



## B1.0 RESIDENTIAL DEVELOPMENT





## PART B – RESIDENTIAL DEVELOPMENT

### How DCP Part B – Residential applies

DCP Part B – Residential applies to all new housing irrespective of the zoning of the land.

Use DCP Part B – Residential along with DCP Part A – General Information. Particular reference should be made to Leichhardt Local Environmental Plan 2000.

Part 2 – Environmental Management and Part 4 – Housing.

DCP Part B is divided into 2 distinct parts:

- General guidance and controls (Sections B1.0 – B3.0) and
- Controls for development types (Section B4.0)

Before commencing any design work, applicants should be familiar with these controls, the Suburb Profiles at Section A10.0 and the structure of the DCP.

#### Structure of controls

Within the General guidance sections, planning and design issues are divided into 'Design Elements' set out in the following format:

##### Principles

*describe the primary purpose and intent of each element.*

##### Rationale

provides an explanation and supporting information for the design element.

##### Guidelines

provide steps and procedures for best practice, and are encouraged by Council.

##### Controls

**provide mandatory controls on all development.**

Applicants should discuss proposals with Council staff prior to lodging a Development Application. This can save time and expense and enable Council to explain the contents of the plan, address potential conflicting controls and consider solutions to achieve the best outcome.

For Development Application submission requirements, refer to DCP Policy Statement No.1.

If you have any queries regarding Leichhardt *TownPlan*, please phone the Council's Division of Environmental Management on 9367 9222.



## B1.1 Design Element 1 – Demolition, site layout, subdivision and design

### Principle

*Design new housing to integrate well with the neighbourhood and be consistent with and enhance existing street subdivision patterns, street character and maintain amenity to adjacent residents.*

*Only allow demolition of existing residential buildings where the replacement buildings are capable of satisfying the suite of controls for residential development in Leichhardt LEP 2000 and this Development Control Plan*

### Rationale

Leichhardt is an area characterised by diverse street patterns. The development of suburbs at different periods has ensured that street and subdivision patterns vary distinctly, both within and between areas. A varied topography and mixture of land uses adds to this complexity.

Local area characteristics are set out in the *Suburb Profiles* (A10.0). In designing the layout of new housing development, consideration of the prevailing street patterns and lot subdivisions is the first step. The scale of the proposal will determine the extent to which the controls outlined below are necessary and applicable.

To enhance the character of the area by encouraging the restoration of existing buildings where those existing buildings make a positive contribution to the streetscape.

To encourage environmentally sustainable development by providing controls that support the restoration of existing buildings.

Where demolition is appropriate, to ensure that infill development:

- meets the desired future character of the area;
- is of high quality urban design;
- provides a better contribution to the area than the existing building;
- meets the amenity impact provision of this DCP in regard to adjoining properties;
- is compatible with the apparent subdivision pattern (as opposed to any underlying paper subdivision);
- meets current amenity standards.

### Guidelines

Before designing the layout and siting of the development, use the Urban Framework Plans and your site analysis to consider the opportunities and constraints such as:

- The maintenance of subdivision patterns that are unique to each Distinctive Neighbourhood of the municipality;
- buildings and landscape features that need to be retained;
- impact on adjacent or neighbouring Heritage Items;
- site contamination;
- potential overshadowing and loss of privacy to neighbours;
- the need to retain and provide solar access;
- and possible sources of noise disturbance to future occupiers and existing residences.
- The ability of a new residential development on any subdivided lot to



- comply with the suite of controls in Leichhardt LEP 2000 and this DCP.
- Before proposing demolition, the following should be considered:
  - The contribution of the existing building to the area;
  - The structural adequacy of the existing building;
  - Options for restoration and renewal;
  - Maintenance of the (apparent) subdivision pattern unique to the Distinctive Neighbourhood rather than seeking to rely on an historic paper subdivision;
  - Impacts of the existing building on surrounding properties.

Design to optimise existing site characteristics, including topography, landscape, use of on-site materials and solar access to land and buildings.



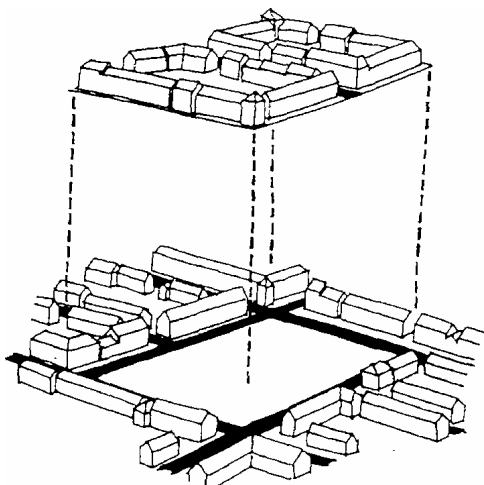
Some corner sites and sites located on the termination of vistas, provide an opportunity to improve townscape and streetscape features by providing a focal point as illustrated above and below. These opportunities should be explored at the outset and the development designed accordingly.





## Controls

- Maintain a grid pattern consistent with the locality, and avoid winding cul-de-sacs on large sites where new roads are proposed.

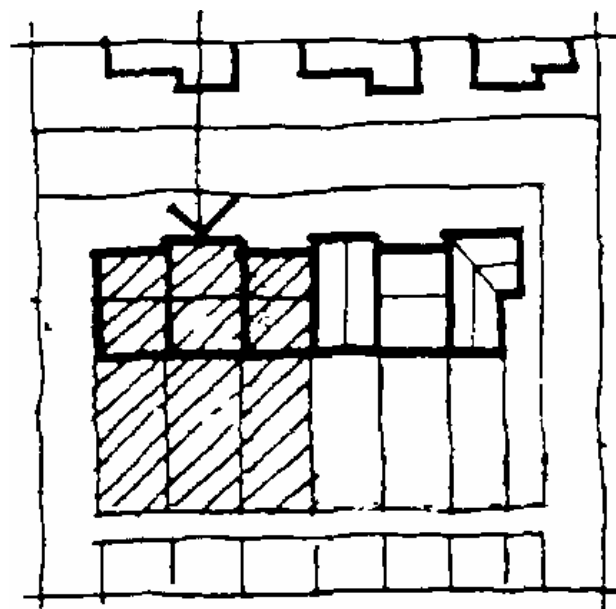


- Subject to the minimum lot size of 200m<sup>2</sup>, future lot subdivision should be consistent with the prevailing subdivision pattern and shape of the surrounding development as described in the Distinctive Neighbourhoods.
- Design the layout of open space in accordance with the Open Space Strategy.

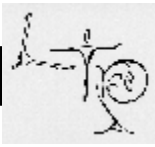


- Where buildings front streets or back on to streets in the locality, new streets should be designed to ensure that this characteristic is respected.

- Development should have an east-west orientated street pattern to achieve greater energy efficiency.
- The layout of new housing development should respect the pattern, orientation and shape of allotments in the area.
- When determining the siting of buildings and the area and dimensions of allotments, enable the provision of private open space, vehicle access and parking to the standards required by this plan.
- Orientate buildings to address streets and public spaces.
- Ensure that adequate arrangements are made for the provision of water, sewerage and drainage services.
- Where development coincides with a major knoll or significant ridgeline design to reinforce these features
- Locate dwellings with ease of access to local services and facilities.



- Ensure streets and footpaths are well lit at night and avoid right angles and 'blind corners' in footpath layout to improve safety and security.



- Council will generally require a Development Application for subdivision to include an application for the buildings to be erected on the new lots in a subdivision (or re-subdivision).
- Council will generally require a Development Application for demolition of all, or a substantial part of, residential buildings on a site to include an application for the replacement buildings on the site.



## **B1.2 Design Element 2 Building Form, Envelope and Siting**

### **Principles**

*Plan and design new housing, and additions and alterations to existing housing, to maintain and enhance the established scale and character of the streetscape. Match and complement existing building forms, private open space and landscaped areas.*

*Plan new housing to provide a balance between building and spaces which respects the character of the area.*

### **Rationale**

It is important that new development and extensions relate to the established setting and character of neighbouring buildings, and the wider locality. This character is determined by the scale, massing, siting, size, height, spacing, form, intensity and use of surrounding buildings. Apart from establishing the character of an area, design that addresses these issues serves to minimise visual impacts, preserve outlooks and protect privacy.

### **Guidelines and Controls**

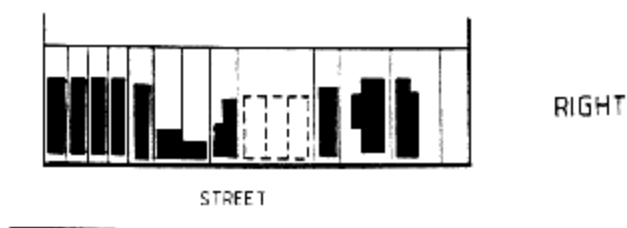
- Siting and Orientation
- Building Location Zone
- Building Envelope
- Side Setbacks

### **Siting and Orientation Guidelines**

An important element of an area's character is the amount of space around and the distance between buildings. New buildings and alterations and additions to existing buildings need to be designed so that they respect the proportions of neighbouring developments, the streetscape and amenity of neighbouring residents.

Established buildings are almost always oriented to their street frontage, often have relatively uniform spaces between them, maintain the existing setback from the street alignment and have similar building heights. Such relationships and existing features and details (e.g. verandahs and roof forms) are together responsible for streetscape character and should provide the basis for new development.

Buildings that are orientated across sites, contrary to the established development pattern, are intrusive and often overlook adjoining properties (see below).





## Building Location Zone Guidelines

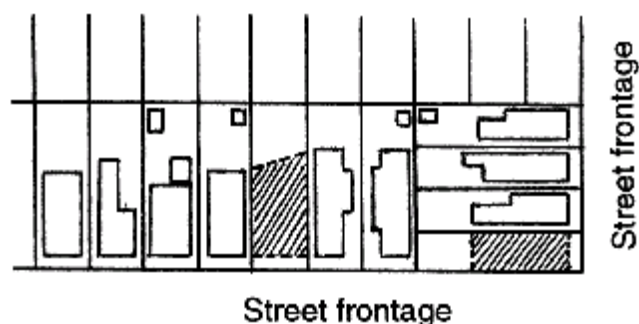
### - Front and Rear Setbacks

In addition to the siting of a building, the setbacks proposed must respect existing setbacks on adjoining properties and the street alignment. They should ensure the efficient use of the site, protect the amenity of residents, maintain established private open space and landscape patterns and reinforce the character of the neighbourhood. Space around the building must be designed to accommodate access, useable private open space, landscaping requirements, site facilities and parking, where required.

New development or an extension to an existing dwelling is to be located within the Building Location Zone (BLZ). This is a zone defined by the average front and rear setbacks of both the adjacent buildings on either side of the subject site. The BLZ is that part of the subject site where it can be reasonably expected that a building will be located (see below). This includes 2 storey development and first floor extensions to existing dwellings, however in most circumstances development above the first floor may not occupy the entire area of the BLZ, due to the resulting bulk and scale issues.



### Building Location Zone



**Note:** With the exception of corner sites, depending upon circumstances, the extent of the BLZ does not refine or relate to side setbacks.

The BLZ is determined only by the main buildings on the adjacent properties. The location of front fences or intervening walls, ancillary sheds, garages, external laundries, toilets or other free-standing structures on the site is not relevant in determining the BLZ.

Where it is proposed to build outside of the BLZ, the onus is upon the applicant to justify that the proposed building footprint is appropriate. Issues which must be addressed in justifying a building footprint extending outside of the BLZ include, but are not limited to:

- visual aspect of the bulk and scale, as viewed from adjoining properties;
- amenity to adjacent properties (ie sunlight, privacy, views);
- location and retention of existing significant vegetation;
- compliance with applicable statutory controls, including Floor Space Ratio and minimum landscaped area of 40% of the site;
- the existing streetscape and character and scale of surrounding development; and
- the adequacy of the size, dimensions, privacy and solar access of private open space for outdoor recreation and landscaping.

On corner sites, the primary street frontage may not necessarily be the widest street frontage. The BLZ of a corner site may be determined by the location of the building on the adjacent property that most resembles the orientation, frontage width and site layout of the subject site (refer to BLZ diagram opposite). Council may exercise some flexibility in relation to the side setback to the secondary street frontage, depending upon the relative importance of this frontage. For example, if the second frontage is to a laneway, a zero setback would be acceptable.





### Building Envelope Guidelines

The building envelope determines another main element of character. It ensures that development is appropriate to the local character, the setting and the context of the development. Wall height, width, depth and roof form and pitch of a building define the building envelope. Wall height is the key control over the building envelope, and roof form is one of the most important features that determines the overall appearance of residential buildings.

The envelope roof control is aimed at encouraging the use of pitched roofs, which is characteristic of most housing in the Municipality. The most typical roof forms are hipped, gabled or parapet designs, often with a skillion roof to the rear. The roof pitch or plane is generally between 30° and 45°, depending on the characteristic style of the local area.

### How to determine a building envelope

The Suburb Profiles give an indication of the general height and roof form of buildings in the area. This is a general guide and the prevailing circumstances should be paramount in assessing a building envelope.

In addition to the information given in the Suburb Profiles, consider the following aspects of surrounding development in relation to the proposal:

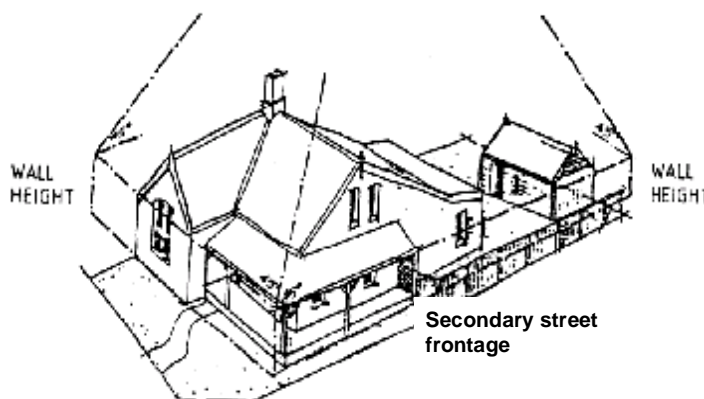
- ridge heights;
- eaves heights;
- roof form and pitch;
- proportion of the street frontage covered by the building elevation;
- any articulation of the front elevations.

The building envelope defines the maximum potential volume of a development above ground level. It applies to the whole area of a building defined by external walls. It includes covered areas such as verandahs and balconies, but does not include open decks and paved areas.

The envelope has two height components, a wall height and a roof control comprising of an inclined plane at 45 degrees from the top of the wall height.

The wall height is related to the average in the area (see Suburb Profiles for the relevant wall height). **The wall height is measured from existing ground level, at the front of the building.** For the purposes of determining a building envelope, wall height does not always relate to the actual height of the front building wall, as shown in the diagrams on the next page. Combined with the roof control, the wall height is simply a means of setting an appropriate height at the front elevation and hence controlling the overall bulk of a building. On a sloping site, wall height shall be measured from several points along the building to provide an average height and split-level solutions must be applied.

The roof control applies 45 degree inclined planes to significant (eg street) elevations of the building to permit compatible roof forms. The inclined plane also encourages the use of traditional building elements such as verandahs and balconies, which would assist in minimising the bulk of front elevations, presenting a smaller roof line at street level. Normally the height of a development including wall height and roof form should not exceed the ridge heights of adjoining development. Minor architectural elements such as chimneys, dormer windows, gables and sub-gables can penetrate the envelope.





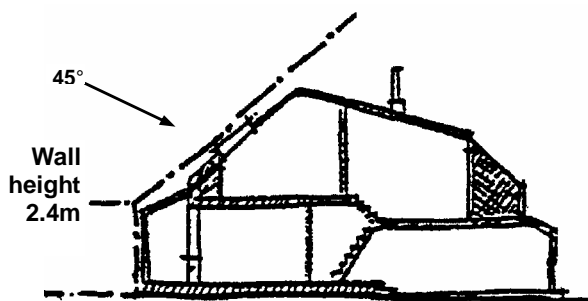
On corner sites, the inclined roof plane must be applied to both street elevations to encourage a building in scale with adjoining development (see diagram above). The above diagram does not reflect the situation of a terrace house on a corner block, where Council may allow for greater bulk fronting onto the secondary street and hence a larger building envelope.

The front wall of the building should be located in accordance with the building location zone. The building envelope is to be measured from the front of the building or attached building elements such as verandahs and balconies.

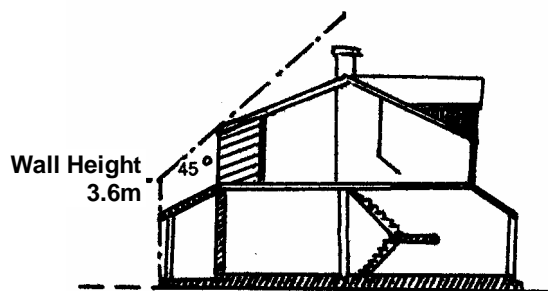
#### Building Envelopes – 2.4m, 3.6m, 6.0m and 7.2m

Four basic building envelopes apply to housing in the Leichhardt area, based upon existing dwelling types:

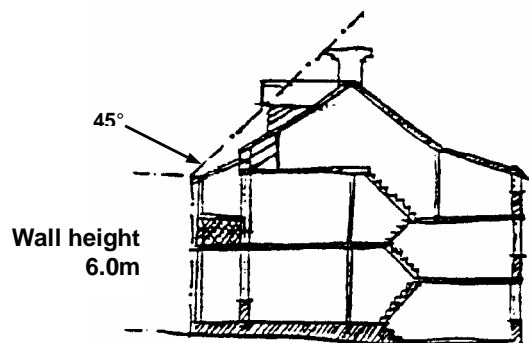
**2.4m wall height** – Single storey, similar to the scale of a workers' cottage.



**3.6m wall height** - Single storey, or low 2 storey dwelling utilising the roof space.

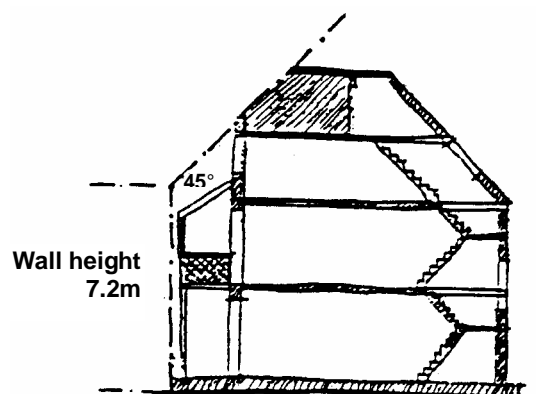


**6.0m wall height** - 2 storey, similar to the scale of



a 2 storey Victorian terrace.

**7.2m wall height** - 3 storey, to a scale compatible with grander terraces or mansions, or when the wall height is used as a parapet.





### Side Setback Guidelines

Setbacks are a key component of the streetscape. They provide rhythm and add character to residential streets, provide views and glimpses of local and distant landmarks and vistas from public places and can provide access to the rear of properties.

Setbacks also provide amenity to existing and proposed housing through the maintenance and provision of privacy, ventilation and sunlight access. As access to sunlight and privacy can be severely affected by tall buildings erected close to or on side boundaries, greater setbacks are required for taller buildings than for low scale single storey buildings.

Where it is proposed to reduce existing side setbacks, the proposal must meet the side setback controls and be designed to ensure that gaps between buildings do not appear to be filled when viewed from the street. Side extensions visible from the street or a public place should appear subordinate to the existing building.

Council encourages a varied side setback in order to provide articulation and relief to side elevations as well as enhance solar access, privacy and air circulation to internal living spaces and adjoining development.

The Suburb Profiles give an indication of the desired character and general setbacks of buildings in the area. This information and the prevailing circumstances should be paramount in assessing the appropriate side setbacks for the proposal.

