landscape aspects of sustainability such as tree retention and green spaces and their role in reducing Urban Heat Island effects should be taken into account when assessing the financial feasibility of developments;
- aspects of building design, such as location and size of windows, design of lift wells and staircases and circulation space should maximise the benefit of the landscape amenity by providing views, cooling of the building and ground level in summer and solar access in winter; and
- generous, well designed staircases should be provided to encourage increased activity as a desirable and pleasant alternative to using lifts, the interior visible from the associated ground and upper floor entrances, glazed doors or open structures.

Safety and Security

The amount of semi-public areas should be minimised, especially in higher-density development:

- ensure security by providing well-defined entrances to clearly demarcate public and private space;
- enable casual surveillance of ground-level open spaces and play areas from ground level residential, commercial and retail uses and upper level dwellings;
- provide ‘residents only’ semi-private open spaces (including play areas) with secure access from public space;
- activate all building frontages along adjoining streets and along internal roads whether publicly or privately owned by locating entrances to groups of units;
- provide ground level access to lifts with visibility of the lift doors from the entrance; and
- ensure appropriate levels of lighting (including solar lighting) throughout the site

Open Spaces and Meeting Places

Provide a variety of on-site internal and external community meeting spaces (including storage spaces) that are accessible to all residents regardless of age and ability:

- in large mixed tenure developments provide community liaison staff on-site or serving a number of sites to support residents and develop activity programs to facilitate resident interaction and include a multi-purpose room with toilet and kitchenette to allow at any one time for 40% of the estimated adult population;
- provide communal gathering spaces on every other floor in high-rise buildings near lifts and stairs with seating and storage;
- locate places for children’s play away from car parking areas and main streets and with visibility from windows of dwellings, but avoid designated playgrounds but provide facilities and equipment or spaces which children can use between buildings;
- provide areas for play for children of all ages focussing on experiential elements rather than play equipment, located close to larger dwellings at ground level;
- provide meaningful, age appropriate play and recreational open space by the location of public/communal and semi-public spaces close to entrances at ground level, children’s play areas and general open space for semi-private use;
- meaningful communal/public open space may be at ground level, roof top or on terraces for the use of residents and guests and include playgrounds, shaded seating adjacent to widened walkways, and central courtyards and small parks, but excludes hard landscaping at entrances, and should be in addition to the 12.5% public open space provision or levy payment;



*High density housing and pathways
Freiburg Germany
Source: Wendy Bell*



*Children playing in Freiburg urban
renewal housing
Source: Wendy Bell*

1.3 APARTMENT DESIGN

- rates of communal open space provision should be calculated having regard to the wider context and varying in size and type according to availability of open space within 300 metres walking distance of the site;
- meaningful communal open space may range in proportion of the site; from 0% when the development is in a central city location, or of a smaller scale, has substantial ground level private open space and is located adjacent to substantial public open space; to 50% for higher density development (> 45 dwellings per hectare) situated more than 300 metres from substantial areas of public open space:
 - in developments of 45 dwellings per hectare (dw/ha) or more (high density apartment development), communal open space should be provided at the rate of 1.8 ha/1000 people, or a reduced amount where there is public open space comprising more than 3 ha/1000 people in the surrounding residential areas and where such open space is within 300 metres of the site or is part of a school within 800 metres of the site; and
 - for medium density developments of 23-45 dw/ha an area comprising 5-25% of the site is required for communal open space depending on the proximity to local open space within 300 metres walking distance.
- all high density development with more than 75 dwelling units should provide open space at or above ground level for children's play on the basis that between 5-7% of such developments is likely to attract families;
- play areas for children should be provided on each site at ground or above ground level or be accessible to the site as follows:
 - outdoor play areas in one or more locations in size from 130m² to 280m²;
 - minimum of 1.0m² per bedroom (excluding main bedroom) allocated for pre-school play areas with a minimum size of 50m² with seating and including 'doorstep' play;
 - minimum of 1.5m² per bedroom (excluding main bedroom) for play areas for primary school aged and older children with a minimum of 85m²; although
 - the size and extent of these areas may be reduced if the site is within 300 metres of nearby playgrounds, sports fields and community facilities designed for these age groups.
- private open space in the form of balconies or roof gardens and ground level gardens with a min. of 2 metres deep by 2.7 metres wide for balconies and a min. of 2.5 metres wide at ground level, designed to maximise sunlight access, safety and adaptability, with larger balconies for family units;
- access to communal outdoor open space should be limited to residents and their guests by gating and locking these spaces;



