PART 23

GENERAL BUILDING DESIGN AND SUSTAINABILITY

GENERAL BUILDING DESIGN AND SUSTAINABILITY

INTRODUCTION

This Part guides development in meeting the and objectives within KLEP. This Part applies to all development types whether or not it is individually specified in *Section A of this DCP.* It also supplements the objectives and controls for each development type in Section A and should be read with the section on Building Design and Sustainability for the relevant development type.

Each section within this Part applies to a range of development types, and some sections to all development. It provides a consistent area wide approach to issues that developments must address. These issues include, but are not limited to, various aspects of sustainability, amenity and quality streets and public areas.

23.1 SOCIAL IMPACT

Objectives

1 *To ensure that development minimises adverse social impacts.*

2 *To ensure that social considerations are an integral part of development proposals.*

Controls

1 Proposals must consider the impacts of the development on nearby residents and users of the site.

Where relevant, particular attention is to be paid to:

- Children;
- Young people;
- Women;
- Older people;
- People with a disability;
- People from culturally and linguistically diverse background;
- Aboriginal and Torres Strait Islander people.

2 A Social Impact Statement will be required in the case of proposals which are likely to have a significant social impact because they are likely:

i) To contribute to social inequity;

ii) To increase risk to public safety; or

iii) To threaten the existing sense of community identity or cohesiveness.

Note: Council may require a social impact statement (SIS) by an appropriately qualified and experienced social impact practitioner. Council will consider the scale of the development and the extent of potential adverse impact (geographically and over time) in determining the need for an SIS. Examples of developments that may require an SIS include major retail centre, major health or education institutions, sex services premises, pub, entertainment facility, late night trading venue, hazardous or offensive uses; strata subdivision of a low rental residential building (of 6 or more dwellings).

3 A Social Impact Statement must:

i) Support socially responsible development and decision-making, contributing to the determination of best policy or development alternatives;

ii) Acknowledge the values of different sectors of society;

iii) Assess the distributional equity of impacts in regard to both intra-generational equity and inter-generational equity;

iv) Identify impacts that are directly related to the proposal (demonstrate the connection between the intervention and the likely impact);

v) Address how net social benefit can be enhanced through the proposal and how negative social outcomes can be ameliorated and managed through mitigating and monitoring measures; and

vi) Demonstrate rigour and a social science base in presenting evidence for the assessment and recommendations.

Note: See Council's Social Impact Assessment Policy for more detailed guidelines, available on Council's webiste (www.krg.gov.au).

23.2 GREEN BUILDINGS

Objectives

1 *To ensure that development minimises the use of non-renewable energy resources and water consumption.*

2 *To utilise an integrated sustainability assessment tool for gauging building sustainability.*

3 *To develop green buildings that incorporate innovative design, construction and operational practices that significantly reduce, or eliminate, the negative impact of development on the environment and building occupants.*

4 *To ensure commercial buildings deliver lower operating costs from reduced energy and alternative resource consumption, and so represent better life cycle value.*

5 *To ensure that all non-residential buildings consider and incorporate Ecologically Sustainable Design (ESD) systems and measures.*

Controls

This section applies to all buildings that are not required to comply with BASIX standards.

All non-residential buildings are required to incorporate Ecologically Sustainable Design measures as stated in Control 1, and to achieve Green Star rated buildings to Green Building Council of Australia (GBCA) standards.

This will enable buildings to easily achieve the ongoing mandatory performance ratings required under the Building Energy Efficiency Disclosure Act 2010 (refer to the website for details: *www.cbd.gov.au*.)

The Green Building Council of Australia (GBCA) has developed the following rating tools:

- *Green Star - Design & As Built:* for building design and construction;
- *Green Star - Interiors:* for fitout design and construction;
- *Green Star - Communities:* for precinct planning and development;
- *Green Star - Performance:* for building operations and maintenance.

All non-residential buildings with a total gross floor area above 2,000m^2 are required to obtain certification under the Green Building Council of Australia *Green Star - Design & As Built* rating tool to provide buildings with a sustainable structure, architecture, and performance, incorporating measures to reduce water and energy consumption which will result in a reduction of carbon emissions and building running costs.

Where developments involve large master planned sites, use of the *Green Star - Communities* rating tool is encouraged. Where large interior refurbishments are being undertaken, the use of the *Green Star - Interiors* rating tool is encouraged.

The GBCA *Green Star - Design & As Built* rating will entitle the developer, architect and team to publicise their building as Green Star rated early in the design development stage (via the 'Design' portion of the Certification) and for the life of the building (via the 'As Built' portion of the Certification). In addition the building will recieve publicity and marketing through the GBCA and Ku-ring-gai Council's media. Council and GCBA will also publicise developments that achieve ratings under the *Interiors*, *Communities* and *Performance* rating tools.

23.2 GREEN BUILDINGS (continued)

Controls

General

1 All new non residential developments are to include Ecologically Sustainable Design (ESD) measures in the following areas, and list them under these titles in the required ESD report and checklist:

i) Water Efficiency:
- provide systems to minimise mains water usage.

ii) Energy Generation:
- building design is to demonstrate a reduced reliance on mains power and provision of alternate energy sources.

iii) Heating and Cooling:
- use of mechanical air conditioning and heating is to be minimised. Where it is unavoidable, the systems are to be of a high efficiency in technology choice to reduce peak energy demand.

iv) Lighting:
- buildings are to be designed to reduce the need for artificial light use.

Note: Refer to *23R of this Part* for examples of measures of the above.

Figure 23.2-1:
Photovoltaic cells integrated into the awning design.

23.2 GREEN BUILDINGS (continued)

Controls

Green Star Rating

Buildings less than 2000m² gross floor area

2 All new buildings that are less than 2000m², or the non-residential components of mixed-use buildings that are less than 2000m2, are to provide the following documentation at Development Application (DA) stage:

i) Ecologically Sustainable Design (ESD) Report:
- prepared by a GBCA Accredited Professional, verifing that the elements/systems included in the development will, in the view of that professional, result in buildings with an ESD level equivalent to a 4, 5 or 6 Star Rating under the GBCA *Green Star - Design & As Built* rating tool.

ii) Annotated Development Application (DA) Drawings:
- clearly indicating the elements/systems described in the ESD Report, including the requirements in 23.2(1) of this section.

iii) A signed Statement of Commitment from the applicant to develop and implement the elements/systems described in the ESD Report into the Construction Certificate (CC) stage and final built form.

Note: Applicants are advised to consult with a GBCA Accredited Professional at the onset of the design process to ensure the building supports ESD principles at the outset.

Refer to *www.gbca.org.au* for a list of Green Star Accredited Professionals.

Note: Approved DAs will have a *Condition of Consent* requiring the applicant to include the following documentation as part of their CC submission:

i. An updated ESD Report by the applicant's Green Star Accredited Professional describing elements/systems incorporated to maintain the ESD principles that were approved at DA.

ii. A Checklist Table of each ESD system/element included in the ESD Report to clearly state systems incorporated (refer to 23R.3 *of this Part* for example of Checklist);

iii. Annotated CC Drawings clearly indicating elements/systems described in the ESD Report.

Buildings greater than 2000m² gross floor area

3 Where the total allowable gross floor area for non-residential components of development on a single site is above 2,000m² but below 5,000m²,
- all new buildings, or
- alterations and addition of non-residential components of a building equal to 80% or more of the existing building,

are to achieve 4 Star Green Star ('Best Practice') Design Rating under the GBCA *Green Star - Design & As Built* rating tool.

23.2 GREEN BUILDINGS (continued)

Controls

4 Where the total allowable gross floor area on a single site is 5,000m^2 or greater, buildings are to achieve a 5 Star Green Star ('Australian Excellence') Design Rating under the GBCA *Green Star - Design & As Built* rating tool.

Note: Refer to *23R.2 of this Part* for the Green Star Information Sheet.

Note: Refer to *www.gbca.org.au* for the latest version of the GBCA's Green Star Rating Tools.

5 The following documentation is required for Development Application (DA) submission:

i) Proof of registration of the proposal with GBCA for a *Green Star - Design & As Built* Certification; and GBCA Certification of the 'Design' component of the Development Application;

ii) A signed Statement of Commitment from the applicant to implement and achieve Certification for both components of the *Green Star - Design & As Built* rating tool.

iii) Ecologically Sustainable Design (ESD) Report prepared by GBCA Accredited Professional, stating the Green Star point distribution for the proposal, and the strategy, methods and systems proposed to achieve the Green Star rating, including the requirements in 23.2(1) of this section;

iv) Annotated Development Application Drawings clearly indicating the Green Star rating elements described in the ESD Report.

Note: The signed Statement of Commitment binds the applicant to complete the consultation process with their GBCA Accredited Professional to complete formal GBCA Certification for the 'As Built' component of the GBCA *Green Star - Design & As Built* Certification.

Refer to *www.gbca.org.au* for a list of Green Star Accredited Professionals.

Note: Approved DAs will have a Condition of Consent requiring the applicant to include the following documentation as part of their Construction Certificate submission:

i. An updated Credit Summary and ESD Report describing elements/ systems incorporated to achieve the nominated Green Star rating;

ii. A Checklist Table of each ESD system/element (refer to *23R.3 of this Part* for example of Checklist);

iii. Annotated Construction Certificate Drawings clearly indicating elements/systems described in the ESD Report including the requirements of 23.2(1) in this section;

iv. A copy of the letter and invoices from the GBCA to the applicant, confirming the project is registered and will progress in assessment of the 'As Built' component of the *Green Star - Design and As Built* Certification.

Note: Approved DAs will have a Condition of Consent requiring the applicant to submit to Council the GBCA *Green Star Design & As Built* Certification, showing the 'As Built' Certification prior to the release of the Occupation Certificate.

23.3 SUSTAINABILITY OF BUILDING MATERIALS

Objectives

1 *To provide good indoor air quality.*

2 *To limit pollution and protect public health and comfort.*

3 *To select materials and products which minimise environmental impact throughout a building's life cycle*

4 *To reduce the consumption of natural and non-renewable, resources.*

5 *To ensure material selection has been equally driven by environmental sustainability, safety, commercial competitiveness and quality.*

6 *To promote use of materials and finishes that contribute to the design of innovative buildings.*

Figure 23.3-1
Recycled timber wall as a feature in the entry lobby.

