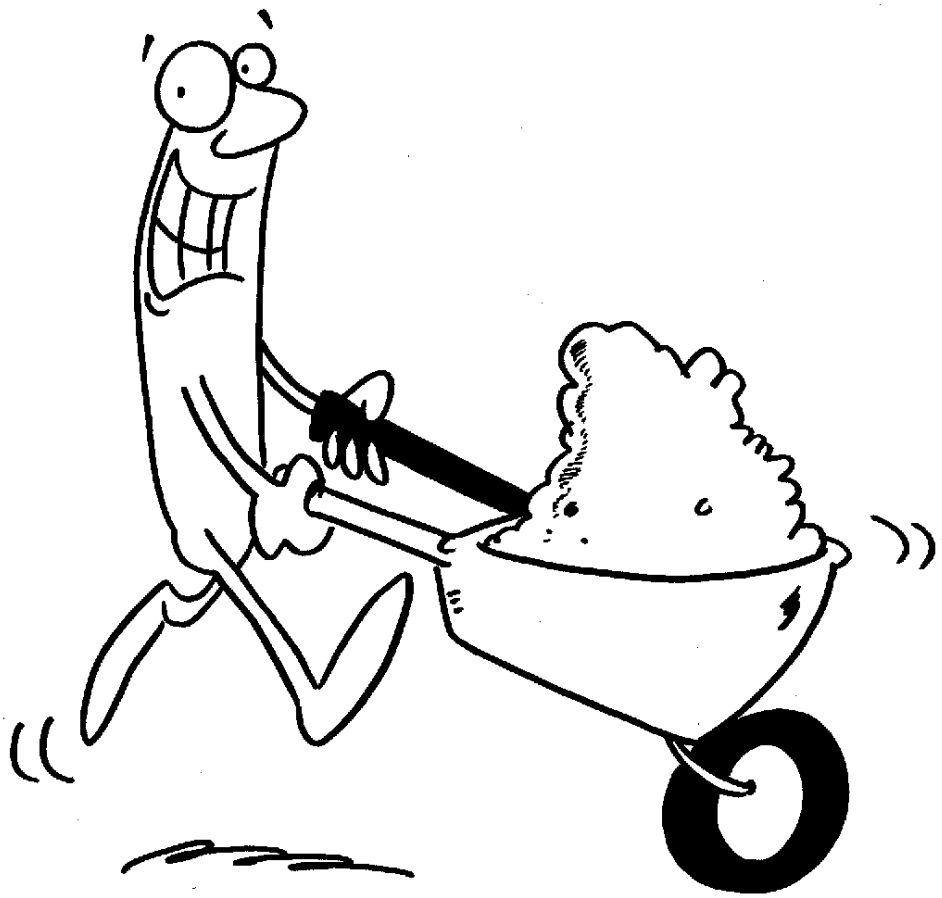
PART C

GENERAL GUIDELINES

CONTENTS
Part C

Chapter 1

LANDSCAPING



1.1 LANDSCAPING OBJECTIVES

The objectives for this chapter are to:

- encourage the enhancement of the natural, cultural and built environment;
- outline the landscaping requirements relating to all forms of development;
- encourage the recognition of climatic influences and the incorporation of landscaping design features to enhance or modify the climatic factors relating to the site;
- encourage the design of low maintenance landscaping;
- integrate development into the landscape to minimise the impact on the natural environment; and
- provide for landscaping which allows freedom of access and mobility.

1.2 LANDSCAPING REQUIREMENTS

A landscape concept plan is required for most developments in the Hawkesbury. The landscape plan is to be prepared by a suitably qualified person, and must incorporate the requirements detailed below.

1.2.1 Existing Environment

Climate Control

Landscaping should attempt to enhance and reinforce positive climatic influences and minimise the impact of adverse climatic features.

Existing Vegetation

Landscaping should retain, protect and enhance existing native vegetation. Maximum advantage should be taken of existing mature trees and shrubs on the site and these should be incorporated into the overall landscape strategy.

During construction, all trees and stands of vegetation which are to be preserved, should be protected by temporary staking or fencing which shall be the drip line of the tree, to ensure root and trunk damage does not occur as a result of machinery movements or storage of building materials.

Long-Term Maintenance

The use of environmentally suitable, low-maintenance species is encouraged. That is, primarily indigenous native species endemic to the locality which are hardy, drought-resistant, and, in some cases, salt-tolerant and best adapted to the conditions of the site.

Maintenance requirements should be minimised by utilising design features such as mowing edges, walls and the installation of watering systems where appropriate.

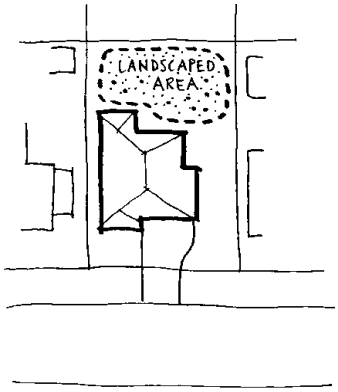
1.2.2 Proposed Landscaping

Area

Other sections of this DCP identify the amount of areas required for different developments to be provided as open space.

A major proportion of the total amount of open space required shall be provided as a single parcel with suitable dimension to accommodate its use.

Figure C0.1 Landscaping area

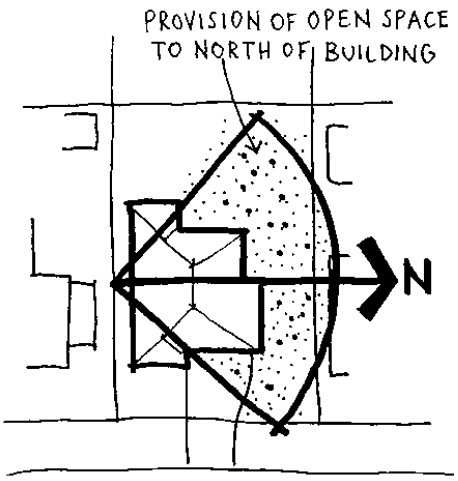


Location

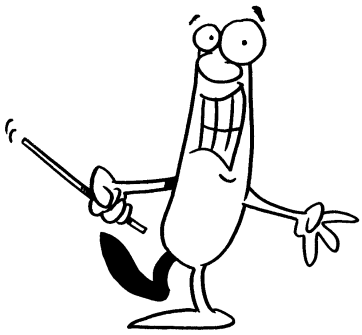
The main parcel of recreation space should be located on the northern, north-eastern or north-western sides of residential buildings in order to achieve the optimum solar aspect, to avoid winter shadow and exposure to cold winds, and to ensure that such space is usable all year round.

On larger sites where the topography may include southerly slopes or areas shaded during winter months, such areas should not be used to locate the main open space parcel or parcels. However, in some localities experiencing adverse northerly winds, protected south-facing courtyards may have merit.

Figure C0.2



In the case of caravan parks and tourist development, the main open space parcel shall be located close to caravan or unit sites, but shall be separate from internal roads to ensure safe conditions for children with respect to traffic.



Planting Considerations

The detailed landscape design should take into account the placement of evergreen and deciduous tree species to ensure winter sun penetration into buildings and outdoor open space/recreation areas.

Where there are existing native trees on the site, the planting should include a proportion of similar species so as to retain the character of the area.

Landscaping should include a suitable proportion of trees, other than palms, in order to:

- reduce the visual impact of buildings;
- shade their western elevations from the hot afternoon summer sun;
- promote privacy between sites; and
- provide shade for car parking areas, outdoor recreation areas, and children's play areas.

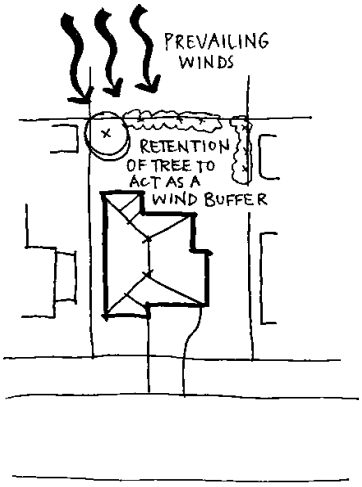
Planting of trees in straight lines should generally be avoided. Planting should be in clumps with a mix of suitable trees, shrubs and ground covers.

Shrub masses should be used to reduce the visual impact of parking and service areas, and to act as windbreaks and privacy screens for outdoor open space areas.

Wind Buffers

Existing stands should be retained as wind buffers. Where clearing is necessary, it should be undertaken only in a direction at right angles to the prevailing winter winds.

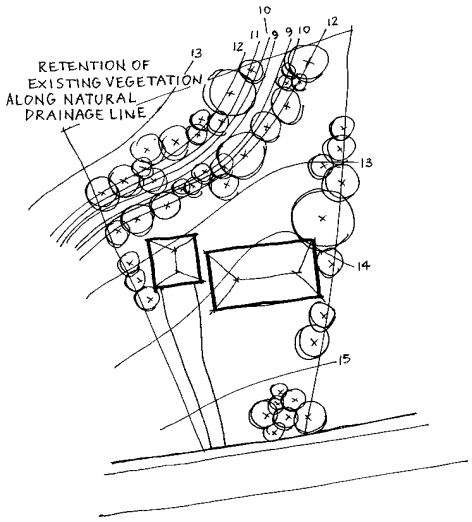
Figure C0.3



Drainage

Existing vegetation should be retained along natural drainage lines and supplementary planting should be considered, to reduce moisture levels and lower stormwater velocities, thus reducing the possibility of erosion of top soil.

Figure C0.4



Treatment

A minimum of 50% of the main open space parcel shall be suitably treated, provided with outdoor furniture and equipment, and screened where necessary, to provide outdoor seating, recreation and children's play areas, where appropriate to the development, to Council's satisfaction.

Screening

Suitable screen fencing will be permitted, where appropriate, to ensure privacy and clothes drying areas and to block out undesirable views. Screen walls may be constructed of brick, timber or other approved materials and shall be suitably designed to achieve integration with the overall landscape treatment.

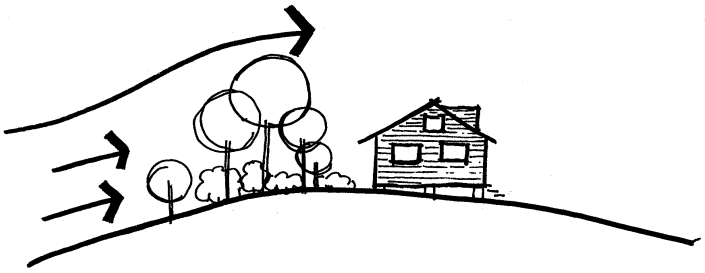
Climate

A site's microclimate is directly affected by a combination of the prevailing climatic conditions such as the site's aspect (the direction it faces), the topography, the vegetation and the structures. With due consideration to the prevailing weather conditions, landscaping can effectively control climatic impacts on buildings and outdoor spaces.

Wind Control

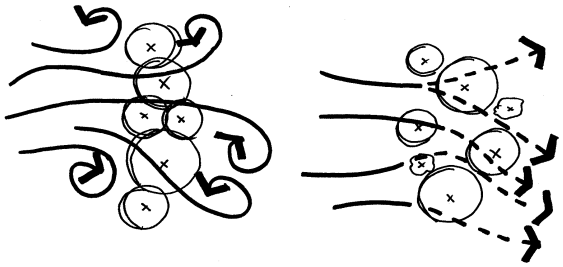
Landscaping should protect buildings and outdoor spaces from unfavourable and cold winter winds.

Figure C0.5



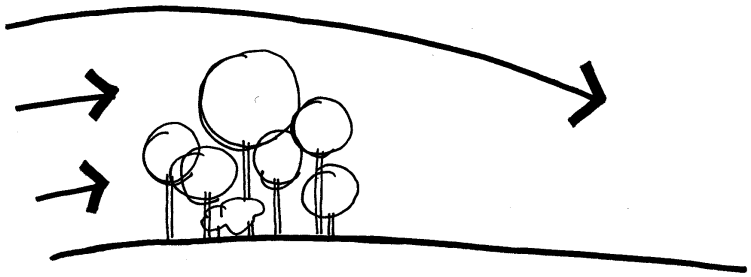
A moderately penetrable shelter belt (60% solid, 40% opening) is the most effective in protecting from unfavourable winds. If it is too dense it will cause turbulence.

Figure C0.6



A good windbreak will give protection over a distance equal to at least eight times its height.

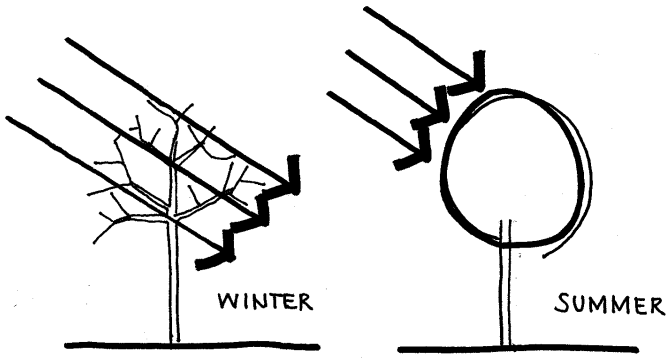
Figure C0.7



Solar Radiation Control

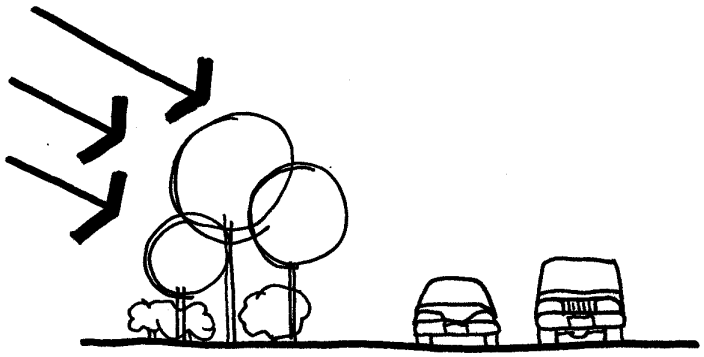
Landscaping should maximise winter sun and minimise summer sun.

Figure C0.8



Landscaping should reduce glare and reflection, particularly off driveways and car parks.

Figure C0.9



In summer the western elevations of buildings should be protected from the afternoon sun with trees of suitable mature height.

Low shrubs, bushes and grasses should be used to reduce the reflection of solar energy from roadways or any other paved surface.

Run-off

Retarding basins can be complemented with planting for extra absorption.

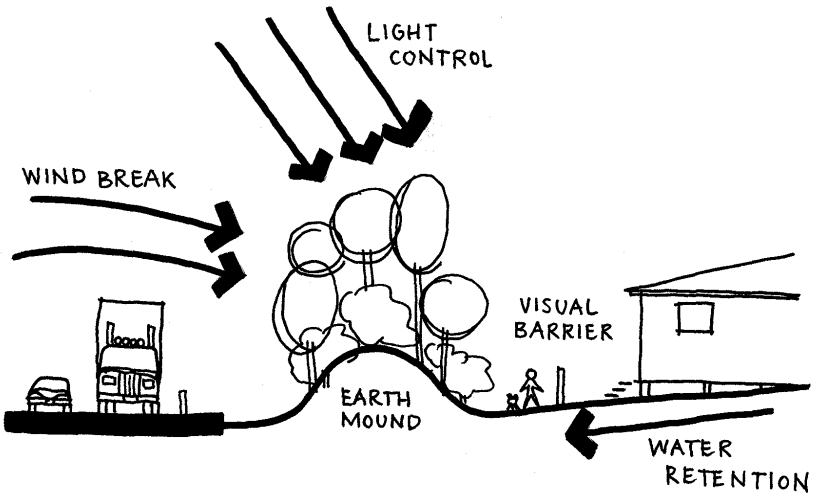
Mounding

Earth mounds can perform a variety of functions including:

- screening;
- buffer strips;
- barriers;
- design features;
- water retention;
- noise reduction;
- light control; and
- windbreaks.