High density housing courtyard in Canberra

Source: Wendy Bell

1.3 APARTMENT DESIGN

- small communal spaces for use by adults only to be provided in developments where children are likely to live (consider roof top and terrace location) and located close to non-family dwellings; and
- semi-public open space should be limited to small areas of landscaping along public walkway and should be designed to deter intruders.



Open space in Housing SA high density housing in Woodville West

The following definitions are relevant to the provision of open space in apartment development:

‘public or communal spaces’ are spaces that, whilst privately owned and typically managed by a body corporate, are intended for use by residents and their visitors (and in some instances the general public i.e. for mixed use developments) and allow for public access, free of any rules of normal behaviour. Such spaces may comprise internal and external communal areas and circulation spaces including driveways, visitor parking areas, footpaths, garden areas, building entrances, lobbies, stairs, lifts, bin storage, etc, which are not subject to security measures such as gates, locks, access cards, etc.

‘semi-public spaces’ refers to spaces that, whilst privately owned and typically managed by a body corporate, are intended for use by residents and their visitors and typically allow for public access, free of any rules of normal behaviour. Such semi public spaces may comprise internal and external communal areas and circulation spaces that are typically subject to security measures such as locks, access cards and other technologies that allow for restricted entry into buildings and spaces or part thereof. Such spaces may include building entrances, mail collection areas, bin storage areas, lobbies, stairs, lifts, etc, which are subject to some form of security measure.

‘semi-private spaces’ refers to spaces that, whilst privately owned and typically managed by a body corporate, are intended for use by residents only and typically allow for private access only, often subject to rules of normal behaviour. Such semi-private spaces may comprise internal and external communal areas that are subject to security measures such as locks, access cards and other technologies that allow for restricted entry into buildings and spaces or part thereof. Such spaces may include driveways, bike and car parking areas, lobbies, stairs, lifts, laundries, bin storage areas, central courtyards, common rooms, storage areas, etc, which are subject to some form of security measure.

‘private spaces’ are those spaces owned by individual tenants, such as dwellings, balconies, ground level gardens, dedicated car parking areas, dedicated storage areas, etc that are subject to security measures. While the internal areas of such spaces are typically free from body corporate rules, it is not uncommon for body corporate rules to be placed on external spaces such as balconies and parking areas.

Community Infrastructure

- In larger developments provide for community garden space with communal or semi-private open spaces with structure providing garden tool storage and facilities for recycling and composting of organic waste;
- separate mail boxes to be provided for all dwellings with a ground level entrance and grouped close to or within communal entrances for groups of dwellings accessed by a common entrance;
- street furniture such as seating, benches, bins, lighting located in semi-private central open spaces and seating and lighting on all pedestrian routes in communal areas;
- separate refuse and recycling containers rather than communal bin enclosures in high density developments, located no more than 30 metres from any dwelling or building entrance and located on a hard, level surface close to bin collection points but screened from view of dwelling interiors and gardens or if communal, located close to well-used pedestrian routes; and
- where dwellings are located at ground level and include an area of private open space, space accessible to the kitchen or laundry should be provided within this space for the storage of refuse containers.

Community Activities/Cultural Infrastructure

- provide space and facilities close to site entrance for a concierge, maintenance staff or community worker in development comprising over 75 units;
- provide opportunities for public art installations that also function as useful facilities (such as bicycle racks);
- provide outdoor space with good solar access and visible from streets and dwellings for the establishment of an on-site community garden to grow food and encourage social interaction amongst residents;
- design spaces and facilities to encourage walking and cycling within, to and from the site; and
- reduce potential maintenance costs by designing for resident involvement in the maintenance of landscaped open space particularly at or close to entrances of ground level dwellings and to groups of units.