Controls

1 Development proposals must consider the following in the selection of building materials:

i) recycled or recyclable materials with low embodied energy;

ii) materials that come from renewable sources;

iii) materials that generate a lower environmental cost over time;

iv) materials with a low life cycle cost and/or high durability;

v) production methods with a low environmental impact.

Note: Generally, non-recycled metals contain the highest embodied energy, followed by plastics and other materials with a high chemical content. Natural construction materials such as timber, brick and render contain the least embodied energy. To reduce the embodied energy of a typical building structure, specify:

i. metal produced from post-consumer waste

ii. concrete blends that include a percentage of recycled content (for example, cement extender including fly ash or blast furnace slag)

iii. concrete that incorporates recycled aggregate wherever possible

iv. the sourcing of locally produced materials and products

2 Where the use of timber is proposed, only FSC, AFS or PEFC certified timbers may be specified for construction or finishing. Medium Density Fibreboard (MDF) and particleboard must not be specified as a construction material for the development.

3 The use of alternatives to PVC piping is highly encouraged including Colorbond (above ground only), and HDPE where appropriate.

4 The use of construction materials and chemicals with toxic components must be avoided, to facilitate recycling and reduce pollution.

5 Structures must be designed with physical, rather than chemical, termite measures. This can be achieved by:

i) appropriate materials and construction design;

ii) physical barriers;

iii) suspended floor systems.

6 Low Volatile Organic Compounds (VOC) are to be used throughout the building interior (carpets, paints, adhesives, sealants and all other finishes), and low emission building materials are to be used across the site.

7 Avoid the use of ozone depleting products and materials, or products and materials manufactured using ozone depleting substances.

8 Avoid materials likely to contribute to poor internal air quality, such as those generating formaldehyde, or those that may create a breathing hazard in the event of fire, such as polyurethane.

23.4 MATERIALS AND FINISHES

Objectives

1 *To reflect and reinforce the local character of Ku-ring-gai.*

2 *To complement the streetscape and natural environment.*

3 *To promote the use of high quality materials, finishes and colours for building facade articulation design and visual interest.*

4 *To ensure the use of materials, finishes and colours creates well proportioned facades and minimises the visual bulk.*

5 *To encourage the use of a subdued palette of colours and limited range of hues for building consistency across the LGA.*

Controls

9 The requirements below apply only to non-residential development:

i) use heavy weight building materials, such as concrete, as thermal mass on roofs and/or walls. Where lighter weight materials are used they are to be well insulated.

ii) encourage the use of photovoltaic cells which can be mounted as panels, or used as an integrated building cladding or sun shading.

iii) use light coloured internal finishes to improve internal reflections and minimise lighting use.

Materials and Finishes

10 External walls must be constructed of high quality and durable materials and finishes.

Note: Material and finishes selection is to be made in accordance with objectives and controls as stated in *23.4 of this Part* to ensure low environmental impact.

11 Reuse or recycling of existing local materials such as sandstone and brick is encouraged.

12 Large, unbroken expanses of any single material and finish (rendered or not) to building facades must be avoided.

Note: Refer to *Parts 6-10 of this DCP* for relevant building facade articulation controls.

13 New development is to avoid extensive use of highly reflective or gloss materials on the exterior of buildings.

14 For buildings of 3 storeys and above, a large expanse of sandstone or face brick is not to be used on the upper levels of the buildings.

Figure 23.4-1:
Use of lightweight materials to minimise bulk and scale of building.

23.4 MATERIALS AND FINISHES (continued)

Controls

15 The exterior finish material (eg. sandstone or brick) must be integral to the overall building façade design and must not appear to be cosmetic.

Figure 23.4-3:
Louvres and sliding panels as an integrated facade element.

16 Highly contrasting coloured bricks are to be restricted to use on building elements such as sills, window heads, string courses and to assist in the division of the building into bays.

17 For buildings of 3 storeys and above, lightweight materials and finishes (eg. timber and copper/steel) are encouraged for the upper levels of buildings to assist in minimising the bulk and scale of the building.

18 Where louvres are used, they are to be an integral element in the building façade design (e.g. west facing windows).

19 Where building cladding is used, consider dual purpose solutions. For example, use of photovoltaic cells mounted on panels used for cladding.

20 Where additions and alterations are proposed, external materials and finishes must complement the existing building.

Figure 23.4-2:
A mix of materials, finishes and colours for building facade.

Colours

21 The selection of a colour scheme for new development and in the restoration of existing facades must comply with the following guidelines:

i) Base colours for major areas of building façade are to be light in tone (eg. earth tone) with minimal colour intensity (or hue) eg. off white or grey colours. Larger expanses of bold colour, black and white must be avoided, as these detract from the prominence of other façade details. Contrasting tints, tones and shades are to be restricted to small areas. See *Figure 23.8-4*.

ii) Highlight colours to window and door mouldings, string courses, parapet details and the like, are to be in sufficient contrast to the base colour. Strong colours to large sections of the building must be avoided. Details should be finished in a matt to semi gloss range. See *Figure 23.8-4*

23.4 MATERIALS AND FINISHES (continued)

Controls

iii) Trim colours for window frames and awning fascias are to be a darker contrast to base and highlight colours. Window frames should be finished in either a semi gloss or full gloss.

22 Natural earth tones are to be used on building facades in close proximity to bushland.

23 For buildings of 3 storeys or above, recessive colours are encouraged for the upper levels of buildings to assist in minimising the bulk and scale of the building. Refer to *Figure 23.8-4*.

24 When repainting existing buildings, colours should generally be evocative of the era of the building.

25 For commercial/office development, the use of corporate colours to identify a business name is to be limited to signage, and must not be used as the main building façade colour.

26 Where buildings colours are representational of a company or brand, the colour scheme will be accepted by Council provided the built form has been designed to addressed the site attributes and constraints and the surrounding urban fabric. Stock standard building forms (representational of a company) placed onto a site regardless of the context will not be accepted.

Figure 23.4-4:
Preferred selection of colour schemes.

23.5 ROOF TERRACES AND PODIUMS

This section does not apply to single dwellings

Objectives

1 *To provide high quality of private and public common open space on roof terraces and podiums.*

2 *To design roof terraces so that they contribute to the streetscape.*

3 *To encourage use of low maintenance planting and low water use on roof terraces and podiums with appropriate support systems.*

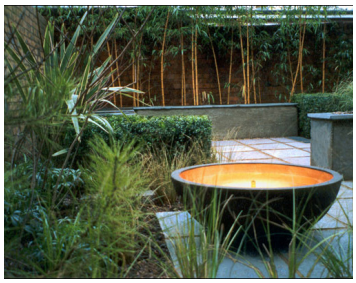


Figure 23.5-1:
Roof top recreation area.

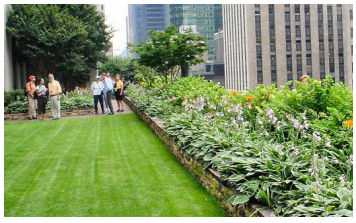


Figure 23.5-2:
Roof top public parkland.

Figure 23.5-3:
Roof top vegetable garden.

Controls

1 All roof terraces and podiums must provide appropriate building systems to make them trafficable, and to support landscaping.

2 Roof and terrace common open areas are to incorporate sun shading devices, wind screens and facilities such as BBQ and kitchenette area with drinking water to encourage usage.

3 Where artificial lighting is required, energy efficient lights must be used in conjunction with timers or daylight controls. All light spill is prohibited.

4 Roof terraces and podiums must provide soft landscaping areas that complement the appearance of the building, soften the edges of the building, and reduce the scale of raised terraces and other built elements such as services.

5 Robust and drought tolerant plant material must be used to minimise maintenance and ensure long term survival.

Note: Communal produce gardens are encouraged.

6 Roof terraces and podiums are to be designed for optimum conditions for plant growth by appropriate solar access, soil mix, and the provision of water connections and drainage.

7 Minimum soil provision for a range of plant sizes must be in accordance with the following:

i) large trees (canopy diameter of up to 16m at maturity)
- minimum soil volume 150m^3
- minimum soil depth 1.3m
- minimum soil area 10m x 10m area or equivalent

ii) medium trees (8m canopy diameter at maturity)
- minimum soil volume 36m^3
- minimum soil depth 1m
- approximate soil area 6m x 6m or equivalent

iii) small trees (4m canopy diameter at maturity)
- minimum soil volume 11m^3
- minimum soil depth 0.8m
- approximate soil area 3.5m x 3.5m or equivalent

iv) shrubs
- minimum soil depth 0.5-0.6m

v) ground cover
- minimum soil depth 0.3-0.45m

vi) turf
- minimum soil depth 0.1-0.3m

Note: Any subsurface drainage requirements are in addition to the minimum soil depths quoted above.

Note: Council will require a long term maintenance plan for both the greenery and the waterproofing.