### Controls

#### Siting

- **Siting for new development in streets with an established siting pattern must be oriented in accordance with the Siting and Orientation Guidelines.**

#### Building Location Zone

- **All new development is to be located within the boundaries set by the Building Location Zone. Any departure from this control must be clearly justified in accordance with the Building Location Zone (BLZ) Guidelines.**

#### Building Envelope

- **All new development must fit within the relevant Building Envelope, as set by the relevant Suburb Profile.**
  - **Building wall height must be measured from ground level and applied at the front building elevation.**
  - **Any departure from this control must be in accordance with the Building Envelope Guidelines.**
- **The ridge height of a development shall not exceed the ridge heights of adjoining development. The development needs to respect the adjoining and local roof form.**
- **Except where a higher building wall height is permissible, Neighbourhood shops or buildings originally designed for non-residential use may use a maximum building wall height of 7.2m in order to incorporate a parapet wall.**

#### Side setbacks

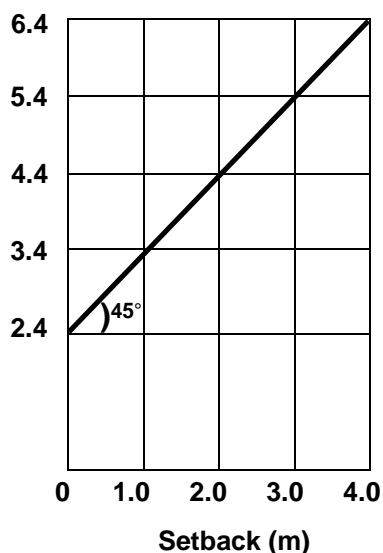
- **Side setbacks for new development are to be of sufficient width, and designed such that the following issues are properly addressed to the satisfaction of Council:**



DCP Amendment No.4 – 23 January 2002  
DCP Amendment No 9 – 20 September 2004

- The requirements of the Suburb Profiles;
  - Ensure that the development is sympathetic to and respects the rhythm of the streetscape created by the lot width and side setbacks of adjoining development;
  - Amenity concerns of adjoining properties, in particular solar access, visual privacy, noise transmission and air circulation;
  - Existing external access to the rear of the property with a minimum width of 900mm is to be retained; and
  - The retention and enhancement of views to significant and local landmarks and vistas from a public place through gaps created by existing side building setbacks.
- **Higher portions of buildings are setback in accordance with the above control;**
  - **The bulk and scale of development is minimised by reduced floor to ceiling heights;**
  - **The potential impacts on amenity of adjoining properties, in terms of sunlight and privacy and bulk and scale, are minimised;**
  - **Reasonable access is retained for necessary maintenance of adjoining properties.**

Minimum setbacks from the side boundaries shall be determined according to the following graph:



Council may allow buildings to side boundaries where:

- The pattern of development is not compromised;



## B1.3 Design Element Car parking

### Principles

*Development must comply with the car parking requirements set out in Part A.*

*Ensure that where on site car parking is required the layout and design:*

- *respects the quality and integrity of the streetscapes of Leichhardt; and*
- *is safe and efficient; and*
- *has regard to the layout, siting and use of neighbouring buildings; and*
- *is integrated with the overall site and building design.*

### Rationale

The layout and design of parking areas should ensure that the amenity of residents, both existing and future is retained. Account should be taken of potential noise disturbance, pollution and light spillage. Car parking areas can have a significant visual impact on the streetscape and should therefore be carefully designed having regard to landscaping, layout and location to ensure that car parking is integrated sympathetically with the development and locality. Where car parking is

provided it must be in a safe and efficient manner, allowing for easy access to residents, visitors and service vehicles, whilst ensuring the safety of pedestrians and other road users.

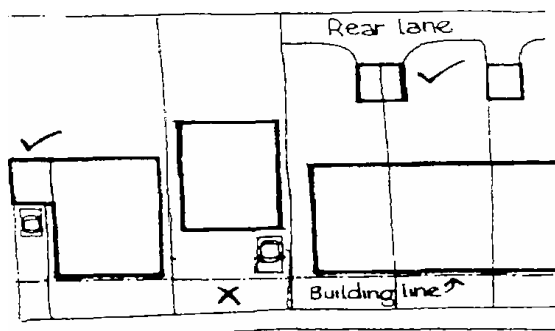
### Guidelines

Use the site analysis to plan car parking and road layouts to take account of; existing road layout and widths, availability and location of footpaths,

existence and location of street trees and furniture and proximity of bus stops and traffic calming devices. Refer to 'site drainage and stormwater control', 'landscaping' and 'elevations and materials' design elements to ensure that any parking takes account of these principles. Ensure road and parking layouts preserve visual and acoustic privacy of residents.

### Controls

- **Car parking layout and design is to comply with numerical standards set out in DCP Part-A 8.0.**
- **Integrate the design of car parking into the overall site and building design.**
- **Where rear lane access is achievable, design car parking to be accessed from the rear lane only.**
- **Where only front access is available, provide car parking areas (such as garages and carports) behind the main building alignment, (the front wall of the dwelling).**



- **Where any dwelling is remote from a public street, access for service, emergency or delivery vehicles should be provided.**

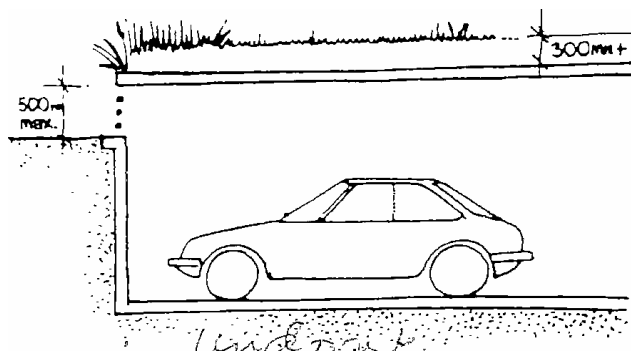


- No on-site parking is allowed for single dwellings on one allotment where vehicular crossings disrupt the continuity of the footpath and verges and reduce on-street parking capacity.
- Where garaging access forms part of the main front wall of a dwelling it must be;
  - 1) less than half the width of the building; and
  - 2) subordinate to the main elevational detail.
- Integrate into the streetscape the design of any paved area. This may best be achieved by either open paved areas, preferably porous or open block paving.

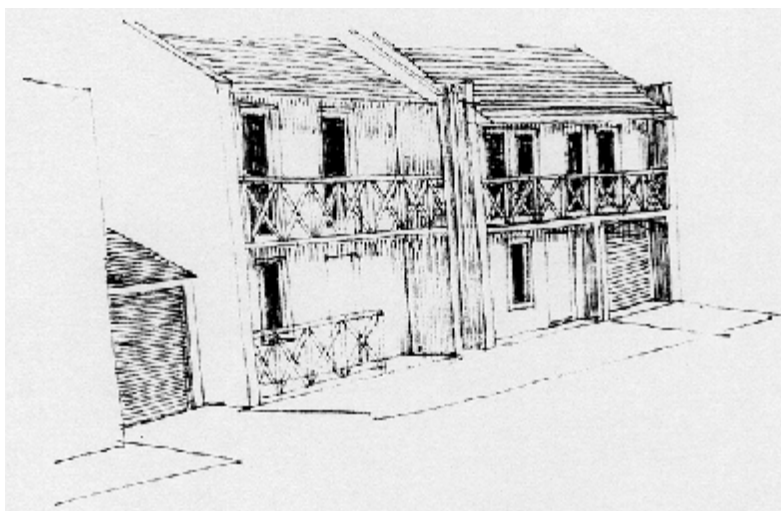
#### Additional Controls for underground parking

- Design access driveways for underground car parking to:
  - minimise the visual impact of the entrance to the street;
  - maximise pedestrian safety; and maintain pedestrian access and access for people with special needs.
- 

Design parking levels to be kept as low as possible with a maximum of 500mm above ground level. Minimise protrusion of end walls above ground level where end walls are situated on or close to property boundaries/street frontages.



- Where landscaped areas are located above parking areas provide;
  - 600mm soil depth for trees/shrub planting, and 300mm for ground cover planting.
  - Car parking spaces and accessways should not be provided directly outside dwelling doors or windows to habitable rooms





## B1.4 Design Element 4 Site drainage and stormwater control

### Principle

*Design to reduce stormwater runoff and pollution.*

### Rationale

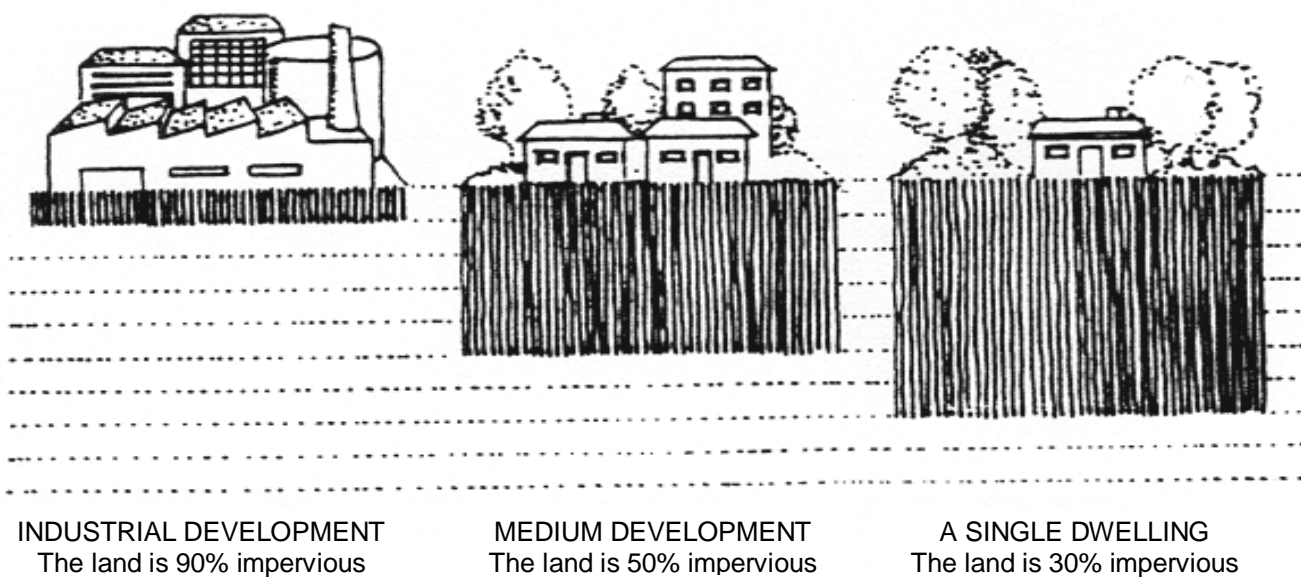
Stormwater pollution is caused by litter, debris and dust which is washed off the streets and other surfaces during rainfall. Pollution is increased by chemicals and products that are poured or leak into drains and also by sewer overflows. Leichhardt's polluted stormwater flows into the harbour and contaminates soil sediments and reduces water quality. This in turn, affects the habitats of fish, water birds and other marine life and reduces our recreational opportunities.

The amount of stormwater runoff in an area relates directly to the intensity of development in that area. For example, due to high site coverage, industrial development is up to 90% impervious to water. With medium density development, the land is around 75-85% impervious. For a single

dwelling on a large lot, the land is approximately 60% impervious.

The imperviousness of an urban area means that stormwater runoff flows more rapidly, and in larger quantities. Stormwater runoff flows faster over smooth, hard surfaces, and its speed is compounded by the volume of water. In summary, more buildings and hard surfaces in an urban area means less natural drainage.

### More building means less natural drainage





### **Guidelines**

Ensure large development sites 'fit' as much as possible, within the hydrology of the natural system, reduce discharge of pollutants into the stormwater system, increase peak flow lagtimes and reduce erosion and sedimentation.

Stormwater infrastructure in large residential developments should provide maximum infiltration and retardation of peak stormwater flows.

### **Controls**

- **Use Urban Framework Plans to determine relevant contours, valleys and ridgelines in relation to the site.**
- **Use on-site detention, preferably on unpaved or grass surfaces to trap and remove contaminants from stormwater and increase infiltration into the ground.**
- **Incorporate detention or retention basins.**
- **Where possible use open space for stormwater control and site drainage, where integrated as part of a large development.**





## B1.5 Design Element 5 Elevation and materials

### Principle

*Design to respect the elevational character and appearance of the streetscape and locality.*

### Rationale

The elevational design of a building is as important as the building bulk and scale. The arrangement of openings in walls is visually important to the quality of the streetscape, especially the placement and proportions of windows and doors.

A building may often comply with the building envelope controls, but does not necessarily 'fit', as the elevational details do not relate to the style and character of the setting. However, simply providing the 'openings' may not in itself be adequate to ensure character is preserved as functionless openings provide 'dead frontages'.

The design of new housing should respond to the vertical and horizontal rhythms established by existing buildings and streets. Rhythms are recurrent design lines that establish a design pattern and reinforce the character of a particular street. Elevational relief and modelling detail also contribute to fitting in with the streetscape.

The architectural diversity of housing in Leichhardt often permits the use of a considerable range of building materials. The careful selection of materials can result in innovative design solutions without compromising the principle of this design

element. However, some modern building materials and external finishes are unsympathetic to neighbouring buildings, and in some cases may detract from the character of the streetscape. In areas of homogeneous character, such as the Bishopsthorpe Estate in Glebe, selection of building materials and finishes requires greater sensitivity.

Traditional building materials for dwellings are smooth face brick in deep red/brown colour with terra cotta tiles, corrugated iron or equivalent roofing; or timber weatherboards with corrugated iron roofing; or where the predominant style is Victorian, rendered and painted brickwork.

### Guidelines

Vertical control lines are set by such elements as blade/party walls, nib walls, exposed down-pipes, attached piers, setbacks and changes in facade planes.

Divide the facades of new buildings into vertical bays or units of dimensions appropriate to the scale of the building proposed and that of adjoining development. Bays are established by vertical control lines.

Horizontal control lines are set by such elements as ground level, string courses, cornices, balconies, balustrades, roofs, eaves lines and door/window heads. Use horizontal control lines to align elements of new buildings with adjoining buildings.

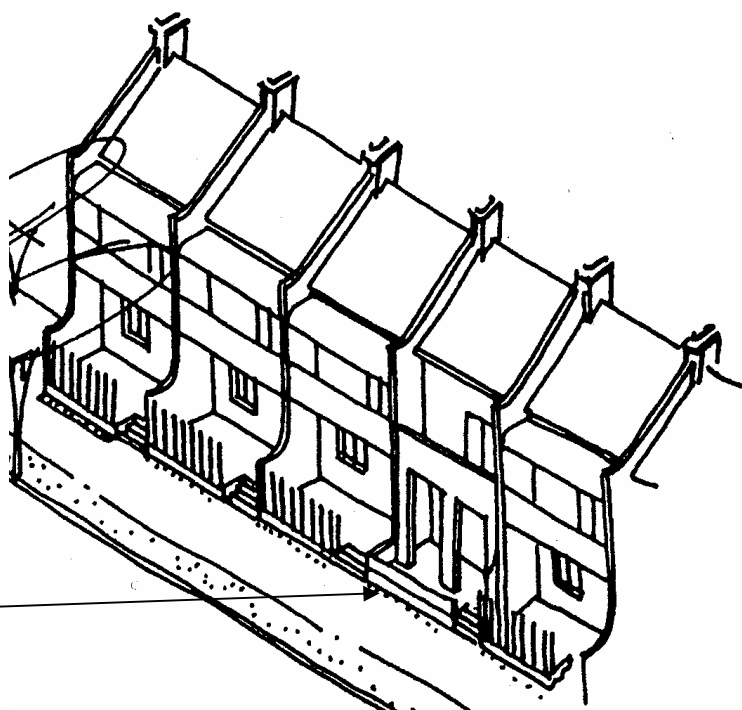
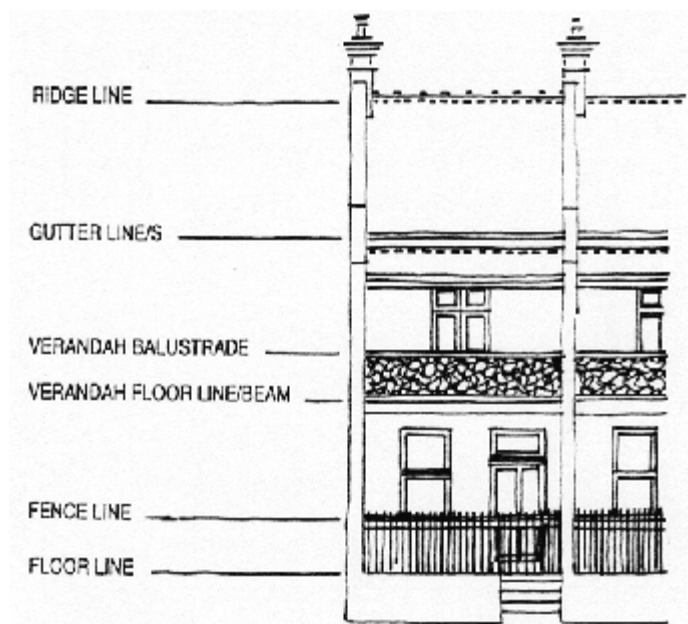




## Controls

- Where new buildings are proposed, elevational design shall respect the size, location and proportions of windows and doors of neighbouring buildings.
- When designing extensions or buildings next to heritage items, ensure the modelling and relief is respected.
- Provide articulated elevations to new building where the streetscape dictates and where wide frontages are proposed.
- Ensure elevations which front a public space are not dominated by windows or doors to non-habitable rooms.
- Development should take reference from and complement the existing character of the streetscape in terms of scale, architectural style and materials. Alternatives may be considered at the discretion of Council.
- Preferred roof forms are hipped and gabled with a pitch between 30° and 45°. Other roof forms may be appropriate and these will be considered at the discretion of Council.
- New townhouse and multi-unit developments shall submit a sample board with the proposal.

New development should follow streetscape patterns.





## B1.6 Design Element 6 – Front Gardens and Dwelling Entries

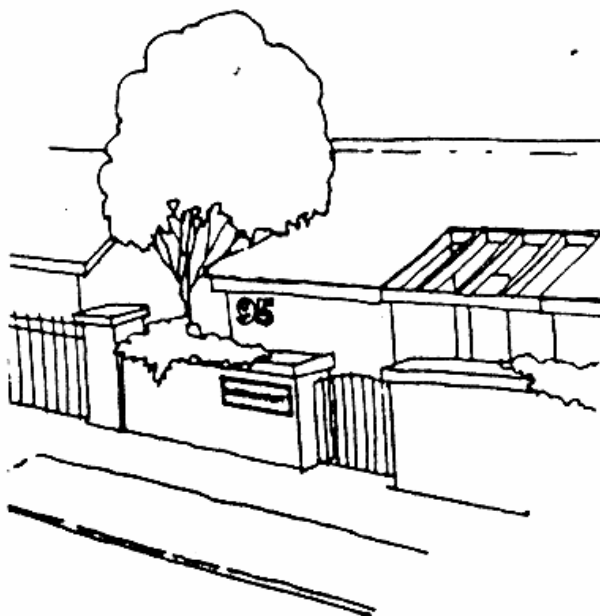
### Principles

*Design practical dwelling entries which improve security.*

*Design front gardens to act as transitional spaces between the public street and private dwelling which improve security and contribute to the streetscape.*

### Rationale

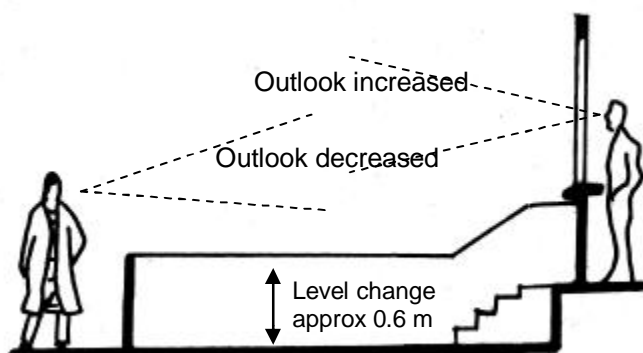
Traditionally, the front garden or yard has functioned as a semi-public space, performing a variety of physical and cultural roles. Front gardens provide a transition from the public space of the street to the private spaces within dwellings. Security and a sense of personal address can be provided by ensuring a clearly defined transitional space where dwelling entries are identifiable. This is characteristic of traditional areas where front gardens and porches delineate the change from public to private space.