Communal garden at Lochiel Park



Generous communal open space and pathways, medium density apartments at Melrose Park



Value of retaining existing tree, high density housing courtyard in Canberra

Source: Wendy Bell

Noise Attenuation

Incorporate noise attenuation measures such as:

- double-glazed windows;
- sealed doorways;
- under-balcony sound-absorbing materials; and
- wall and ceiling insulation which exceeds BCA requirements where there is a risk of nuisance from noise.

Environmental, Social and Economic Sustainability

Retain existing large or character trees and include vegetation cover in communal open spaces to provide shade for ground level open space and apartments from the summer sun, while allowing access to winter sun if they are deciduous trees:

- consider roof gardens without interfering with provision of solar panels;
- use self-finishing materials such as bricks or other masonry materials, compressed fibre cement and other sheet materials that do not require painting;
- adopt a low maintenance internal fit-out;
- where the development comprises affordable rental housing funded through NRAS or other forms of social housing, the provision of a communal laundry should be considered on a case by case basis;
- if comprising the above mentioned rental housing and where the development site is not located within 400 metres walking distance of a centre of a size likely to contain a Laundromat, a small laundry will be provided within the apartment building for tenants only, with swipe card access, provision and maintenance of coin operated washing machines by an external contractor with cost of use equivalent to local Laundromats;
- in each unit/dwelling, space and connections should be provided for washing machines as an essential requirement whereas clothes driers and dishwashers are non-essential but adequate space and fittings are to be provided; and
- whether or not clothes dryers are installed or space provided, clothes lines are to be installed on balconies or where available, in other private open space at ground level.

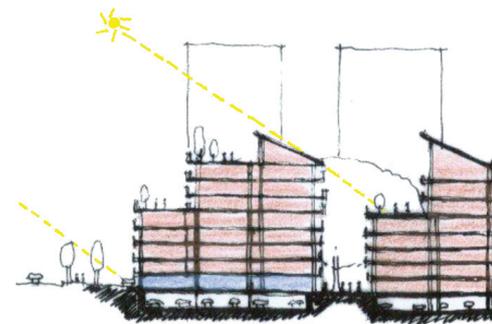


Figure 3 Maximise solar access for all levels
Source: Wendy Bell



BedZed development, UK
Source: Flickr



Affordable housing at Lochiel Park

1.3 APARTMENT DESIGN

Water Efficiency

Designs should comply with water sensitive urban design principles as follows:

- use water-efficient fixtures and appliances;
- provide green spaces to receive and utilise stormwater run-off;
- use permeable paving (incorporating water storage where possible);
- rain water storage and re-use;
- water features utilising stormwater; and
- recovery and recycling of stormwater on site for irrigation of landscaping and use within units where appropriate.

Energy Efficiency

Apartments must be designed with dual aspect, openable external windows, and doors to balconies to facilitate cross-ventilation of indoor environments.

- provide standard sizes, materials and components and avoid imported fittings such as lights for which globes are difficult to source or have high energy use; and
- passive design of dwellings by orientation of living areas to the north for winter sun and shading of northern and western windows in summer; and sufficient thermal mass in external walls to limit use of air-conditioners and mechanical heating.

1.3 APARTMENT DESIGN

BUILDING FORMS FOR SAHT APARTMENTS

Newbuild SAHT apartments are likely to range from two level developments with access stairs, to more complex buildings with three or more levels of accommodation accessed by a lift. For buildings up to four storeys, stairs should remain the primary form of access with a lift provided as a supplementary service to assist residents with physical impairments or heavy shopping loads. The introduction of a lift is also likely to make development of less than 24 dwellings unviable for construction.

Options for access to individual units can include open deck arrangements or enclosed foyers.

Design solutions must allow for community strata titling as new SAHT developments may be mixed in any one project for rental use, community housing providers and for private sale. Particular projects, may require additional features in respect of energy efficiency ratings, roof water collection and accessibility requirements.