Wherever utilised, mounds should form an integral part of the landscape strategy.

Figure C0.10



Typical Mound Detail

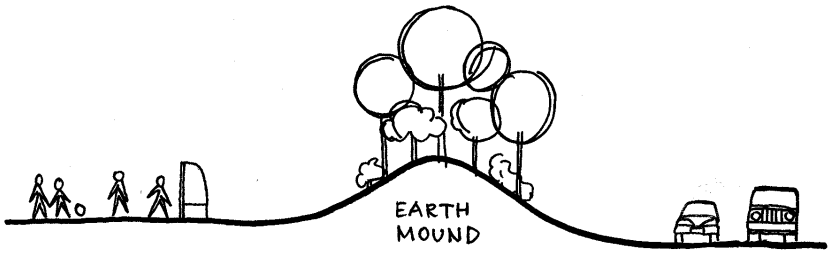
Mounds must be stabilised by appropriate planting to avoid erosion. Use mulch and ground cover for moisture retention and stability. Soil should have good moisture holding capacity. Mounds which are to be turfed should have slopes not exceeding 1 in 3.

Car Park Mounding

The following detail illustrates the use of mounding to contain effectively noise and car headlights in a car parking area.

Provided mounds are densely planted, they will also act as a pedestrian barrier.

Figure C0.11



Drainage Retardation

Mounds or weirs can be incorporated into minor (non-permanent) drainage lines as landscape features, and restrict water flow during storms.

Noise

Landscaping creates a natural buffer for machinery noise and adds to the amenity of the area.

Pedestrian Access

Landscaping should aim to provide a streetscape environment that encourages people to walk or cycle.

Pathways and laneways should create a series of attractive experiences while ensuring safety and surveillance is not compromised.

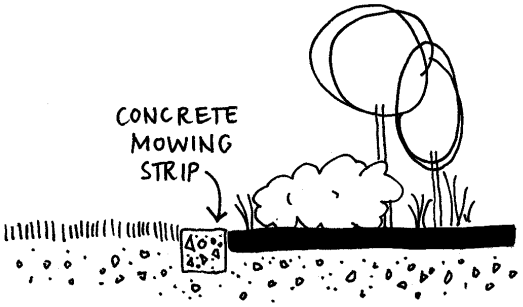
Pedestrian crossings can be used to highlight access points and perceptually emphasise the pedestrian environment.

Edging

Grassed areas should be separated from garden beds with suitable garden edging.

Mowing strips of concrete, brick or timber should be constructed to facilitate ease of maintenance and to enhance appearance.

Figure C0.12

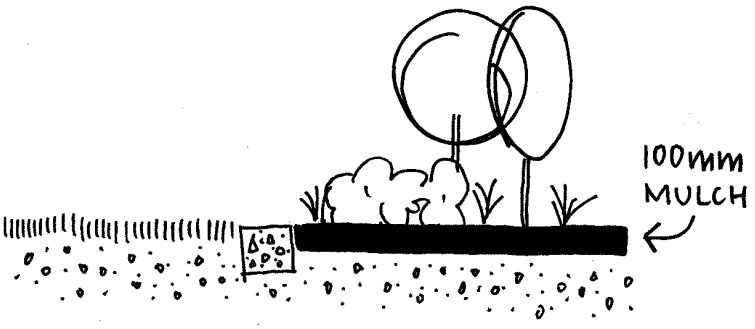


Mulching

All planting beds and mounds are to be mulched with suitable material to a minimum depth of 100 millimetres. These areas should then be over planted with suitable ground covers to create a living mulch.

The use of black plastic or similar impermeable membranes on planting beds is not acceptable, as it interferes with air and water entering the soil.

Figure C0.13



Irrigation

Irrigation systems such as trickle, drip or spray are recommended as they minimise maintenance.

Staking

Staking is not required if healthy young plants are provided. Staking may be advisable when planting in a windy location or where large container plants are being transplanted.

Hessian strips should be looped loosely around the trunk and staked in a figure eight to allow some sway movement, thus encouraging root

growth.

Fertilising

Many native plants are adapted to conditions of low soil fertility, such as species (Banksia, Grevillea and Hakea). Care should be taken when fertilising these types of plants, and only fertilisers with low phosphorous content should be used.

Species Variety

While some species will grow in full sun or fairly exposed in areas, other factors such as soil type and drainage may limit their use in certain situations. In these cases it may be more appropriate to select plants native to the Hawkesbury area.

To assist with the choice of suitable species, Appendix D in this DCP includes a categorised species list. Species and varieties have been identified along with other information relating to habitat and growing conditions.

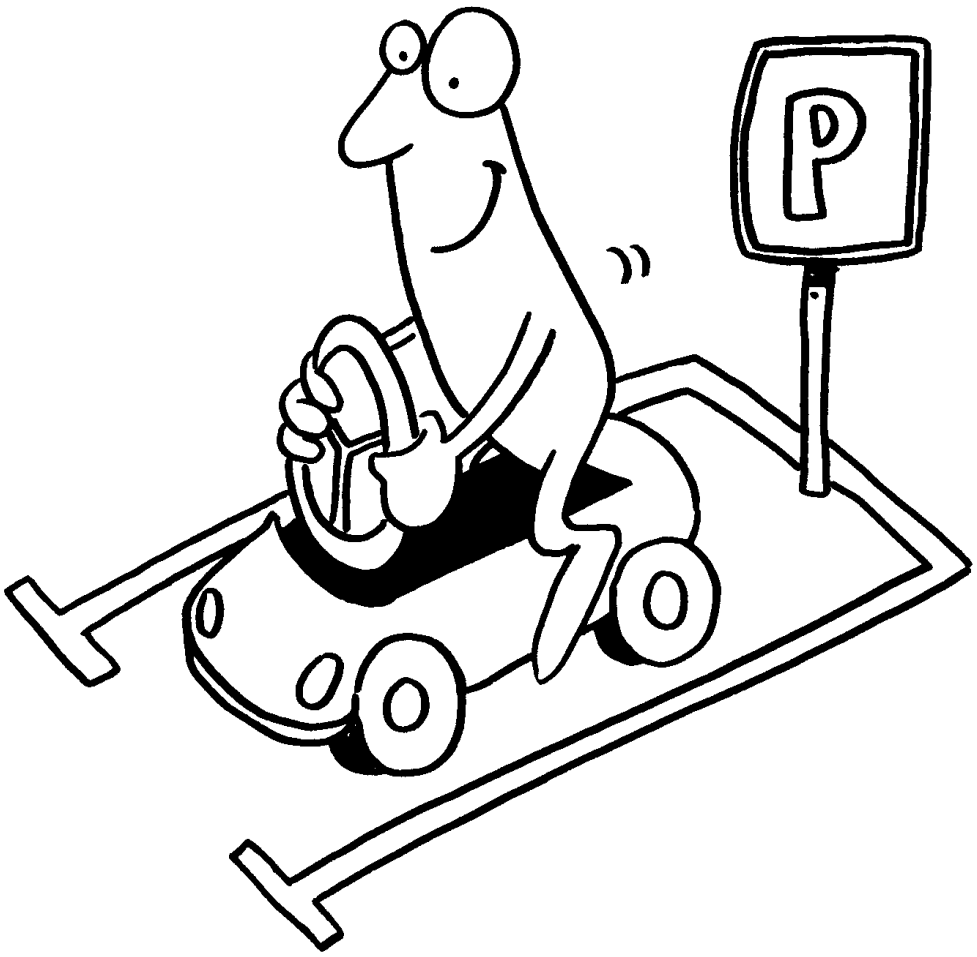
Access and Mobility

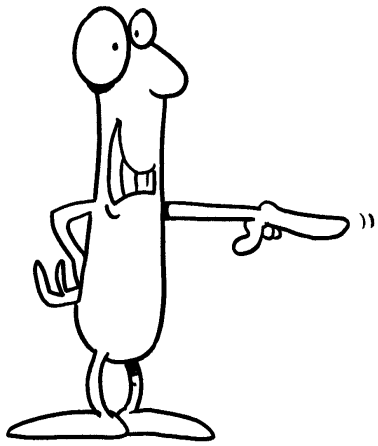
Landscaping design shall allow for easy access for people dependent on walking frames, wheelchairs and pushing prams. Designs shall include:

- location and design of designated vehicle parking bays;
- grades and widths of access paths and ramps;
- outdoor furniture and other fixtures; and
- reference to Australian Standards.

Chapter 2

CAR PARKING AND ACCESS





2.1 CAR PARKING AIMS

This chapter aims to:

- ensure that adequate and convenient off-street parking facilities are provided for all vehicles generated by new development;
- encourage the efficient flow of traffic through car parks and to minimise the potential for pedestrian/vehicle and vehicle/vehicle conflict;
- ensure minimum of interference to the flow of traffic on the street network; and
- ensure adequate traffic safety and management and to improve the amenity of car parking areas.

2.2 OBJECTIVES

New development is to make provision for off-street car parking to cater for the needs of residents, visitors, employees and service vehicles.

In determining the provision of on-site car parking, Council will take into account:

- the size and type of development and its traffic generation;
- the availability and accessibility of public car parking areas;
- the degree of accessibility by public transport; and
- traffic volumes on the street network, including expected future traffic volumes relating to Hawkesbury road hierarchy.

Within the development site, the location of parking area shall have regard to:

- site conditions, such as slope and drainage;
- visual amenity of the development and adjacent sites;
- proximity of the parking area to any neighbouring residential areas;
- relationship of the building/s to the parking area; and
- relationship of the parking area to the street.

2.3 LANDSCAPING

Landscaping of parking areas is required to provide shade for cars and pedestrians, to lessen the visual impact of expansive paved areas, to enhance the overall appearance of the development and to screen the car park from adjacent development. Refer to Part A Chapter 2 Section 2.6.4 and Part C Chapter 1 of this DCP for Council's detailed landscaping requirements.

2.4 ACCESS CONSIDERATIONS

- Vehicles should enter and leave the site in a forward direction. Ingress and egress to or from a site should be located where they will cause least interference with vehicular and pedestrian movement on public roads.
- The potential for on-street queuing should be eliminated by the provision of sufficient standing area for vehicles entering the car park and loading areas.
- To encourage their utilisation, entrances to parking areas should be located so as to be readily visible and accessible from the frontage road.
- Service vehicle areas should be provided off-street with convenient access. Service areas should operate independently of other areas, and enable vehicles to enter and leave the site in a forward direction.
- Parking areas shall incorporate rational circulation patterns. All parking bays shall be readily accessible and the provision of adequate space for the manoeuvring of vehicles, particularly rigid and articulated heavy vehicles, shall be considered.
- Car parking spaces for people with disabilities should be clearly marked and the surface should be level.

2.5 RULES

Car parking is to be provided generally in accordance with the following standards. Where there are no specific guidelines for a land use or a variation to the standard is sought, a traffic impact statement should accompany the DA.

2.5.1 Residential

Use	Standard
Dwelling House, Dual Occupancy, Villas and Townhouses, and Residential Flat Buildings	▪ 1 covered space per small dwelling (GFA less than 55m2). ▪ 1.5 covered spaces per medium dwelling (GFA 55 to 85m2). ▪ 2 covered spaces per large dwelling (GFA more than 85m2). ▪ For each development containing 3 or more dwellings, visitor parking is to be provided at the rate of 1 space per 5 dwellings or part thereof. For example: ▫ villa development would need 2 visitor spaces; and ▫ a 12 villa development would need 3 visitor spaces.
Boarding Houses and Hostels	▪ 1 space per 5 beds.
Hostels for Aged and Disabled Persons	▪ 1 space per 10 units/beds, plus ▪ 1 space per 2 employees, plus ▪ 1 space for an ambulance.
Self Contained Dwellings for Aged and Disabled Persons	▪ 0.5 space per 1 bedroom dwelling. ▪ 0.85 space per 2 bedroom dwelling. ▪ 1 space per 3 or more bedroom dwelling.
Hospitals, Nursing Homes and Convalescent Homes	▪ 1 space per 5 beds, plus ▪ 1 space per 2 employees, plus ▪ Provision for ambulances.
Note	Consideration will be given to reducing car parking rates for residential development in commercial zones, particularly for 'shop top' housing.

2.5.2 Commercial

Use	Standard
Commercial Premises and Shops, Professional Chambers and Veterinary Clinics	▪ 1 space per 30m^2 of GFA.
Restaurants, Reception Centres and Refreshment Rooms	▪ 1 space per 30m^2 of GFA in commercial zones. ▪ 1 space per 20m^2 of GFA in all zones other than commercial zones or one space per three seats, whichever is greater.
Fast Food Restaurants (free standing)	▪ 1 space per 6m^2 of service area or 1 space per 3 seats, whichever is the greater, plus ▪ 1 space per 2 employees.
Roadside Stall	▪ 5 spaces.
▪ Retail Plant Nursery	▪ 1 space per 200m^2 of site area.
Service Station	▪ 5 spaces per work bay, plus ▪ 1 space per 30m^2 of ancillary retail floor space.
Outdoor Display and Sales Areas (car showrooms, sale of boats, caravans, trucks, agricultural machinery etc)	▪ 1 space per 250m^2 of sales/display area, plus ▪ 1 space per 2 employees.
Motel	▪ 1 space per unit, plus ▪ 1 space per employee, plus ▪ where a restaurant/function room is included 1 space per 10m^2 of service area, or 1 space per 3 seats, whichever is the greater.
Hotel and Licensed Club	*Service/Bar Area* ▪ 1 space per 10m^2 of service area/bar area, plus ▪ 1 space per 2 employees. *Accommodation* ▪ 1 space per bedroom or motel type unit.

2.5.3 Industrial

Use	Standard
Industry, Factory, Warehouse, Bulk Stores	▪ 4 spaces for all development up to 300m^2 of GFA, then 1 space for each 90m^2 of GFA or part thereof, in excess of 300m^2.
Factory Units	▪ 4 spaces for each unit up to 300m^2 of GFA, then 1 space for each 90m^2 of GFA or part thereof, in excess of 300m$^{2.}$
Car Repair Station	▪ 5 spaces per work bay.
Wrecking Yard	▪ 1 space per 200m^2 of site area. ▪ When largely contained within a building, requirement is 1 space per 40m^2 of GFA.
Bulky Goods Retailing	▪ 1 space per 40m^2 of GFA.

2.5.4 Recreational

Use	Standard
Bowling Alley	▪ 3 spaces per lane.
Squash Courts	▪ 3 spaces per court.
Tennis Courts	▪ 5 spaces per court.
Bowling Club	▪ 30 spaces for first green, ▪ 15 spaces for each additional green.
Gymnasium	1 space per 25m^2 of GFA.