### Guidelines

Promote safety and casual street surveillance by:

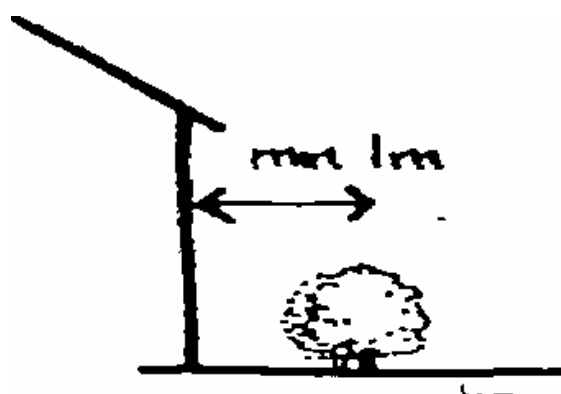
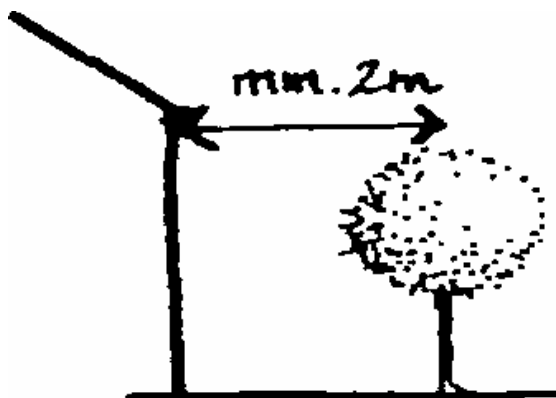
- ensuring visitors can be seen from the inside of the dwelling without opening the door; and
- designing dwelling entries and their adjacent windows to ensure casual and mutual surveillance from the street, site and other dwelling entry points, pathways, play areas and other public areas.
- Allow for privacy by separating publicly accessible paths from dwelling windows.

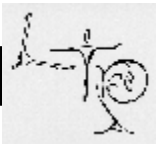




### Controls

- Ensure the dwelling entries are clearly visible and easily identifiable from streets, public areas and internal driveways.
- Design dwelling entries to provide a sense of personal address and incorporate a transitional space around the entry.
- Incorporate shelter at main dwelling entries without compromising elevational detail and the character of the streetscape.
- Public or shared paths should not abut any dwelling wall. A minimum 1 m strip should be allowed for planting of flowers and climbers. Substantial bushes should not be planted closer than 1m and decorative trees no nearer than 2m.
- Where the front garden functions as the main private open space for the dwelling, use trees to act both as street trees and also shade trees for the garden. Ensure the space is designed to meet user requirements for solar access and private open space.





## B1.7 Design Element 7 Fences

### Principle

*Design fences to complement the architectural styles of the building and the local area.*

### Rationale

In Leichhardt, fences help achieve architectural uniformity and cohesion, being related to buildings and styles of particular periods. For example, cast iron picket fences were traditional in the Victorian era, with timber picket, brick and timber and brick and iron fences popular during the Federation period. More recently, low brick fences have also been popular. These issues are important to the character of an area, especially in Conservation Areas.

The intention of controlling fences is:

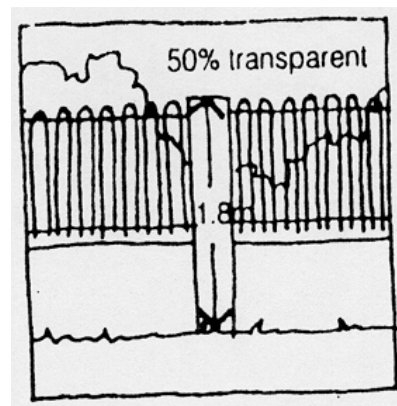
- to maintain the character of the existing streetscape;
- to ensure that fencing heights and material types are similar to existing fences in the street;
- to ensure that fencing heights allow for privacy between dwellings and public accessible paths, while not obstructing the view of the building façade and street surveillance; and
- to encourage sympathetic restoration and removal of unsympathetic fencing.

### Guidelines

Design fences to respect the architectural character of the house and heritage context. Design fences to take account of streetscape, privacy and security issues, and to enhance entrances to the site and building. Use fences to define the edge

between the street and semi-public front garden space.

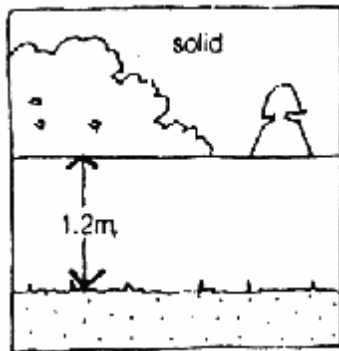
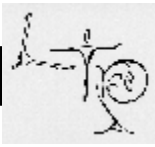
Fencing should not block views from the dwelling out towards the street. Where the main private open space of the dwelling is orientated to the street frontage screening higher than 1.2 metres is permissible. However, a minimum of 50% of the screen is to be transparent, and some surveillance of the street should be maintained from the dwelling.



In this situation, use screens that adequately enclose the space, but enable some outlook from the building and the space to the street. **Fences used in this manner should be located on the front property boundary.**

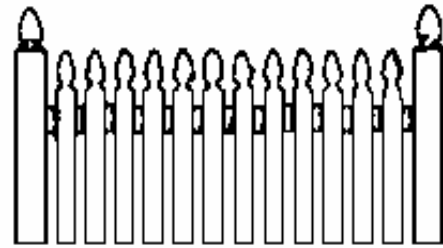
### Controls

- Fencing shall complement any original fencing relating to the architectural style of the dwelling or found on adjoining properties and in the wider streetscape in terms of style, height and materials;
- Where side fences project in front of the building line ensure that they complement the scale of the adjoining front fence and function of the front yard;
- The height limit for front fences is 1.2 metres, measured from the finished footpath level at any point adjacent to the fence to the top of the main part of the fence. This does not include supporting posts or mailboxes;

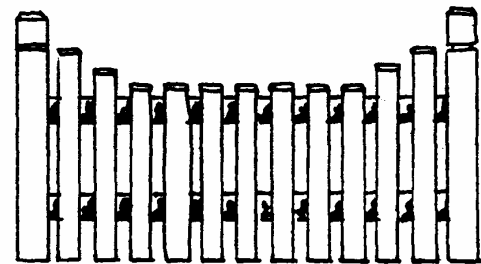


- Where there is a change in ground level along the street boundary, the higher of the two levels will be taken when measuring fence heights, however a fence in this circumstance should not exceed 1.8m in height;
- Fencing over 1.2m in height shall be 50% transparent;
- Where there is dual street frontage, consideration may be given for the allowance of a higher side fence to ensure privacy;
- All controls are subject to the provision of adequate sight lines for emerging vehicles to enable surveillance of pedestrians;
- Integrate the design of fences, with the location of mail boxes, nameplates and street numbering.

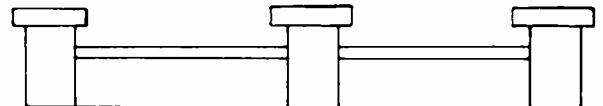
**Note:** The use of intervening fences/walls setback from the front property boundary is discouraged and should not be used to determine the measuring point for the building envelope.



Example: Victorian style picket fence



Example: Federation style picket fence



Example: Matching low brick fence



## B1.8 Design Element 8 Site facilities

### Principles

Design to integrate adequate and convenient site facilities, such as storage, recycling and collection areas and clothes drying areas into the overall development.

Ensure site facilities are practical and easily maintained.

### Rationale

Poorly designed site facilities can significantly detract from the image and amenity of housing. The efficient and practical use of a dwelling and its associated residential activities should be a primary consideration in the design of new housing. The absence of adequate private storage is often a problem leading to spaces which best serve another function being utilised for storage. These problems are best solved early in the design process.

### Guidelines

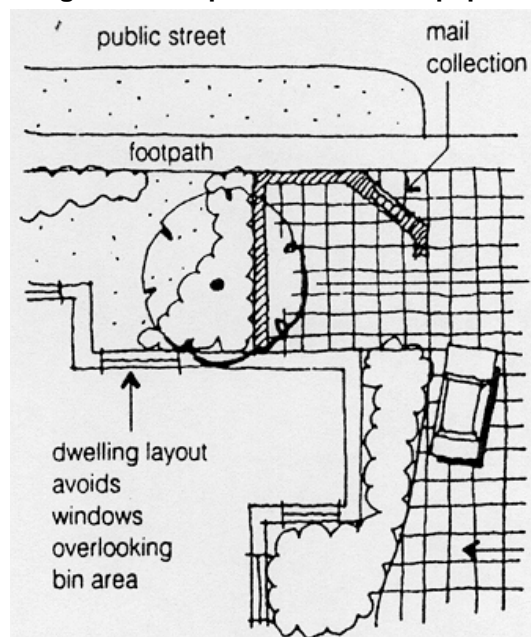
Garbage bin and waste recycling areas, mail boxes, outdoor drying areas and external storage facilities should be adequate in size, durable, waterproof, blend in with the development, avoid visual clutter and be conveniently located for residents, visitors and service people.

### Controls for site facilities

- Provide adequate internal storage space, of at least 6 cubic metres per dwelling.
- Provide useable externally accessed storage space for the accommodation of bicycles and large goods which may be incorporated as part of a carport or
- Ensure garbage storage and waste recycling areas, especially glass

recycling bins are not located adjacent to habitable rooms.

- Mailboxes big enough to cope with large envelopes and newspapers



should be provided and located for convenient access. Provide a mailbox for body corporate correspondence where applicable.

- Refer to DCP No. 38 – Waste, Avoid, Reuse and Recycle for further controls relating to the design and provision of waste facilities.



## **B1.9 Design Element 9 – Corner Site Controls**

### **Principle**

To control the scale of development affecting corner sites in residential and business areas.

### **Rationale**

Corner sites often form the junction of two distinct scales and built forms. In some circumstances development on corner sites does not conform with the scale or form of the streetscape on one street while matching the form and scale of the other street. New development can inappropriately seek to maintain the larger form and scale of the two streetscapes. This can lead to poorly proportioned and out of scale development for one streetscape.

### **Guidelines**

Throughout the municipality, corner sites have played a pivotal role in delineating form and scale. Due to their visual prominence, corner sites are often the focal point of the public domain. This visual prominence has traditionally been promoted for commercial as well as architectural reasons. Various architectural elements are used to emphasise the dominance of buildings on corner sites. These elements include; the use of awnings or verandahs, reduced or nil setbacks, increased bulk & height as well as the use of articulated building elements, corner pediments, parapets etc.

In situations where development involves a corner site and two distinct streetscapes, it is necessary to provide guidelines to restrict the scale and form of development on to the street with the lesser scale. For the purposes of this design element, building scale consists of the following building elements: wall height, roof form, front setback and

the following architectural features: balconies, awnings, verandahs, parapets and dormers.

### **Controls**

- **These controls apply to development on corner sites in residential and business zones.**
- **1) Development extending to two distinct streetscapes should maintain the existing pre dominant character and adjoining building scale on each frontage.**
- **2) A higher building scale on the frontage with the lower scale may be permitted where the following applies:**
  - a) **Where a variation in scale is permitted under the Town Plan DCP and:**
    - b) **The variation in scale will not adversely impact on the streetscape, surrounding properties or areas of public domain by virtue of:**
      - **Amenity;**
      - **Solar access;**
      - **Views;**
      - **Privacy; and**
      - **Urban Design.**
- **Any variation in scale must include a transitional area to enable the development proposal to blend with the existing scale within the street frontage.**
- **Where awnings or balconies are incorporated into the design of a corner building, they are to reflect the controls in Design Element 7 – Protective Structures in the public Domain.**





Examples of corner development and the principles that they have utilised to achieve a successful design solution in these exposed locations are shown below.



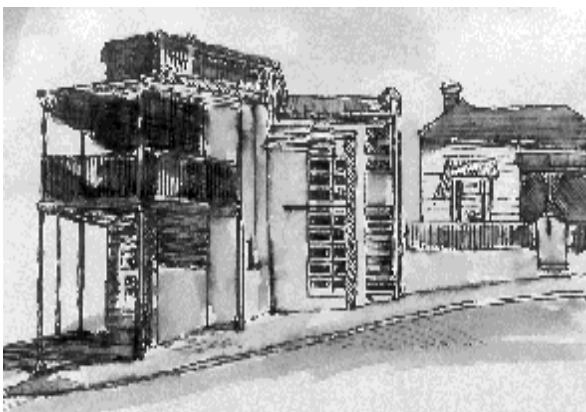
#### PRINCIPLES

- The building addresses the major street.
- Nil setback to side street follows established pattern.
- Gables echo the form of the adjoining building.



#### PRINCIPLES

- Contemporary corner building built to street alignment follows traditional corner layout.
- Verandah adds interest to corner.
- Scale suits both street frontages, with single and double storey heights and form.



#### PRINCIPLES

- The slope assists compatibility with the single storey scale of the street.
- The verandah frames the corner and breaks the bulk of the building.
- Contemporary house bridges differing scales.



## **B2.0 Ecologically Sustainable Residential Development**

Energy efficient design and the use of alternative (non-fossil fuel) energy sources helps to reduce air pollution such as sulphur dioxide, nitrous oxides and photochemical smog. Important Carbon Dioxide (CO<sub>2</sub>) and other greenhouse gas emissions can be reduced.

Energy efficient building design minimises the human consumption of energy such as gas, electricity and fossil fuel in a building by utilising the sun's natural energy. Windows are designed to direct sunlight into a building which warms the inside rooms during winter. In summer, shade and natural ventilation keep the building and garden cool and prevent overheating.



## B2.1 Design element 9 - Building construction Thermal mass and materials

### Principles

Improve the energy efficiency and thermal comfort of housing, by maximising thermal mass.

Choose housing construction materials that are of an ecologically sustainable nature.

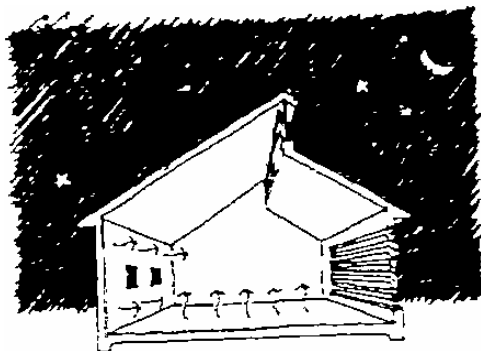
### Rationale

The principles and properties of thermal mass, glazing and insulation are important in achieving energy efficient housing. Thermal mass is a measure of a material's ability to absorb and store heat. Generally, the heavier and more dense a material is, the more heat it will store, the longer it will take to release it and the higher its thermal mass value / rating. Materials commonly used in housing, such as bricks, concrete and stone, have a high heat storage capacity.

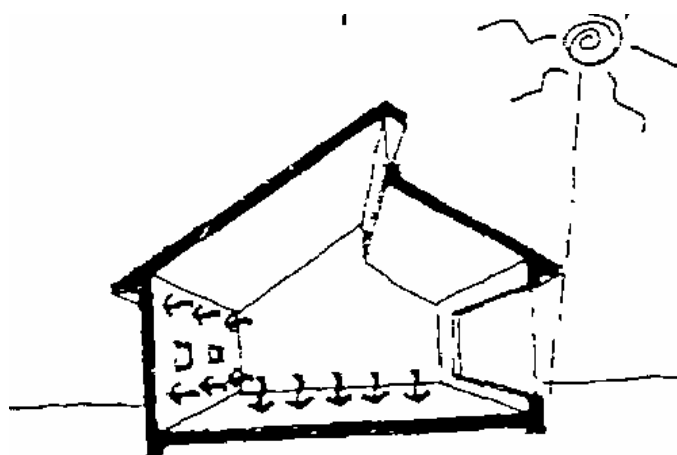
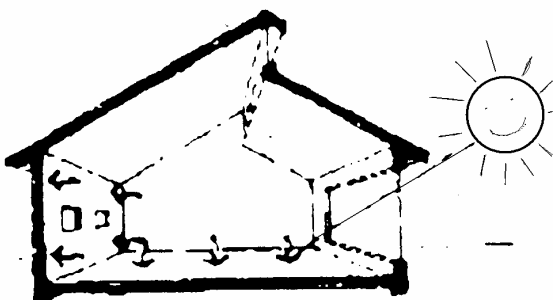
Maximising thermal mass is important to both heat-gain, and heat-release during the seasons.

During the night, this heat is released back into the rooms.

In summer, the thermal mass soaks up excess heat in the building. During the night this heat is slowly released into the rooms, or to any cooling breezes.



In winter, internal walls with a high thermal mass value can soak up heat from the sun through north-facing windows.





### Guidelines

Leichhardt Council promotes greater energy efficiency and ecologically sustainable development by requiring the careful choice of building materials. Choose building materials that take account of the following environmental considerations:

- energy efficient materials with low embodied energy;
- recyclable and reusable materials;
- renewable or abundant resources;
- durable materials with low maintenance;
- non-polluting materials;
- environmentally-acceptable production methods.

### Controls

- Use materials that have a higher 'thermal mass' value, such as bricks, concrete and stone, where they can benefit thermal comfort and energy efficiency.
- To be most effective, locate materials with a higher thermal mass:
  - inside the house;
  - in north-facing rooms, where they can benefit from winter heat gain, and where they are shaded from direct summer sun.
- In the construction of housing, specify plantation or regrowth timbers, timbers grown on Australian farms or state forest plantations or recycled timbers.

- Rainforest timbers or timbers cut from old growth forests are not to be used in Leichhardt.

#### Key References

Refer to Appendix 2,3,5 & 6



## B2.2 Design Element 10 - Solar control - External window shading

### Principle

*Integrate external window shading into the design of the building to improve the comfort and energy efficiency of housing.*

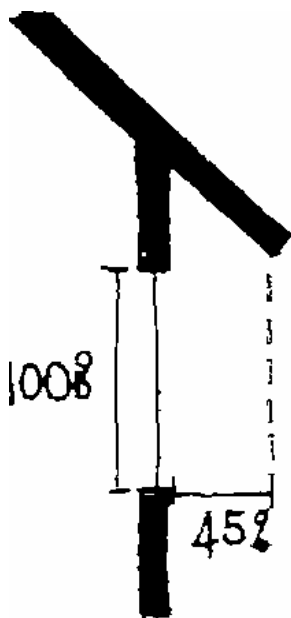
### Rationale

Housing design should take advantage of winter sun and provide protection from the severity of summer sun. The most effective way of controlling the overheating of a dwelling, is to prevent summer sun from reaching glazed areas. Unshaded glass will typically allow 86% of summer heat into a building, whilst shaded glass will only allow around 25%.

The effectiveness of external shading devices is illustrated by construction of a section through a window/wall.

### Guidelines

For north facing walls, a general rule of thumb suggests that overhangs or shading devices, should be  $0.45 \times$  height of the glazed area, measured from the bottom of the glass to be shaded. In Sydney, this will provide shading from mid-October to late February. Landscaping can also contribute to energy efficiency by providing shade for the dwelling. Consider location, shape, type and height of fully grown trees. Examples of horizontal shading devices are awnings, upper floor balconies, pergolas, eaves and overhangs.

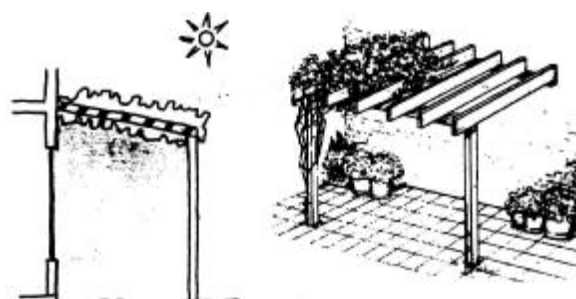


Examples of vertical, shading devices are blinds, shutters, adjustable external awnings and landscaping.