External Spaces

SAHT flat and apartment development has been notable in the past for its high quality landscape features. Many sites feature fine stands of now mature native plantings and in some circumstances rare exotic specimens. The amenity of the open space surrounding these developments contributes to both the quality of apartment living and assists in offsetting the inherent density of apartment living.

All open space within a development must be designed in such a way as to contribute to the overall amenity of the project, taking into consideration maintenance requirements and public safety. Included within these areas may be driveway access for both resident and visitor carparking.

Site issues to be considered by designers and developers are set out in the design guideline *2.2 Design Guidelines for Site Layouts*.

Where possible new development should be located adjacent to existing public open space in order to give residents opportunities for self recreation, and to compensate for the limited open space available within the project.

1.3 APARTMENT DESIGN

On-Site Car Parking Requirements

Particular car accommodation needs will be advised by the SAHA. Car parking requirements must be clearly articulated and agreed with approval authorities prior to commencement of a project.

Where undercroft car parking is to be used, the exterior design should form a positive and interesting relationship with the street frontage. Allocated car parking spaces should ideally have flexibility to include storage lockers or similar. Individually secured and covered carparking is preferred.

As a guide in master planning a development, off street parking levels should be no more than one space per dwelling, and where it can be demonstrated, this requirement can be reduced as follows:

- minimise on-site car parking (less than 1 space for 1-2 bedrooms and 1-1.5 spaces for 3 bedrooms, and consider alternative off-site car parking within 150 metres of the development in the form of multi-deck, above ground parking and shared parking within mixed use developments for those who can afford it;
- car parking spaces can be varied according to proximity of site to frequent public transport routes, CBD or inner city areas, with equal access for renters to car parking where distant from such facilities;
- tenant and owner car parking is secure and separate from visitor parking and where possible associate visitor parking with the street network; and
- power and water to be provided within car park areas for car washing and maintenance.

For particular CBD developments consider on and off-site parking options within 150 metres, such as:

- shared parking with mixed uses; and
- car-share scheme membership included in purchase of apartment.

Bicycles and Electric Scooters (Gophers)

Secure lockable well ventilated storage capable of sheltering an electric 3 or 4 wheel scooter may need to be provided. An external electrical outlet must also be provided for battery charging.

Provision should be made for secure bicycle parking or storage. The demand for these spaces in particular projects will be advised by the SAHA, or as follows:

- cycle parking to be provided within units or in communal cycle storage areas in secure, sheltered and well-lit facilities at the rate of 1 per 1 or 2 bedroom units and 2 per 3 or more bedroom units.

Where practical these storage or parking spaces should be co-located adjacent to dwelling units.

Common Area Access for Apartments and Walk Up Flats

Foyers are a publicly accessible space and must be designed to meet BCA access requirements, including access and mobility requirements. Within these access areas avoid enclosure and doors to simplify fire separation and BCA requirements of enclosed space.

Historically in walk up flats the primary security of individual tenancies was established at the dwelling unit front door. Unless otherwise directed for buildings of up to four storeys, the primary security is to be at the front door of the unit.

Enclosed foyers will require the use of fire rated construction and doors within access and foyer areas. The provision of a lift should not mandate an enclosed foyer but security arrangements for access and operation of the lift will need to be considered.

Stairs for low rise towers, three or four storeys must be designed as the primary means of access and not be separated for emergency and fire egress only, in order to provide a user friendly environment.

The entry doorway to individual units can also be provided with an openable highlight or sidelight to offer flow through ventilation without violating fire separation.

Accessibility

All apartments will be built to the design guideline 2.3 SAHT *Universal Housing Design Criteria* that includes stepless entries and appropriate bathroom and kitchen arrangements.

Ground level units may have a separate entry (not off foyer) associated with a small private yard.

Stairs and Vertical Circulation

The building design should encourage use of stairs by residents in accordance with healthy living principles and should therefore be attractive well lit and safe. Stairs must also meet requirements for fire egress.

Where lifts are provided, stairs should be designed to offer an attractive alternative means of access.

Lift Requirements

Lifts shall comply with AS 1735.12 *Lifts, escalators and moving walks - Facilities for persons with disabilities*.