2.5.5 Other Land Uses

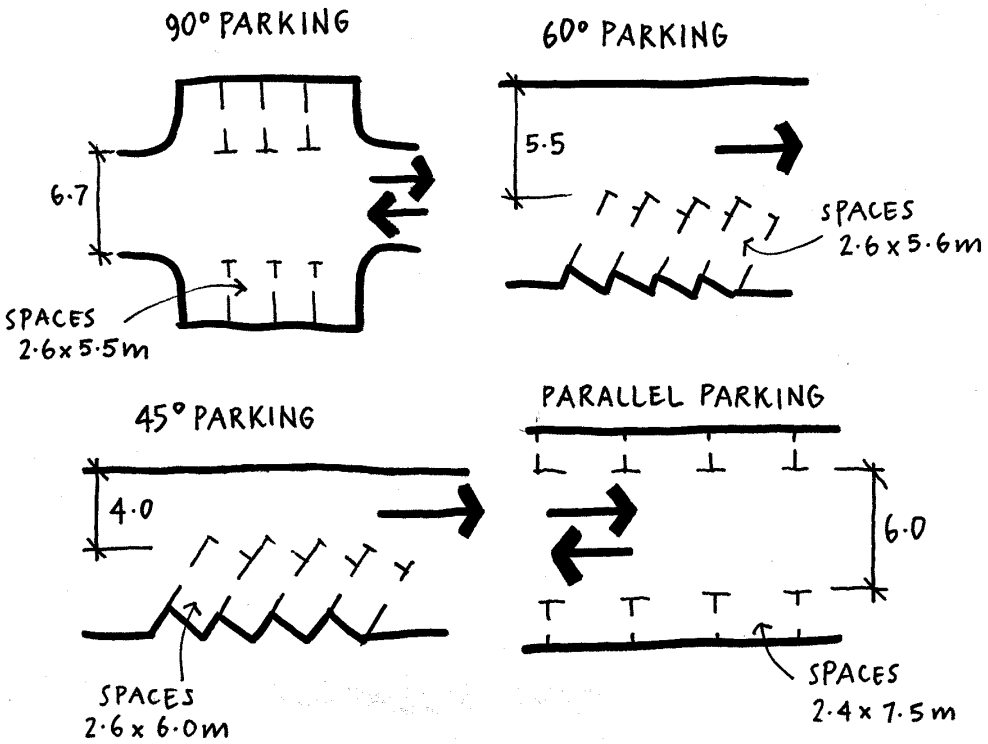
Use	Standard
Caravan Parks	▪ 1 space per caravan/camping site, plus ▪ 1 visitor space per 10 sites or part thereof.
Church, Church Hall, Places of Worship, Funeral Parlour and Mortuary	▪ 1 space per 5 seats.
Schools and Educational Establishments	▪ 1 space for each staff, plus ▪ space for delivery vehicles and buses, plus ▪ 1 space per 5 seats or 1 space per 7m^2 of floor area in assembly hall, whichever is greater, plus ▪ 1 space per 3 Year 12 students.

2.6 ACCEPTABLE DESIGN SOLUTIONS

- Minimum dimensions for car parking spaces and aisle widths to be in accordance with the following table and diagram.

Parking Layout	Parking Space Dimensions (metres)	Traffic Flow	Aisle Width (metres)
90O Parking	2.6 x 5.5	Two Way	6.7
60O Parking	2.6 x 5.6	One Way	5.5
45O Parking	2.6 x 6.0	One Way	4.0
Parallel	2.4 x 7.5	One Way	4.0
	2.4 x 7.5	Two Way	6.0

Figure C0.1



- Car parks to provide separate ingress and egress points where more than 50 parking spaces are provided or where traffic turnover is high.
- Driveways to be located at least 1 metre from adjoining property boundaries.
- Driveways to have a minimum width of 6 metres at or in front of the building line except for single dwellings. This may be reduced in width for residential developments behind the building line in accordance with the following table.

Note: The Australian Standard shall not be used in determining design and layout of car parking. Consideration will be given to reduce widths where aisle widths are provided.

Number of Dwellings	Minimum Driveway Width
9 or fewer	3 metres
10 to 20	4 metres
more than 20	5.5 metres

- Where parking spaces are located 90^0 to the driveway alignment, the minimum driveway width adjacent to the space is to be 6.7 metres to allow adequate manoeuvring.

2.7 ACCESS AND MOBILITY

The provision of parking for persons with a disability is to be provided in accordance with Australian Standard 2890.1 – 1993 and the Building Code of Australia. Such spaces shall be located so as to allow convenient and safe access within sites.

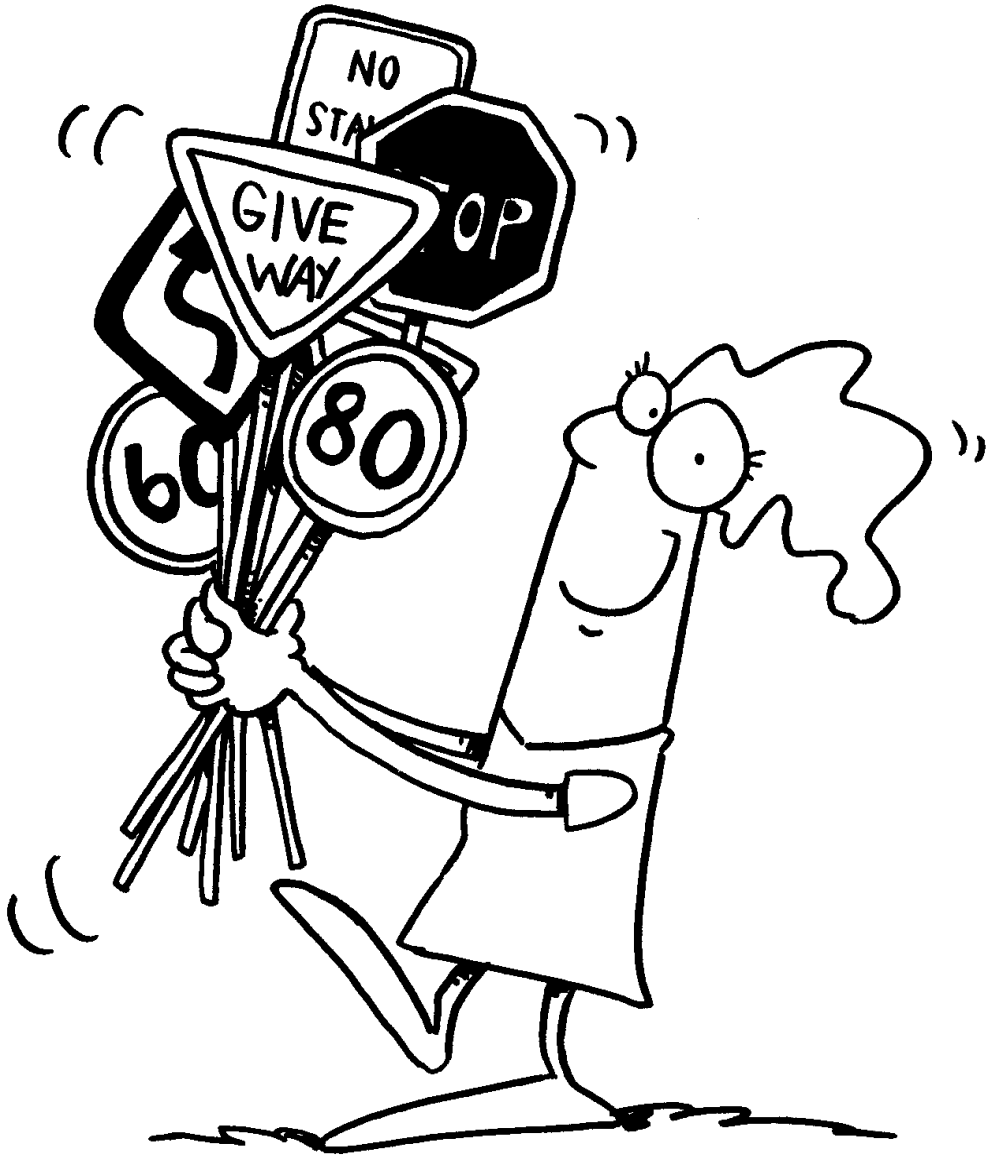
The width of a disabled parking space should allow for the disembarking of either the disabled driver or passenger. The disembarking zone is not to be shared with general pedestrian access. The space should be long enough to allow for the loading/unloading of wheelchairs.

Acceptable design solutions involving car parking spaces for disabled persons are:

- it should be located as close as practicable to and be linked to an entrance of the building, or to a wheelchair accessible lift by a continuous accessible path of travel;
- a firm surface and a fall not exceeding 1 in 40 in any direction;
- a minimum length of 5.5 metres, a minimum width of 3.8 metres and a minimum height of 2.5 metres;
- clearly visible sign incorporating the international symbol of access for disabled people;
- an overlap allowance (maximum 500 millimetres) applies when, parallel to the car parking space, there is an adjoining walkway or similar surface which is:
  - at the same level as the car parking space;
  - firm and level, with a fall not exceeding 1 in 40 in any direction;
  - not another car parking space; and
  - not less than 1,000 millimetres in width;
- a vertical clearance of not less than 2,500 millimetres provided from the entrance of the car parking space to a distance of not less than 2,160 millimetres from the far end when entering the space; and
- non-slip or textured paint used for line markings.

Chapter 3

SIGNS



3.1 OVERALL SIGNAGE OBJECTIVES

Appropriate signs identify and promote businesses and buildings, as well as communicate messages. Well designed signs can contribute to the streetscape and assist people to find their way. It is, however, important that signs contribute to the amenity of the area.

Unless specifically exempted from the need for an application, no advertising structures shall be erected, displayed or affixed on any building or land without the prior approval of Council. Signage also needs to comply with the requirements of State Environmental Planning Policy No.64 - Advertising and Signage.

The general objectives for signs in Hawkesbury are to:

- allow signs that add to the character of the streetscape and complement the architectural style and use of the building;
- encourage suitably located signs that provide legible and clear messages;
- encourage well designed and located signs that contribute to the streetscape and the site on which it is proposed;
- avoid visual clutter through the proliferation of signs; and
- consider the amenity of the area and the visual quality of the public domain.

3.2 SIGNS IN COMMERCIAL AND INDUSTRIAL ZONES

Aim

- To permit adequate business identification and advertising to identify the nature of the business conducted on the premises.

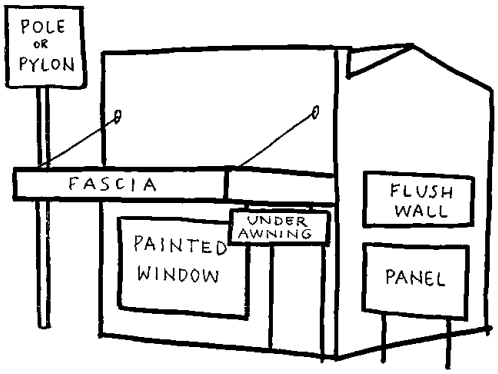
Objectives

- The design and location of signs are to:
  - be integrated and in proportion with the architecture and structure of the host building;
  - be placed to ensure that architectural features of the building, views or vistas are not obscured;
  - consider existing signs to avoid visual or physical clutter; and
  - avoid obstruction of pedestrian access or line or sight of vehicular traffic.
- Signs shall be simple, concise and uncluttered in appearance. Emphasis should be on clarity of communication.

- Advertising other than real estate signs shall relate to the use occurring on the respective property.
- A common structure for signage shall be provided for multi unit developments.
- Directional signage should be located in a convenient point close to the main entry to the development.

Rules

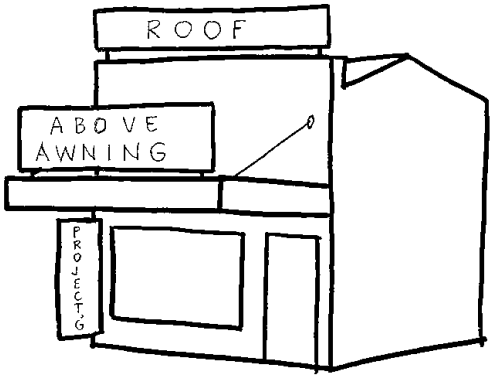
Figure C0.1 Acceptable signage



Signs that are generally acceptable are:

- under the awning signs;
- painted window signs;
- pole or pylon signs up to 6 metres in height;
- fascia signs - signs attached to the fascia or return of an awning;
- flush wall signs - attached to the wall of a building and projecting not more than 300 millimetres;
- top hamper signs - attached to the transom of a doorway or display window of a building.

Figure C0.2 Unacceptable signage



Signs that are unacceptable are:

- pole or pylon signs above 6 metres in height;
- roof sign - signs erected on or above the roof or parapet of a building;
- above awning signs - signs attached to the upper side of an awning);
- horizontal projecting signs - attached to the wall of a building and projecting more than 300 millimetres horizontally;
- vertical projecting signs - attached to the roof of a building and projecting more than 300 millimetres vertically;
- moving, blinking or flashing signs; and
- fin signs - signs erected on or above the canopy of a building.

Compliance with the requirements of State Environmental Planning Policy No. 64 - Advertising and Signage.

3.3 SIGNS ON HERITAGE ITEMS

Aim

- To ensure the design and location of signs on heritage items does not detract from the heritage significance of the building or streetscape.

Objectives

- All signs on heritage items are to be carefully designed and placed to ensure the heritage integrity of the building is not compromised.

Rules

(a) Above awning or projecting wall signs are unacceptable.

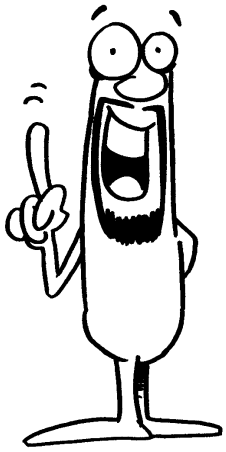
3.4 SIGNS IN RESIDENTIAL, RURAL AND SCENIC PROTECTION ZONES

Aim

- To limit signs in the residential, rural and scenic protection zones in Hawkesbury, while permitting adequate opportunity to display and identify the nature of activities being carried out on the land to which the sign is erected.

Objectives

- Generally, advertising signs are discouraged in residential rural and scenic protection zones.



Rules

(b) In the following instances Council may permit signs:

- real estate signs that comply with Section 3.5 of this chapter;
- a sign directing the travelling public to tourist areas or displaying private advertisements for tourist accommodation or other tourist facilities; and
- a sign indicating the purpose for which the land is used. These signs shall be restricted to:
  - one sign per property,

- a height of 2.5 metres above ground level, and
- a maximum area measuring 0.75m^2. Double sided or "V" signs may be permitted where considered appropriate, with each face being restricted to 0.75m^2.

3.5 REAL ESTATE SIGNS

Real estate signs are defined as an advertisement which indicates that the land, building or other structure to which it is attached is for sale, rent, auction or to be disposed of by some other means.

Objective

- To provide for the transaction of property on a temporary basis.

Zones	Rules	
Residential	(a)	One double sided or "V" sign measuring no more than 0.75m2 for each face inside the property boundaries or positioned hard up against the front boundary of the property when located on Council land/road reserve.
	(b)	Signs positioned so as not to obstruct any pedestrian access or line of sight for vehicular traffic.
	(c)	Signs are permitted for up to 4 months.
	(d)	Larger signs may be permitted, upon written submissions to, and approval by Council.
Commercial and Industrial	(a)	One double sided or "V" sign, measuring no more than 3.0m2 for each face, inside the property boundaries, or attached to the building being advertised for sale.
	(b)	Signs are permitted for up to 4 months.
	(c)	Larger signs may be permitted, upon written submissions to, and approval by the Building and Development Branch of Council.

Zones	Rules	
Other zones with land size greater than 4,000m2	(a)	One sign measuring no more than 1.2m2 inside the property boundary or positioned hard up against the front boundary where located on Council land/road reserve.
	(b)	Signs are permitted for up to 4 months.

3.6 TEMPORARY SIGNS

Temporary signs for community events may be permitted for a period of 14 days prior to an event, with the written consent of Council. Application is to be made in writing, at least 14 days prior to the date of display, or 28 days prior to an event. If approved, the temporary sign shall be removed within two days of the completion of the event.