23.5 ROOF TERRACES AND PODIUMS (continued)

Controls

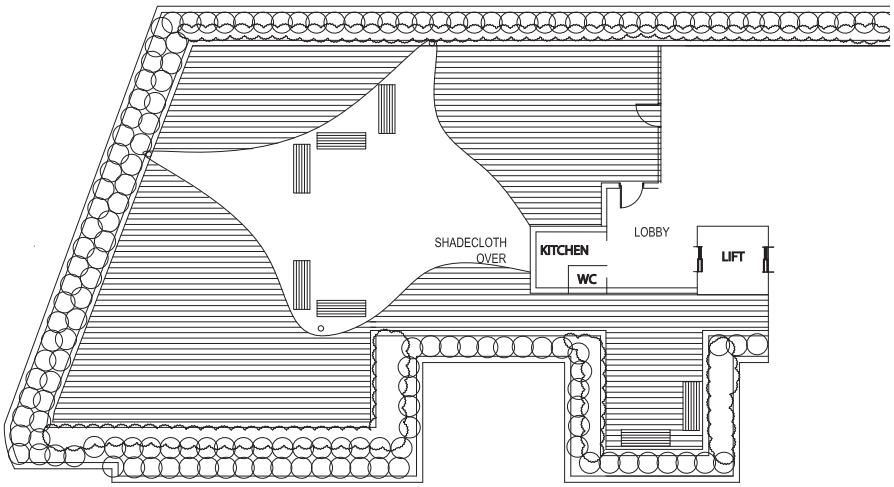


Figure 23.5-4: Roof terrace design

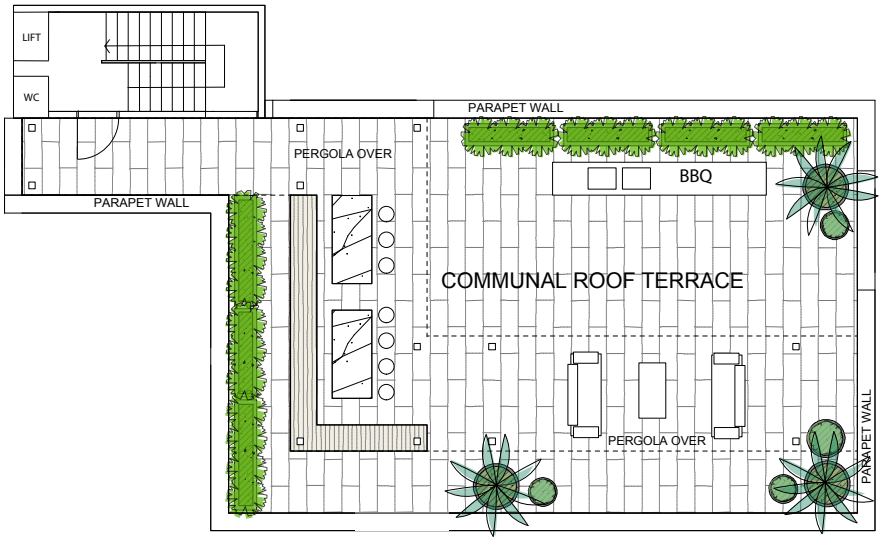


Figure 23.5-5: Roof terrace design

23.6 BUILDING SERVICES

Objectives

1 *To ensure visually intrusive service elements are located away from the streetscape.*

2 *To ensure that proposed or future service provision does not detract from the visual or general amenity of the building users.*

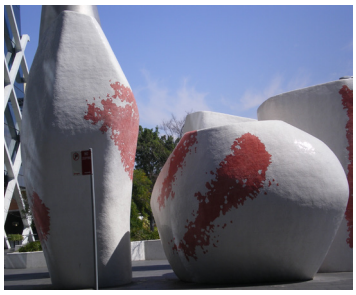


Figure 23.6-1 Public art used to hide ventilation stacks

Controls

1 All applicants must consult with service providers such as energy, electricity, gas, water, telephone and fire.

2 Services and structures required by the providers are to be located within basements, or concealed within the facade, with appropriate access. Where this is not possible, the proposal must demonstrate an alternative method of minimising street impact, such as screening with landscape or built elements. Particular care should be taken in mixed use precincts to ensure substations and fire hydrants are not visible from the primary street and principal active street frontages.

3 Ventilation stacks are to be concealed within the building. Where they exhaust at street level (eg. from basements) they should be integrated within the design of the site. (See *Figure 23.3-1*)

4 All new developments designed to allow for commercial uses must include an internal ventilation shaft to ensure future alterations do not place the shaft in an unsuitable location.

5 With the exception of dwelling houses, all buildings must accommodate proposed or future air conditioning units within the basement or on rooftops, with provision of associated vertical/ horizontal stacks to all sections of the building.

6 Air conditioning condensers are to be located within the basement or within the roof structure of the upper most roof. Air conditioning condensers are not to be located on:

   i) the building façade;

   ii) the top of a flat roof;

   iii) terraces;

   iv) private or communal open spaces; or

   v) balconies.

   Note: Where air conditioning condensers are to be located within the basement, certification from a mechanical engineer is to be provided confirming that the nominated area/plantroom will be large enough to accommodate the number of proposed condenser units. This certification must also indicate the likely required supply/extraction air flow within the plant room to demonstrate that ventilation requirements have been sufficiently incorporated into the basement design. Additionally there must be sufficient service ducting incorporated into the development so that the systems operate efficiently.

7 Air conditioning units located on the roof will only be permitted where they are well screened, integrated into the building form and do not result in adverse noise impacts on neighbouring occupants.

23.7 WASTE MANAGEMENT

Objectives

1 *To enable efficient, effective and sustainable waste management practices.*

2 *To ensure waste collection and storage within the site that does not affect the amenity of residents with regard to odour, visual appearance or noise disturbance.*

3 *To ensure waste and recycling storage areas are designed and constructed to meet the requirements of the building's use and its occupants.*

4 *To ensure design and management of waste and recycling facilities protect public health.*

Controls

General

1 All waste and recycling facilities must comply with the BCA and all relevant Australian Standards.

2 All waste and recycling storage containers must be stored within the boundary of the subject site.

3 All putrescible and non-putrescible waste materials stored in any waste and recycling room or at centralised collection points must be contained in approved rigid containers supplied by the Council.

4 During the design of the development, waste must be minimised by:

i) using recycled materials, selecting materials that reduce waste or do not require disposal, or can be reused or recycled in the future; and

ii) designing with minimal site disturbance by avoiding unnecessary excavation or fill.

5 No compaction equipment is to be used for any sized bin.

Storage Room

6 Sufficient space must be provided within the premises for the storage and manoeuvring of the number of bins required to store the volume of waste and recycling materials.

7 Sufficient space must be provided to adequately house any additional equipment to handle or manage the waste generated.

8 For buildings exceeding four (4) storeys which contain a residential component; where a chute system is proposed, a fully enclosed waste and recycling materials compartment must be provided within each storey of the building. The facility must be designed to contain the waste chute hopper and the number of recycling storage bins equivalent to 2 x 240 litre bins for every 4 units per storey.

Access to collection point

This section does not apply to residential developments of 4 dwellings or less, which do not have an internal collection point.

9 The location of the waste and recycling room must be conveniently accessible and have unimpeded access for both occupants and collection service operators. In the event that the proposed development is protected by a security system and/or locked gates, the waste and recycling room/s must have unimpeded access for the collection service providers. Where security gates are provided to the development, gates must be accessible by Council's master key.

10 The waste and recycling collection point must be located on a level surface away from gradients and vehicle ramps, with the path of travel being free from any floor obstructions such as steps to allow for the transfer of wheelie bins to and from the storage room to the collection vehicle.

23.7 WASTE MANAGEMENT (continued)

Controls

11 The vehicle access road leading to and from the collection point in a waste and recycling room must have a minimum finished floor to ceiling height of 2.6m for residential waste rooms and 4.5m for commercial waste rooms for the entire length of travel within the building. This clearance is to be kept free of any overhead conduits, ducting, services or other obstructions.

12 The Waste Management Plan (WMP) must describe how the waste management system is to be managed and who is responsible for each stage of the process. (Refer to Waste Management Plan, *23R.8 of this Part*)

Construction of waste and recycling rooms

13 The floor of any waste and recycling room must be:

i) constructed of either concrete which is at least 75mm thick; or other equivalent material; and

ii) graded and drained to a floor waste which is connected to the sewer.

14 The walls of any waste room, recycling room and waste service compartment are to be constructed of solid impervious material and shall be cement rendered internally to a smooth even surface coved at all intersections.

15 All waste and recycling rooms must be provided with an adequate supply of hot and cold water mixed through a centralised mixing valve with hose cock. This does not include waste and recycling service compartments located on residential floors of multi-occupancy dwellings.

Note: This control is to aid in cleaning of the area.

16 A close-fitting and self-closing door that can be opened from within the room must be fitted to all waste and recycling rooms.

17 In the event that Council permits the installation of a roller shutter door (under special circumstance only), a sign must be erected in a conspicuous position drawing attention to the fact the door must be kept closed at all times when not in use.

18 All waste and recycling rooms must be constructed to prevent the entry of vermin (eg. no gaps under access doors etc).

19 All waste and recycling rooms must be ventilated by either:

i) mechanical ventilation system exhausting at a rate of 5L/s per m^2 of floor area, with a minimum rate of 100L/s; or

ii) permanent, unobstructed natural ventilation openings direct to the building exterior, not less than one-twentieth (1/20th) of the floor area.

23.7 WASTE MANAGEMENT (continued)

Controls

20 Meters and piping are not to be located in the waste and recycling room.

21 All waste and recycling rooms must be provided with artificial light controlled by switches located both outside and inside the rooms.

22 Clearly printed “NO STANDING” signs must be affixed to the external face of each waste and recycling room.

23 Clearly printed signage must be affixed in all communal waste collection and storage areas, specifying which materials are acceptable in the recycling system and identifying the location of waste and recycling storage areas, as well as waste and recycling service compartments.

24 Waste management systems must not be visible from outside the building. Where this is unavoidable and Council is in agreement, it must be designed to be consistent with the overall appearance of the development.

Residential Buildings

25 Centralised waste collection points are required in the following circumstances:

i) Attached dwellings where the number exceeds four dwellings in total; and

ii) Where site characteristics (eg. steep sites, narrow street frontage) make access to the street difficult for individual unit holders and where placement of bins on the street frontage is assessed as dangerous for either the public or service personnel, or would have a detrimental effect on the street amenity.

Low / Medium Scale Residential

This section applies to single dwellings, including both the principal and secondary dwellings; dual occupancy development whether attached or detached; and small scale multi-dwelling housing where the number does not exceed four dwellings in total.

26 Council’s standard waste and recycling service is:

Waste Type	Bin Type
Waste (garbage)	1 x 120L
Co-mingled recycling	1 x 240L
Recycling of paper and cardboard	1 x 240L
Green waste (communal except for single dwellings) (subject to Owners Corporation Agreement on a fee for service basis)	1 x 360L

23.7 WASTE MANAGEMENT (continued)

Controls

27 Developments must allocate, within each property boundary, an area for storing Council specified waste and recycling bins, preferably located at the rear of the premises to minimise visual clutter. The storage area is to be a minimum of 3m from openable windows and integrated with the landscaping. Refer to *23R.5 of this Part* for bin characteristics.