Where practical, and without compromising the design elements, reduce the extent and size of east and west facing windows to reduce low summer sun penetration into the dwelling.

### Controls

- Provide for external shading to a dwelling's north, east and west facing windows.
- For north facing windows, use horizontal shading devices (adjustable or fixed) that maximise winter sun penetration and reduce summer sun penetration.
- For east and west facing windows, use vertical shading devices to block the low rays of the rising and setting summer sun.
- Use landscaping to reduce summer heat gain, by controlling sun penetration and shading the house and outdoor spaces, without reducing solar access in winter.





## B2.3 Design Element 11 Insulation

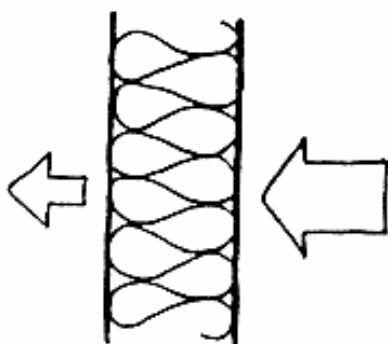
### Principal

*Improve the energy efficiency and thermal comfort of housing through the use of insulating materials in walls, floors, ceilings and roofs.*

### Rationale

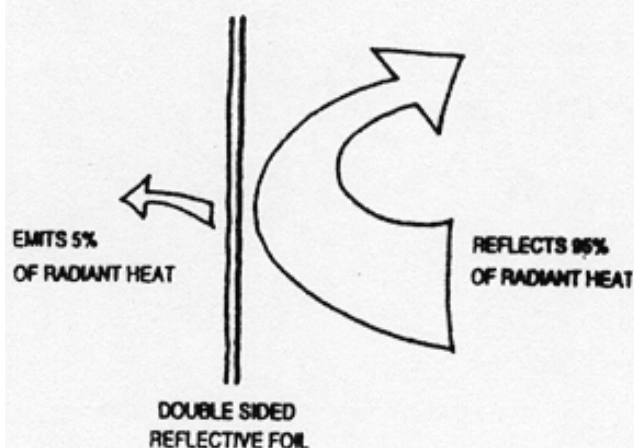
Insulation alters the rate at which a building loses or gains heat. Insulation is not a heat store, it just makes it harder for heat to pass through a wall, roof or floor.

#### BULK INSULATION AND HEAT FLOW



Thermal insulation will help make your building easier to heat in winter, by reducing the rate at which heat is lost, and also help to retain any solar heat gain achieved.

#### REFLECTIVE INSULATION



In summer insulation will help reduce heat entering through the walls or the roof, thereby increasing the thermal comfort of the home.

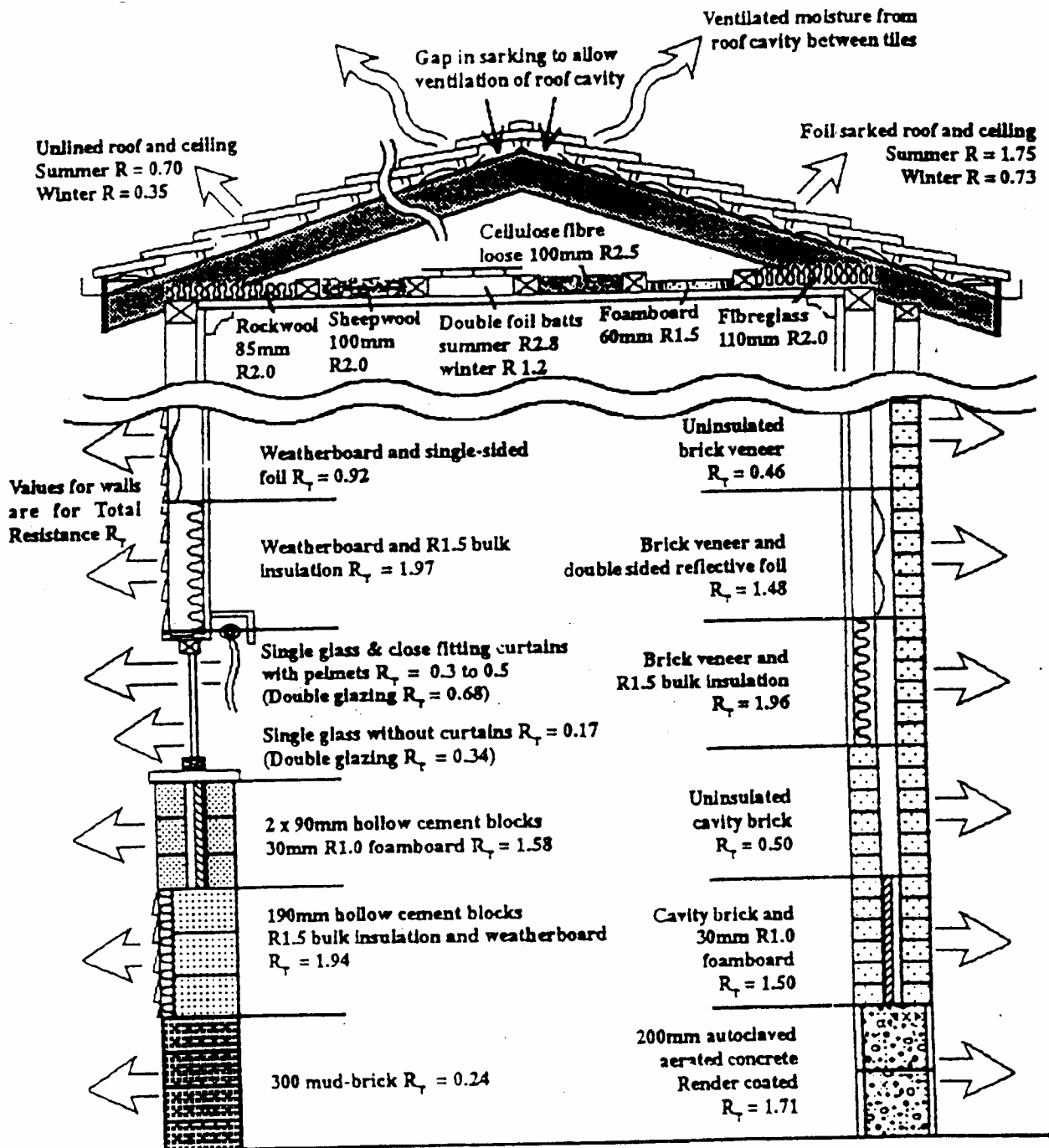
Insulation can be equally effective for all types of housing. It will not, however, significantly improve the heat storage capacity of a timber frame cottage with wooden floors, which will be warm during the day, but still cool down at night.

### Controls

- Insulate to achieve greater energy efficiency in the home.
- Use bulk insulation and reflective insulation to walls, ceilings and roofs. Construct housing to achieve a combined 'R' value for insulation to the following standards:
- R3.0 for roofs and ceilings
- R1.5 for walls



Ceiling insulation R values are for resistance of specified thickness of insulation material only and should be added to roof and ceiling R values to give total resistance  $R_t$ .



Typical ' $R_t$ ' values. The higher ' $R_t$ ' rating indicates higher thermal efficiency.



## B2.4 Design Element 12 Natural Ventilation

### Principle

*Improve the energy efficiency and comfort of housing by designing to make the best use of natural ventilation.*

### Rationale

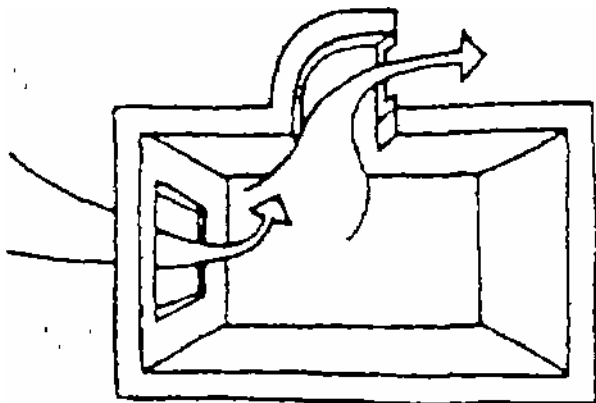
Ventilation in housing is a factor often overlooked at the design stage. Too often, attention is focused upon achieving warmth during winter and not ventilation/ cooling during summer. Natural ventilation relies only on natural air movement and can save significant amounts of fossil fuel-based energy by reducing the need for mechanical ventilation and air-conditioning. It can also help in protecting the ozone layer by reducing the risk of leakages into the atmosphere of the Chlorofluorocarbon (CFC) gases that are still used in many air-conditioners.

Significant factors affecting natural air movement are:

- building form and the location of windows;
- site and landscaping features;
- internal planning and design.

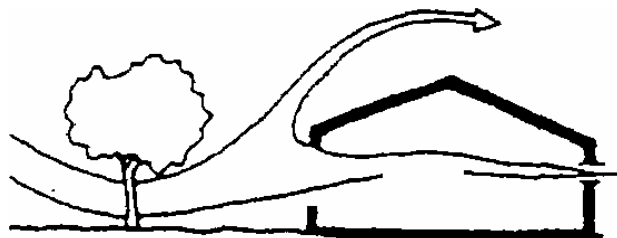
Ventilation can be achieved in the following ways:

**Cross ventilation**, where air enters a building from one side passing out on the other, replacing warm inside air with cooler outside air.



Hot air rises

Cool air in



**The stack effect**, where warm air rises through the height of the house, and is replaced by cool air at the base of the house.

**Artificial ventilation**, where fans are used to extract warm air allowing it to be replaced by cool air.

### Guidelines

Use the site analysis to orientate and design dwellings to benefit from cooling summer breezes.

For effective ventilation:

- locate openings on opposite sides of the room;
- locate windows and openings in line with each other, and where possible, in line with prevailing breezes a low level inlet and high level outlet is preferable;
- use water features such as fountains in strategic positions to cool breezes;
- consider strategic positioning and type of vegetation to modify wind direction;
- use ceiling fans to provide a high level comfort on most hot days, at low running costs.
- Use window types that provide security while allowing for good ventilation





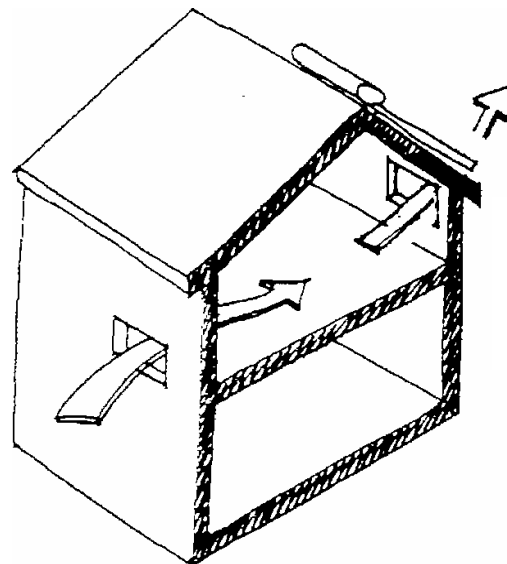
## Controls

*Low inlet and high outlet produce a good pattern of air movement*

- Designing buildings with a maximum internal dimension between openings of 14m to maximise natural ventilation without compromising other design elements.
- Ensure ventilation of residential buildings can be achieved by permanent openings, windows, doors or other devices, which have an aggregate opening or openable size of not less than 5% of the floor area of the room.

**Key references:**

*For information on wind speeds refer to the Bureau of Meteorology, for local variations refer to Australian Standard AS1170 Part 2 – 1898 – Wind Loads  
Leichhardt DCP No. 35 – Exempt and Complying Development*



Low inlet and high outlet produce a good pattern of air movement.



## B2.5 Design element 13 Heating and Cooling

### Principle

*Where thermal comfort cannot be achieved through building design elements choose energy-efficient and environmentally-friendly space heating and cooling systems.*

### Rationale

The implementation of design elements should ensure internal comfort in new buildings. However, where the heritage context or site restraints prevent the achievement of these design elements, thermal comfort should be addressed by the installation of energy-efficient and environmentally-friendly services. Similarly these guidelines should be used when refurbishing existing houses.

The choice of heater-type is a very significant factor affecting the cost of heating and environmental impact, such as emission efficiency. Emission controls for open fires, solid or oil fuel heaters are subject to the Clean Air Act 1961 and Regulations.

The following list of heating/cooling systems compares the efficiencies of different heating systems.

**Solid fuel heating** - depending on their design, open fires only produce heat at about 25% efficiency. However, this can be increased to up to 60% if designed with an air circulation system.

**Stoves and heaters** - non airtight appliances operate at an efficiency of around 30%. An airtight version could operate at between 40-60% efficiency.

**Oil Heaters** - these fall into two categories, flued and flue-less. Flued oil heaters have an efficiency of up to 75%. If a flue-less oil heater is used, up to 95% efficiency is possible, but adequate room ventilation must be provided, which effectively lowers its overall efficiency.

**Gas Heaters** - gas heaters operate at an efficiency level of approximately 75% for flued models. This rises to up to 95% to flue-less models, which also require room ventilation.

**Electric Heating** - this is the most common source of space heating in New South Wales. Its efficiency of heating is often measured as 100%, but this refers only to the heating units itself. There are considerable energy inefficiencies in the generation and transmission of electricity. Overall efficiency at the point of end use is only up to 35% of original energy available.

The types of heater available are: radiators, convection heaters, fan heaters, night storage (block heaters), under floor heating (electrical or water).

**'Heat pump'** - *reverse cycle air conditioning*. The heat pump provides a very efficient form of heating, that can provide both winter heating and summer cooling.



### Space Cooling

In Sydney, the number of days which are uncomfortably hot do not justify the cost of installation and operation of air-conditioning (A/C) systems.

A/C systems increase CO<sup>2</sup> emissions into the atmosphere enhancing the greenhouse effect.

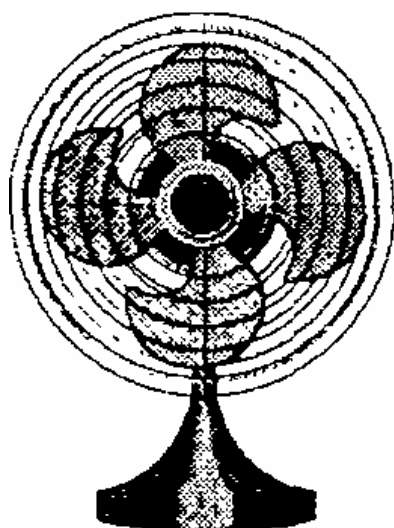
#### Guidelines for space cooling

Use passive methods of minimising heat gain. Design housing with window shading, appropriate insulation, and sealed against hot air infiltration

during the day, incorporating ventilation and natural cooling.

#### Control for space heating

- **Install energy-efficient and environmentally friendly space heating / cooling systems in all new dwellings, and major renovations. Where other design methods are not possible and more heating / cooling is required.**





## **B2.6 Design element 14**

### **Using solar energy ‘actively’ – Energy efficient water heaters, photovoltaic (solar energy) & systems & swimming pool heating**

#### **Principles**

*Promote the use of renewable energy and energy-efficient technology in the design of new and existing housing in order to: reduce greenhouse gas emissions from the residential sector, reduce dependence upon non-renewable energy consumption and increase the use of renewable energy.*

*Minimise any negative visual impacts of renewable energy systems on streetscapes and neighbouring properties while maximising positive attributes of such technology, including promoting such technology by enabling public visibility of systems.*

#### **Rationale**

In addition to well established passive solar design measures to make homes more comfortable and ‘energy smart’ (see B2.1-B2.4), increasing advances in technology are enabling the provision and use of solar energy as a domestic energy source. The use of solar energy in the home significantly assists in the reduction of the use of non-renewable energy resources and the negative environmental impacts of their extraction and consumption.

Water heating typically accounts for around 30 percent of all traditional (electrical and gas) energy imported into a Sydney home. However, with the use of a well installed and operated solar water heater it is possible for over 60 percent of water heating through the year to be provided from the sun alone. The remainder of water heating needs are usually met via an electrical or gas boosting element within the storage tank.

Heat pump water heaters use a different technology to solar water heaters but still make use of renewable energy source – ambient air temperature (see diagram on following page).

While heat pump, electrically boosted solar, and high efficiency gas hot water systems are all more efficient water heating methods than traditional electrical storage, instantaneous electric and low efficiency gas systems, the most efficient commercially available water heaters, in terms of reducing greenhouse gas emissions and consumption of non-renewable energy are gas boosted solar hot water systems. High efficiency gas systems do not generally make use of renewable energy sources.



**Solar water heaters on new homes in Glebe**

#### **Guidelines**

To operate efficiently, solar water heaters need to be installed with due regard to orientation (a strongly north facing aspect is desirable) and inclination (the angle of inclination should ideally be close to that of the latitude of location). The visual impact of solar systems needs to be carefully considered. Streetscape and neighbour



amenity can usually be protected by well-planned solar water heater installation. Where necessary (for example where the best north-facing roof presents directly to the street) the water storage tank may be separated from the panels and installed on the reverse roof pitch, on the ground or within the roof space. On rare occasions, roof top solar water heaters may not be appropriate due to the degree of visual impact and the inability to resolve this by design. Solar water heaters may also not be appropriate if solar access to the panels is insufficient due to roof orientation or shading by trees.

Insufficient solar access is defined as more than a 30% reduction in total solar radiation to the solar panels over the year.

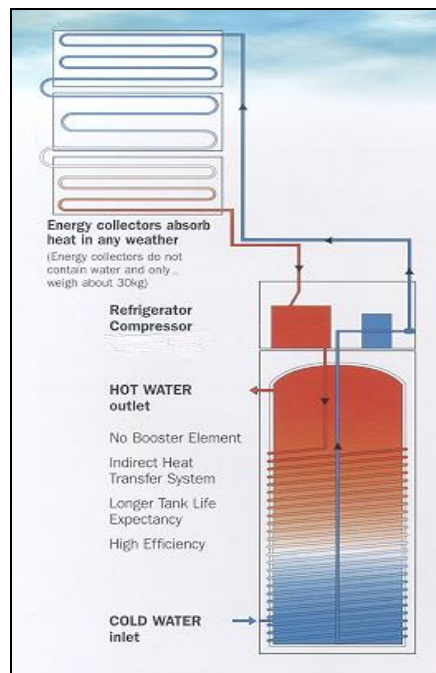
The average family household (2 adults, 2 children) generally needs a hot water tank with a 300 litre capacity, which will require a solar collector area of about 4 square metres (4m<sup>2</sup>). This will provide about 1.5 days supply of hot water.

Storage tank size for close-coupled solar systems:	Dwelling Size	Appropriate for usual dwelling occupancy of:
180 litres – 1 panel	< 85 m <sup>2</sup>	2 people
220 litres – 2 panel	86-120 m <sup>2</sup>	2-3 people
300 litres – 2 panel	120-300m <sup>2</sup>	2 - 5 people
440 litres – 3 panel	300-500m <sup>2</sup>	5 - 8 people
600 litres – 4 panel	500+ m <sup>2</sup>	10 people



*How solar water heating works*  
*A typical close-coupled thermosiphon solar water heater*

Bracket-mounted solar water systems (i.e. systems that are not flush to roof) should generally be avoided unless visual impact issues can be resolved. However, installations on rear skillion roofs are often acceptable.



*How a heat pump water heater work. Some models have roof panels, others do not.*

#### Summary Of SWH Exemptions:

Council will exempt the normal solar water heater requirements for new dwellings:

- Where the applicant installs (a) photovoltaic system(s) to a minimum capacity of 450 watts per dwelling
- For development applications for a single bedroom dwelling
- When there is no appropriate roof orientation (i.e. within 45° of True North) for dwellings with pitched roofs
- Where significant over-shadowing will impact on water heater efficiency.
- Where solar-gas systems would normally be required but gas is not provided to the site, a solar-electric or heat pump system is to be installed.