The car shall be large enough for a stretcher.

The lift shall also comply with AS 1735.1 *Lifts, escalators & moving walks - General requirements*.

A facility shall be included to allow for mechanical or electronic access to be set up for individual floors. The interior finishes shall be easily maintained.

Public Lighting

Public lighting in the foyers and stairwells of buildings is to be to the current Australian Standard (i.e. BCA and AS 2293.1 *Emergency escape lighting and exit signs for buildings - System design, installation and operation*).

In locating these lights, consideration is to be given to the future changing of lamps, the testing of any emergency lighting and maintenance of the same.

To enable tenants to turn on the lights while they use the stairs on a dull day a push button timer type over ride system is to be provided.

Wherever possible natural lighting is to be provided for day time use.

For external and site lighting requirements refer to design guideline 2.2 *Design Guidelines for Site Layouts*.

Emergency Lighting in Foyers

To ensure that there is always lighting in the stairwells and foyers in the case of an emergency, where it is not possible to interconnect the lighting with the fire alarm system, the lighting is to be controlled by the photo electric cell that controls the site lighting.

Security Management

Where a lift is associated with an enclosed foyer, residents may be required to use a swipe card or separate key to enter the foyer and use the lift. Visitors may need to gain entry by first contacting residents by means of an intercom system.

These systems will need to be agreed and designed into each project and backed up by appropriate maintenance contracts, for regular servicing, warranty and repair.

Access from Foyer - BCA Requirements

Front Doors - Entry to Unit

Historically some people living in flats or apartments have wanted to hold open their solid core front doors and have a screen/safety/security door so that they could gain both extra ventilation in hot weather and additional social contact with neighbours using the foyer and stair.

Fire Separation Requirements

In general the front door of a flat or apartment that provided access from a corridor or a stairway needs to have a fire rating. Balcony access does not have the same requirement. There is a requirement in the BCA that there be no impedance to someone exiting in the case of a fire other than the fire rated door(s). The SAHT sought a BRAC (Building Rules Advisory Commission) opinion relating to screen doors associated with those front doors. The commissioners held the view that such doors were a fire hazard. They reasoned that once they had a screen door people would lock the screen door and chock open the fire door. They considered that was an unacceptable risk as smoke and fire could escape the unit and prevent others leaving via the stair or corridor or it could enable any smoke and fire from in the stair or corridor entering the unit.

1.3 APARTMENT DESIGN

The SAHT subsequently determined that these issues could be overcome by providing the fire rated door with a magnetic holder which would release the door in the case of smoke being detected in any unit associated with the stair or within the foyer. After several attempts a working system was installed as a trial in a stairwell in Barwell Flats on Portrush Road. This system has continued to operate successfully.

Current Requirements and Retrofitting Options

Current policy is to not provide screen, safety or security doors on these doors. Doors are to be provided with a peep hole. However, it is proposed to move forward and have the magnetic holders used as the general design requirement and possibly looking at some retrofitting. The retrofitting is expensive because while the control system and magnetic holders are not a large cost, a lot of the older flats were not required to have fire rated or solid core doors with a reliable door closer. Having to replace the door and door closer adds significantly to the retrofitting cost.

Natural Ventilation

SAHT clients tend to be people of limited means and so public housing has always been designed to minimize the running costs. Hence the use of natural ventilation is very important during the warmer months. The traditional walk up flat design ensured that all flats have front and back windows which gave an ability to provide cross ventilation. However, the foyer and stair does offer a natural chimney for moving air, particularly as the doors at ground level were deliberately not secure and so could be left open. The foyers also had a number of openable windows at upper levels.

1.3 APARTMENT DESIGN

Balconies and Private Open Space

For apartments and walk up flats, balconies may enhance amenity or comprise the only available private open space. The balcony represents the only external usable space for upper level units.

Balconies are not normally provided off sleeping accommodation. Exceptions may be required to include particular outlooks, cross flow breezes and other environmental or locality circumstances and in bedsit accommodation.

Balcony areas can be included in private open space in accordance with planning guidelines.