28 An area is to be nominated for on-site composting.

Multi-Dwelling Housing

This section applies to multi-dwelling development, such as attached dwellings, townhouses and villas, where basement car parking is not provided and dwellings are separately accessed via a private access road, or where centralised arrangements are not required under *23.4 (25) of this Part*.

29 Space is to be provided for:

Waste Type	Bin Type
Waste (garbage)	1 x 120L
Co-mingled recycling	1 x 240L
Recycling of paper and cardboard	1 x 240L
Green waste (communal) (subject to Owners Corporation Agreement on a fee for service basis)	1 x 360L

Note: To check the service level for the relevant collection zone contact Council's Customer Service Section. Waste is collected weekly while all other waste types are collected on a fortnightly basis.

30 All new dwellings must be designed so as to allow the internal accommodation of one receptacle to collect waste and two receptacles to collect recycling materials, each with the capacity to store one day's worth of material.

31 All such developments must allocate, within each property boundary, an area for storing Council specified waste and recycling bins, preferably located at the rear of the buildings to minimise visual clutter. The storage area is to be a minimum of 3m from openable windows and integrated with the landscaping. Refer to *23R.5 of this Part* for bin characteristics.

32 An area is to be nominated for on-site communal composting.

33 Centralised collection points are to be provided, directly accessible from the street/rear lane and/or the internal road. Collection points must be located a minimum of 12m from any openable window. One collection point is to serve a maximum of 6 units.

34 Where on site collection points are provided, the full path of travel to and from the collection points is to be designed to allow a 6m rigid vehicle, weighing GVM 7 tonnes, to enter and exit the development in a forward direction.

23.7 WASTE MANAGEMENT (continued)

Controls

35 The maximum grade of any access road leading to a waste and recycling room must be not more than 1:5 (20%). The turning area at the base of any ramp must be sufficient to allow for the manoeuvre of a 6.0m rigid vehicle to exit the building in a forward direction.

36 A path shall be established for wheeling bins to the collection point; it must be level and free of steps or kerbs.

Medium / High Density Housing

This section applies to attached dwellings where the number exceeds four dwellings in total (eg. residential flat building, multi-dwelling housing) where basement parking is provided.

37 Council's standard waste and recycling service for multi-dwelling housing and residential flat development, where the number of units exceeds four is as follows:

Waste Type	Number of Units	Number of Bin/s
Waste (garbage)	N/A	1 x 120L MGB per unit dwelling or 1 x 240L MB per 2 units
Co-mingled recycling of glass, steel and aluminium cans and plastic etc	For every 4 units or part thereof.	1 x 240L MGB (communal)
Recycling of paper and cardboard	For every 4 units or part thereof.	1 x 240L MGB (communal)
Green waste	Optional	Please contact Council's Waste Service Team to discuss options. Green waste bins will be subject to Owners Corporation Agreement on a fee for service basis. Green waste bins will be serviced from the street frontage due to the small number of bins involved.

Note: To check the service level for the relevant collection zone contact Council's Customer Service Section. All bins are collected weekly except green waste bins. Please contact Council's Waste Service Team to discuss options.

38 All new dwellings must be designed so as to allow the internal accommodation of one receptacle to collect waste and another to collect recycling, each with the capacity to store one day's worth of materials.

23.7 WASTE MANAGEMENT (continued)

Controls

39 Centralised waste and recycling rooms must be provided in the basement that has sufficient capacity to store all waste and recycling likely to be generated in the entire building in a week.

40 The full path of travel to and from the waste and recycling room is to be designed to allow a 6m rigid vehicle, weighing GVM 7 tonnes, to enter and exit the development in a forward direction.

41 The maximum grade of any access road leading to a waste and recycling room must be not more than 1:5 (20%). The turning area at the base of any ramp must be sufficient to allow for the manoeuvre of a 6.0m rigid vehicle to exit the building in a forward direction.

42 The minimum floor to ceiling height within the vehicle accessway leading to and from the waste and recycling room(s) must be 2.6m for the entire length of travel required within the development.

Note: Prior to pouring of the ground floor slab, the applicant will be required to obtain confirmation from Council engineers that 2.6m headroom has been provided.

43 Noise attenuation measures are required to ensure that the use of, and collection from, the waste and recycling room do not give rise to "offensive noise" as defined under the *Protection of the Environment Operations Act 1997.*

44 An area is to be nominated for on-site communal composting.

Mixed Use Buildings

45 In a mixed use development, the waste handling, storage and collection system from residential waste and commercial waste must be completely separate and self-contained.

46 There must be at least two separate centralised waste and recycling storage areas, one for residential waste and one for commercial. The WMP shall identify the collection points and management systems for both residential and commercial waste streams.

47 An area must be nominated on relevant plans for on-site composting and/or worm farm if the proposal has a residential component.

48 Where there is a residential component, any new dwellings must be designed so as to allow the internal accommodation of one receptacle to collect waste and another to collect recyclable materials, each with the capacity to store one day's worth of materials.

Other Development Types

This section applies to other development types not covered by controls 25 to 48 above. It applies to any development that incorporates a commercial, business or light industrial use (eg. retail premises, offices,

Controls

hospitals, restaurants and food retailers, light industries, residential care facilities and the like).

49 Buildings must have a dedicated and enclosed waste and recycling room(s) which has adequate storage area to meet the generation rates (refer to *23R.10 of this Part*).

50 Centralised collection points are to be provided, directly accessible from the street/rear lane and/or the internal road. Collection points must be located a minimum of 12m from any openable window. One collection point is to serve a maximum of 6 units.

51 Where on site collection points are provided, the full path of travel to and from the collection points is to be designed to allow an appropriately sized rigid vehicle to enter and exit the development in a forward position. The design and location of the waste and recycling room must allow for adequate access for the relevant vehicle size, including manoeuvring and loading.

Note: Standard sizes include a 6m rigid vehicle, weighing GVM 7 tonnes and an 11m rigid vehicle, weighing GVM of 22 tonnes. The size will be dependent on the the intended usage and quantity of waste generated by the development type. Consultation with Council's waste section early in the design phase to ascertain the relevant vehicle size is strongly recommended.

52 A path shall be established for wheeling bins to the collection point; it must be level and free of steps or kerbs.

53 The size and design of the waste and recycling rooms must be based on the following criteria:

i) the proposed and potential land use of the building;

ii) the floor area of the building;

iii) the number of separate occupancies contained within the development;

iv) waste and recycling generation rates associated with the land use;

v) type and amount of waste/recycling to be produced;

vi) the number and sizes of bins required to contain waste/recycling materials likely to be generated during the period between collections; and

vii) the size and design of the waste/recycling storage is to allow for future changes of use.

54 If Council is to collect commercial waste from the premises, the minimum floor to ceiling height within the vehicle accessway leading to and from the waste and recycling room(s) must be 4.6m for the entire length of travel required within the development. Otherwise, any development application is to be accompanied by documentary

23.7 WASTE MANAGEMENT (continued)

Controls

evidence from at least three contractors giving the dimensions of their vehicles and confirming that they are willing to collect waste from the building after construction.

55 For recycling materials, clinical, medical or liquid waste, the design must reflect the separate storage, operation and management of these waste materials within the development.

56 In the event of the generation of:

i) more than 1.5m^3 per day of food waste, other than unprocessed or uncooked fruit and vegetables; or

ii) organic veterinary or medical waste;

stored waste must be refrigerated unless collected daily.

57 Where refrigeration is required:

i) the temperature must be maintained at or below 5°C;

ii) all refrigeration equipment must be installed with sufficient space for cleaning both the equipment and the storage area;

iii) the floors walls and ceiling of the refrigerated waste room must be constructed of a smooth impervious material and coved at all intersections;

iv) the floor of the refrigerated waste room must be graded to the doorway and a floor waste, designed in accordance with Sydney Water guidelines, shall be located outside the room as close as practicable to the doorway; and

v) noise attenuation measures must be put in place to ensure that the noise generated by the refrigeration equipment associated with the waste and recycling room shall not give rise to “offensive noise” as defined under the *Protection of the Environment Operations Act 1997*.

58 In circumstances involving the use of baling equipment for paper and cardboard, sufficient area must be provided for the storage of a minimum of four (4) bales without impacting on the access and service conditions for collection materials for each day.

59 Where liquid wastes such as oils are generated by the business, a separate bunded storage area for these wastes must be provided with drainage directed to a grease trap. The bunded area is to be weather protected and have a capacity not less than 20% of the storage contents to contain any spill.

Note: Liquid waste from grease traps must only be removed by licensed waste contractors approved by Sydney Water Corporation and the NSW Environment Protection Authority.

60 Any construction for food premises must be in accordance with the ‘National Code for the Construction and Fit-out of Food Premises’

Note: Contact Council for a copy of this Code and advice on the construction of food premises.

23.7 WASTE MANAGEMENT (continued)

Controls

61 For retail premises, light industry, hospitals, residential care facilities, a waste service compartment must:

i) be provided on each storey of the building;

ii) have the capacity to store at least one day's volume of waste and recycling likely to be generated on that floor; and

iii) provide for the separation of paper and cardboard for recycling on each storey.

62 If more than $10m^3$ of waste and recycling is likely to be generated per day, then the central waste and recycling room must be separate from the goods receival dock.

63 Separate space and collection arrangements must be made for clinical/hazardous waste.

64 For offices, provision must be made on each floor and in the central waste and recycling storage area, for the separation and storage of all recyclable materials such as cardboard, paper and paper products likely to arise on the premises.

65 Easement waste collection must be in accordance with terms in 24R.8 of this DCP.

23.8 GENERAL ACOUSTIC PRIVACY

Further controls that may apply:

SECTION B
PART 20 - Development Near Road or Rail Noise

Objectives

1 *To ensure high standards of acoustic privacy for all occupants of the development.*

2 *To minimise the impact of the development on the acoustic privacy of neighbouring developments.*

3 *To ensure housing adjoining main roads is designed and constructed to minimise the impact of external noise and facilitate comfortable living conditions for residents.*

4 *To ensure measures to address acoustic privacy have regard to the existing or desired future character of the street.*

Service and circulation areas used to buffer noise sensitive areas.