### Grid connected photovoltaic (solar electricity generating) systems

These systems use solar panels to generate electrical power that is then usually consumed by lighting, appliances etc. within the building the photovoltaic (P.V.) system is installed upon. In urban areas it is logical to connect residential P.V. systems to the existing electricity grid system rather than use the more complex battery storage systems used in remote areas. Surplus power can be exported to the grid system.



*A photovoltaic system on a Lilyfield home*

Council encourages but does not mandate installation of roof-top or other, grid-connected P.V. systems. Note that P.V. systems may also be integrated into building design features such as window awnings, entry canopies or skylights – Council encourages such innovation.

**N.B.: Submitted plans must show the location of solar water heaters and P.V. systems, drawn accurately to scale, when such systems are required by Council policy or when applicant elects to install such systems**

### Controls

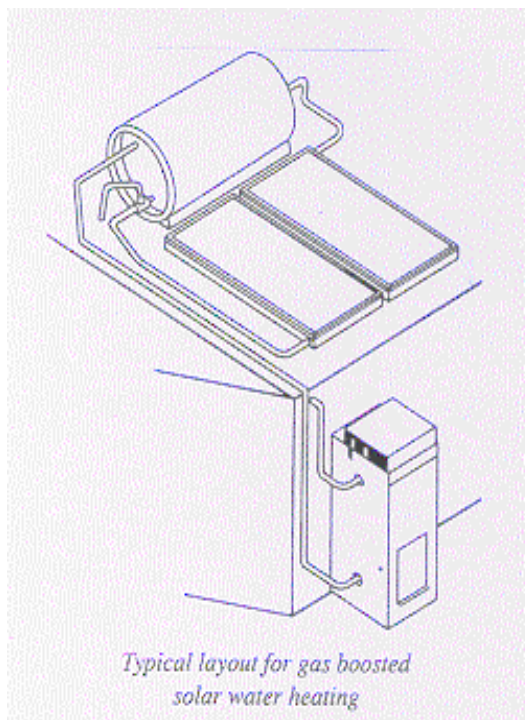
(SEE ALSO 'GENERAL CONTROLS' SECTION)

#### New Residential Development – Terrace / Townhouse Style, 1–2 dwellings

- For new house/townhouse type developments comprising a single dwelling or two dwellings (excepting one-bedroom dwellings), Council requires adequately sized gas or electric-boosted solar water heaters, or heat pump water heaters to be installed.

#### New Residential Development – Terrace / Townhouse Style, More than 2 dwellings

- For new terrace / townhouse / infill type developments comprising more than two dwellings (excepting one-bedroom dwellings) Council requires adequately sized gas-boosted solar water heaters to be installed.



*Typical layout for gas boosted solar water heating*

**A gas-boosted solar water heater. Other options feature no roof tank but single or twin tanks on the ground.**





### New Residential Development – Residential Flat Buildings

- For new multi-unit type development (residential flat buildings / apartments), Council requires the installation of centralised or in-sequence close-coupled solar water heater systems with gas boosting, or centralised heat-pump water heating with gas boosting (if boosting is required).



*Centralised solar water heating on new housing at White Bay, Rozelle*

- Ø Where solar water heater systems are installed a minimum of 50% of the annual hot water demand is to be derived from solar energy input.
- Ø The non-solar portion is to be provided by heat pump or high efficiency gas hot water services of adequate capacity.
- Ø Separate metering is required for each dwelling.
- Ø Where heat pump technology is to be installed Council encourages 'dual-use' technology whereby (i) air cooling is achieved for some space within the building as a by-product of water-heating and/or (ii) return (waste) air from air conditioning is captured and used for water heating.

### Modifications to existing single dwellings

- For existing dwellings (including detached, semi-detached, town houses and terrace forms) undergoing alterations / additions, the re-use of the existing water heater is permissible if:
  - Ø The system(s) proposed for re-use is a solar, heat pump, gas storage, or instantaneous gas system, or, if an electric hot water system, is a model less than 7 years old (as evidenced by receipt, product service history or other evidence to Council's satisfaction)
- Where a new hot water service is to be installed in an existing dwelling it must be selected from the following list:
  - Ø Solar (gas or electric boosted)
  - Ø Heat pump
    - Ø Gas storage high efficiency (5 energy-star rated minimum)
    - Ø Instantaneous gas high efficiency (5 energy-star rated minimum)

Gas appliance star ratings refer to Australian Gas Association rating system (<http://www.gas.asn.au>).

- Timer switches and/or manual over-ride switches must be installed in a prominent location to enable the system user to eliminate unnecessary boosting
- Water heaters should be located as close to the kitchen (the most frequent point of water use) as possible without compromising visual amenity.



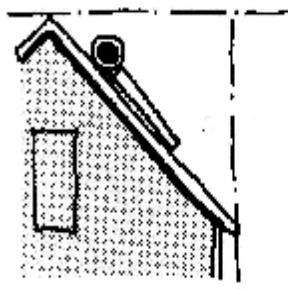
**Modifications to Existing Multi-Unit type Development: residential flat buildings / apartments**

- For existing multi-unit type development (residential flat buildings / apartments), being retro-fitted, re-use of the existing hot water service is permissible if the systems can meet the new hot water demand. If the hot water service is to be replaced, Council requires the installation of adequately sized, centralised or in-sequence close-coupled solar water heater systems with gas boosting, or centralised heat-pump water heating with gas boosting (if boosting is required). 'Dual-use' technology is encouraged (see previous page).
- For centralised solar water heater systems the *solar* contribution to water heating over the year must be a minimum of 50 percent.
- The non-solar portion is to be provided by heat pump or high efficiency gas hot water services of adequate capacity.

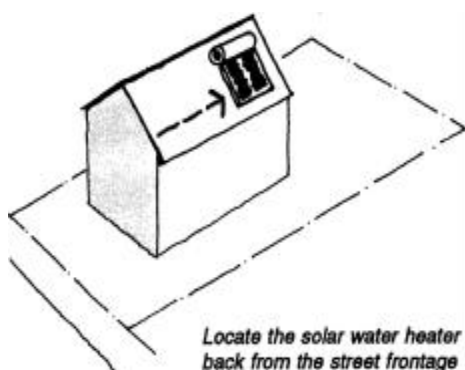
**General Solar Water Heater controls**

- *Option to install photovoltaic system in lieu of solar water heating:* Where solar or heat pump water heating would normally be required, applicants may elect to install a photovoltaic system or systems (see controls for photovoltaic installations at end of this section) to provide electrical power to the development from a renewable source in lieu of the solar water heater requirements. The photovoltaic system(s) must be sized to contribute a minimum of 450 watts per dwelling *and* water heating must still be achieved via an energy efficient (i.e. not traditional electric boosting) method.
- Where a solar water heater would normally be required but is deemed unsuitable for reasons of excessive shading, heritage building protection or roof form/orientation, energy-efficient natural gas systems (minimum 5 star-rated on AGA scale), or heat pump water heaters shall be installed.
- Where solar-gas systems would normally be required but gas is not provided to the site, a solar-electric or heat pump system is to be installed.
- Any water heater installed must be of adequate capacity to meet the anticipated hot water demands of the dwelling, based on bedroom numbers and size and associated likely occupancy
- Solar water heaters should be integrated into the building design. Where close-coupled (tank-on-roof) systems are to be installed, position the units to be as unobtrusive as possible, both to the street and neighbouring properties. (see diagrams below).
- On housing with a north-facing street frontage, specify and locate solar water heaters to minimise the visual impact of the system on the street
- Ensure that mature trees will not shade solar water heaters, both on the proposed development, and on adjoining properties.
- Hot water pipes are to be insulated with the equivalent of 6mm thickness of closed cell nitrile rubber or better. Higher levels of insulation are required in centralised systems with longer pipe runs than single dwellings.
- Position solar water heaters fully below the ridgeline of the roof and back from the street frontage (see the following two diagrams).





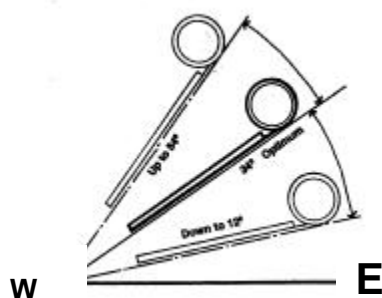
*Reduce the visual impact of the system*



*Locate the solar water heater back from the street frontage*

For optimum water heating angle solar panels at  $34^\circ$  to horizontal. Variations between  $12^\circ$  and  $54^\circ$  are acceptable:

- Solar Panels must be orientated within  $45^\circ$  either side of True North:



- The building work and installation itself must not reduce the structural integrity of the building or involve structural alterations.
- Hot water pipe runs should be minimised to avoid heat loss and energy demands.
- Details of the water heater system, including capacity, to meet the demands of the occupants, based on dwelling size, are to be submitted to the Principal Certifying Authority prior to the issue of a Construction Certificate.
- Any opening created by the installation is to be adequately weather proofed.

#### Key References – Water Heaters

- A.S.2712-1993 Solar Water Heaters: Design and Construction
  - A.S.2813-1985 Solar Water Heaters – Method of test for thermal performance – Simulator method
  - A.S.2984-1987 Solar Water Heaters – Method of test for thermal performance – Outdoor test method
  - A.S. 3500.4 1990 National Plumbing and Drainage Code, Part 4, Hot Water Supply Systems
  - A.S.4234-1994 Solar Water Heaters – Domestic and Heat Pump – Calculation of Energy Consumption
  - A.S./NZ 3663-1993 Water Supply: Water Efficiency, Main Pressure, Shower Spa Heads
- Leichhardt DCP No. 35 – Exempt and Complying Development.

**Swimming Pools**

Private and commercial swimming pools using water heating are required to use either solar or heat pump water heating.

**Key References – Swimming Pool Heating**

- A.S.2369.1-1990 Materials for Solar Collectors for Swimming Pool Heating – Rubber Materials
- [A.S.2369.2-1993 Materials for Solar Collectors for Swimming Pool Heating - Flexible or Plasticized polyvinyl chloride](#)
- [A.S.3634-1989 Solar Heating Systems for Swimming Pools](#)

**Controls For Photovoltaic (P.V. Electricity Generating) Systems**

The following conditions apply to applicants wishing to install P.V. systems in Leichhardt.

- Photovoltaic systems must be installed so that the module orientation is within 45° either side of True North unless the applicant can demonstrate reason for designing the system otherwise, or can show that the electrical output is at least 75% of that which would be achieved from orientation of the same-sized system to true north (see footnote \*\*).
- Photovoltaic systems must be installed to all relevant Australian Standards, Sustainable Energy Industry Association (SEIA) Guidelines, and the specification and standards of the manufacturer(s) of all equipment installed. P.V. systems must be installed by a person holding accreditation from SEIA, or by a person who can demonstrate equivalent knowledge and experience of design and installation of P.V. systems. Grid-connected systems must meet the Guidelines of the Electricity Supply Association of Australia (ESAA), and specifically, grid-connected inverters must have been tested against, and fulfilled the

requirements of ESAA Guidelines for Grid-Connected Inverters.

- Roof mounted P.V. systems shall be installed in the same plane as the roof itself, unless the applicant can demonstrate that to do so would adversely affect the electrical output, and that the aesthetics of the building and visual amenity of neighbours and public domain will not be adversely affected.
- For P.V. tiles that act as the roof surface itself, heat build-up in the roof cavity or apex of living spaces must be controlled by insulation and/or adequate venting. This heat may be gainfully used elsewhere in the dwelling space by use of ducting and a low energy fan to redistribute tempered air. This may reduce the need for additional energy demand to heat / cool a dwelling.
- Any opening created by the installation must be adequately weather proofed.

\*\* Note that an adequate electrical output would be 1200kWh per annum per kW installed, averaged over the whole system.

**Key References - P.V. and other energy matters**

- A.S.1170.2 Wind Loads
- A.S.1359.51 Noise Level Limits
- [A.S.2915-1987 Solar Photovoltaic Modules - Performance Requirements](#)
- [A.S.3595-1990 Energy Management Programs - Guidelines for Financial Evaluation of a Project](#)
- [A.S.3596-1992 Energy Management Programs - Guidelines for Definition and Analysis of Energy and Cost Savings](#)
- Draft Australian Standards for Grid Connection of Energy Systems Via Inverters, July 2001:
  - Part 1 installation requirements (DR 01212)
  - Part 2 inverter requirements (DR 01213)
  - Part 3 grid protection requirements (DR 01214)



## B2.7 Design element 15 Water conservation and management

### Principle

*Design and specify to improve water conservation and increase on-site storage of rainwater.*

### Rationale

In Sydney, outdoor water usage accounts for an average of 30% of total household use. In some areas, usage is as high as 50%. The amount of water used, on average per household, for general outdoor activities is:

–	Hosing driveway	100 litres
–	Car washing with hose per car	200 – 300 litres
–	Garden sprinkler	1500 litres/hour
–	Garden dripper	4 litres/hour

Indoor activities use similarly as much water:

–	Toilet flush (single flush cistern)	12 litres
–	Bath	100 litres
–	Shower (10 mins)	200 litres
–	Dishwasher load	50 litres
–	Washing Machine	150 litres
–	Brushing Teeth (with tap running)	5 litres
–	Drinking/cooking/cleaning per person per day	10 litres
–	hand basin per use	5 litres

The practice of collecting rainwater ended in Sydney with the advent of reticulated water supplies. Using a rainwater tank can save water by providing an extra source of water for outdoor use, such as gardening, washing the car and other cleaning purposes.

### Guidelines

Many opportunities also exist inside the dwelling for conserving water. These range from selecting water saving appliances such as front loading washing machines and dual flush toilets to adopting conservative practices. This includes

minimising the time taps are left running, eg when brushing teeth or in the shower.

### Rainwater Tanks

#### Details of the tank

When selecting a suitable tank you should obtain detailed information to make the right choice. You need to consider the following details of the proposed tank to assess whether the tank can comply with Council's guidelines.

- product specification for standard tanks;
- size, shape and capacity;
- material;
- colour and appearance;
- a certificate of compliance of the tank with Australian Standards AS/NZS 2179-1994 and AS 2180 1986;
- a suitable location for the tank on property;
- consideration for the owners of the properties directly adjacent to the tank location.

#### Plumbing Connections

Sydney Water requires that the water connected in a tank is to be kept entirely separate from the existing mains water supply system and allows no direct cross connection with water mains plumbing. This means that tank water cannot be fed into your existing plumbing system but must be kept in separate pipes.

- The tank tap can be directly connected with a hose to a sprinkler (a wide bore hose is recommended, eg 19 mm) basin or washing machine, as long as the tank water pipe is not connected with any other pipe that brings in water from the mains system or drains into the sewage system.

Plumbing codes specify the methods allowed for indirect connections to the tank, which are not connected with the plumbing of the water mains



system. All plumbing works must be carried out by a licensed plumber.

### **Taps**

Tank water supply taps are to be marked *“Tank Water Only – do not use for human consumption”* to prevent use for drinking water and cooking.

### **Overflow**

Overflow from the tank is to be piped directly into a stormwater detention basin or the stormwater drainage system serving the building. Overflow is not to be directed into a sewer pipe.

### **Visual Appearance**

The rainwater tank, its associated drainage, plumbing and supporting structure, should be of a suitable appearance and should be compatible with the surrounding housing style and open space. The tank should be designed and placed so as to be unobtrusive and in harmony with the immediate environment. Installation should not adversely affect neighbouring properties. You should select compatible materials, colours and shapes that blend in with, or compliment the existing building, adjoining properties and streetscape. Shrubs or climbing plants can be used to screen tanks if required.

### **Materials**

Rainwater tanks can be made from galvanised steel, polyethylene, fibreglass, concrete or masonry. Metal tanks can be finished in colourbond or painted externally or lined internally with Aquaplate, a long lasting polymer lining. Many new models are being designed in shape and colour to blend in with your chosen location. Some retailers offer customised systems to suit your needs.

### **Standard Tank Installation**

Note: Polyethylene tanks can stand on level ground, eg. a bed of 50 mm of sand. Make sure that ground or surface water cannot wash out this

base. Metal tanks should be installed on a tank stand or concrete slab to prevent corrosion.

### **Water Protection**

First Flush Systems and Mesh Screens to Protect Your Water. Often rain washes dust and leaves off your roof, which could end up in your rainwater tank. To prevent this from happening, a first-flush rainwater diverter can be installed. It drains away the first 50 litres of water (approximately) which can contain these pollutants. Fitting all openings with fine mesh also prevents mosquitoes and some contaminants from entering the tank and is highly recommended.

### **Support Structure**

The support structure for any water tank must be in accordance with the requirements of a qualified practicing structural engineer. You can seek advice from the manufacturer, a builder, or a structural engineer.

### **Installation**

The tank and support structure must be set on a suitable foundation. A person licensed by the NSW Department of Fair Trading must carry out installation and plumbing.

### **Safety**

The water tank needs to have suitable contaminant screens to prevent the entry of any animals or sediment into the water. The tank must be covered or enclosed entirely and any lid must be designed to prevent children from wilfully or accidentally entering, climbing or falling into the tank.

### **Mosquito Proofing**

The tank must be mosquito proof to prevent the breeding of mosquitos. This can be achieved by installing a strainer with mosquito net in all openings including inlet and outlet pipes.



## Pump

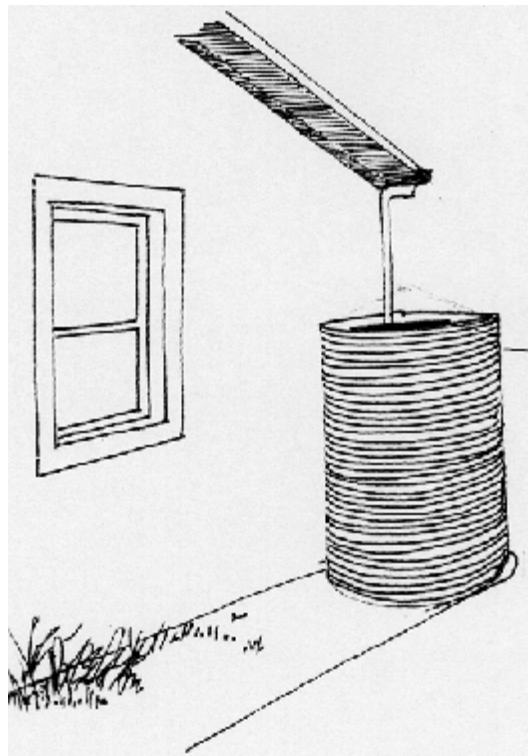
If the installation of a pump is required, it should not cause noise disturbance to the neighbours and any pump should be located away from the adjoining property or should be encased in sound insulation material.

## Controls

- For new single dwelling houses (and major renovations to existing dwellings) and multi unit development, install rainwater tanks for outdoor usage, such as watering gardens, car washing and general cleaning
- Ensure the rainwater tank meets the requirements of the above guidelines.
- Install hot water systems with water saving shower roses or shower flow restrictors, with a water conservation rating of 'AA' or better.

## Install:

- dual flush toilets
- low flow tap roses
- drip-irrigation for the watering of landscaped areas



## Key references:

AS/NZ 2179 – 1994  
“Specification for rainwater goods, accessories and fasteners”.

AS 2180 – 1986  
“Metal rainwater goods – selection and installation”  
Infosheet No.9 – Rainwater tank installation

Developed Control Plan No. 35 Exempt and Complying Development

Australian Standards;  
AS 2179 – 1986 “Metal rainwater goods-Specification”  
AS 2179 – 1986 “Metal rainwater goods-Selection and installation”



## B2.8 Design Element 16 Landscaping

### Principles

Design landscaping to:

- *enhance the visual setting of buildings;*
- *increase the use of native landscape species;*
- *reduce the need for irrigation, thereby conserving water resources;*
- *maximise vegetation to regulate and increase rainwater infiltration, thereby increasing nutrient recycling and reducing surface run-off;*
- *preserve or retain natural features which contribute to the landscape of the area.*

### Rationale

Landscaping provides a setting for development and enhances its appearance from the street. It also provides interest and colour contributing significantly to the sense of well being and amenity of residents and visitors. Landscaping also plays a significant role in achieving sustainable development. New development should be designed to incorporate landscaping, of a minimum of 40% of the total site area, which enhances the natural features of the site and relates to the scale of other elements of the streetscape and the landscaping of adjoining development.