The erection of temporary banners on Council owned land and road reserves is allowable on the Council banner poles located in North Richmond and McGraths Hill. Approval for this type of temporary signage shall be sought from the Director of Assets Services and Recreation and shall comply with the Banner Policy adopted by Council.

Details of the location, type of sign and dimensions, together with methods of attachment shall be included in the application, as well as details of the event being advertised.

3.7 SANDWICH BOARD/A FRAME SIGNS

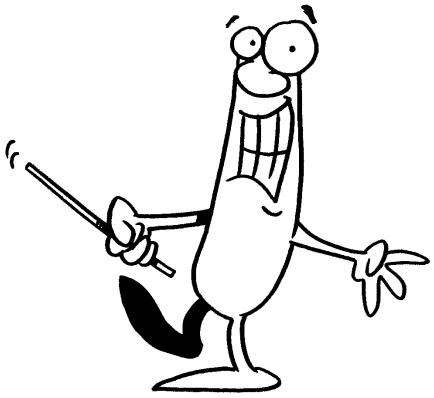
A sandwich board or "A" Frame sign is self-supporting by its own structure, and not mounted on any vehicle, tree, pole, building or the like. These signs are restricted to business and industrial zones.

Location	Rules	
Private Business Property	(a)	The sign is wholly contained within the leased area for the business and restricted to a maximum signage area of 2.4m2 on each of the two faces.
	(b)	Signage of this type shall be restricted to one sign per business.
Public Places and Upon Council Property	(a)	Signs shall have a maximum signage area of 1.2m2 for each of the two faces.
	(b)	Each sign shall be registered with the Council. A registration plate issued by Council shall be permanently affixed to the sign for identification purposes.
	(c)	Each sign shall be covered by a $5 million insurance indemnity, protecting both the owner of the sign and Council jointly. This shall be renewed annually with

Location	Rules	
		evidence of insurance to be provided on an annual basis.
	(d)	Signs shall not obstruct pedestrian access or line of sight for vehicular traffic.
	(e)	Signs shall be located adjacent to the premises gaining advantage from the sign, that is, not outside an extended line from the side boundaries to the gutter or where no gutters exist a distance of 5 metres from the shop or business front wall.
	(f)	Signage of this type shall be restricted to one sign per business.

3.8 PROHIBITED SIGNS

Hawkesbury Local Environmental Plan 1989 prohibits the following signs:

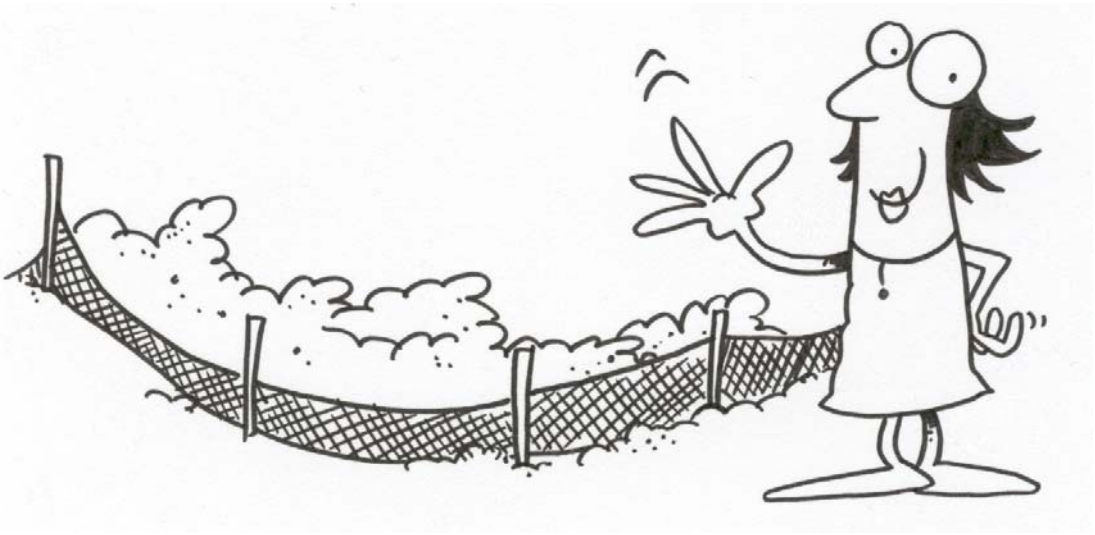


- signs mounted on motor vehicles or trailers (whether registered or unregistered) where the vehicle or trailer is parked in a location of position for a period of time such that its principal function is for the display of an advertisement and not for the transportation of goods or people;
- any 'freestanding portable sign' not being covered by a current insurance policy; and
- any form of advertising sign attached to telegraph poles, trees, street posts or the like.

Prohibited signs will be required to be removed from display upon notification from an authorised Council officer. Should the prohibited sign be displayed after such notification is given, then the sign may be confiscated and disposed of at the waste depot. Alternatively, where the sign is affixed to private property, failure to remove the sign after notification may result in legal action being taken against the person benefiting from the sign.

Chapter 4

SOIL EROSION AND SEDIMENT CONTROL



4.1 INTRODUCTION

Soil erosion and the subsequent sedimentation of waterways and bushland is having a significant effect on downstream areas and receiving waters within the Hawkesbury area. Pollutants are often associated with the sediment, including nutrients and pesticides.

DAs may therefore require the submission of a Soil Erosion and Sedimentation Control Plan (SESCP) or Statement. Such a statement is to clearly indicate how sediment is to be prevented from leaving the site.

Any proposal which will or may involve:

- the disturbance of the existing surface of the earth or placement of fill; or
- changes in the rate and/or volume of run-off entering a watercourse, or flowing over land;

shall be subject to the provision of this chapter of the DCP.

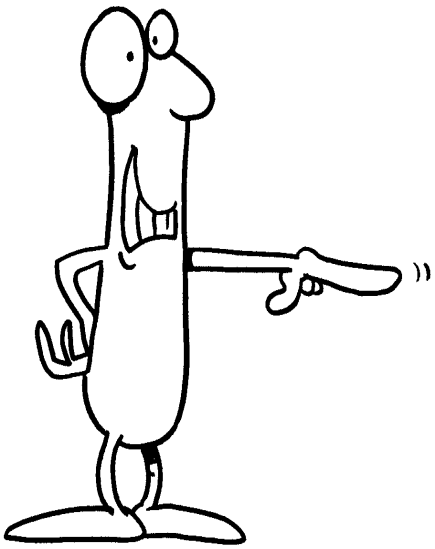
4.2 SOIL EROSION CONTROL OBJECTIVES

Principles of erosion and sediment control are to:

- investigate site features;
- prepare a SESCP;
- save topsoil for reuse;
- control run-off onto, through and from the site;
- use erosion control measures to prevent on-site damage;
- use sediment control measures to prevent off-site damage;
- rehabilitate disturbed areas quickly; and
- maintain erosion and sediment control measures.

4.3 GUIDELINES FOR EARTHWORKS AND EROSION CONTROL

To minimise soil erosion, one or more of the following measures may be required during earthworks:



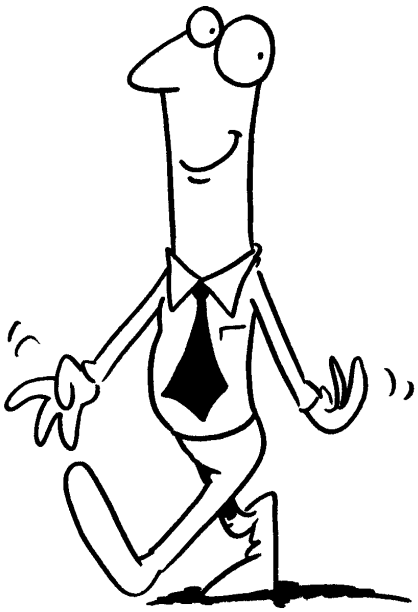
- run-off and erosion controls prior to disturbance or removal of any of site vegetation;
- topsoil from approved areas be stockpiled for re-use during site rehabilitation and landscaping;
- uncontaminated run-off intercepted up-slope and diverted around all disturbed areas;
- run-off detention and sediment interception measures to reduce flow velocities and to prevent topsoil, sand, aggregate, road base, spoil or other sediment escaping from the site or entering any downstream drainage easements or natural watercourses;
- the capacity and effectiveness of run-off and erosion control measures maintained at all times;
- erosion and sediment control devices, as per documented references, installed and maintained to ensure there is no increase in downstream levels of nutrients, litter, vegetative debris and other waterborne pollutants;
- stockpiles of topsoil, sand, aggregate, spoil or other material capable of being moved by running water to be stored clear of any drainage line or easement, natural watercourse, footpath, kerb or road surface;
- measures applied to prevent site vehicles tracking sediment and other pollutants onto any sealed roads serving the development; or
- dust control measures (vegetative cover, mulches, irrigation, barriers and stone) shall be applied to reduce surface and airborne movement of sediment blown from exposed areas.

4.4 GUIDELINES FOR BUILDING PROJECTS

To minimise soil erosion during construction, the following measures may be required:

- a dish diversion drain or similar structure constructed above the proposed site to divert clean run-off to a stable discharge area, with the diversion drain being lined with turf or otherwise stabilised;
- a sediment trapping fence using a geofabric designed for such a purpose and installed to the manufacturers specifications, to be placed below the construction area;
- the owner is to ensure that drains, barriers and accessways are maintained, and will be responsible for the maintenance of such erosion and sediment controls once the building contractor has completed his/her work, until such time as the site is no longer in an erosion-prone state;
- no building or other materials being stored on the Council footway or roadway;
- vehicular access shall be controlled so as to prevent tracking of sediment onto adjoining roadways, particularly during wet weather or when the site is muddy;
- any soil or sediment escape from the building site (from the access point or on vehicle tyres), being cleared off the roadway or gutter immediately to ensure non-entrance to the drainage system;
- downpipes and stormwater drainage being installed and connected to approved disposal systems before the roof has been fixed;
- topsoil from the construction site being stripped, or stockpiled is required to be adequately fenced or stabilised in a location where it will not be eroded from the site;
- cut and fill areas being topsoiled using stored material, or purchased topsoil if required, and vegetated on a temporary basis until final landscaping is undertaken;
- stockpiles of building materials (spoil, sand, etc) surrounded down slope with approved sediment controls;
- trenches excavated during the course of construction being backfilled and turfed or sown with appropriate seed and fertiliser mix as soon as practicable;
- access to the site not being permitted other than by the approved route indicated on the construction certificate;
- hard standing area to be installed before any other works proceed;
- retain existing vegetation and/or install a strip of turf minimum 600 millimetres adjacent to back of kerb; and
- dust control measures shall be applied to reduce surface and airborne movement of sediment blown from exposed areas of construction sites.

4.5 GUIDELINES FOR SITE REHABILITATION AND LANDSCAPING



To ensure that the landscape and scenic quality of the locality is maintained and improved, and to ensure that the completed development will not result in loss of downstream water quality, the following measures may apply:

- the site being landscaped, with all disturbed ground being stabilised;
- on lands where shaping has finished, rehabilitation to be completed within a specified time, usually 20 working days. Where final shaping has not been finished but works are unlikely to proceed for periods of 14 days or more, temporary revegetation works for erosion and sediment control being installed, including use of mulches, annual grasses, sediment fences, etc;
- a detailed landscape plan for the site being submitted for approval, consultation with a qualified landscape architect or designer is recommended. The plan is to be in accordance with *Part C Chapter 1*. Where a construction certificate is not required, the landscape plans are to be submitted with the DA for consideration;
- planting of native trees and shrubs utilising endemic seed collected before clearing of site where deemed appropriate;
- all landscaping works being completed in accordance with the approved landscape plan prior to occupation of premises;
- all landscaping being permanently maintained in a good condition and in accordance with the intent of the landscape plan;
- approval shall be obtained from DLWC prior to the removal or injury of any tree from:
  - land within the bed of or within 40 metres of the top of the bank of the Hawkesbury River or any other river or creek; or
  - land designated "Protected Land" under the *Native Vegetation Conservation Act 1997*.

4.6 APPROPRIATE VEGETATION

To provide quick soil surface stabilisation, either turf or a cover crop of grasses should be immediately established as the work progresses. The following seed types are provided as a guideline only, allowances should be made for the type of flow, either sheet or diverted which may require turf, fabric.

Type	Spring/Summer	Autumn/Winter
Japanese Millet	4kg/ha	-
Couch (hulled/unhulled)	4kg/ha	4kg/ha
Ryecorn/Barley	-	30kg/ha
Red Clover	4kg/ha	4kg/ha
White Clover	4kg/ha	4kg/ha
Wimmera Rye	10kg/ha	-
Perennial Rye	-	10kg/ha
Kikuyu	4kg/ha	-

For medium to long term site stabilisation and protection of the integrity of the surrounding ecology, local native trees and shrub species best suited to the Hawkesbury soils are as follows:

Very Hardy and Suited to Exposed Sites

Snappy Gum	Drooping Oak	Red Bloodwood
Smooth Barked Apple	Yellow Bloodwood	Cypress Pine
Silvertop Ash	Coast Tea Tree	Woody Pear
Mountain Blue Mallee	Stringybark	Dwarf Apple Myrtle
Scribbly Gum	Bottlebrushes	Kunzea
She-Oak	Paperbark	Privet-leaved
Bracelet Honeymyrtle	Coast Rosemary	Stringybark
Bottlebrushes	Narrow Leaved Apple	Round Leaf Tea Tree

Species Suited To Clay Soils And Exposed Sites

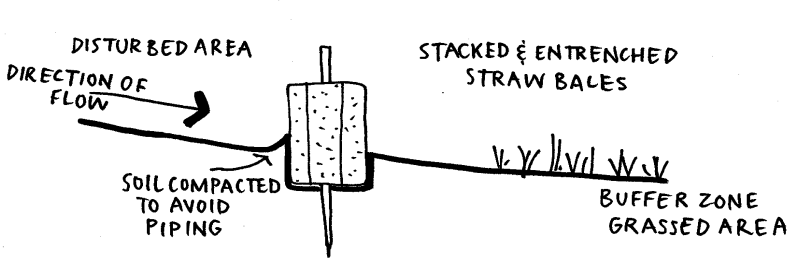
River She Oak	Cedar Wattle	Lilly Pilly
Belah	Forest She Oak	Lemon Scented Gum
Grey Ironbark	Tallowwood	Silky Oak
Brush Box	Ribbon Gum	Paddy's River Box
Turpentine	Kurrajong	Drooping Bottlebrush
Grey Gum	White Cedar	Swamp Oak
Willow Gum	Glory Wattle	She Oak
Westringia	Silver Cassia	Mudgee Wattle

4.7 EXPLANATORY NOTES ON BASIC CONTROL METHODS

Sediment is generated when soil erosion occurs. Prevention of soil erosion, must therefore be the first priority. Temporary sediment control measures most commonly used during urban development include the following:

- **Sediment Retention Barriers** - materials used in their construction include straw bales, geofabric attached to wire fences, geofabric over straw bales, stabilised earth, hessian bags filled with aggregate or dry sand cement mix, etc. Actual choice generally depends on constraints imposed by availability and cost.
- **Straw Bales** - used in temporary situations instead of earth to construct bunds, perimeter banks or catch drains. They will probably need replacement at intervals of less than four months. Users should ensure that they are:
  - bound with wire or plastic rather than twine;
  - placed lengthways in rows, single or twin, with straws parallel to the ground surface;
  - embedded into the soil to a depth on the upslope side of at least 0.1 metre; and
  - anchored securely to the ground by two stakes or pickets driven through the centre.