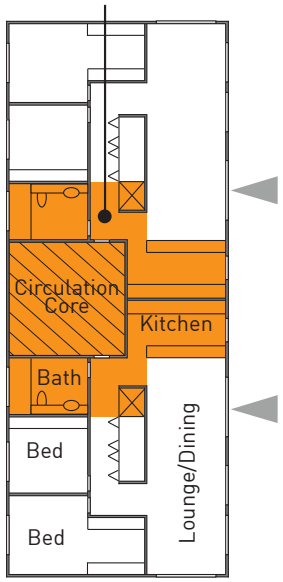


Figure 23.8-1:
Buffer zone to minimise noise pollution.

Controls

1 Development is to be designed to minimise the impact of external noise sources (eg busy roads, railways, swimming pools, heavy vehicle entries) on the internal and external spaces used by occupants.

2 Balconies and other external building elements are to be designed and located to minimise infiltration and reflection of noise onto the facade.

3 Buildings must be designed to minimise noise transmission by, but not limited to:

i) careful siting and orientation of the building;

ii) locating bedrooms away from both internal and external noise generators of a development, eg by using storage or circulation areas as a buffer or grouping room uses according to the noise level generated.

Note: Internal noise generators include, but are not limited to - kitchens, laundries and living areas

External noise generators include, but are not limited to - traffic, railway line, vehicle entries and mechanical equipment; pool pumps, air conditioning units, garbage collection areas, tennis courts.

iii) fitting out building services with appropriate acoustic insulation;

iv) incorporating appropriate noise shielding or attenuation techniques into the design and construction of the development.

4 Measures such as mounding or high solid fencing will only be permitted where they are compatible with the streetscape.

5 When designing and siting active open space areas (eg BBQ areas, swimming pools, communal areas etc) regard must be paid to potential noise impacts on adjacent rooms and buildings, such as bedrooms.

6 Noise levels associated with air conditioning, kitchen, bathroom, laundry ventilation, or other mechanical ventilation systems and plant either as an individual piece of equipment or in combination shall not be audible within any habitable room in any residential premises before 7am and after 10pm. Outside of these restricted hours noise levels associated with air conditioning, kitchen, bathroom, laundry ventilation, or other mechanical ventilation systems and plant either as an individual piece of equipment or in combination shall not emit a noise level greater than 5dB(A) above the background noise (LA90, 15 min) when measured at the boundary of the nearest potentially affected neighbouring properties. The background (LA90, 15 min) level is to be determined without the source noise present.

Note: Council requires an acoustic assessment be undertaken for multi-dwelling housing, residential flat buildings, mixed-use development, non-residential buildings, and child care centres. Council may require an acoustic assessment be undertaken for dwelling houses and secondary dwellings. Assessment must be undertaken by a suitably qualified acoustic consultant to assess compliance with the above criteria. Recommended noise attenuation measures must be included in this report where applicable.

23.9 GENERAL VISUAL PRIVACY

Objectives

1 *To ensure the impact of development on the visual privacy of neighbouring occupants is minimised.*

2 *To ensure that the level of visual privacy to principal living areas and private open spaces is appropriate to the development type.*

3 *To ensure high standards of visual privacy for all occupants within low density residential development.*

4 *To ensure visual privacy measures do not compromise outlook, ventilation and solar access or the functioning of internal and external spaces.*

Controls

1 Private open spaces and principal living spaces of the proposed dwelling/s and adjacent dwellings are to be protected from direct or unreasonable overlooking from all new residential and non-residential developments. Siting and design measures to achieve this include:

i) use of distance or slope;

ii) appropriate dwelling layout;

iii) off-setting windows in relation to adjacent windows;

iv) use of obscure glass or highlight windows;

v) screening devices such as fences, louvres, translucent screens, perforated panels, trellises and courtyard walls;

vi) using louvres/screen panels to windows and balconies (see Figure 23.9-1);

vii) using solid or semi-transparent balustrades or screens to balconies or terraces (see Figure 23.9-2);

viii) off setting balconies in relation to adjacent balconies;

ix) using recessed balconies and/or vertical fins between adjacent private balconies;

x) using deep sills with planter boxes or incorporating planter boxes into walls or balustrades (see Figure 23.9-3).

xi) providing vegetation as a screen between spaces;

xii) utilising pergolas or shading devices to limit overlooking of lower building levels or communal and private open space.

Figure 23.9-1:
Balconies with sliding panels to increase visual privacy.

Figure 23.9-2:
Use of a mix of solid and transparent balustrades on different levels to ensure visual privacy.

23.9 VISUAL PRIVACY(continued)

Controls

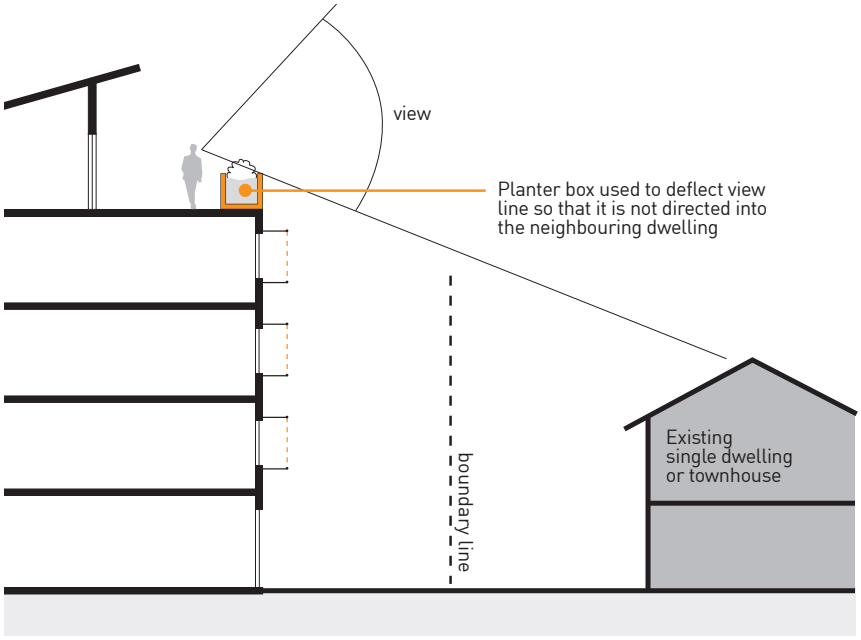


Figure 23.9-3: Incorporation of planter boxes into walls or balustrades for visual privacy.

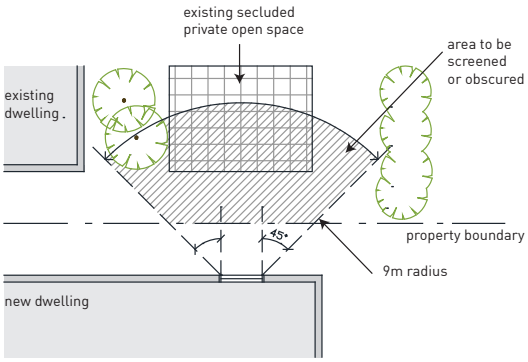


Figure 23.9.4: Designs incorporating screening to protect residents of the development.

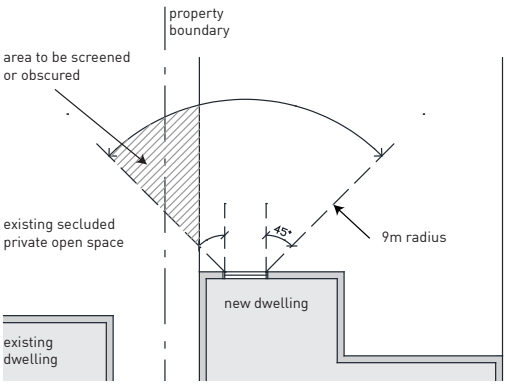


Figure 23.9.5: Area of neighbouring development to be protected from overlooking..

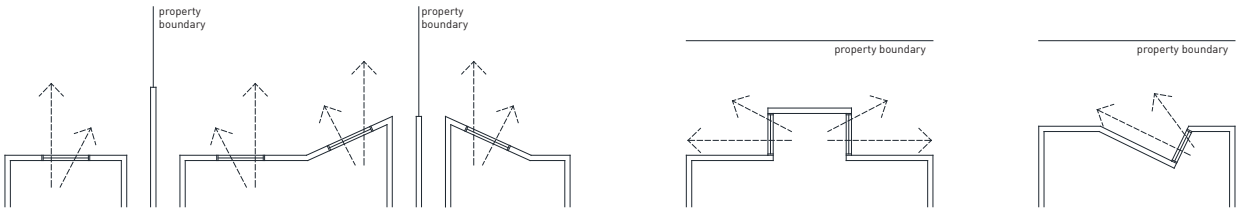


Figure 23.9.6: Arrangement of windows to avoid overlooking of adjacent open space or living areas

23.9 VISUAL PRIVACY(continued)

Controls

2 For low density residential development first floor decks, balconies and roof top terraces are not permitted where they unreasonably overlook or would directly overlook principal living spaces or private open space and the impact cannot be adequately mitigated.

3 Continuous transparent balustrades are not permitted to balconies or terraces for the lower 3 storeys.

23.10 CONSTRUCTION, DEMOLITION AND DISPOSAL

Objectives

1 *To preserve the various natural elements and habitats such as soil profile, vegetation, natural rock shelves and watercourses.*

2 *To protect existing trees and the natural elements of the site, including soil profile, vegetation, rock outcrops and water courses.*

3 *To reduce the volume and cost of construction and demolition waste material.*

4 *To protect neighbouring structures and minimise disturbance to neighbouring and downstream properties.*

5 *To ensure regular rainfall events do not adversely affect water quality.*

6 *To protect the sensitive Hawkesbury Sandstone communities in the LGA.*

7 *To prevent cumulative impacts from pollutants, (such as excess nutrients, sediment) on downstream ecosystems.*

8 *To maintain visual amenity of the locality and the natural environment.*

Controls

Environmental Site Management Plan

1 Site disturbance during construction or demolition must be minimised by:

i) avoiding excavation beyond the building area;

ii) restricting machinery and vehicle movement to the building footprint and access corridor;

iii) locating service lines close to the building or within previously excavated areas where possible; and

iv) locating storage areas to areas outside the tree protection zones of trees to be retained.