### Guidelines

Use the site analysis to identify existing landscape elements such as rock formations, location and type of trees and vegetation, watercourses and hard landscaping features.

Landscaped areas should also provide for suitable soft/porous areas to increase rainwater absorption. Landscape area includes parts of the site at ground level, not occupied by a building, used for recreation, lawns, gardens and substantial planting. This does not include

balconies, driveways and parking areas, but does include decks with direct connection to the ground no more than 500 millimetres above ground level.

Integrate the design of landscaping with the design and energy efficiency of the building and its private open space:

- use as many native species as possible whilst also achieving the other objectives;
- use shading to improve outdoor comfort levels in summer, by using trees and vegetation (deciduous plantings and vines) in conjunction with built elements such as pergolas and screens;
- consider the natural ventilation of buildings when deciding on the type and location of hard and soft landscaping features;
- use deciduous trees located on the northern side of the building, the wide canopies of which can provide shade in summer, and allow sun to penetrate in winter; and
- exclude plants known to be toxic.

New development should:

- provide for the retention of existing, or planting of additional, trees with spreading crowns;
- retain and protect existing trees;
- protect neighbouring trees from root damage;
- provide semi-mature trees in open space along boundaries adjacent to neighbouring open space;
- use footings that allow root growth for large trees;
- contribute appropriate street tree plantings;
- ensure the re-establishment of street trees and restoration of native species whenever possible;



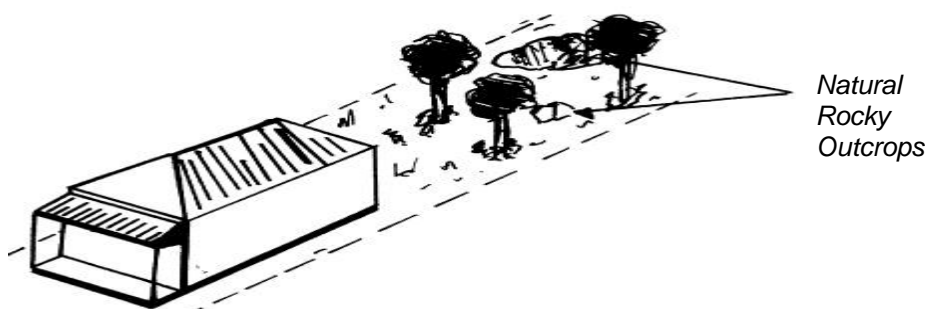
- retain natural rocky outcrops where they occur;
- ensure solar access and seasonal shading;
- provide shading for open parking areas; and
- provide a safe, attractive and functional environment for residents and enhance the neighbourhood.

### Controls

- Ensure that 85% of plantings in new development are native species from the Sydney locale.
- Ensure one tree of at least 4m mature height is planted for each dwelling with ground level access.
- Design areas of open space suitable for trees taller than 1m in height when mature.
- A landscape plan shall be submitted showing planting, paving and other details of external areas of the site. Where appropriate, streets and parks, vegetation, species type and numbers, together with size and location are to be specified in the

plan along with details of all external finishes and colours.

- 25% of the landscaped area is to be on natural or un-paved ground that is not overhung by or on top of any structure and is permeable and appropriate for substantial planting.
- Street trees must be retained where possible.
- Natural rocky outcrops shall be preserved in their existing form and integrated into site landscaping.





## B3.0 Residential Amenity







### B3.1 Design element 17

#### Solar access

#### Residential amenity and energy efficiency

##### Principles

*Design to optimise solar access to habitable rooms and private open space of new housing to improve amenity and energy efficiency.*

*Minimise overshadowing of the habitable rooms and private open space of existing housing.*

##### Rationale

Solar access to dwellings and areas of private open space is essential to both the amenity and energy efficiency of new and existing housing.

Sunlight is a valued component of residential amenity as it enhances people's sense of well-being, has a demonstrated psychological value and promotes the growth of gardens and plants.

The sun can also provide a free yet valuable source of energy in your home by providing thermal benefits and solar energy for generation of hot water and electricity.

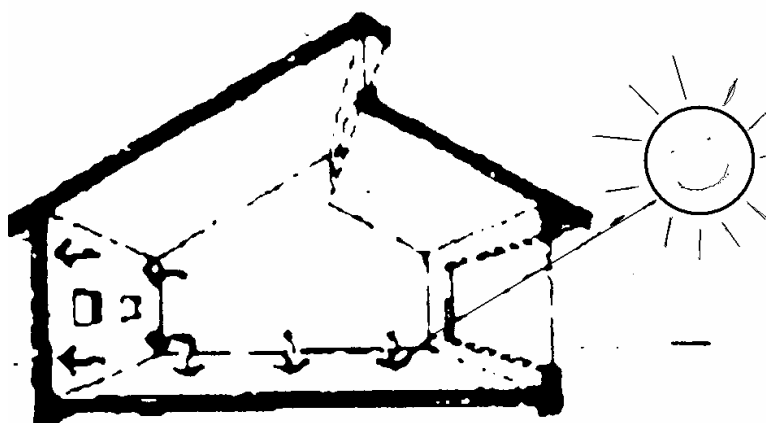
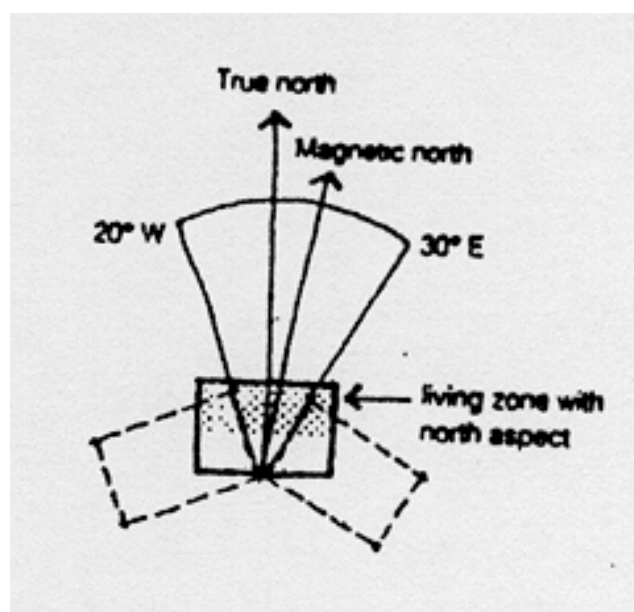
In order to reap the benefits of this energy source, it is imperative that living spaces, structures, walls and roofs all have maximum access to sunlight.

The winter solstice (21 June) is the most critical time to assess solar access, where at 12 noon the sun's altitude (32°) casts shadows 1.6 times the height of an object.

During winter, the north face of the building receives significantly more solar energy than east and west sides. The northern side of the building is a good location for living spaces that are continually occupied during the day, and which usually have the largest heating and lighting requirements.

##### Guidelines

Orientate the living areas of a dwelling within a range of 30° east and 20° west of True North in order to optimise solar access.

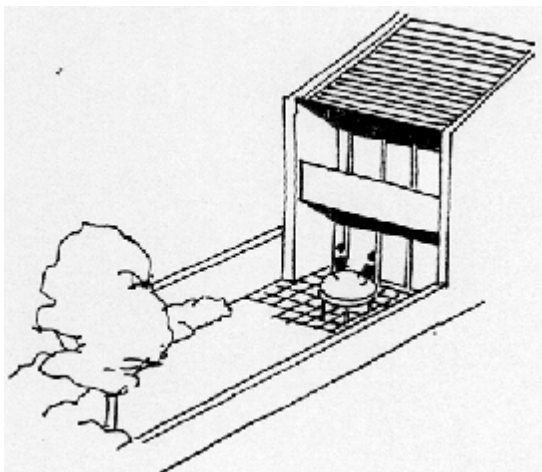


Use glass roofs and walls, skylights or clerestory windows to improve solar access and provide shared light to poorly lit parts of a house.

Use double glazing to improve heat retention in winter especially with regard to south facing living areas.



Aim to achieve a glazed area of up to 30% of rooms with a northerly aspect to optimise solar access and thermal benefits.



### Controls

- Prepare a shadow diagram in plan and elevation (showing impact on habitable rooms) with all Development Applications for new built development, and major alterations and additions to existing dwellings.
- Design to ensure solar access for a minimum of 3 hours between 9.00 a.m. and 3.00 p.m. at the winter solstice, to the living areas of new dwellings.
- Maintain solar access to existing housing
- Where an existing adjacent building has an east - west orientation:
  - Maintain solar access to the habitable side rooms for a minimum period of 2 hours between 9.00 a.m. and 3.00 p.m. at the winter solstice.
  - Where less than 2 hours solar access is currently available to the habitable side rooms of existing dwellings, no additional overshadowing shall be permitted.



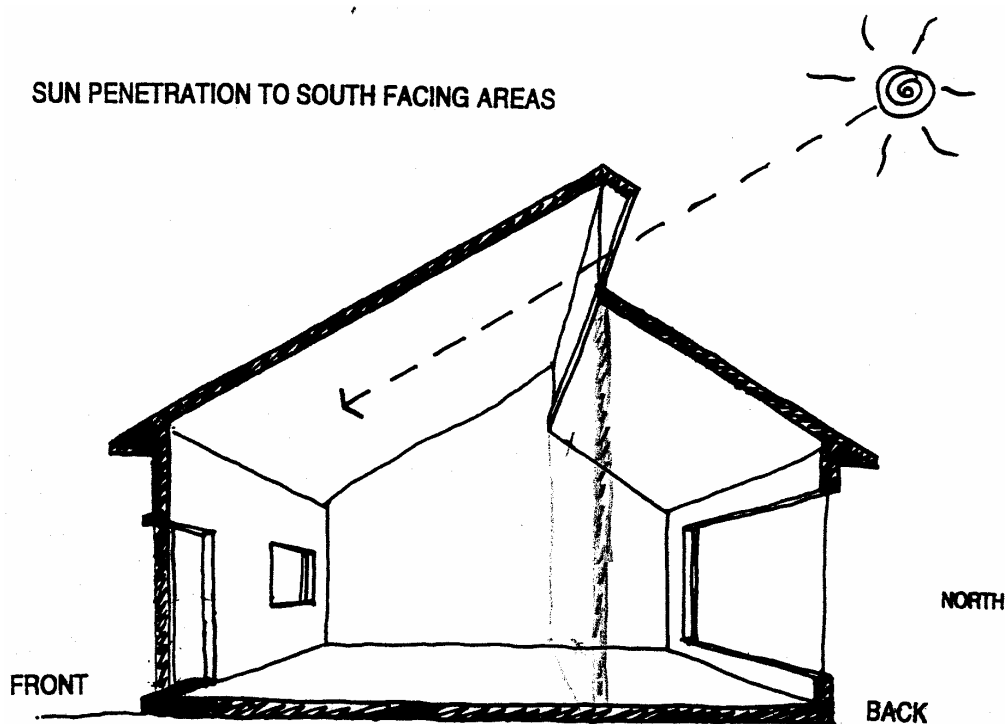


- Where an existing adjacent building has a north - south orientation:
  - Maintain solar access to the front and rear habitable rooms for a minimum period of 4 hours between 9.00 a.m. and 3.00 p.m. at the winter solstice.
- Where solar access already exists to the private open space of adjacent dwellings, ensure it is maintained over a minimum of 50% of the private open space for a minimum period of 3 hours

between 9.00 a.m. and 3.00 p.m. at the winter solstice.

#### *Solar water heaters*

- Maintain solar access to existing solar water heaters throughout the day at all times of the year.
- Maintain solar access to the north facing roofs of existing dwellings (45° West to 45° East variation is possible) to a fixed minimum area of 10 sqm, capable of accommodating solar water heater panels.





### B3.2 Design Element 18 Private Open Space

#### Principle

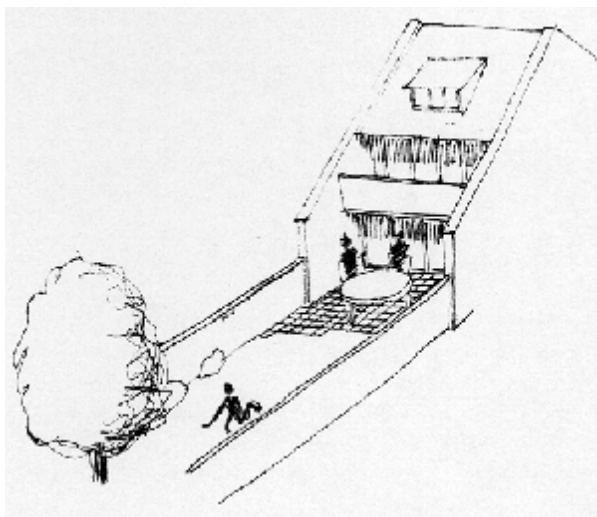
*Design private open spaces to be of a size and shape that meets user requirements for recreation, service and storage needs, solar access and is well integrated with living areas.*

#### Rationale

Private open space forms a component of the landscaped area, but focuses on the useable spaces. It is a necessary component of residential life and a major contributing factor to the amenity of residents. The amount of private open space per dwelling will depend on the type of accommodation proposed and its location. Private amenity space should be provided in some form or other to all accommodation.

#### Guidelines

Design outdoor seating areas as an extension of the indoor living area, with provision for shade and privacy.

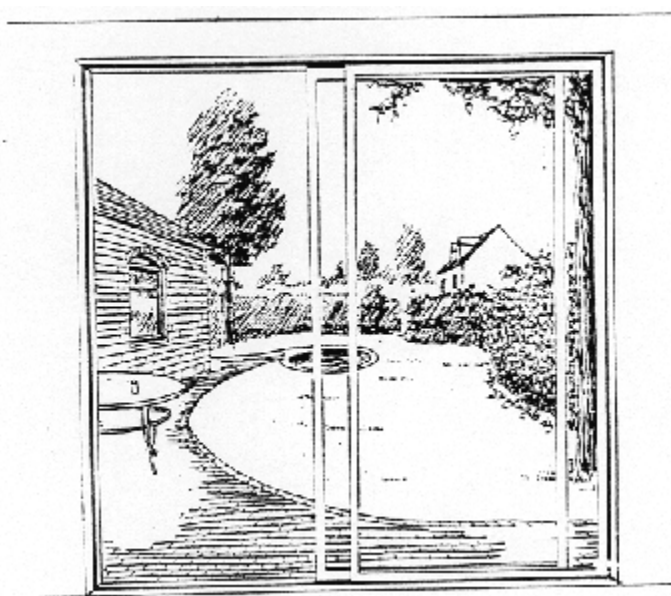


Design to maximise solar access and natural breezes, improving efficiency and user comfort.

Secluded private open spaces may be reduced where communal open space or recreation facilities will better serve the needs of the

residents. Provide an area for an outdoor clothes drying line.

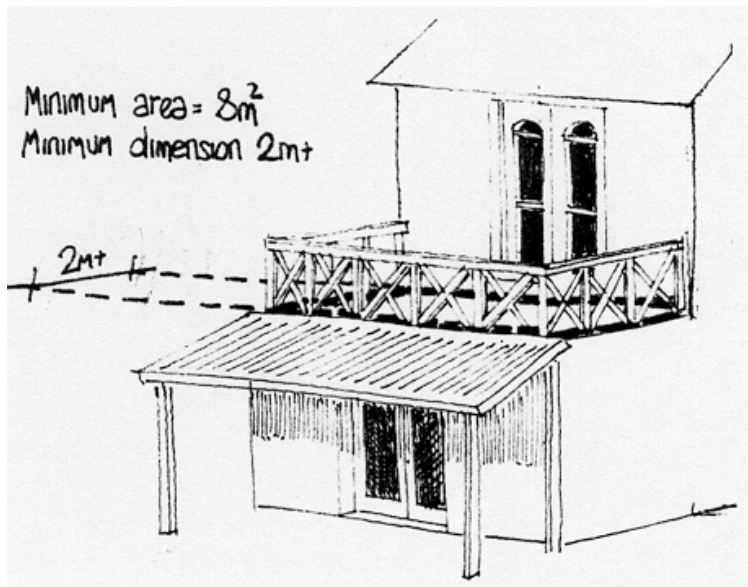
Integrate the landscaping design to improve the appearance, amenity and energy efficiency of the space.



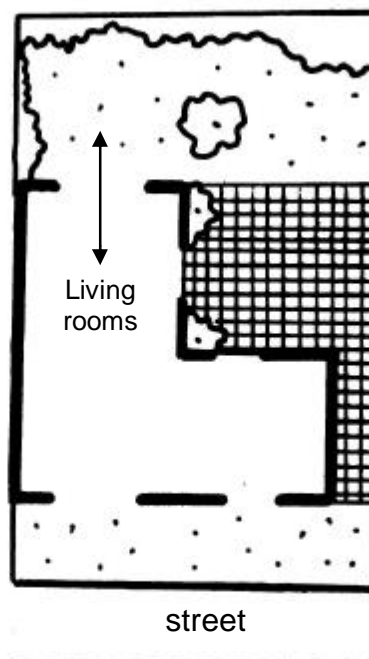


### Controls

- Private open space which connects directly to dwellings at ground level shall:
  - have a minimum area of  $16 \text{ m}^2$  with direct access to the principal indoor living areas;
  - have a minimum dimension of 3 metres;
  - not be steeper in gradient than 1 in 20 (5%).
- Where there is no direct access to ground level open space, above ground level private open space, designed as a balcony or deck, should have:
  - a minimum area of  $8 \text{ m}^2$ , and
  - a minimum dimension of 2 metres with direct access to the principle living areas of the dwelling.
- Roof top spaces should have a minimum area of  $10 \text{ m}^2$  and a minimum width of 2m which has safe and convenient access.
- Design above ground private open space to ensure privacy of the occupants of adjacent buildings, and the new occupants within the proposed development.



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### B3.3 Design Element 19 Visual privacy

#### Principle

*Protect visual privacy of adjoining dwellings by minimising direct overlooking of principal living areas and private open space.*

#### Rationale

Visual privacy is a highly valued component of residential amenity. The privacy needs of both existing and future residents needs to be considered in the design of new development.

Planning for privacy should be considered at the site analysis stage. However the detail cannot really begin to be considered until the site design layout, building form and setting stages have been considered. It is not possible to consider all the stages in isolation and the detail of design and outcome should be considered throughout the design process. The privacy needs of both new residents and existing neighbours should be considered when deciding the location of dwellings, their windows and private open space.

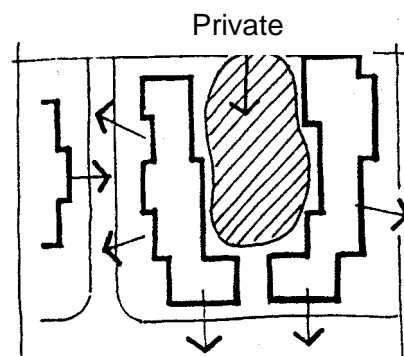
#### Guidelines

Place as few windows as possible along side boundaries or close to rear boundaries unless they face a street or are necessitated through the requirement of solar access.

Consider levels when designing to ensure maximisation of visual privacy.

#### Controls

- Ensure habitable room windows of one dwelling are not located opposite the windows of another dwelling within 15m unless direct views are restricted or they are separated by a street.
- Restrict views in this situation by:
  - staggering the location of windows so that viewing is
  - oblique rather than direct; or
  - providing sill heights of 1.6m above floor level; or

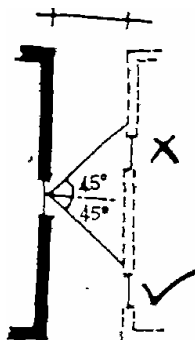


- glazing in any window pane below 1.6m above floor level.