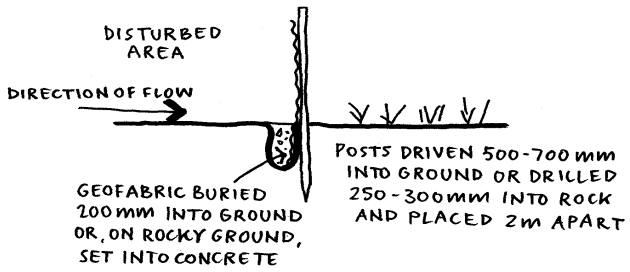
Figure C0.1 Construction of straw bale bund



- **Sediment Fencing** - used instead of bunds. The sediment fence must not be placed outside the property boundary. Installation inside the boundary is recommended as follows:
  - excavate a small (150 to 200 millimetres deep) trench along the line of the fence, ensuring any loose spoil is deposited on the upslope side;
  - geofabric buried 200 millimetres into ground; or on rocky sites set into surface concrete;
  - posts to be at a maximum of 2 metre centres, and driven into ground 500 to 700 millimetres or drilled into rock 250 to 300 millimetres;
  - height from ground level to top of fabric to be minimum 500 millimetres;

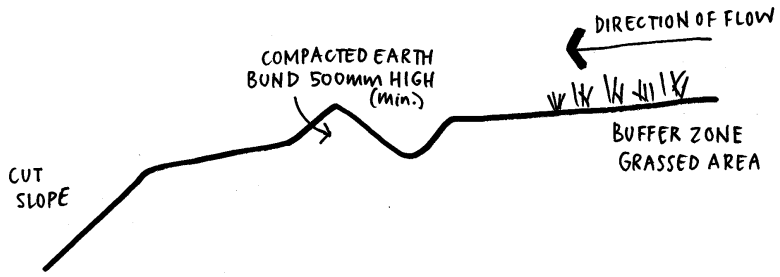
- any joints overlap a minimum 300 millimetres and are either sewn or securely attached to a post; and
- for strength, fabric may be reinforced with chain, weldmesh or wire fence.

Figure C0.2 Construction of geo-fabric lined silt fence



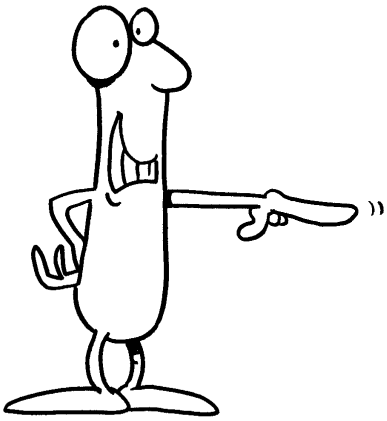
- All erosion and sediment control measures must be regularly inspected and adequately maintained. They must function efficiently until the development is completed and the site rehabilitated.
- Temporary control measures not required after rehabilitation should be removed and the area stabilised and revegetated.
- Permanent control measures will require a long term maintenance strategy to ensure their ongoing efficiency.

Figure C0.3 Use of bunds and channels to divert water from a cut slope



Chapter 5

BUSHFIRE PRONE LAND



5.1 INTRODUCTION

In January 2002, the Rural Fire Service and Planning NSW produced a document called "Planning for Bushfire Protection - A Guide for Council's, Planners, Fire Authorities, Developers and Home Owners".

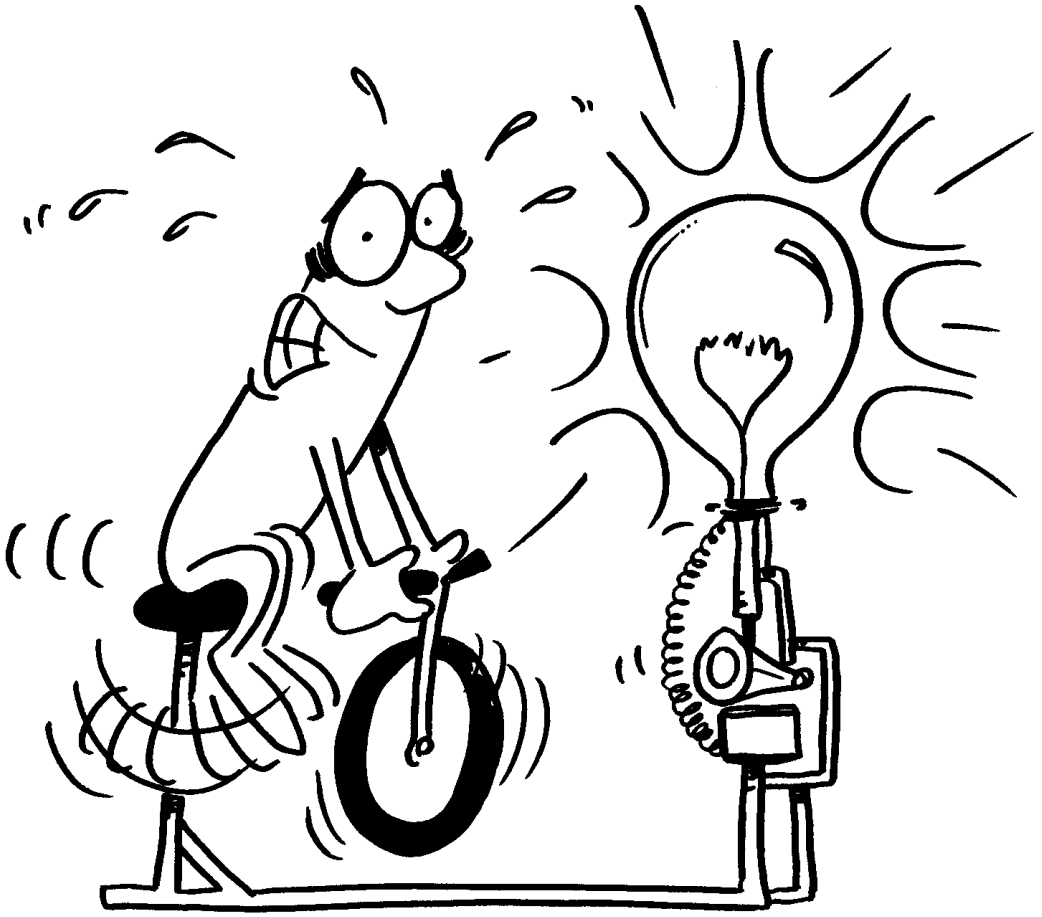
As a result of this document Council's Bushfire Mitigation Policy was repealed and is currently being rewritten. In the interim Council at its Ordinary meeting of 12 March 2002 resolved that development within bushfire prone land is to comply with the relevant provisions of the following:

- Building Code of Australia;
- Australian Standard AS 3959 - Construction of Buildings in Bushfire Prone Areas;
- Planning for Bushfire Protection produced by the Rural Fire Service and Planning NSW;
- The Hawkesbury Bushfire Risk Management Plan, July 2000.

Development must comply with the amendments to the Environmental Planning and Assessment Act and Rural Fire Act (as amended).

Chapter 6

ENERGY EFFICIENCY



6.1 INTRODUCTION

This section of the DCP has been developed as part of the growing community desire to achieve greater efficiency in domestic energy use. It stems from a general concern about the effects of greenhouse gases generated by energy use on the environment and, in particular, global warming.

The DCP shows how energy efficiency can be achieved in all new dwellings and in alterations and additions to existing dwellings. It includes design alternatives, such as passive solar design and solar water heating, that will dramatically reduce the need for non-renewable energy, reducing both costs and air pollution, and increase the level of comfort in the average Australian home.

Energy efficient homes, through their design, construction and choice of appliances, maximise use of renewable energy sources (such as sunshine), and use less energy more efficiently. They are 'smart' because they simultaneously help preserve scarce resources, reduce the level of greenhouse gas emissions, and provide significant savings. This is supported by a recent study by the Australian Consumers Association (July 1997) which estimated that an energy efficient home is almost $1,000 a year cheaper to run than an average new home.

6.2 OBJECTIVES

The objectives in relation to energy efficient homes are to:

- improve the quality and energy efficiency of dwellings;
- contribute positively to an overall reduction in greenhouse gas emissions;
- assist professionals, technicians and tradespersons by providing relevant information and resources;
- create homes that are comfortable and economical to live in;
- foster partnerships between Council, State Government and industry; and
- provide performance criteria and acceptable solutions to cover all aspects of energy efficient residential development in Hawkesbury.

6.3 SUBMISSION REQUIREMENTS

The information required to be submitted with any residential DA is shown in the following table:

Minimum Compilation scores or ratings	
Land Use or Activity Proposed	**Compliance Requirements**
Single dwellings	▪ A certificate from an accredited assessor showing a minimum NatHERS rating of 3.5 stars ▪ Hot water system/s minimum score of 3.5 stars ▪ A certificate from an accredited assessor showing a minimum NatHERS rating of 3.5 stars ▪ Ratings are to be provided for each layout and thermal exposure condition eg: ground floor, middle floor, top floor, corner and middle units ▪ Hot water system/s minimum score of 3.5 stars
Dual Occupancies	▪ A certificate from an accredited assessor showing a minimum NatHERS rating of 3.5 stars plus -Unit Residential Buildings and Shop-Top Developments must submit an Energy Performance Statement (EPS) [refer below] ▪ Ratings are to be provided for each typical layout and thermal exposure condition eg: ground floor, middle floor, top floor, corner and middle units ▪ Hot water system/s minimum score of 3.5 stars ▪ Clothes dryers: 3.5 star greenhouse rating or greater
Multi-Unit Residential Buildings and Shop-Top Housing	▪ A certificate from an accredited assessor showing a minimum NatHERS rating of 3.5 stars plus -Unit Residential Buildings and Shop-Top Developments must submit an Energy Performance Statement (EPS) [refer below] ▪ Ratings are to be provided for each typical layout and thermal exposure condition eg: ground floor, middle floor, top floor, corner and middle units ▪ Hot water system/s minimum score of 3.5 stars ▪ Clothes dryers: 3.5 star greenhouse rating or greater
Subdivision	▪ Designers should ensure that 80% of all lots shall achieve a 5 star rating with the remainder achieving a minimum of 4 stars as defined by an analysis determined from SEDA's "Solar Access for Lots" document. Copies of this document are available from council or SEDA upon request.
Major additions/alterations	▪ A certificate from an accredited assessor showing a minimum NatHERS rating of 3.5 stars
Minor additions/alterations	▪ Wall Insulation [minimum R1.5 rating], ceiling insulation [minimum R2.5 rating] in addition is required.

Energy Performance Statements

Multi-unit and Dual Occupancy development applications must submit a satisfactory Energy Performance Statement [EPS] relevant to the application. The EPS is required to demonstrate how the intent of the DCP has been met and evaluate the performance of the proposal in relation to [but not necessarily limited to] the following issues.

1. The energy ratings of the typical units of the typical units and justification as to why those units chosen are considered to be 'representative'.
2. The levels of solar access achieved to:
   (a) north facing windows
   (b) solar hot water systems or other solar collectors [if relevant]
   (c) clothes drying areas.
3. Energy efficiency influences on the design in general.
4. Energy efficiency influences on landscape design.
5. Justification of hot water system selection.
6. Overshadowing of adjoining properties.
7. Information as required in table above.

6.4 SOLAR ACCESS

Aim

- To preserve solar access to north facing solar collectors, private open space and clothes drying facilities in all residential development.

Objectives

- Full solar access is to be maintained to solar hot water or photovoltaic panels.
- Design so that all north facing solar collectors have in front of them a volume bounded by an imaginary inclined plane, angled up at 30^{o} to the horizontal and two vertical planes 45^{o} either side of the centre-line which is clear of all shadow-forming objects such as trees, garages, neighbouring dwellings.
- Step building heights and setbacks to permit solar access requirements.
- Position solar collectors in areas where no shadows fall (determine through site analysis).

Rules

(a) Solar collectors face 20° west of north and 30° east of north and receive direct sunlight between the hours of 9.00am and 2.00pm on June 21.

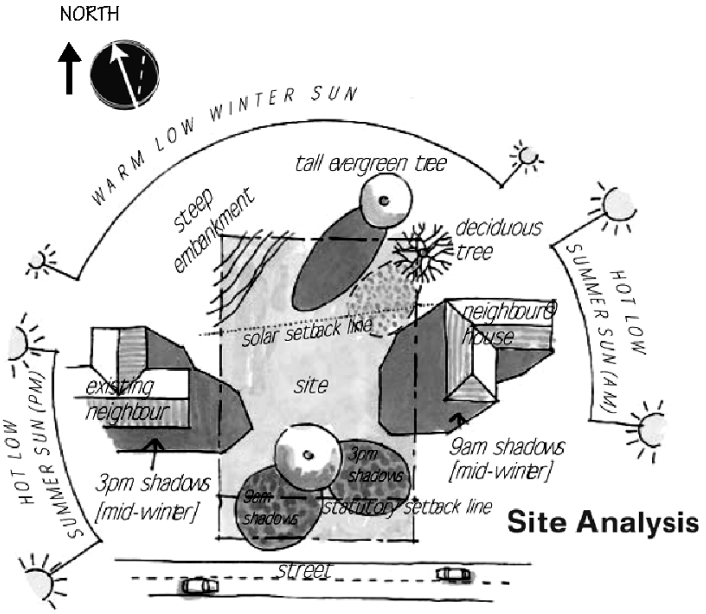
(b) Four hours of direct sunshine is received by 75% of other north facing solar collectors designed/installed under this Plan (refer Definitions, Appendix A).

(c) Sunlight is available to at least 50% of required private open space for at least 2 hours between 9.00am and 3.00p, on 21 June. Where existing overshadowing is greater than the above, it should not be further reduced.

(d) Any new development will not reduce the solar access of solar collector/s of an adjoining property to less than 4 hours per day in mid-winter except solar hot water panels to which full access must be maintained.

(e) Sunlight is available to a clothes drying area for at least 4 hours on June 21, to a plane 1 metre above the finished ground levels under the drying lines.