2 An environmental site management plan showing tree protection areas, machinery usage zones, storage areas, site sheds and location of stormwater pollution barriers is to be submitted with the application as per Councils DA Guide.

Waste Management Control

3 A Waste Management Plan (WMP) must be submitted with the application, in accordance with *23R.8 of this Part*. Evidence such as weighbridge dockets, copies of invoices or some other form of written evidence will be required to be submitted to Council on completion of the development to verify the quantities and destination of waste and recycling materials generated during works (either demolition and or construction).

Note: Plans and drawings of the proposed development that highlight the location of and space allocated to the waste management facilities and the nominated waste collection point must be attached to the WMP. The path of access for both users and collection vehicles must also be highlighted.

4 Provide source separation facilities on building sites so that different waste streams may be easily separated during construction and demolition to encourage the reuse and recycling of materials.

Stormwater Quality Control During Construction

5 Manage soil, water and materials on construction sites to prevent erosion, sedimentation and pollution of waterbodies and the natural environment.

6 Manage the quality and quantity of post-construction stormwater runoff from the site to protect downstream ecological communities, to prevent altered nutrient regimes and to reduce litter entering the waterways.

7 Control erosion and sedimentation by:

i) minimising the extent of disturbance;

ii) rapidly stabilising the disturbed areas;

iii) diverting clean runoff around work areas; and

iv) trapping eroded sediment as close to the source as is practical.

23.10 CONSTRUCTION DEMOLITION AND DISPOSAL (continued)

Controls

8 Provide for appropriate management of wastes, chemicals and fuel through:

i) Appropriate storage and handling to prevent discharge of pollutants to waterways;

ii) On-site containment of waste water from construction activities;

iii) Appropriate storage and disposal of waste materials; and

iv) Appropriate management and disposal of waste water.

Note: Under the *POEO Act 1997*, owners and builders have a responsibility to notify Council or the Environment Protection Authority (NSW Office of Environment and Heritage) of any harmful pollution incident as soon as is practicable.Allowing pollutants (including sediment) to enter any waterway is an offence under the *Protection of the Environment Operations Act 1997*.

Failure to notify could result in a maximum fine of $250,000 for corporations and $120,000 for individuals.

Erosion and sediment control

9 All activities that have the potential to pollute must comply with the requirements of the Protection of the Environment Operations Act

10 All development applications must be accompanied by an 'Erosion and Sediment Control Plan' (ESCP) that describes the measures undertaken at development sites to minimise land disturbance and to control sediment pollution. The ESCP shall be prepared in accordance with "Managing Urban Stormwater, Soil and Construction, 2006 (Landcom)".

11 Disturbance to existing vegetation should be minimised when installing controls, especially along watercourses, on highly erosive lands and in high-conservation-value areas.

12 Where land disturbance activities occur in riparian zones (Category 1 and 2) or watercourses, a separate Vegetation Management Plan may be required. This plan is to cover all disturbed lands within the riparian zone. It should address revegetation, bush regeneration and weed control. It should ensure that previously stored topsoil is respread over disturbed lands and the litter layer is restored. Any imported topsoil must be weed free.

Note: Under the POEO Act 1997, it is an offence to store hazardous and dangerous liquids (including oils, solvents, fuels, acids and paints) in such away as to allow any water pollution incident to occur. Also you need to be in accordance with the Ku-ring-gai Council DA guide.

23.10 CONSTRUCTION DEMOLITION AND DISPOSAL (continued)

Controls

13 All disturbed areas should be rehabilitated as soon as possible after excavation or completion of the construction period. This includes, but may not be limited to:

i) restoration of all surfaces to their original condition (or as specified);

ii) re-establishment of surface stability with suitable cover to achieve a permanent C-factor of less than 0.1 (equivalent to 60 per cent ground cover) within 20 working days from the start of works.

14 Disturbance to existing vegetation should be minimised when installing controls, especially along watercourses, on highly erosive lands and in biodiversity significant areas.

PART 23R

REFERENCES

23R References

23R.1 EXAMPLES OF ESD MEASURES

Water Efficiency

These measures ensure all non-residential buildings implement systems of water collection and recycling. Systems to minimise mains water usage may include:

i) on-site rainwater collection and on-site waste water treatment to provide recycled water for use within the development;

ii) provide low flush toilets and water efficient fixtures and fittings, including waterless urinals;

iii) utilise water efficient landscape principles, such as the selection of low water usage species, including local species, and the use of tree foliage to create on ground shade and windbreaks.

Energy Generation

These measures encourage implementation of systems that provide alternative energy sources. Energy generation measures may include:

i) solar louvres (powered by photovoltaic cells) that track the sun to supply building use;

ii) solar hot water system;

iii) solar energy collection technology such as solar heat pumps for hot water and photovoltaic cells;

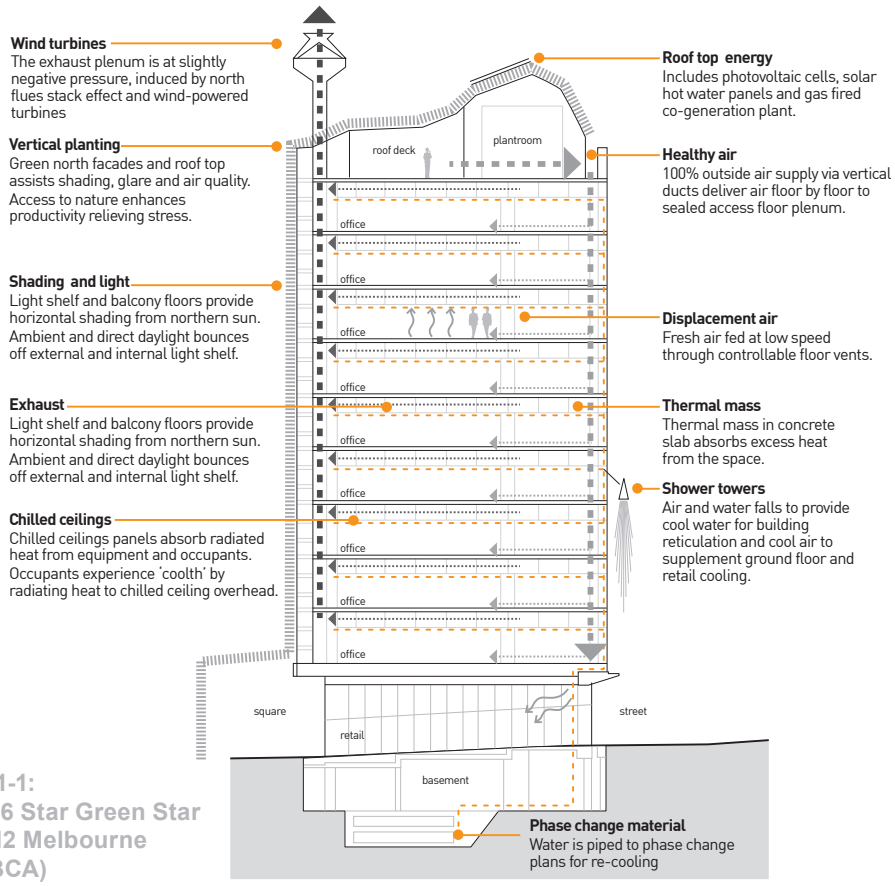


Figure 23R.1-1: Example of 6 Star Green Star Building CH2 Melbourne (Source: GBCA)

23R.1 EXAMPLES OF ESD MEASURES (continued)

i) use of photovoltaic cells which can be mounted as panels, or used as an integrated building cladding as shading device;

ii) use of co-generation or tri-generation plants located within the basement to service the whole building; and

iii) wind turbine technology.

Heating and Cooling

These measures reduce the heat and carbon output of non-residential buildings. Alternative heating and cooling measures may include (refer to *Figure 23R.1-2*):

i) displacement ventilation with low level air delivery and high level air exhaust to create air change effectiveness;

ii) thermal chimneys in atriums to draw warm air up and out of work areas;

iii) new generation cooling systems such as chilled ceiling beams;

iv) active mass cooling system utilising thermo-active slabs and concrete core conditioning;

v) radiant slab heating to provide energy efficient thermal comfort;

vi) night purge systems to cool and clear stale air within the building;

vii) roof surfaces with a sheen finish that reduce heat gain in summer (only where they do not impact on the amenity of neighbour in terms of glare and reflectivity);

viii) roof gardens and landscaped terraces which provide thermal insulation;

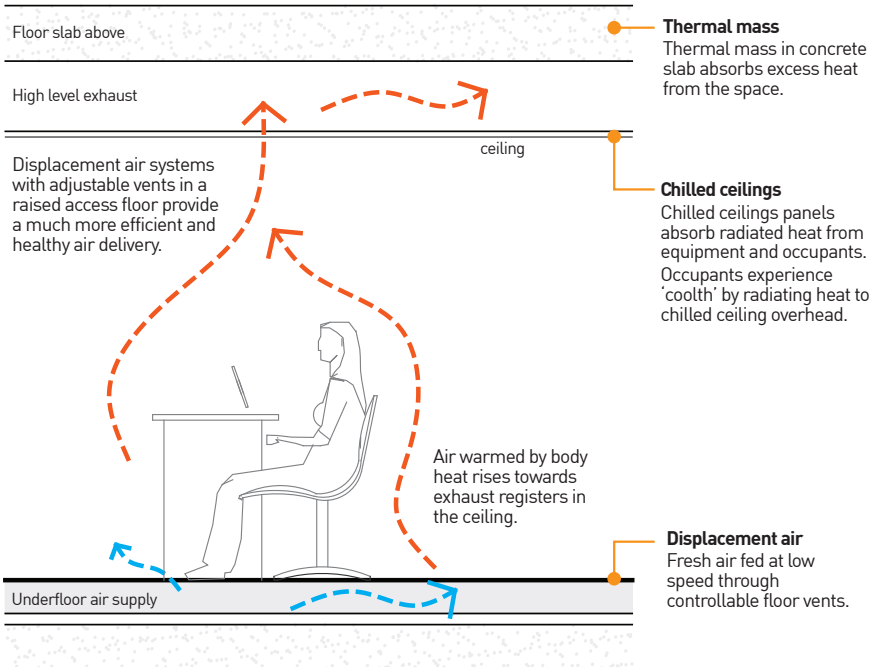


Figure 23R.1-2:
A displacement air system. Removing contaminants efficiently with 100% fresh air supply, resulting in a healthier work environment.