Minimum balcony space for apartment projects are:

| Dwelling Type | Minimum Total Area | Minimum Width |
|---------------------|--------------------|---------------|
| 1 bedroom or studio | 8m ² | 2.00m |
| 2 bedroom | 11m ² | 2.40m |
| 3 bedroom | 15m ² | 2.40m |

Notes:

- The minimum width allows for a component of outdoor furniture.
- For ground floor units 20m² private open space is an acceptable minimum for all 1 and 2 bedroom units.
- Family housing (3 bedrooms and larger) would not be normally included in above ground level group housing projects.

Solar Clothes Drying

Larger balconies will allow for discrete use of solar clothes drying by residents using portable frames. A technique for providing balcony privacy is to include a portion of closed (solid) balustrade. A ground level shared drying yard will be required for larger items. Ground level units may have individual fold down or retractable clothes line.

External Floor Finishes

For external walkways in public areas and balconies the use of trowelled concrete is acceptable. For stepless entries the concrete finish leads to simpler detailing of the concrete floor slab.

Refer to the SAHT fixtures and fittings schedule for approved tile applications for balconies and porches.

Internal corridors, foyers, stair treads and landings consider the use of an acoustic backed vinyl or equivalent product in order to reduce noise.



Balconies at Portrush Road, Kensington 1995

Cross Flow Ventilation

Double sided buildings are not encouraged as the presence of an enclosed corridor or foyer will inhibit both through ventilation and access to natural daylight to inner rooms. Acceptable design techniques can include allowance for a diagonal cross-flow in corner units at the ends of buildings.

Within apartments it is important that ordinary openable windows are used to allow for natural ventilation and are in compliance with BCA requirements. It is not acceptable to rely on balcony doorways and full height sliding windows are not to be used due to ground level security and upper level draught sealing issues.

Natural Ventilation and Healthy Living

Natural ventilation is very important for the control of mould to ensure healthy living conditions. To ensure moist or foul air does not build up, mechanical ventilation is to be provided for all new apartment bathrooms, laundries and kitchens in addition to natural ventilation.

Natural ventilation can be of significant benefit in reducing energy use in summer months.

Heating and Cooling Requirements

Allowance for future provision of mechanical heating and cooling is to be made.

Typically a resident may wish to install a split system air-conditioning unit. Provision is to be made for equipment to be located on an external balcony.



Balcony with high balustrade screen at one end, Winona St., Findon

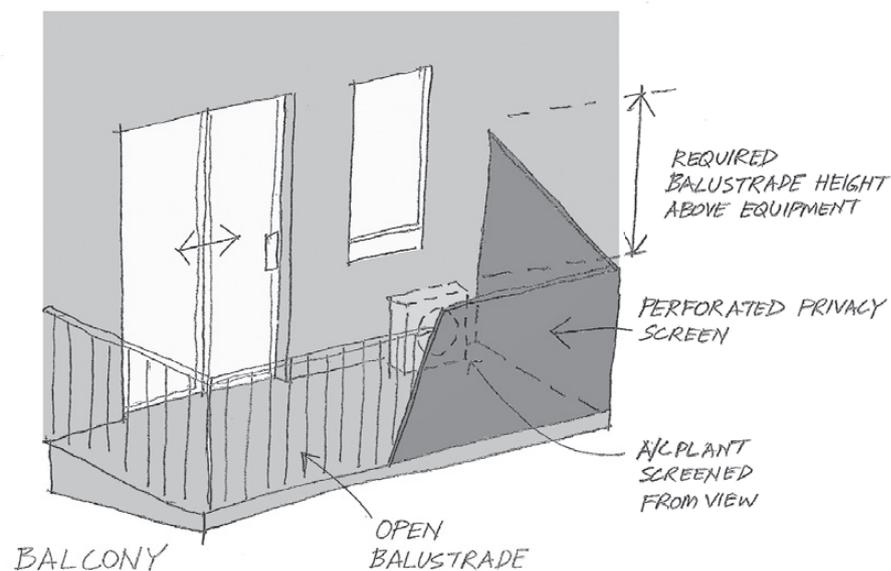


Figure 4 - Sketch of a typical balcony

Future Installation of Mechanical Equipment

Allow for the future installation by tenant or occupant of split-system outdoor air conditioning equipment. Provide 20 amp weatherproof electrical outlet in suitable location.