Figure C6.1



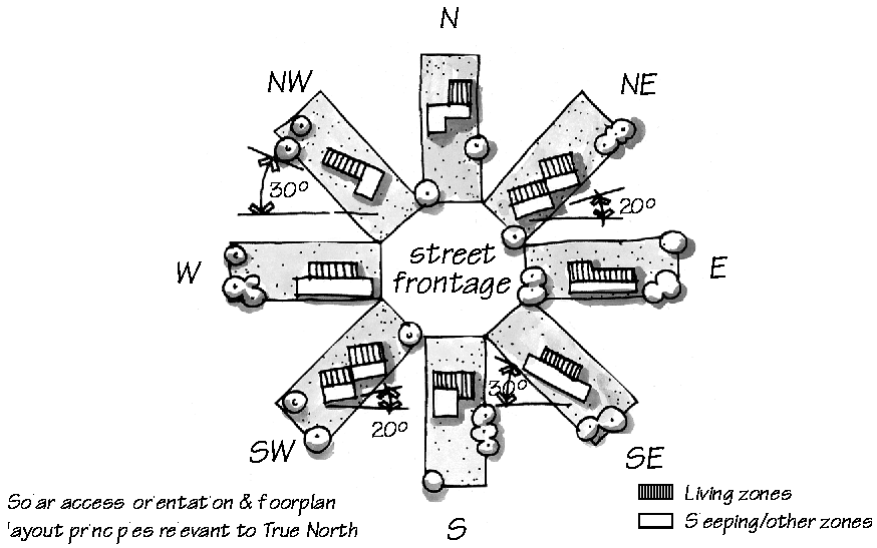
HELPFUL HINTS

Site Analysis

A solar site analysis assists in siting your building[s] to achieve maximum solar access in winter, including:

- *true north* point [refer Definitions, Appendix A]
- spot levels or contours
- shadows cast by trees and surrounding structures
- *solar setback line* [refer Definitions, Appendix A] where necessary

Figure C6.2



Building Orientation

To maximise winter solar access and minimise summer heat gains:

- face the long axis of your building up to 30° east and 20° west of *true north*
- face living spaces to the north, sleeping areas to the east or south and utility areas to the west or south

Figure C6.3

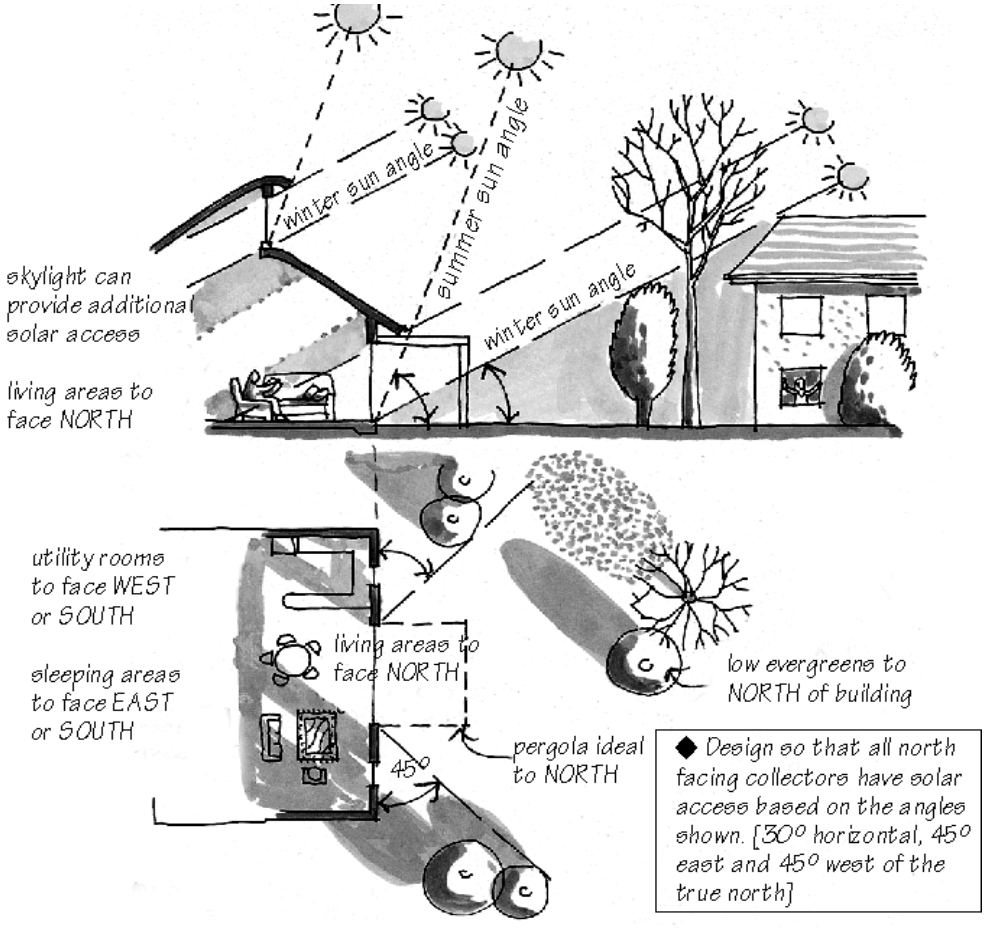
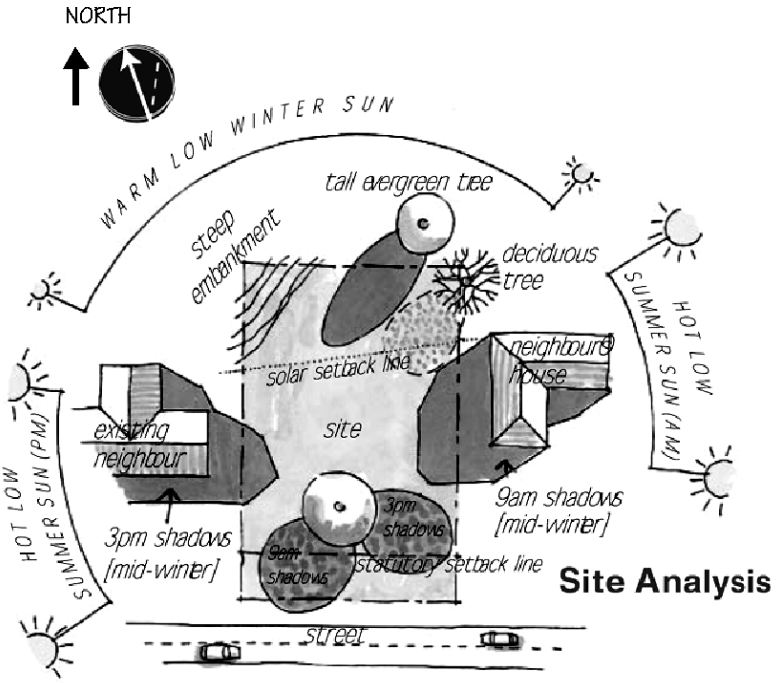

winter sun angle
summer sun angle
winter sun angle
skylight can provide additional solar access
living areas to face NORTH
utility rooms to face WEST or SOUTH
sleeping areas to face EAST or SOUTH
living areas to face NORTH
45°
pergola ideal to NORTH
low evergreens to NORTH of building
◆ Design so that all north facing collectors have solar access based on the angles shown. [30° horizontal, 45° east and 45° west of the true north]

Figure C6.4



HELPFUL HINTS

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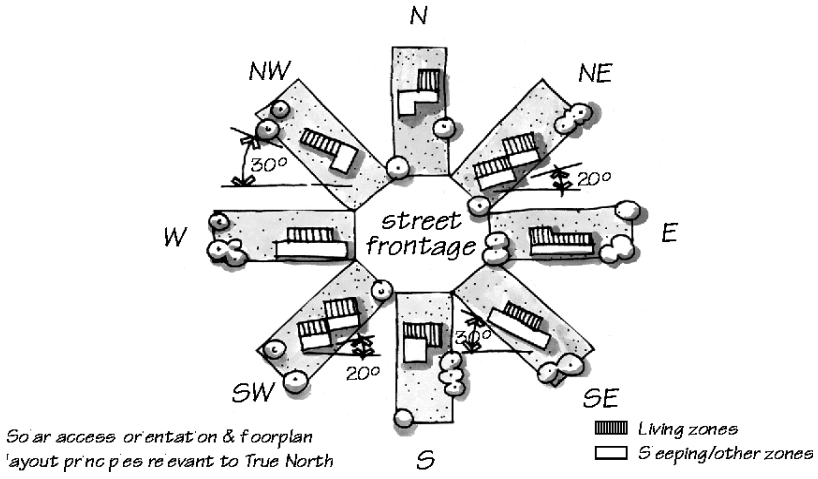
- shadows cast by trees and surrounding structures
- *solar setback line* [refer Definitions, Appendix A] where necessary

Figure C6.5

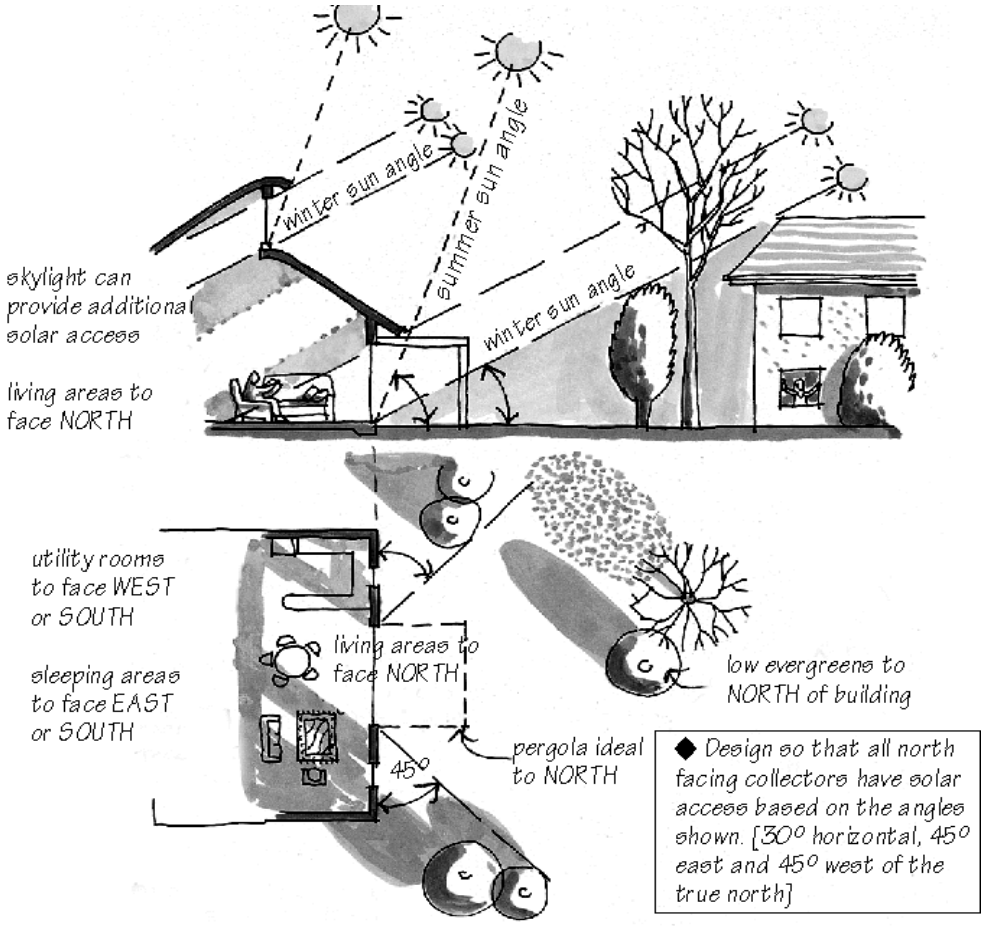


Building Orientation

To maximise winter solar access and minimise summer heat gains:

- face the long axis of your buildings up to 30° east and 20° west of *true north*
- face living spaces to the north, sleeping areas to the east or south and utility areas to the west or south

Figure C6.6



Solar Access

General Guidelines

Consider:

- solar access early in the design process
- existing winter shadows of trees/structures to the north, NE and NW of your site

- possible future developments to the north, NE and NW of your site versus overshadowing
- the design of windows, shading devices and roof overhangs pergolas to the north
- consider the addition of a sun porch or greenhouse [consider vents; high performance glass; external shading devices]

Medium Density and Multi-Unit Housing

- consider the spacing between buildings
- consider high level windows to the north in the case of attached dwellings

6.5 LANDSCAPING

Aims

- To ensure that streetscape components do not detrimentally affect solar access to individual dwellings.

Objectives

- Street tree species are selected to provide summer shading while not impeding solar access to dwellings in winter.
- Trees are planted or retained so as not to impede solar access to dwelling.
- Streetscapes contribute as winter windbreaks.

Rules

(a) Select deciduous trees for solar efficiency where shadows may impact on housing.

(b) Plant taller tree species on northern side of east-west aligned; shorter species on southern.

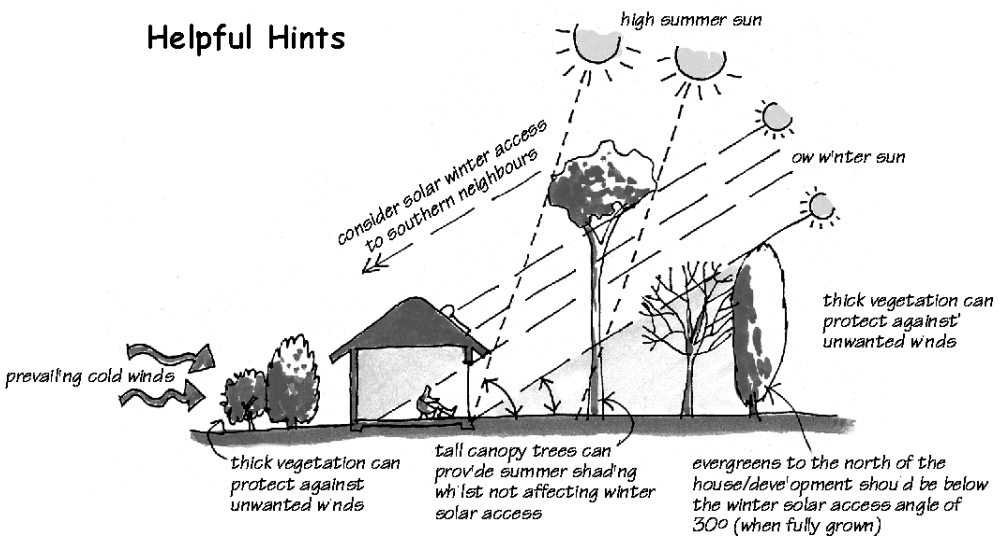
(c) Select plantings with low maintenance and low water consumption.

(d) Retain existing vegetation in master plan to minimise solar obstruction to dwellings.

(e) Select evergreen species for windbreaks and plant them along south or west side of area being protected against the wind.

(f) Ideally, select indigenous species that preserve solar access of adjoining properties.

Figure C6.7



6.6 RESIDENTIAL DEVELOPMENT

Aims

- To maximise the use of renewable energy sources in design and construction of residential development.

Objectives

- The selection of an energy efficient heating/cooling system should be made during dwelling design stage.
- Heating/cooling systems should target only those spaces which require heating or cooling, and ensure efficient distribution/redistribution of warm/cool air. where a space heating and cooling system is installed it should be selected for maximum energy efficiency.

HELPFUL HINTS

Space Heating and Cooling

- Consider natural forms of heating and cooling. These should be considered in design process.
- Select an energy efficient heating/cooling system dwelling design stage.
- The incorporation of programmable thermostats is highly recommended.
- The incorporation of a control system is recommended [to regulate air flow between zones via dampers and regulation fan speed].

- Ductwork should be insulated to ≥ R1.5.
- Refrigeration lines are to have a minimum of 20mm foam insulation.
- Energy efficient and renewable energy systems are highly recommended.

Dual Occupancy, Multi-Unit and Shop-Top Housing

- Individual HW units should be placed indoors and close to wet areas.
- An individual HW heater can double as an airing cupboard.
- Appliances with maximum energy efficiency should be installed.

HELPFUL HINTS

Lighting

General Guidelines

- Maximise the use of natural lighting.
- Design lighting fixtures to suit the purpose of specific rooms [eg task or effect lighting in study, general spread of lighting in family room].
- Provide separate switches for special purpose lights.
- Incorporate energy-efficient lamps, fittings and switches [eg. Compact fluorescent lighting].
- Locate switches at exits to rooms/lobbies etc to encourage switching off.
- Incorporate dimmers, motion detectors, automatic turn-off switches where appropriate.

Dual Occupancy, Multi-Unit and Shop-Top Housing

- Light switches in common areas are to be time switched.
- Incorporate fittings with high efficiency reflectors suitable for compact fluorescent lamps and fluorescent tubes.
- Motion detectors are to be used for unit entries, lobbies and outdoor security.
- Provide automatic turn-off switches for outdoor purposes.
- Allowance is made for outdoor drying space with solar access.