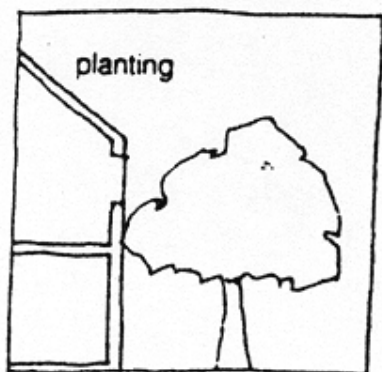
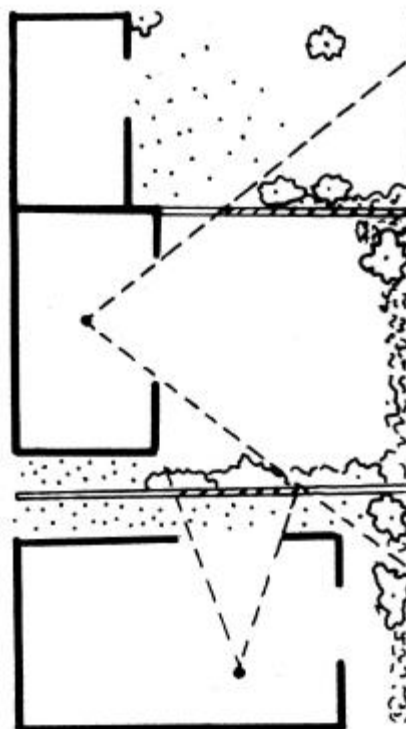
- Obscure outlook by providing screening if habitable room windows or private open space is overlooked:

- within 15m,
- within an angle of 45°, measured perpendicular to the face of the opening from a height of 1.6m above floor or deck level.



- Screening is not required where:  
windows are to bathrooms, toilets, laundries, storage rooms or other non-habitable rooms;
- windows are to habitable room which face a property boundary where there is a visual barrier at least 1.8m high and the floor level of the room is less than 0.5m above ground level at the boundary.

- Screening devices should be 75% obscure, permanently fixed and made of durable materials. Use screening devices such as obscure glazing, timber lattice screens, external ventilation blinds, canvas blinds, window hoods and shutters.



- Provide landscape screening either by using existing dense vegetation or new planting that can achieve a 75% screening effectiveness within three years. Specify mature height to provide effective screening, while retaining access for light, sunlight and views. Deciduous planting may be used to screen outdoor living areas, decks, etc, which are less likely to be used in winter.



### B3.4 Design element 20 – Access to Views

#### Principles

*Ensure existing views and vistas are protected and enhanced where possible.*

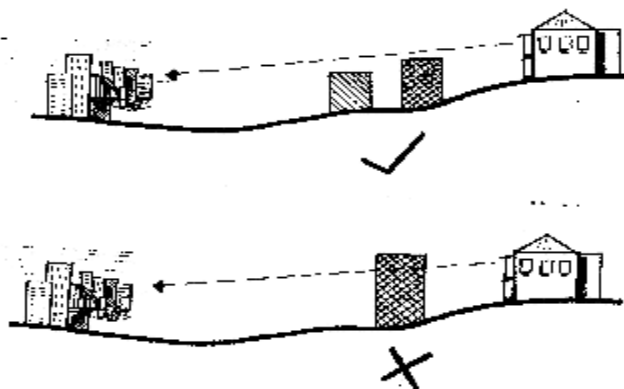
*Provide view sharing between new and existing residential development.*

#### Rationale

The distant view over land that does not belong to the 'viewer', may not be a right in itself, or for the exclusive benefit of certain individuals. However it is a desirable aspect of amenity and contributes significantly to the sense of well being and enjoyment of property occupiers and the general public.

Views available in Leichhardt vary from significant vistas of the city skyline and Harbour Bridge, water and foreshores of Sydney Harbour, to outlooks and glimpses of water and parks from many vantage points. Often these views, outlooks and glimpses are available from public places and private properties situated a considerable distance from the proposed development.

The significance and importance of a view is a highly personal and subjective matter. For these reasons it is not possible to predict where and how views should be established or maintained, however, a fair sharing of the benefits of pleasant views and outlooks should prevail. View sharing seeks to maximise the number of people who can benefit from a view.



#### Guidelines

Use the Site Analysis and Suburb Profiles to identify the nature and extent of views available from buildings and public places in the vicinity of the development. In particular, consideration should be given to available views of landmarks (eg Sydney Harbour Bridge, Anzac Bridge, City skyline, local landmarks such as church spires or significant chimney stacks) and significant vistas.

Where views are currently enjoyed from existing buildings or public places, new development should minimise obstruction of those views. Where access to new views may be created, new development should maximise access to those views both from within the new development and from existing buildings and public places in the area thus sharing the benefits.

In addition, it is recognised that secondary views may exist from private or public buildings and spaces. Secondary views are those of local or district features, as opposed to obvious Sydney landmarks such as the City or Harbour. Obstructions of secondary views must be minimised by new development.

Where a proposed development is likely to obstruct views, measures must be introduced to promote the sharing of these views. Such measures include:

- reducing the height and bulk of the building;
- incorporating more generous setbacks, particularly where strategic view corridors can be created;
- introducing greater gaps between proposed buildings;
- breaking up the proposed built form;
- minimising floor to ceiling heights;
- using raked ceilings to upper floors;
- using hipped or gabled roof forms.





**However, access to views should not unduly compromise any other design element.**

The applicant must satisfy Council that appropriate view sharing has been achieved by the design of the proposal. Development that results in the monopolisation of views should be avoided.

### **Controls**

- **Where views are currently enjoyed from existing buildings or public places, new development is to be designed such that any obstruction of these views is minimised.**
- **Development should maximise access to views both from within the development and from existing buildings and public places in the area thus sharing the benefits.**



### B3.5 Design element 21 Acoustic privacy

#### Principles

*Contain noise within each dwelling, and ensure noise from communal areas or shared facilities has minimal impact on nearby dwellings.*

*Protect internal living and sleeping areas from high levels of off-site noise.*

#### Rationale

Acoustic privacy is a major element in maintaining and/or providing reasonable amenity. The issue must be considered at the design stage, as it is difficult and expensive to retrofit dwellings to improve acoustic privacy. Most problems can be minimised through appropriate layout and design combined with the use of sound insulating materials.

Developments near existing noise sources such as busy roads, railways or industry, need to be designed to achieve satisfactory internal noise levels, using a combination of construction techniques and internal layout to locate the most noise sensitive rooms (such as bedrooms) away from the noise source.

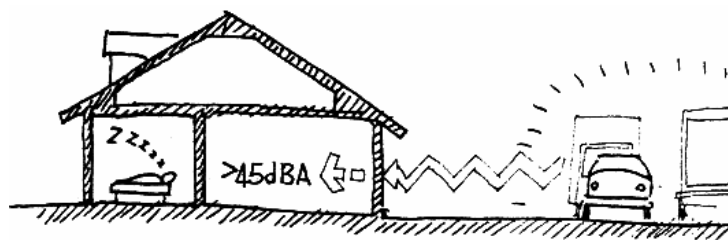
#### Guidelines

Where dwellings abut major roads, railway lines or other uses that emit high levels of noise, locate noise sensitive uses away from the source and protect by appropriate noise shielding devices.

Key references:  
Including AS3671 – Road Traffic;  
and AS2021  
Aircraft Noise

#### Controls

- Use Urban Framework Plans to establish potential noise producing sources such as rail and road in the vicinity of the site.
- Ensure living rooms, activity areas, parking and service equipment are located away from bedroom windows of adjacent dwellings.
- Construct dividing walls and floors between dwellings, to limit noise transmission to 40-45 dBA.



- Ensure electrical, mechanical or hydraulic equipment or plant does not generate a noise level greater than 5dBA above background sound level at the boundaries of any development
- Ensure internal habitable rooms of dwellings affected by high levels of external noise, are designed to alleviate internal noise levels in accordance with Australian Standard 2107 – Recommended Design Sound Levels and Reverberation Times for Building Interiors.
- Separate and contain the plumbing for each dwelling to prevent the transmission of noise between dwellings using appropriate noise resistant wall, ceiling and floor treatments.



### B3.6 Design element 22 Dormer windows

#### Principles

*Additions to roofs to obtain light and ventilation in converting roof spaces for accommodation, particularly where visible from the street, should be compatible with the character of the house and streetscape.*

*Where part of a row or group, the character should be consistent in all respects, to conserve the unity of the group.*

#### Rationale

Steeply pitched and complex roofs are a major attribute of Leichhardt's buildings. While the roofs offer opportunities to increase the floor space, it is essential that conversion and changes to the roof form respect the character of the building or group of dwellings. These conversions usually involve additions such as skylights, rooflights, dormer windows, or new roof elements seeking to obtain light and ventilation.

Such changes should be minor, and complementary to the building in terms of scale, detail, and materials.

In the nineteenth century most attic rooms were lit by single window dormers, usually with a window matching a window used elsewhere in the building. The windows were usually vertically proportioned and double-hung, clad in weatherboards to the sides. Single fronted houses or terraces usually had a single central dormer. Double fronted houses may have had a pair of single window dormers, or sometimes a wider central dormer. The total width of dormers rarely exceeded 25% of the width of the roof.

In the early twentieth century, the Federation style, and then later suburban house forms, more complex roof forms were used, with windows in gable ends, or gabled, or skillion roofed type dormers. To harmonise with the more horizontal and spreading roofs, dormers and attic windows were often wider with lower heads than earlier. Casement windows or an array of casements

were the norm. The total width of attic windows was greater than earlier, up to 50% of the width of the roof.

The conversion of roof spaces for accommodation by making additions to obtain light and ventilation or increase floor space, particularly where visible from the street, should be compatible with the character of the house and streetscape.

There is scope for increased flexibility with roof additions to the rear in terms of size, style and detail. However additions should be compatible, and simple boxing out from the existing ridge line should be avoided. Roof form at the rear of dwellings, in particular along ridge lines, may be important to the streetscape, and controls applied to street frontages should also be applied at the rear. It is preferable for such additions to be modelled within a form complementary to the existing form, such as a wide dormer, or sub-gable, or as a separate roofed pavilion.

If compatible with the style and form of the building and the street, and the amenity standards, it may be reasonable to allow a modest raising of wall heights in association with a new roof- form. This shall not apply to Heritage Items.



**Controls for front dormer windows and changes to roof elements:**

- Where the height of the roof as measured from the gutter to the ridge is less than 2.5m, windows should be flush to the roof; and
  - limited to one on single fronted houses, or a pair on double fronted houses, usually centred on the roof.
- Where a house is not part of a row, semi-pair or group of like-houses, then it may be appropriate to change the roof form provided that it is compatible with the character of the house and the amenity controls. Changes that may be considered include:
  - a change of roof form;
  - an increase in pitch to a maximum of 45°; and
  - a modest increase in wall height.
- Where the house is part of a row, semi-pair or group of like houses, any change should respect the unity of the group.
- The existing ridgeline shall be maintained.
- Any dormer or roof element shall be in style with the adjoining group of houses.
- Where there is an existing dormer or roof element consistent with these controls, it shall be replicated in all respects.

- The roof of any dormer or sub-roof shall be a minimum of 300mm below the main ridge.
- The window pattern should generally reflect the windows used elsewhere in the building (but often smaller).

**Traditional Dormer Window (19th century):**

- The roof should have no eaves or gutter.
- For terrace, semi-detached, or single fronted houses, pre-Federation in period and style, use a single window type dormer.
- For a double fronted house, use:
  - a pair of single window dormers, equally spaced across the face of the roof, or a wider central dormer; and
  - the total width of dormers should not be greater than 25% of the width of the roof.

**For a twentieth century dormer or windows to an attic storey:**

- Eaves and a gutter may be appropriate.
- A sub-gable or sub-roof complementary to the main roof form, or skillion roof form may be appropriate.
- The total width of dormers or attic storey windows should not be greater than 50% of the width of the roof.



## B4.0 Development Types

The Site Analysis and Design Elements contained in Part B provide the guidelines and controls necessary for any form of residential development. However, certain types of development require particular attention to the detail of their design. The following sections address particular development types and highlight their specific requirements over and above the consideration of design elements C1.0 -C 3.6.



## **B4.1 Development Type 2**

### **Alterations and additions to existing dwelling houses**

#### **Principles**

*Design alterations and additions to dwelling houses to:*

- *be complementary to the scale, form and appearance of the existing and adjacent buildings, and the density and character of the local area, and*
- *maintain existing residential amenity.*

#### **Rationale**

Leichhardt's changing population profile is placing increased pressure on the dwelling stock, with modestly designed housing being adapted for today's living requirements. In most cases, this involves a considerable increase in floor space, often to the detriment of the building form itself, and the quality of the streetscape. Traditional worker's cottages are particularly prone to these pressures for change.

Guidelines have been prepared indicating the general limits to the expansion of existing dwellings. These guidelines offer examples of appropriate 'alterations and additions' to existing dwellings for typical dwelling types in Leichhardt. Whilst they focus on the more common dwelling forms, design innovation is encouraged as long as the intent of the guidance is met by other means.

The controls for the *conservation of small detached houses* are set out in B4.2. These guidelines offer advice over and above the controls in Part B1.0 –B3.0 of this DCP.

#### **Guidelines**

##### **Roof Forms**

Roof forms are a key element in the character of Leichhardt's buildings. Design roof alterations and additions to respect the scale, form and pitch of the existing roof. Extensions should be subordinate to the existing roof.

Changes to roofs should be minimal and roof lights are preferable to dormer windows. Dormers should be traditionally vertically proportioned, with a height 1.5 x width. With rows of terraces or houses which are Heritage Items, only use dormers on roofs with greater than 2.5m vertical height between the top of the wall and the ridgeline. Where less than 2.5m, use a roof light.

##### **Dormers to front**

The introduction of dormer or roof lights should be determined by the street and building context. The form, scale and style of dormer depends upon the building being altered.

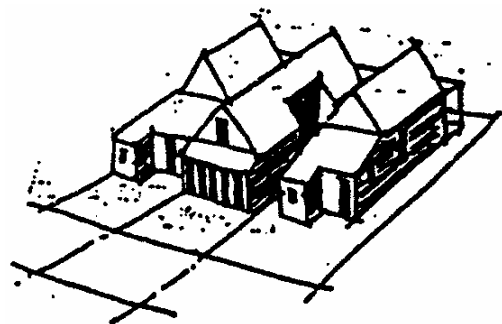
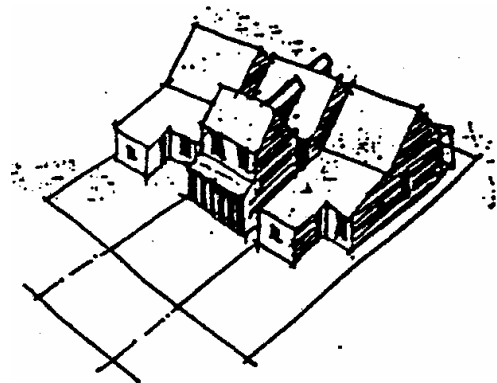
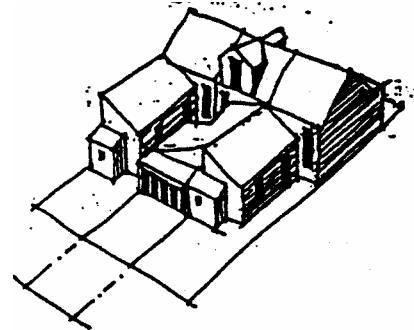
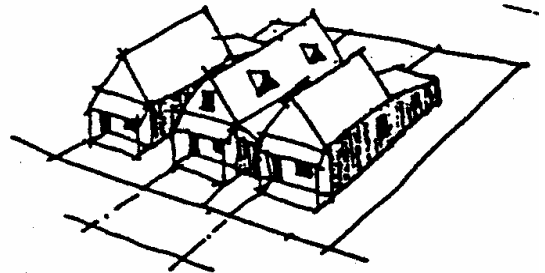
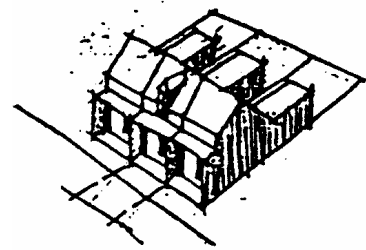
##### **Dormers to rear**

The rear of a building is generally not visible from the street, and provides latitude for increased space. However, conservation of building style should always be respected. Use either a wider dormer form, or a sub roof. A boxing out form is not favoured particularly where the side gables are visible from the street. Generally, boundary walls should not be extended. Where backs are visible from a public place or street and significant in terms of streetscape, a traditional dormer should be used.

**Extensions to rear**

The height and site coverage of an extension is determined by

- ensuring consistency in the wall height and roof form of existing and adjacent buildings
- respecting the site layout characteristic in the area.
- ensuring adequate solar access and private open space to the dwelling
- minimising impact on residential amenity of nearby properties
- minimising visibility of the extension from the street





#### Alterations to front

Avoid enclosing existing balconies. Reinstall balconies and verandahs where appropriate. Retain significant front gardens and landscaping. Retain and restore historic fences and walls.

#### Materials and details

Take note of any relevant architectural ornamentation, material or detailing on the building. Refer to Leichhardt Suburb Profile (A10.2) for local information. Design and specify additions or alterations to be complementary to existing form and detailing.

#### Side extensions

Two storey side extensions should incorporate a roof structure that respects the main roof of the building and does not appear incongruous. Avoid closing gaps between buildings. Ensure roofs are subordinate. Take account of views.

Where a side extension is visible from the street or public place, ensure that the form and scale of the extension is subordinate to the main building and the extension appears as a sympathetic

continuation of the original building. Where the street comprises detached buildings, ensure that side extensions do not appear to close the gap between buildings by either:

- providing a 1m setback of the side extension from the main front wall, and consequently a subordinate roof form, or
- setting the extension away from the boundary by a minimum of 1m.

#### Controls

- **Dormer windows should be set below the ridgeline and up from the eaves.**
- **Ensure windows do not overlook adjacent private open space or habitable rooms.**
- **Ensure the materials match the existing building and that window and door proportions are respected.**





## B4.2 Development Type 2 Conservation of small detached houses

### Principles

*To prevent the demolition of or unsympathetic alterations to small houses that contribute to the heritage streetscapes and diversity that characterise Leichhardt's residential areas.*

*To encourage the restoration of small houses.*

*To encourage the innovative adaptation of small houses for contemporary needs.*

### Rationale

Modest houses in their garden settings usually single storeyed and often timber, contribute to the character of the bulk of Leichhardt's residential areas. Small houses are under increasing threat of unsympathetic enlargement with increasing pressure to maximise floor space, or demolition for larger houses, or multi-dwelling development.

The intent in part is to conserve the diversity of houses both in terms of the variety in a particular street, and the contrasts within the suburbs making up Leichhardt.

The principal aim is to prevent demolition where retention is desirable, at the same time as giving guidance on complementary alterations and additions.

A small house is a free standing dwelling generally less than 100m<sup>2</sup> in its original form and often around 75m<sup>2</sup>. Configured with a living space, usually two bedrooms, kitchen and ancillary spaces such as a wc, pantry, laundry, etc. Room sizes are generally less than 12m<sup>2</sup>.

### Guidelines

#### Alterations and Additions

Adaptation shall be done in accordance with the controls and principles of this DCP and the Guidelines. Council's 'Guidelines for the Conservation and Design of Alterations and Additions to Small Detached Houses' should be consulted, when work is proposed. The Guidelines consist of a brochure setting out principles, and a folio of built worked examples.