23R.1 EXAMPLES OF ESD MEASURES (continued)

ix) use of tri-generation plants located within the building basement;

x) use of vertical planting to shade building elevations;

xi) insulation and ventilation of roof spaces; and

xii) use of heavy weight building materials, such as concrete, for thermal mass on flat roofs and/or walls. Where lighter weight materials are used they are to be well insulated.

Lighting

These measures reduce the energy uptake for lighting systems within non-residential building sites. Measures to reduce artificial light use may include (refer to *Figure 23R.1-3*):

i) considering internal building use relative to window location;

ii) consider fenestration with high performance glazing with spectrally selective glass that allows views and a high degree of diffused natural light into the workspace without glare;

iii) select and position light fittings to minimise energy consumption. For example create separate lighting zones for areas close to and further away from windows;

iv) lighting used in common areas such as entries, corridors, car parks and communal open space areas must utilise daylight sensor control, movement detectors, automated dimmers and timers. Lightspill must be controlle;.

v) improve internal natural light reflection and minimise lighting use by using light coloured internal finishes;

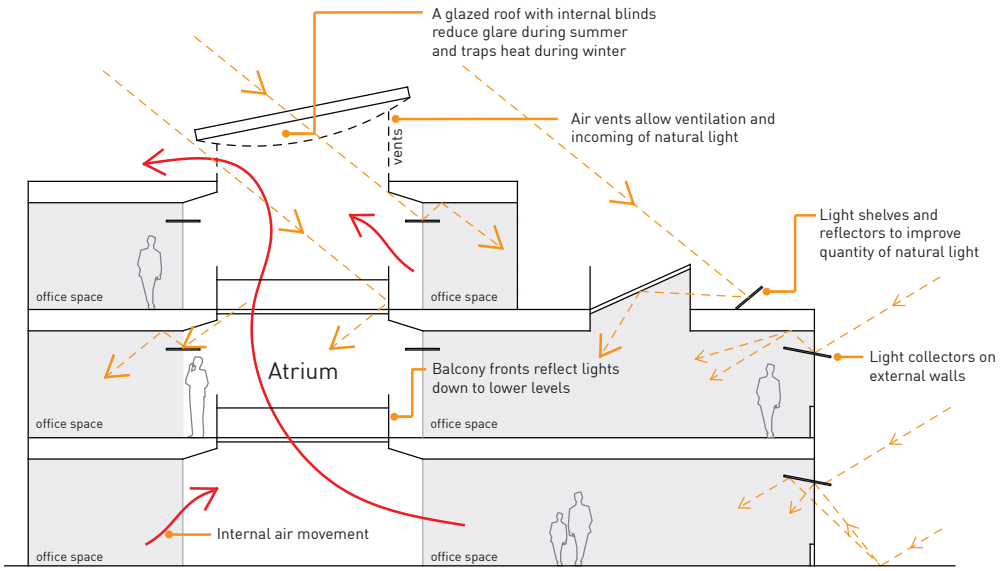


Figure 23R.1-3:
Lighting and ventilation.

23R.2 GREEN STAR RATING INFORMATION SHEET

What is the Green Rating Star environmental rating system?

The Green Star environmental rating system for buildings was developed by the Green Building Council of Australia (GBCA). Green star is a comprehensive rating system for evaluating the environmental design and performance of Australian buildings based on a number of categories. The nine categories included within all Green star rating tools are:

- Management
- Indoor Environmental Quality
- Energy
- Transport
- Water
- Materials
- Land use and Ecology
- Emissions
- Innovation

These categories are divided into credits, each of which addresses an initiative that improves or has potential to improve environmental performance. Points are awarded in each credit for actions that demonstrate that the project has met the overall objectives of Green Star. Once all claimed credits in each category are assessed, a percentage score is calculated and Green Star environmental weighting factors are then applied.

What do Green Star ratings mean?

Green Star rating tools use stars to measure performance:

i) 4 Star Green Star Certified rating (score 45-59) signifies 'Best Practice' in environmentally sustainable design and/or construction;

ii) 5 Star Green Star Certified rating (score 60-74) signifies 'Australian Excellence' in environmentally sustainable design and/or construction;

iii) 6 Star Green Star Certified rating (score 75-100) signifies 'World Leadership' in environmentally sustainable design and/or construction.

Projects that obtain a 4 Star rating or above using the GBCA rating tools, are eligible to apply for formal certification through the GBCA, following which they are permitted to advertise their status as "green buildings".

Why should buildings have a Green Star Rating?

Green Star Rating confirms that the building is designed with sustainable principles that will contribute to the reduction of carbon emissions and the preservation of non-renewable material sources. It also sets up a system of ongoing sustainable management that enables the ongoing operation of the building to remain sustainable. In addition, there are many business benefits of Green Star buildings as outlined below:

23R.2 GREEN STAR RATING INFORMATION SHEET (continued)

Lower operating costs

Green buildings are built for high energy and water efficiency, so they are cheaper to operate. Green buildings achieve energy savings of at least 20-30% when compared with industry standards, and sometimes much more.

The Szencorp Building at 40 Albert Road in South Melbourne, for instance, was the first existing office refurbishment in Australia to be awarded a 6 Green Star - Office Design rating, and has reported energy savings of over 70% after two years of operation.

Higher return on investment

Green buildings deliver a higher return on investment. The McGraw Hill Construction Report (2007) found that building green increases a property's value by 7.5% and improves the return on investment by 6.6%. the Royal Institution of Chartered Surveyors' report Green Value: Growing Buildings, Growing Assets (2006) confirms this, revealing that green building practices improve an asset's value by securing tenants more quickly, commanding higher rents or prices, enjoying lower tenant turnover, costing less to operate and maintain, attracting grants, subsidies and other inducements, and improving business productivity for occupants, which affects churn, renewals, inducements and fitting out costs.

Greater tenant attraction

More tenants are seeking environmentally sustainable , healthy and productive workspaces that demonstrate their commitment to corporate social responsibility.

The BCI Australia Green Building Market Report (2008) found that client demand is one of the primary drivers for committing to green building, with 65% of respondents nominating it as an important factor. In return, owners are rewarded with decreased vacancy periods and a subsequent increase in occupancy ratios of 3.5%.

Enhanced marketability

The owners of Australia's first Green Star certified project at 8 Brindabella Circuit in Canberra say they could not put a financial figure on the amount of free publicity they have received from their green building, both through their Green Star certification and their subsequent environmental awards. In fact, the owners have needed to completely rethink their marketing strategy, as they now have a waiting list of prospective tenants.

Productivity benefits

Green buildings consistently outperform non-green buildings in terms of comfort and productivity. Natural light, fresh air and access to views of the outdoors, as well as control over their own individual workspace temperature and lighting, can directly affect productivity.

23R.2 GREEN STAR RATING INFORMATION SHEET (continued)

For example, a post-refurbishment study of 500 Collins Street in Melbourne found a 9% increase in typing speeds of secretaries and a 7% increase in lawyers' billings ratio despite a 12% decline in the average monthly hours worked. At the City of Melbourne's 6 Star CH2 building, productivity has risen by an impressive 10.9% since staff moved into their green office, with an estimated annual cost savings of $2 million.

Note: Refer to *www.gbca.org.au* for more information

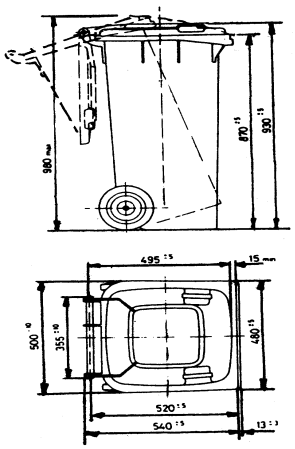
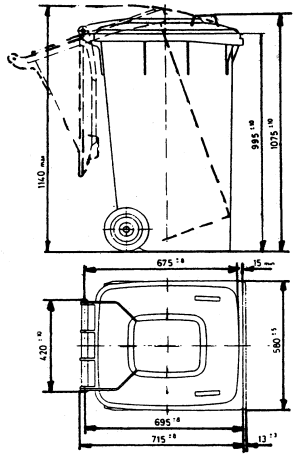
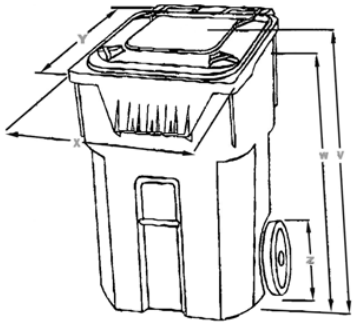
23R.3 CHECKLIST OF ESD MEASURES TO BE SUBMITTED WITH DEVELOPMENT APPLICATION AND UPDATED FOR CC APPROVAL

CHECKLIST OF ESD MEASURES

Project details:

From updated Credit Summary			From updated ESD Report			From proposed Schedule of Works	CERTIFIER CHECK
Category	Title	Points achieved	Description of system/element	Location in building	DWG Ref.	Estimated Installation dates for system/element	

23R.4 COUNCIL'S STANDARD BIN CHARACTERISTICS

Bin Type	Characteristics	Uses
120 Litre MGB		**Landfill Collection** Used for domestic waste that cannot be recycled. Contents to be taken to landfill.
240 Litre MGB		**Co-mingled/Paper Recycling** Used for the storage of material that can be recycled. Two bins are supplied, one for paper and cardboard while the other is for co-mingled material such as plastics, metal and aluminum cans.
360 Litre MGB		**Vegetation Recycling** Used for the storage of vegetation material for recycling as garden mulch or similar.