Rules

a) A minimum NatHERS rating of 3.5 stars is achieved for the relevant the development type.

b) A hot water system with a Greenhouse Score of 3.5 stars or greater is installed and which suits the needs of the occupants.

Hot Water and Appliances

Water Heater Types	Star Rating	
Solar Gas Boost*	Storage	5
Gas	Instantaneous	4
Gas Storage	High Efficiency	4
Gas Central Boiler	With insulated circulating ring main	4
Electric Storage	Heat Pump	4
Gas Storage	Low Efficiency	4
Solar Electric Boost*	Continuous	4
Solar Electric Boost*	OP2	4
Electric	Instantaneous	2
Electric	Continuous	1
Electric Storage	Storage [OP1 OP2]	1

**Greater than 50% solar contribution*

Water Heating

General Conditions

- All newly installed hot water [HW] systems are to have a minimum rating of 3.5 stars [refer table above]
- HW systems are to be located as close as possible to wet areas [kitchen, bathroom, laundry, etc]
- Insulation of tanks and/or pipes is beneficial
- Cluster wet areas so as to minimise pipe runs
- Roof design should consider the option of a north facing solar HW system.

- The dwelling should be designed so that artificial lighting is unnecessary during daylight hours, and when required uses energy efficient lamps and fittings requiring less that 3 watts/m^2 of installed lighting.
- Dryers, where necessary, should have a greenhouse score of at least 3.5 stars and have direct ventilation to outside.
- At least AAA rated water efficient shower heads, toilets and aerators on bathroom hand basins and kitchen sinks are installed.
- Design dwelling specifically for its site (locate northern wall to maximise solar access, and orient one of the building's axes between 30^o and 20^o west of true north. where this is not possible in existing subdivisions, provide properly shaded north facing glass to living areas and maximise solar access by the use of site analysis including existing shadows diagram.

- Living zones (lounge, family, dining, kitchen] located on northern side, for maximum thermal comfort.
- External shading to north facing windows should provide maximum shading in summer and minimum shading in winter. This type of shading can be eave overhangs or fixed awnings designed to meet a 70^{o} (from the horizontal) line drawn from the bottom of the window to the eave.
- Pergolas, verandas and eaves to the western and eastern aspects designed to maximise summer shade and minimise winter shade by deciduous climbing vines on pergolas or operable louvers.
- The proportion of north-facing (30^{o} east to 20^{o} west of true solar north) windows in a plan compared to other aspects should be as close to 75% as the site and plan will allow.
- Provision of lighter coloured roof and walls.
- Openings designed to take advantage of prevailing wind direction; passive solar design not only takes advantage of cooling daytime breezes but depends on cool night-time ventilation to flush out the heat of the day so that the structure is cool for the next day.

HELPFUL HINTS

Figure 6.8

Windows and Shading Devices

General Guidelines

- main windows are to be shaded in summer between 9am & 4pm. They should have suitable shading or other solar control to avoid overheating in summer
- provide a balance between winter solar access and summer shading
- place windows to allow for cross ventilation
- prevent infiltration both in winter and on hot summer days
- consider views, privacy, natural light and acoustics
- refer to design options below

Multi-Unit Housing & Residential Flat Buildings

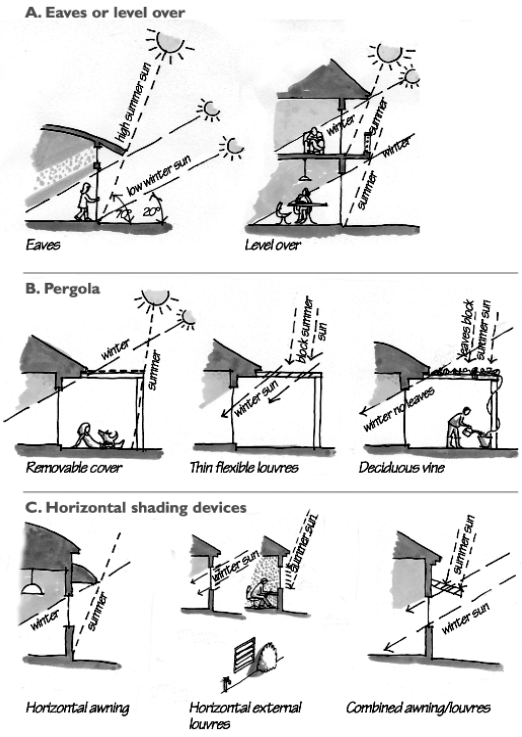
- shading elements are to be integrated into the overall elevation design
- where winter solar access is not optimum consider the use of double-glazing or high performance glass
- main windows should have suitable shading or other solar control to avoid summer overheating

DESIGN OPTIONS:

North Facing Windows

- Ideally most of the windows in the dwelling should face north
- horizontal shading devices are ideal. They allow low winter sun into the window whilst providing shade from high summer sun. Horizontal shading devices include eaves, verandas, pergolas, awnings and external horizontal blinds

North Facing Windows



East & West Facing Windows

- west and east facing windows can be a serious source of overheating in climates with hot summers
- minimise the size of east and west facing windows due to the hot, low summer sun. This is crucial in warm to hot climates or provide suitable solar control systems
- external vertical shading devices are ideal [vertical blinds, blade walls and thick vegetation]

- *thick vegetation is ideal & cost effective*
- *deciduous trees are ideal for more extreme climates*

- external vertical shading is preferable over horizontal shading devices, however a combination is beneficial
- consider implementing heat-absorbing, reflective or other high performance glazing

South Facing Windows

- minimal shading devices are required in NSW to south facing windows
- windows to the south are good for cross-ventilation however their size is best restricted

Figure C6.9

Thermal Design

INSULATION

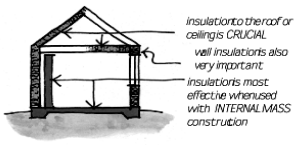
General Guidelines

- **Insulation is a vital component of energy-efficient design in all climates. It helps to delay and moderate temperature swings in both summer and winter**
- **Insulation is to conform with relevant Australian standards**

Bulk Insulation [Insulation batts of fibreglass, sheep wool, cellulose etc. and straw bale construction] is important in ceilings, walls and floors

Reflective Insulation [eg reflective foil laminate] is effective particularly in summer

Insulation to windows includes heavy curtains, insulated panels and double glazing



Multi Unit Housing & Residential Flat Buildings

- insulate walls between units and garages

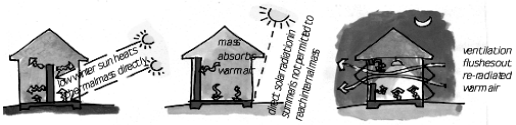
THERMAL MASS

General Guidelines

Thermal mass is:

- **heavyweight construction [eg brick, concrete, stone, earth] which absorbs and stores heat during the day and releases it at night**
- **particularly beneficial when combined with external insulation**
- **able to delay and moderate temperature swings in both summer and winter**

Thermal Mass



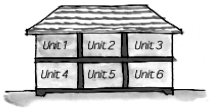
WINTER DAY thermal mass absorbs direct solar heat & radiates it later in the day and during the night

SUMMER DAY thermal mass absorbs warm internal air during the day effectively cooling the room

SUMMER NIGHT the warm air is remitted by the mass and flushed out by ventilation when outside tempeatures are lowered

Multi-Unit Housing & Residential Flat Buildings

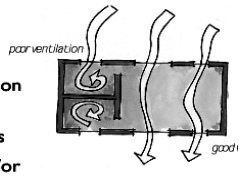
- thermal mass is usually more effective in adjoining dwellings due to shared walls that have less contact with the outside air



MEDIUM & MULTI-UNIT HOUSING DENSITY

MAXIMISE VENTILATION IN SUMMER

General Guidelines



- **position openings in relation to prevailing summer breezes so as to encourage cross ventilation**
- **consider the installation of fans, roof vents and high level windows**
- **consider evaporative cooling and/or wind stacks**
- **windows should be lockable in a partly open position**
- **exhaust fans to wet areas must be ducted outside**

Multi-Unit Housing & Residential Flat Buildings

- ventilation is to be considered early in the design stage
- consider prevailing breezes in relation to building orientation, window design and internal circulation
- consider spacing between buildings
- provide security screen doors at unit entries

MINIMISE INFILTRATION

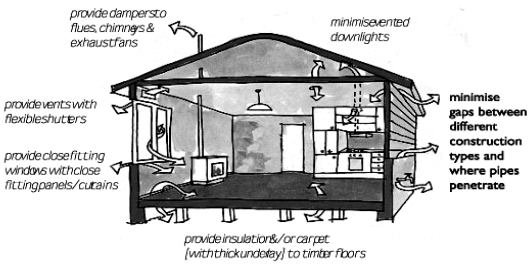
General Guidelines

- **infiltration is the filtering of cold or warm air through gaps in the construction of a dwelling**
- **it is especially important to minimise draughts in winter**
- **consider air locks at entries**
- **minimise air gaps**

Multi-Unit Housing & Residential Flat Buildings

- incorporate door and window seals
- provide self-closing doors at unit entries and the main entry
- provide built-in shutters to exhaust fans in wet areas

Minimise infiltration



6.7 SCORING YOUR HOUSE/DEVELOPMENT

NatHERS Certification

NatHERS certification is required under this DCP for all housing types. A range of computer software tools have been developed in Australia to simulate and rank thermal performance in buildings across a wide variety of climatic zones. NatHERS [refer Definitions, Appendix A] is a sophisticated thermal modelling tool designed for use by experienced professionals and industry personnel.

NatHERS certification can be determined by accredited third party assessors within the building industry as well as accredited Council officers. A list of accredited assessors is available from Council or the NSW House Energy Rating Management Body (HMB), telephone: 9385 5593 or www.fbe.unsw.edu.au/units/solarch/hmb.

Exemptions

There are special conditions under which an exemption can be claimed from the achievement of minimum energy performance for dwellings and alterations and additions. Where one or more of the special conditions apply, approval is subject to:

- Single dwellings – provision of ceiling (min R2.5 rating) and wall (minimum R1.5 rating) insulation, and underfloor (min R2.0 rating) insulation to elevated timber floors.
- Dual occupancy, multi-unit and shop-top housing – assessment on merit. An Energy Performance Statement will be required.
- The seven special conditions are:
  - *block geometry* – orientation or shape of block such as to preclude the northerly orientation defined as 20o west of north to 30o east of north;
  - *block overshadowing* – the adverse slope of a block, existing obstruction or planned or existing development resulting in overshadowing of northerly windows;
  - *block topography or geology* – slope drainage of geotechnical constraints such as to preclude slab-on-ground type construction;
  - *novel construction* – where the prescribed assessment techniques do not address or reliably assess the performance of the construction being adopted and there are prima facie grounds for believing the prescribed techniques significantly underestimate the construction's performance;
  - *conflicting guidelines* – existing lease and development conditions, any other policy or guidelines that Council determines will have priority over this DCP (heritage requirements, which preclude the attainment of the minimum rating requirement);
  - *uneconomic requirements* – where it can be demonstrated that the attainment of the 3.5 star rating would require additional expenditure which is not cost effective

within a five year period. The technique to establish the uneconomic nature of the requirements is the subject of a guide note available from Council; and

- *water heater* – where it is demonstrated that the installation of a low greenhouse gas emission water heating system (greenhouse score 3.5 or greater) would require additional expenditure which is not cost-effective within a five year period. The technique to establish the uneconomic nature of the requirements is the subject of a guide note available from Council.

For further information contact:

Energy Smart Information Centre (ESIC)
Sydney Building Information Centre
525 Elizabeth Street, Surry Hills NSW 2010
Ph: 1300 363 768 or (02) 8303 1565
Fax: (02) 8303 0566

House Energy Rating Management Body (HMB)
Solarch
Faculty of Built Environment
University of New South Wales, NSW 2052
Ph: (02) 9385 5593
Fax: (02) 9385 4507
Email: hmb@unsw.edu.au
Website: http://www.fbe.unsw.edu.au/units/solarch/hmb

NSW Sustainable Energy Development Authority (SEDA)
PO Box N442, Grosvenor Place NSW 1220
Ph: (02 9249 6100
Fax: (02) 9299 1519
Email: seda@seda.nsw.gov.au
Web: www.seda.nsw.gov.au

Chapter 7

EFFLUENT DISPOSAL

7.1 INTRODUCTION

This chapter deals with on-site sewage management facilities.

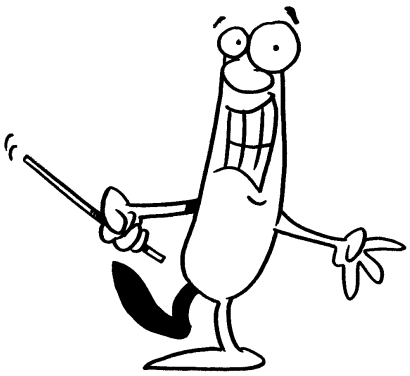
This chapter seeks to assist Council, landowners and occupiers, and developers to assess, regulate and manage the selection, design, installation, operation and maintenance of on-site sewage management facilities. Specifically, this chapter identifies information required to be submitted to Council and matters required to be considered when seeking approval for development requiring or relying on the installation or operation of a on-site sewage management facility.

Other chapters that are relevant to the Effluent Disposal chapter include:

- Part A Chapter 2 General Information
- Part D Chapter 1 Residential Development
- Part D Chapter 3 Subdivision
- Part E Chapter 3 Grose Wold

This chapter should also be read in conjunction with:

- The Local Government (Approvals) Regulation 1993.
- The designated development and integrated development provisions of the Environmental Planning and Assessment Act, 1979, as amended, and Environmental Planning and Assessment Regulation 2000.
- Australian Standard 1547 : 2000 On site domestic – waste water management, Standards Australia/Standards New Zealand.



- On-site Sewage Risk System Assessment System, NSW Department of Local Government, 2001.
- On-Site Sewage Management for Single Households, NSW Department of Local Government, 1998.
- NSW Health, Greywater Reuse in Sewered Single Domestic Premises, 2000.
- Part 2 and Part 3 Clause 11 (17) of Sydney Regional Environmental Plan No. 20 (No. 2 –1997).
- Clauses 12 and 13 of Hawkesbury Local Environmental Plan 1989.

7.2 AIMS

The aims of this chapter are:

- to ensure that development proponents and their consultants are aware of their responsibility for the selection, design, sizing, approval process, installation, operation and maintenance of on-site sewage management facilities;
- to ensure that the on-site disposal of waste water can be achieved without significantly affecting public health, the environment, surrounding properties, environmentally sensitive areas, ground or surface waters or significant vegetation;
- to ensure that the selection and design of any proposed on-site sewage management facility represents the best management practice for wastewater on the site over the expected life of the system;
- to minimise the cost of on-site sewage management facilities without compromising the achievement of environmental and public health objectives;
- to ensure that on-site sewage management facilities are capable of being operated and managed in the long term and provide for on going risk minimisation; and,
- to encourage consideration and use of the variety of NSW Health approved sewerage management facilities.

7.3 OBJECTIVES

The objectives of this chapter are:

- to set out the minimum requirements for applications requiring or relying the installation of an on-site sewage management facilities;
- to set out the limited circumstances where Council may agree to removal of sewage by pump out or tanker removal; and,
- to identify special provisions relating to connection to reticulated sewerage systems and development within the rural and environmental protection scenic zones.