Balcony balustrade must be designed in such a way that equipment is hidden from view and does not compromise BCA requirements for balustrade height when equipment is installed.

1.3 APARTMENT DESIGN

Sound Transmission Between Units

Effective acoustic separation between units is crucial to the success of apartment living.

Sound transmission requirements given in the BCA are to be met, but there are also design techniques that should be implemented to maximise acoustic privacy.

A design technique is to plan dwelling layouts to limit noise transmission between adjacent dwellings by arranging bedrooms of adjacent dwellings next to, and above, one another, rather than living rooms above bedrooms. Wet areas should be coincident and water closets located to avoid transmission of sound to adjacent units and sleeping areas within units. Provide resilient floor coverings to reduce impact noise on floors.

Ensure acoustic covering to all services passing through floors. Acoustic ducts surrounding plumbing risers passing through units. Provide acoustic insulation to ceiling below floor plumbing relating to the unit above.

Units can be staggered on plan to reduce external noise transmission between dwellings. Care should be taken with balcony placement. Baffle and nib walls and screens can assist in both providing visual and acoustic privacy. Care should be taken with window placement to minimise accidental sound transfer between open windows. Windows should be offset to avoid direct facing.

Noises from communal areas also must to be considered. Attention should be given to location of lifts and stairs and reverberation time in enclosed spaces such as foyers and passages.

Utility Metering

All services entering a unit are to be individually metered, easily accessible and be able to be isolated at the unit. Where possible these are to be supplier's meters, but where that is not possible local meters may be used and read by the "strata manager". Landlord metering is required for services to public areas.

Bins

Bin collection arrangements will require negotiation with local authorities to ensure domestic waste can be removed at no additional operating cost.

Enclosed bin stores in publicly accessible areas are not to be provided. In the past these areas have been the source of management complaint in respect of security issues (CPTED) and vermin problems.

Hot Water

Individual electric hot water units may be used, however shared hot water units will give greater efficiency, and either heat pump or solar units may be used.

Where shared hot water is installed, metering to allow the costs to be distributed based on use must be included. However, in larger or taller complexes this may not be practical and a bulk hot water reticulated system may be the best solution. The energy source is to be electrical and metered by the landlord. Each apartment will have a hot water meter.

Facilities for Employees and Maintenance

The requirements of Table F2.3, Volume 1 of the BCA are to be met in respect of provision of maintenance workers toilets.

Particular attention shall be paid to maintenance and access to carry out maintenance, particularly for items on roofs and at height.

Provision should be made for storage of cleaning items and other required on-site maintenance equipment.

Operation and Management

The following matters should be determined prior to design development as these matters can influence building form:

- Landlord management including cleaning of internal shared access spaces; foyers, stairs and lifts;
- Upper level window cleaning arrangements;
- Security and access to internal shared spaces; foyers, stairs and lifts;
- Security and keying requirements for individual residential units; and
- Rubbish; on-site management arrangements and local council collection requirements.

Hot Water Isolation

All hot water systems are to have an easily accessible isolator that isolates each occupancy unit from the main hot water supply.

Energy Supply Charges

Energy bills have two components. There is a fixed charge for being connected and then a charge for the energy used. Since electricity is needed for lighting, electricity should be the only energy source supplied to the individual units.

APARTMENT LIVING UNITS ACCOMMODATION REQUIREMENTS

General Requirements

Two bedroom units are generally preferred and most popular in suburban development. In inner city developments there may be limited demand for one bedroom and bed-sit accommodation units. Also where appropriate larger 3-bed dwellings suitable for family accommodation should be provided. Particular project requirements will be advised by the SAHA.

Living Unit Accommodation Requirements

For schedules of floor areas and amenity in accommodation units for SAHT rental use refer to the design guideline *1.4 Housing Accommodation Schedules*. For schedules of floor areas and amenity in accommodation units for Affordable and Market housing refer to design guideline *1.5 Affordable and Market Housing*.