Dimensions		
Overall Height	V	1171mm
Cart Body Height	W	1088mm
Overall Width	X	704mm
Overall Depth	Y	803mm
Wheel Diameter	Z	305mm
Load Rating		154Kg

23R.5 COUNCIL'S COLLECTION VEHICLE CHARACTERISTICS

Waste collection vehicles may be side loading, rear end loading or top loading. The size of the vehicle varies according to the collection service. Thus it is impossible to specify what constitutes the definitive garbage truck. Developers must consult with Council regarding the type of vehicle to be used for the development if the development is to be serviced by Council collection vehicles.

The following characteristics represent the typical collection vehicle used by Council; however these are for guidance only.

Any turning circle considerations must also include allowances for driver steering error and overhangs. The steering error allowances shall be at least 0.6 metres (absolute minimum) on both sides of the theoretical wheel path, and 1m as a desirable minimum.

1 Collection from Enclosures

Collection vehicles may enter building basements for the collection of waste and/or recyclables provided the following requirements are met:

i) the gradient of the ramp access to basement should not exceed 1:5;

ii) the height to the structural members and upper floor ceiling should allow for a typical collection vehicle travel height / operational height consistent with type of vehicle employed;

iii) the provision of space clear of structural members or vehicle parking spaces is adequate to allow the typical three-point turn of collection vehicles; and

iv) the basement floor should be of industrial-type strength pavement and designed for a maximum wheel loading of 7 tonnes per axle in order to accommodate waste and recycling collection trucks.

23R.6 VEHICLE ACCESS/TURNING CIRCLES

Best design practice for access and egress from a development calls for a separate entrance and exit to allow the collection vehicle to travel in a forward direction at all times. Where there is a requirement for collection vehicles to turn at a cul-de-sac head within a development, the design should incorporate a bowl, 'T', or 'Y' shaped arrangement.

1 The design aspects that shall be taken into account include the following:

i) placement of waste and recycling bins outside each home, or in a common collection area;

ii) the presence of parked cars on access roads;

iii) trucks should only be expected to make a three-point turn to complete a U-turn; and

iv) allow for collection vehicle overhang and possible interference with bins and road furniture.

2 Internal Road Geometry

The design parameters covered in *AS2890.2 Off Street Parking – Part 2 Commercial Vehicle Facility* must be complied with.

23R.7 WHAT IS A WASTE MANAGEMENT PLAN?

1 A waste management plan (WMP) is a checklist that provides Council with details of the following:

i) the volume and type of waste to be generated;

ii) how the waste is to be stored and treated on site;

iii) how and where the non-reusable, or recyclable residual, is to be disposed of; and

iv) how ongoing waste management for the site will operate.

Completion of the WMP will help to determine what materials are on the site and how and where they will be stored, re-used/recycled and eventually disposed of. A list of local outlets and other waste disposal facilities can be obtained from Council's '*Register of Waster Receiving Facilities for Waste Planning*' and from the Waste Service NSW recycling directory.

A copy of the proforma WMP follows. Further copies can be obtained from Council's Customer Service counter or from Council's website (www.krg.gov.au).

23R.8 WASTE MANAGEMENT PLAN

To be completed for all Developer Applications:

To facilitate sustainable waste management and waste reduction, Council requires on-site sorting and storage of waste products pending re-use or collection. Completing this proforma will assist you in identifying the type of waste that will be generated and in advising Council how you intend to reuse, recycle or dispose of your waste.

The information provided on the proforma (and on your accompanied plans) will be assessed against the design objectives of the DCP (e.g. to maximise reuse and minimise disposal where possible) and the relevant controls for your particular use.

If space is insufficient in the table please provide attachments.

Outline of Proposal

Applicant's Name & Address: _____

_____

Phone: _____Fax: _____

Site Address: _____

Buildings & other structures currently on the site: _____

_____

_____

Builders Name & Address: _____

_____

Brief Description of Proposal: _____

_____

_____

_____

The details provided on this form are your intentions for managing waste relating to this project.

Signature of Applicant: _____ Date: _____

23R.8 WASTE MANAGEMENT PLAN (continued)

Section One: To be completed for all Development Applications involving demolition (including major renovations and excavation), single-dwellings, dual occupancy and non-habitable building or structure.

	Weight/ Volume	Reuse/Recycling On site	Off site/Recycling Specify name & address of contractor/recycling outlet	Disposal Specify name & address of contractor/recycling outlet
Timber		☐ Chip for landscaping on site ☐ Reuse ☐ Other _____	☐ Deliver to second hand building yard ☐ Other _____	☐ Landfill _____ ☐ Other _____
Plasterboard		☐ Mulch on site ☐ Other _____	☐ Return good quality remnants to _____ ☐ Other _____	☐ Landfill _____ ☐ Other _____
Bricks/Tiles/ Concrete		☐ Crush and use in landscaping ☐ Use for fill behind retaining walls ☐ Store on site for future use ☐ Other _____	☐ Deliver to second hand building centre _____ ☐ Other _____	☐ Landfill _____ ☐ Other _____
Organics (green waste, vegetation etc.)		☐ Mulch on site for landscaping ☐ Other _____	☐ Deliver to recycling centre or mulch company _____ ☐ Other _____	☐ Landfill _____ ☐ Other _____
Fill		☐ Used in landscaping ☐ Other: _____	☐ Other _____	☐ Landfill _____ ☐ Other _____

	Weight/ Volume	Reuse/Recycling On site	Off site/Recycling Specify name & address of contractor/recycling outlet	Disposal Specify name & address of contractor/recycling outlet
Metal (e.g. steel, aluminum etc)			☐ Deliver to second hand building centre _____ ☐Metal Recycler _____ ☐ Other _____	☐ Landfill _____ ☐ Other _____
Plastics – recyclable			☐ Deliver to recycling company _____ ☐ Other _____	☐ Landfill _____ ☐ Other _____
Plastics – non-recyclable			☐Return to manufacturer _____ ☐ Other _____	☐ Landfill _____ ☐ Other _____
Contaminated material (e.g. asbestos)			☐ Approved recycling Company _____ ☐ Other _____	☐Approved Landfill _____ ☐ Other_____

Section Two: Construction Stage (To be completed and submitted with all Development Applications for all other developments not included in Section One).

Materials on-site		Destination		
		Reuse and Recycling		Disposal
Expected Waste Materials	Est. Volume (m^3)	ON-SITE • Specify proposed reuse or on-site recycling methods • See *Waste Guidelines* for suggestions	OFF-SITE • Specify contractor and recycling outlet • See *Waste Guidelines* for suggestions • Refer to *Register of Waste Receiving Facilities for Waste Planning* for outlets.	LANDFILL • Specify contractor and landfill site • Refer to *Register of Waste Receiving Facilities for Waste Planning* for outlets.
Excavation Material				
Green Waste				
Bricks				
Concrete				
Timber – please specify				
Plasterboard				
Metals – please specify				
Other – please specify				

Note: Details of site area to be used for on-site separation, treatment and storage (including weather protection) must be provided on the plan drawings accompanying your application.

23R.8 WASTE MANAGEMENT PLAN (continued)

Section Three: Use of Premises (Occupation Stage) (To be completed and submitted with all development Applications with Section Two).

Type of waste material to be Generated	Proposed on-site storage & Treatment facilities	Destination
Please specify. For example – glass, paper, food waste, off cuts etc.	For example – • Waste storage and recycling area • On-site composting • Compaction equipment	Specify contractor name & address • Recycling • Disposal

Note: Details of on-site waste management facilities must be provided on the plan drawings accompanying your application.

Section Four: On Going Management (To be completed and submitted with Sections Two and Three).

Space

Number of Units (if applicable): _____

Estimated garbage generation (see *Waste Guidelines* at A.26): _____

Estimated recycling generation (see *Waste Guidelines* at A.26): _____

Describe the equipment & system to be used for managing:

Garbage _____

_____

_____

Recyclables _____

_____

_____

Garden Organics (if applicable)_____

_____

_____

Access

Describe arrangements for access by system users to waste facilities (highlight on plan drawings): _____

_____

_____

_____

Describe arrangements for access by collection contractors to waste facilities (highlight on plan drawings): _____

_____

_____

_____

Amenity

Describe how noise associated with residents using bins, collection contractors emptying the bins has been minimised: _____

_____

_____

_____

Describe the ventilation of waste storage areas (highlight on plan drawings): _____

_____

_____

_____

Describe facilities for washing bins and waste storage areas (highlight on plan drawings): ____

_____

23R.9 WASTE GUIDELINES

Type of Premises	Garbage Generation	Recycling Generation
Food premises		
Butcher	80L/100m² floor area/ day	Information not available
Delicatessen	80L/100m² floor area/ day	Information not available
Fish shop	80L/100m² floor area/ day	Information not available
Greengrocer	240 L/100m² floor area/day	120L/100m² floor area/ day
Restaurants	660L/100m² floor area/day	130L/100m² floor area/ day
Supermarkets	660L/100m² floor area/day	240L/100m² floor area/ day
Takeaway	80L/100m² floor area/ day	Information not available
Retail (non-food sales)		
Shops with less than 100m2 floor area	50L/100m² floor area/ day	25L/100m² floor area/ day
Shops with over 100m2 floor area	50L/100m² floor area/ day	50L/100m² floor area/ day
Showrooms	40L/100m² floor area/ day	10L/100m² floor area/ day
Hairdresser	60L/100m² floor area/ day	Information not available
Other		
Backpacker accommodation	40L/occupant/week	20L/occupant/week
Boarding house/ guesthouse	60L/occupant/week	20L/occupant/week
Offices	10L/100m²/day	10L/100m²/day
Hotel	5L/bed/day50L 100m² floor area/day 660L/100m² dining area/day	50L/100m² of bar and dining areas/day
Licensed club	50L/100m² floor area/ day	50L/100m² of bar and diningareas/day
Motel (without public restaurant)	5L/bed/day 660L/100m² dining area/day	1L/bed/day

Better Practice Guide for Waste Management in Multi-Unit Dwellings.
The current standard NSW commercial waste generation rates are those established by the Combined Sydney Region of Councils. For further information on commercial waste generation rates as they become available, please refer to www.environment.nsw.gov.au