7.4 RULES

(a) Waste water feasibility studies

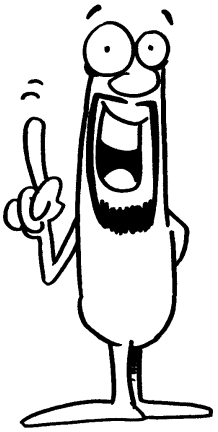
With the exception of single dwellings in low risk areas as defined by Council's Septic Safe Program, or a toilet, shower and/or hand basin within a shed, garage or other outbuilding used in association with an existing approved development in a low risk area as defined by Council's Septic Safe Program, all developments

requiring or relying on an existing or proposed on-site sewage management facility must be accompanied by a waste water feasibility study (or similar) prepared by a suitably qualified and experienced expert. The feasibility study must contain the following information:

- Description of the proposed development

- Site and Soil Assessment.

  This is to be an assessment of the site and surrounding area in relation to the following factors:



  - Size and shape
  - Topography and exposure
  - Run on and upslope seepage
  - Erosion Potential
  - Location of any landfill
  - Drainage including likelihood of flood water inundation
  - Proximity to watercourses
  - Assessment of existing vegetation
  - Proximity to threatened species, populations or ecological communities or their habitats
  - Climate data obtained from the nearest Bureau of Meteorology of Australia weather station or from their Silo data set which ever is the closest
  - Groundwater depth
  - Buffer distances
  - Soil type including assessment of depth, colour, texture, permeability, salinity and sodicity, instability, cation exchange capacity, mobility of nutrients, fertility, Ph and potential to overcome soil limitations
  - Assessment of the performance of any existing systems and feasibility of connection to any reticulated sewage system in the vicinity of the site.

- Assessment and Recommendation of Suitable Systems

  This is to include:

- estimations of the number of occupants and expected peak and averaged volume of waste water generated by the development
- calculations for nitrogen and phosphorus balances
- water balance calculations (based on a daily data set) for land application areas
- the suitability of a various systems (such systems may include conventional septic tanks, aerobic wastewater treatment systems, amended soil mound systems and composting toilets)
- identification of land application areas and the suitability of the application area to receive waste water
- methods of disposal and concept design plans of disposal lines/trenches and full specification
- using daily water balance calculations, an assessment of the need for wet weather storage
- assessment of the need or advantages gained by primary tank outflow filters
- identification of recommended buffer distances/zones.

▫ Installation, Operation and Maintenance

The study must be accompanied by:

- details of recommended system(s)
- the operation and maintenance requirements for the proposed sewage management facility
- the proposed operation, maintenance and servicing arrangements intended to meet those requirements
- actions to be taken in the event of a breakdown in, or other interference with, its operation
- the estimated operational life of the system and options for system restoration/renewal at the end of the operational life of the system.

▫ Site Plan

This is to be a drawn to scale plan showing the location of:

- the sewage management facility proposed to be installed or constructed on the premises
- any other sewage management facility and land application area on the site

- any existing buildings within 250m of the sewage management facility or land application area
- any dams, watercourses, drainage line or pipe work, vegetation, environmentally sensitive areas within 100 metres of the sewage management facility or land application area
- contours
- retaining walls, embankments and swimming pools.

▫ Specifications

- Specifications shall include (where applicable) details such as pump sizes, air pump capacities, cross sectional details of the proposed system and a technical description of the processes used
- Information as to the expected quality of effluent to be disposed on-site with specific reference to the following:
  - Biological Oxygen Demand (mg/L)
  - Suspended Solids (mg/L)
  - Total Nitrogen (mg/L)
  - Total Phosphorus (mg/L)
  - Faecal Coliform (cfu/100ml)
  - PH
  - Dissolved Oxygen (mg/L)
  - Residual Chlorine (mg/L).

▫ Certification

- The report is to certify that all site and soil investigations, water balance reports, proposed sewage management facilities and land application areas, and construction, installation and maintenance recommendations comply with the relevant provisions of Australian Standard 1547: 2000 On site domestic – waste water management, Standards Australia0/Standards New Zealand; On-Site Sewerage Risk Assessment System, NSW Department of Local Government; On-Site Sewage Management for Single Households, NSW Department of Local Government; and relevant NSW Health accreditations.

(b) Availability of Council Pump Out Service

On 10 August 1999 Council resolved the following:

The only developments to be approved in respect of unsewered land that will rely on tanker removal of septic tank effluent are as follows:

a) single dwelling houses;
b) light industry and single shops which do not require a water supply greater than that which can be delivered via a normal domestic connection without on-site storage or which are not connected to a reticulated water supply

Subdivision of unsewered land that will rely on tanker removal of septic tank effluent will not be approved.

(c) Connection to Reticulated Sewage Service

Council will require that all new subdivisions and other new development are connected to a reticulated sewer system where it is reasonably available. This may include the extension of the reticulated sewer to service the development.

(d) Subdivision of Rural or Environmental Protection zoned land

In the case of the subdivision of Rural or Environmental Protection zoned land, any sewage management facility proposed to service the lots to be created which is not a composting toilet, convention septic tank and trench system, or a household Aerated Wastewater Treatment System will be required to be installed prior to release of the Subdivision Certificate.

Chapter 8

MANAGEMENT OF CONSTRUCTION & DEMOLITION WASTE

September 2005

8.1 INTRODUCTION

This chapter has been developed to assist Hawkesbury City Council to achieve waste minimisation targets introduced by the State Government in 1996. The State Government has made a commitment to reduce levels of waste going to landfill by 60% below 1990 levels, encouraging waste producers to avoid, reuse, reprocess and recycle waste in residential, commercial and industrial developments.

The chapter aims to ensure a responsible approach to waste minimisation in the Construction and Demolition (C&D) sector. It makes it compulsory that Waste Management Plans are submitted with development applications for the following types of development:

- Single dwellings
- Multi-unit housing
- Walk-up flats
- Industrial and commercial development
- Subdivision requiring engineering works
- Demolition
- Dwelling additions

C&D waste is responsible for 60% of the waste going to landfill in Sydney. After domestic waste, the industrial and commercial sectors are the largest generators of waste in the Hawkesbury, where over 25 000 tonnes of waste goes to landfill every year. This chapter provides guidelines to significantly reduce this amount.

This chapter should also be read in conjunction with:

- The Protection of the Environment Operations Act and associated Regulations
- Waste Planning Guide for Development Applications (Planning for Less Waste) Resource New South Wales
- Australian Standard AS 2601-1991: The Demolition of Structures

8.2 GENERAL PRINCIPLES

8.2.1 Waste Management Plans

A Waste Management Plan is a simple checklist that will provide Council with information about the volume, treatment, storage, disposal and ongoing treatment of C&D waste. Applicants seeking development approval from both Council and accredited certifiers must complete a Waste Management Plan that will show that:

- The potential for waste is avoided
- Where possible, waste is reused on site
- Waste that cannot be reused on site is separated and recycled
- Waste with no reuse or recycling potential is disposed of at an authorised landfill site

A standard form is used to prepare Waste Management Plans and should not take more than ten minutes to complete. Waste Management Plans should be submitted on this form with any supporting documentation. An example of a completed Waste Management Plan can be found at the end of this chapter.

8.2.2 Types Of Development Requiring Waste Management Plans

a) Demolition (Including Subdivision With Engineering/Excavation Works)

This is the stage with the greatest potential for waste minimization due to the high level of waste generated and the high costs associated with waste disposal. The first thing that applicants should consider is whether it is possible to re-use existing buildings, or parts thereof for the proposed use.

With careful on-site sorting and storage, and by staging work programs it is possible to re-use many materials either on-site or off-site. Waste Management Plans encourage 'total recycling on site' and a move away from simply 'trashing the building'.

Waste Management Plans for subdivisions that require engineering works should take into account relevant site-specific factors such as slope, drainage, native vegetation and location of watercourses in order to minimise any environmental impacts.

b) Construction (Including Building Alterations And Additions)

During construction, a variety of options are available to builders and developers to minimise waste going to landfill. This includes such measures as:

- Identifying waste materials before work commences
- Purchasing Policy – considering measures such as ordering the right quantities of materials and using prefabricated materials where possible
- Reusing formwork
- Minimising site disturbance, limiting unnecessary excavation
- Careful source separation of off-cuts to facilitate re-use, resale or efficient recycling

8.3 COMPLIANCE WITH WASTE MANAGEMENT PLANS

The person who generates the waste is responsible for it and must adhere to their Waste Management Plan. Failure to comply with a Waste Management Plan may result in a fine of up to $600. To ensure compliance, Council officers will carry out regular audits. Some of the methods that can be used to assist with compliance include:

- Providing all builders with a copy of the Waste Management Plan
- Ensuring that contractors are aware of their obligations to minimise waste going to landfill
- Keeping a Waste Data File to verify recycling and disposal

8.4 HOW TO MANAGE WASTE ON-SITE

For a detailed outline of approaches to on-site waste management refer to the Waste Planning Guide for Development Applications (Planning for Less Waste). This is available from Council and Resource New South Wales.

8.5 COMPLYING DEVELOPMENT

Submission of a Waste Management Plan is required for the following developments in order to obtain a complying development certificate:

- Industrial Buildings/Additions to industrial buildings
- Single Storey Dwelling Houses/Single Storey Dwelling House buildings

8.6 OBJECTIVES

- To minimise waste produced during construction and demolition of residential, commercial and industrial developments and ensure the continual reduction of waste generation.
- To ensure that waste management issues are considered as early as possible in the development process.
- To maximize the reuse, recycling and reprocessing of construction and demolition waste.
- To ensure compliance with Waste Management Plans.
- To provide guidelines to applicants for the preparation and implementation of Waste Management Plans.
- To assist in achieving state and federal government waste minimisation targets.

8.7 WASTE MANAGEMENT PLAN

8.7.1 Rules

a) Waste Management Plans should contain the following information:

- The Amount and Type of Waste Materials Produced
  An estimate of the volume and/or weights of each type of waste that the development will generate is required. To assist with estimating these quantities refer to Council's brochure "Preparing Waste Management Plans".
- *Statements Outlining The Reuse, Recycling And Disposal Methods For Waste Both On-Site And Off-Site*

Applicants must indicate how waste will be reused and recycled on-site and specify the contractor and recycling outlet for off-site waste disposal. Details must be provided indicating:

- How waste will be sorted and stored on-site and if it will be reused on-site
- Mechanism for controlling dust generation
- How waste is transported off-site to a reuse, recycling or landfill facility
- Who will transport the waste company name, address and phone number?
- Where the waste will go name of facility, address and phone number

The main objective of a Waste Management Plan is to minimise waste going to landfill. Disposal is the last resort in waste management and should only occur after waste has been avoided at the source, recycled and reused. Responsible waste disposal means keeping track of the waste to ensure that best efforts are made to recover any materials.

- *Waste Management Site Plan Showing the:*
  - Location of on-site storage space for materials and containers for recycling and disposal
  - Vehicle access to collect waste from the site during and post-construction
  - Footprint of building to be constructed or demolished and other structures on-site
  - Location of skip-bins for collection by contractors

- *A Statement Of Ongoing Waste Management*
  This is a statement that demonstrates that the future use of the building has been considered, and provisions have been made for contractors to access garbage and recycling bins. At a minimum you will need to address the following:

  - State the type and future use of the development

  - State the type of waste that will be generated

  - Provide estimates of the expected volume of waste to be generated per week

  - Show on plans and describe any on-site storage and/or treatment facilities for waste

  - State the destination for the waste produced

b) Waste management plan shall require:

- The siting of stockpiles of waste on-site should take into account environmental factors (eg. slope, drainage, location of watercourses and native vegetation
- Materials should be separated on-site in a minimum of two on-site waste bays or trade waste bins located wholly within your property
- If the site is size constrained, mixed waste may be stored in a 2m x 2m waste bay and sent to a waste contractor/facility that will sort the waste for recycling
- Waste bays must have minimum dimensions of 1.5m x 2m
- Waste bays may be constructed with sediment fencing, shade cloth or metal sheets. They should have adequate weather protection and where appropriate be enclosed or undercover
- The removal of trade waste bins is only to be carried out during permitted construction hours
- At a minimum, construction and demolition materials must be separated into:
  - Masonry products (bricks, concrete/concrete roof tiles)
  - Mixed waste (plastic etc)
  - Paper and cardboard
  - Metal
  - Treated timber
  - Greenwaste
- Waste bays must be conveniently located to enable easy access for on-site movement and collection
- Demolition of any existing structure is to be carried out in accordance with *Australian Standard AS 2601-1991: The Demolition of Structures*

- Waste must be adequately secured and contained within designated waste areas and must not leave the site onto neighbouring properties
- The location and size of waste storage areas must be indicated on a waste management site plan
- During demolition and construction, the Waste Management Plan, together with records of waste disposal (waste receipts or dockets, recycling processors receipts etc.), is to be retained by the person responsible for the site in a Waste Data File. The Waste Data File must be provided to Council officers on request to check that the Waste Management Plan is being implemented
- Production, storage and disposal of hazardous wastes, such as contaminated or toxic materials and asbestos will require particular attention. In such cases, the EPA should be contacted and appropriate arrangements must be made for their removal, transport and disposal

8.8 SAMPLE WASTE MANAGEMENT PLAN

The applicable sections of this table must be completed and submitted with your Development Application.

Completing this table will assist you in identifying the type of waste that will be generated and in advising Hawkesbury Council how you intend to reuse, recycle or dispose of the waste.

The information provided on the form (and on your plans) will be assessed against the objectives of the DCP.

If space is insufficient in the table please provide attachments.

Table 1 Outline of Proposal

Site Address:
Applicant's name and address:
Phone: Fax:
Buildings and other structures currently on the site:
Brief Description of Proposal:
The details provided on this form are the intentions for managing waste relating to this project.
Signature of Applicant: _____Date:

8.8.1 Demolition Waste Management Plan

Table 2 Demolition - Waste Management Plan

		DESTINATION		
Materials On-Site		**REUSE & RECYCLING**		**DISPOSAL**
Type of Material	**Estimated Volume (m^3) or Area (m^2)**	**ON-SITE** Specify proposed reuse or on-site recycling methods	**OFF-SITE** Specify contractor and recycling outlet	Specify contractor and landfill site
Excavation Material				
Green Waste				
Bricks				
Concrete				
Timber – please specify				
Plasterboard				
Metals – please specify				
Other – please specify				

- Ongoing Management

  Describe how you intend to ensure on-going management of waste on-site (eg. lease conditions, caretaker/manager on-site).

  The company will prepare an environmental management system addressing office and retail waste recycling. This will include achievable objectives for sorting and separating waste

  An information kit about waste minimisation will be provided to employees every 12 months

  A waste storage and recycling area will be suitably installed and bins clearly labelled

A staff member (or cleaner) will be responsible for transferring materials to the area and keeping the area clean and tidy

8.8.2 Construction Waste Management Plan

Table 3 Construction - Waste Management Plan

		DESTINATION		
Materials On-Site		**REUSE & RECYCLING**		**DISPOSAL**
Type of Material	**Estimated Volume (m^3) or Area (m^2)**	**ON-SITE** Specify proposed reuse or on-site recycling methods	**OFF-SITE** Specify contractor and recycling outlet	Specify contractor and landfill site.
Excavation Material				
Green Waste				
Bricks				
Concrete				
Timber – please specify				
Plasterboard				
Metals – please specify				
Other – please specify				

- Ongoing Management

  Describe how you intend to ensure on-going management of waste on-site (eg. lease conditions, caretaker/manager on-site).

  The company will prepare an environmental management system addressing office and retail waste recycling. This will include achievable objectives for sorting and separating waste

An information kit about waste minimisation will be provided to employees every 12 months.

A waste storage and recycling area will be suitably installed and bins clearly labelled.

A staff member (or cleaner) will be responsible for transferring materials to the area and keeping the area clean and tidy.