Kitchen Design

Set out of kitchens refer to the design guideline *1.1 House Design Guide*. Options for apartment design can include L shaped layouts. However straight line bench solutions are discouraged, as they can lead to excessive travel and unnecessarily inefficient work practices. Overhead storage units can be considered.

In some narrow building types the kitchen or meals preparation area will not be on an external wall. Nevertheless requirements for mechanical ventilation in the vicinity of the cooktop will need to be addressed. The design solutions will need to take into account extract fan unit capacity and duct length and space provision for horizontal or vertical locations for ducting to outside. For apartment buildings options for locating servicing conduits may be limited due to forms of construction, and the fire separation and acoustic requirements of class 2 building classification.

An alternative to the provision of a ceiling mounted extract fan may be the use of an over cook top range hood, subject to approval by the SAHA. Ductwork to the outside is essential. In smaller dwelling units the location of the ceiling mounted fire alarm must be well clear of the kitchen ventilation device.

Recirculating or recycling rangehoods will not be acceptable in any circumstances.

Kitchen Floor Finishes

Sheet vinyl is to be provided. This decision has been developed to meet customer expectations for ease of cleaning and appearance, and performance criteria in respect of slip resistance.

The kitchen floor coverings are to continue into any alcoves provided including fridge spaces.

Appliances

Cooking appliances include hot plate and underbench over or upright cooker options (refer to SAHT fixtures and fittings schedule for details).

A dishwasher space must be allowed for in all sales units, and where provided, kitchen joinery must be finished at sides and an appropriate power outlet provided. For SAHT rental project a removable cupboard, appropriately serviced, should be designated as the dishwasher location, unless otherwise specified by the SAHA.

Bedrooms

All bedrooms must have direct access to both natural light and ventilation. The use of borrowed light options are not acceptable for rental, affordable or marketable accommodation. Viewing to outside is important to avoid claustrophobic spaces and ensure that apartment living promotes a healthy and satisfying lifestyle for all. High level windows and obscure glazing are to be avoided and rigorously rejected at all stages of development submission.

Built-in wardrobes must be provided in all bedrooms for apartments.

Floor Coverings

For retained rental projects the SAHT has a range of approved floor coverings.

To maintain acoustic separation acoustic backed vinyl is to be specified in kitchen areas.

For the wet area floors SAHT approved floor tiles must be used in units retained for rental housing.

Refer to the SAHT fixtures and fittings schedule for further details on floor coverings.

Bathrooms

Bathrooms in one and two bed apartments should be combined to include all wet area facilities. This has design and construction advantages including the efficiency of combining plumbing services and wet-area construction within the one location.

Refer to the design guideline *1.4 Housing Accommodation Schedules* for details. All apartments at ground floor or accessed by a lift should be set out in accordance with the design guideline *2.3 SAHT Universal Housing Design Criteria*.

Upright Cooker Alcoves

For upright cookers the wall behind the cooker is to be tiled with wall tiles and the floor under the cooker is to be tiled with the non slip tiles specified for wet areas.

If permission is granted by the SAHA to use the kitchen floor covering under the cooker, it is to be installed to cover the whole area under the cooker prior to the cooker installation.

Wet Area Floor Tiles

Floor tiles are to meet criteria for slip resistant performance, ease of cleaning and appearance. For public liability reasons no other products will be acceptable.

Sheet vinyl and alternative floor finishes are **NOT** acceptable in wet areas.

1.3 APARTMENT DESIGN

Laundry Facilities

Laundry facilities are to be included in all one and two bed flats and apartment units where natural ventilation, waterproofing and a graded floor trap can be accommodated. Dedicated laundry rooms or spaces must be appropriately flued or vented to the outside.

In inner city areas there may be some demand for commercial laundromat facilities. Project specific requirements must be confirmed.

Ceiling Heights

Where ceiling mounted sweep fans are to be provided a minimum floor to ceiling height shall be 2550mm.

For non habitable rooms such as bathrooms and wet areas generally minimum floor to ceiling height shall be 2250mm.