Council's intention is to retain small houses without substantial change to the significant elements. If alterations and additions are required to these buildings they should generally conform to this DCP and consider the Guidelines, and adhere to the following principles:

- 1) retain major form, scale and materials of existing structure;
- 2) additions generally should be to the rear and, depending on context, may be one or two storey but should not overshadow the existing building or substantially change the relationship of the building to the street when viewed from the street;
- 3) roof additions should either not alter the overall roof form, or should alter it in a complementary fashion with rooms within the existing roof form;
- 4) the use of dormers or roof windows should be determined by the context;



- 5) significant established gardens and plantings including early fences should be retained;
- 6) building extensions should be complementary in terms of size, height, form and materials with the existing building;
- 7) extensions do not have to imitate the existing house but should complement the existing detailing and form.

### Demolition

An applicant who proposes to demolish a small house must establish to Council's satisfaction that the house should not be conserved in terms of its heritage value, its contribution to the streetscape **and townscape**, its suitability for housing, or due to irredeemable structural failure. These criteria must be addressed in a conservation assessment, submitted with the application.

### Where demolition is proposed:

#### Criteria for Conservation Assessment

If the house does not meet the heritage **and streetscape criteria**, criteria (3) and (4) need not be addressed.

#### (1) Heritage Value of Building & Site

- The applicant must provide a statement on the heritage significance of the house. This should include a brief history of the building and site including garden and site elements, comments on the historic, aesthetic, social and scientific value of the place, a report on the intactness of early or original fabric and a statement of significance.

*(Terminology used is from the Burra Charter, it is recommended that the applicants consult the Charter for information on how to assess significance)*

#### (2) Streetscape Setting

- The applicant must include, with the application to demolish, an assessment of the existing streetscape to establish whether the house contributes positively to the streetscape and determine how demolition would impact on the streetscape.
- It must be established that the demolition of the building will not adversely effect on the streetscape or townscape value of the area.

#### (3) Viability for Residential Purposes

- Where demolition of the entire house is proposed, it must be established that the building cannot accommodate residential use either within the existing building envelope or through sympathetic additions. Applicants should refer to DCP1 as well as the 'Guidelines for the conservation and design of alterations and additions to Small Detached Houses'. Council will not consent to demolition where it is possible to adapt the existing structure, in an appropriate way, for the desired use.
- Matters relating to building function that are not to be taken into consideration in determining applications for demolition:
  - Inadequate size of existing rooms or spaces.
  - The desire to provide on-site parking.



#### (4) Structural Condition

- It must be established, if structural failure is cited as a reason for demolition, that the structural integrity of the building has failed to the point where it cannot be rectified without major reconstruction of the building.

It is noted that structural condition does not include:

- cladding elements such as roof covering or wall cladding;
- verandahs;
- internal finishes;
- site conditions including garage.

A certificate from a registered structural engineer, certifying that the building has structurally failed, is a minimum requirement if the case for demolition is based on the structural condition of the building.

**As structural problems are rectifiable this is not grounds alone for demolition.**

#### Controls

- **An application for alterations or additions must address each of the guidelines specified above.**
- **A Conservation Assessment addressing the criteria must be included with an application for demolition.**
- **For the restoration and adaptation of small dwelling houses, apply the guidelines and controls set out B4.2 Alterations and additions to existing dwelling houses.**

#### Disclaimer:

In its determination of the application proposing demolition of a small house, Council shall take into account this Plan including its objectives without being bound by any conservation assessment of the house.

Key references:
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Burra Charter
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### **B4.3 Development type 3 Laneway Development**

#### **Principle**

*Ensure that building uses are appropriate based on a Laneway Hierarchy in order to achieve acceptable levels of amenity, landscaping, building design, access and security.*

*Ensure that the existing and desired building form and character within a lane is considered and reflected in the design of new laneway development.*

#### **Rationale**

Lanes historically provided secondary access to properties and consequently are narrow, often with limited vehicular access. These constraints limit the type of development achievable.

The construction of additional buildings on lanes, in particular, dwellings poses a number of potential issues and conflicts. These include an erosion of amenity, reduction in landscaped area and reduced access.

Consequently a Laneway Hierarchy has been developed to provide guidance on the preferred type of developments and uses that may be appropriate depending on a lane's width and existing character.

Buildings fronting onto lanes should clearly read as secondary to the primary residence on the same allotment. Lane development should respect this established hierarchy by ensuring that the bulk and scale of new development does not significantly diminish the dominance of the primary residence.

Lanes contrast with primary roads in character, with simple brick buildings including gable roofs, or a skillion behind parapets, being most common. Buildings have a general lack of adornment and dormer windows and the like are foreign to lanes. This simple, unadorned built form is a significant element in the character of lanes,

as are zero set backs that provide a hard edged form in contrast to the front gardens that dominate primary street frontages.

A key function of a lane is the provision of access to and from a site. This access should not be compromised but should be improved in any future development. Development can provide the opportunity to improve pedestrian security through increased lighting and surveillance. Consequently, where a dwelling is proposed an active interface with the lane is encouraged.

Backyards contain a large proportion of the trees that add to the landscape quality of the area. Consequently it is important to avoid a cumulative loss of significant trees as a result of lane developments. Natural features such as rock outcrops can also be important elements of a lane and should be protected where possible.

#### **Guidelines**

In order to retain the secondary service character of lanes, controls are applied to new development based upon the width and existing development on the lane. In most cases, the scale of existing development is the best reference for assessing the potential of a development site fronting a lane. However, where there is inappropriate and out of scale development existing in lanes, this should not be used as justification for any further inappropriate development.



A 'laneway', also referred to as a 'lane', is defined as a way open to the public for passage of vehicles, persons and animals which:

- is secondary in that the allotments, which it serves, generally address another road;
- has a minimal width;
- has little or no footpath or nature strip; and
- has a predominantly service character.

The following table defines the class of laneways within the Leichhardt Municipality.

<b><u>LANEWAY HIERARCHY</u></b>	
<b><u>Class and Characteristics</u></b>	<b><u>Width</u></b>
<b><u>Pedestrian/service lane</u></b>	<b><u>Less than 2.5m</u></b>
<b><u>Narrow lane:</u></b> - <b><u>service character</u></b> - <b><u>garages</u></b> - <b><u>wide enough for single car to drive through and access garages</u></b> - <b><u>no standing</u></b>	<b><u>2.5m-5m</u></b>
<b><u>Medium lanes:</u></b> - <b><u>service character</u></b> - <b><u>garages</u></b> - <b><u>some dwellings</u></b> - <b><u>parking to one side with room to drive through and access to garages</u></b>	<b><u>5m-8.1m</u></b>
<b><u>Wide lanes:</u></b> - <b><u>garages</u></b> - <b><u>dwellings</u></b> - <b><u>parking either side</u></b> - <b><u>two way driving</u></b>	<b><u>8.1m +</u></b>

The width of lanes shall be measured at three points and then averaged to provide an average lane width. The first point shall be from the subject site frontage, and the remaining two points shall be measured from a position of 15m from the side boundaries of the subject site. This will provide an average lane width figure for the Laneway Hierarchy table, thereby defining the class of lane.

Suggested types of development, along narrower lanes, less than 5m, can include garages, workshops, garden sheds, and storage rooms.

In wider lanes, above 5m in width, development may include garages, workshops, garden sheds or storage rooms. Dwellings should only be considered where there are existing dwellings fronting onto a lane and the amenity of the lane is not compromised.

Innovative design techniques shall be developed to ensure that sufficient on-site parking is provided without compromising the prevalent building form, set back, character and appearance of the area. Development must provide sufficient maneuvering space to allow vehicular access within the lane an appropriate turning circle.

Development along lanes should maintain the prevalence of mature, regularly spaced and predominantly native street trees and bushes, as well as mature and visually significant trees on private land.

As lanes were originally designed for a low scale service use and not as residential streets, development should provide for additional safety, such as lighting and street observation.

Laneway development should not contravene the density, subdivision and landscaping controls set out under the LEP section of the Town Plan 2000



### Laneway Hierarchy Controls

#### Pedestrian/service Lane - less than 2.5m

- Development along lanes that are less than 2.5m in width is discouraged.

#### Narrow Lanes - 2.5m - 5m

- Dwellings fronting onto narrow lanes are discouraged.
- The service character of the lane must be retained.

#### Medium Lanes - 5m - 8.1m

- Dwellings fronting onto medium lanes are discouraged where they do not already exist,
- Dwellings may be considered if other lane-fronting dwellings are located within 15m from the property boundaries of the proposed dwelling.
- The service character of the lane must be retained.

#### Wide Lanes - 8.1m+

- Dwellings may be considered on wide laneways.

### General Laneway Controls

#### Urban Form

- Development shall be designed with simple built forms and not be visible from the primary street frontage and should be at or very close to the lane alignment.

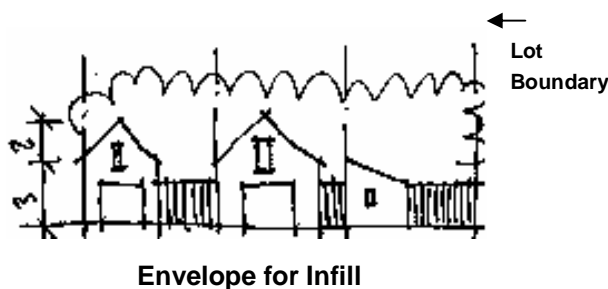
§ Use painted and bagged finishes to walls or plain brick and timber

- Roof forms should include gabled roofs pitched from sides, or skillion roofs located behind parapets. Use corrugated iron, slate or terracotta tiles for roofing materials

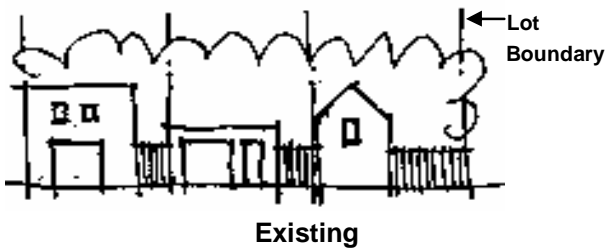
- Roof openings shall be flush to the roof and should not represent dormer windows or the like, whether or not they are visible from a public place.

- The scale of building envelopes for development fronting onto lanes shall not be higher than the prevailing building envelopes within the lane.

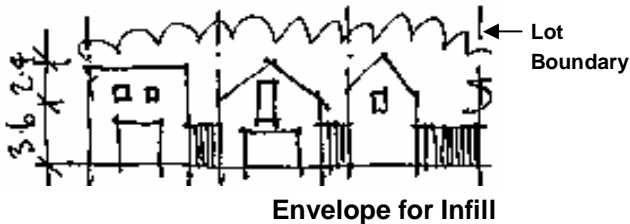
- For narrow lanes, the side wall height shall be limited to a maximum of 3m with a 45° envelope control, allowing a roof height limit of 5m.



- For medium lanes, the side wall height shall be limited to a maximum of 3.6m with a 45° envelope control, allowing a roof height limit of 6m.

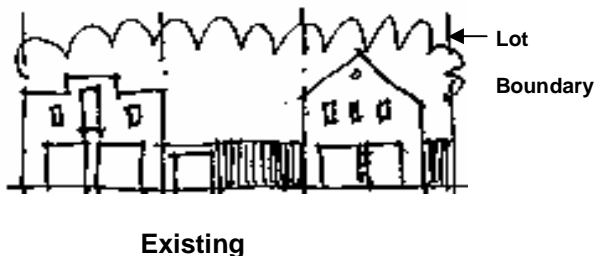


Existing



Envelope for Infill

- For wide lanes the proposed development shall have a height consistent with surrounding development or be a height that is an intermediate between two abutting buildings.



Existing



Envelope for Infill

### Access

- Vehicular, pedestrian and servicing access (including garbage collection), where existing, must be retained to the rear of all existing properties and dwellings,
- New development shall not result in increased laneway parking and the potential to provide car parking space(s) must be retained.
- Where the proposal incorporates a dwelling on the lane, separate pedestrian access to the lane must be provided directly into the new dwelling.

### Security

- Entrances to dwellings shall be provided with overhead lighting.
- The placement of windows on the lane frontage is encouraged for the purposes of street surveillance.

### Landscaping

- Trees more than 6m in height which make a significant contribution to the lanescape must be retained.
- Where natural rock outcrops or rock cuttings are visible from the lane, these must be preserved in their natural or existing state.
- Side gardens adjacent to buildings shall be included where appropriate.



## B4.4 Development Type 4 Foreshore development

### Principles

*Design foreshore development to present a coherent waterfront vista which is compatible with the appearance of the existing foreshore.*

*Ensure the development does not detract from the amenity of neighbouring residents or have a detrimental impact on the views to or from the foreshore.*

### Rationale

Foreshore development comprises not only residential dwellings and extensions but associated ancillary development often associated with the waterfront location, such as boat sheds, jetties and launching ramps. All this development can impact detrimentally on the appearance of the foreshore from the water. The foreshore is an environmental feature which crosses many Local Government Areas boundaries. These boundaries should not be distinguishable when viewed from the Harbour and Parramatta River. It is therefore important to preserve this shared amenity and ensure that the continuity and visual coherence of the foreshore is maintained.

### Guidelines

Due to the publicly visible nature of development on the foreshore the sensitive and sympathetic design of buildings and structures is imperative. Building form, scale and setting, and elevations and materials should be given particular attention.

Works or development below mean high water mark may require consent from the port authority.

### Controls

- **Respond to foreshore topography. Design sensitively to preserve and enhance the natural features and vegetation, and minimise the intrusion of built structures.**



- **Limit the scale, building form and overall visual impact of development that affect the foreshore and adjacent dwellings.**
- **Design to achieve shared views, maximising the number of residents who can benefit from a view. Maintain views from public roads and public spaces.**
- **Where development is permissible under clause 34 of Leichhardt LEP 2000, design low scale buildings with minimum impact on the foreshore setting. Design 'light' structures using steel, glass and wood. Avoid the use of bulky or 'heavy' structures and materials.**







## B4.5 Development Type 5

### Conversion of existing non-residential buildings

#### Principle

*Encourage re-use of the non-residential buildings in residential zones for either residential or community purposes.*

#### Rationale

Leichhardt's *TownPlan* advocates the recycling of buildings in the interests of Ecologically Sustainable Development and energy efficiency. This requires an approach to regeneration and building utilisation that embodies the principles of 'Long life, low energy, loose fit'.

Where non-residential buildings can no longer be used for the purpose for which they were built, alternative uses should be sought.

Non-residential buildings in residential areas provide a valuable supply of land that can be used for development which is complementary to residential areas. Given the need to retain existing residential building for dwellings, non-residential buildings should be utilised for purposes which are permissible with consent in the residential zone.

#### Guidelines

Whilst all the design elements should be considered in the process of re-using existing buildings, innovative design techniques may be necessary to achieve the principles.

Council encourages the use of non-residential buildings for conversion to:

- **boarding houses;**
- **child care facilities;**
- **community facilities;**
- **educational establishments;**
- **places of public worship;**
- **hospitals;**

having regard to the design elements controlling amenity, ecologically sustainable development and urban form and design.

Minimise the amount of demolition undertaken in the reuse of buildings.

Maximise the recycling of site and building materials.

Integrate a mix of uses into the building, especially at ground level, whilst ensuring that residential amenity is maintained and the uses are easily and effectively serviced.

Development will need to respect the visual privacy of gardens, courtyards, balconies and habitable rooms of adjacent dwellings. Specific attention may need to be focused on visual privacy and addressed in an innovative manner without compromising the appearance/character of a building.

In the adaptation of existing buildings for residential use, maximum private open space should be provided in the form of courtyards, balconies, roof gardens and communal open space. Due to layout constraints, building reuse may require a design approach that provides private open space at standards below those set out B4.1 of this Plan.

Maximise solar access to the living spaces of all dwellings. If orientation and limitations in the adaptation of the building fabric dictates, and justification is provided, solar access may be provided at standards below those set out in B3.1 of this Plan.

Where existing buildings have a deep floor plan, the subdivision and design of deep spaces requires an energy efficient approach to ventilation. Natural ventilation methods should be used such as cross or stack ventilation, by incorporating atria and courtyards.



Council encourages the installation of centralised gas-boosted solar water heater systems, with separate meters for each dwelling.

Integrate garbage bin and waste recycling areas, mail boxes, outdoor drying areas and external storage facilities into the overall development, with convenient access for residents.

### Controls

- For specific controls, see Clause 19(5)  
LEP 2000 – Building Conversion and Adaptation





## B4.6 Development Type 6 Residential development in business areas

### Principles

Enhance the vitality and safety of business areas by increasing residential activity.

*To Promote Ecologically Sustainable Development by allowing services and employment uses in proximity to residences.*

### Rationale

By providing housing in business areas the need for car travel is potentially reduced. The proximity of places of work, leisure and services to residences improves quality of life, enhances the vitality and improves the safety of business areas which would otherwise be devoid of activity. These factors in turn contribute to a more ecologically sustainable environment.

### Guidelines

When designing residential development for integration into business areas, the emphasis of each design element in relation to 'residential amenity' may change. For instance, there may be greater potential for access to views without the loss of privacy to neighbouring residents. However, there may be less potential for the provision of ground floor private open space. Acoustic privacy becomes paramount and solar access will often require innovative design solutions.

The re-use of shop-top housing is encouraged.





## Controls

- Ensure separate and clearly defined dwelling entries where mixed use development is proposed.
- Innovative design solutions such as central light wells / atria and articulated facades should be incorporated to maximise solar access.
- No car parking should be provided.
- Design new development to allow conversion to other uses.
- Noise insulation measures should be incorporated into all development with particular attention to shared ceiling / floors and walls and mixed use development.
- Residential development should be integrated with business development and not developed as separate 'enclaves' within a business zone.



## B4.7 Development Type 7 Diverse and Affordable Housing

### Principles

*Encourage a mix of housing types to match the housing needs of the diverse social and economic groups who wish to live in Leichhardt.*

*Provide incentives for the provision of affordable housing in the form of rental and boarding house accommodation.*

### Rationale

The provision of diverse and more affordable housing assists Council's strategy for maintaining a historical mix of dwellings and household types in the Leichhardt area. The controls set out below were derived from a Triple R' housing study, which investigated mechanisms by which Council can improve housing choice, cost, accessibility and security of tenure for local households.

Diverse and affordable housing controls have been developed in recognition of recent development trends in the Leichhardt area, where large sites are being developed for relatively large, well-appointed housing for wealthier groups of the community. Such developments do not account for future changes to demographic, economic and social trends. This rigidity of design limits the 'lifespan' of a house and it is for this reason that the following guidelines and controls should be incorporated into the design of new housing.

### Guidelines

**Diverse housing** encompasses housing which, because of type and size, can satisfy the needs of diverse household types. This is achieved through dwelling mix requirements.

Diverse housing also includes the development of adaptable housing in accordance with the provisions in Council's DCP No. 32 - Design for Equity of Access, and Australian Standards 4299 (1995). Adaptable housing is a flexible design

concept which has the potential to meet a broad range of housing needs. Adaptable housing is specifically designed to be easily modified at a later stage to cater for an occupant, or visitor who may become frail, develop a disability or has an existing disability which may worsen progressively.

**Dwelling mix** requirements ensure new housing reflects the mix of household sizes currently found in Leichhardt, as a means of retaining Leichhardt's diverse social mix.

Larger dwellings should have layouts that are able to be adapted to suit a variety of household types.

### Design suggestions:

- Have at least 2 bedrooms of similar size and amenity.
- Separate bedrooms by built-in wardrobes, hallways, bathrooms or other non-habitable rooms so as to reduce noise transmission between bedrooms.
- Provide more than one living room or living/kitchen/dining areas that can be functionally divided.
- Design the basic shell of a dwelling to allow each occupant to have fit outs designed to their own needs.
- Design ground floor dwellings to allow access by people of limited mobility.
- Avoid public areas of the site that are only accessible via steps and steep gradients.

### Controls

- **Ensure adaptable housing is designed in accordance with Council's DCP No. 32 - Design for Equity of Access and Australian Standard 4299 (1995).**
- **Ensure housing meets the requirements of Clause 19(6) Diverse Housing and Clause 19(7) Adaptable Housing in Leichhardt LEP 2000.**