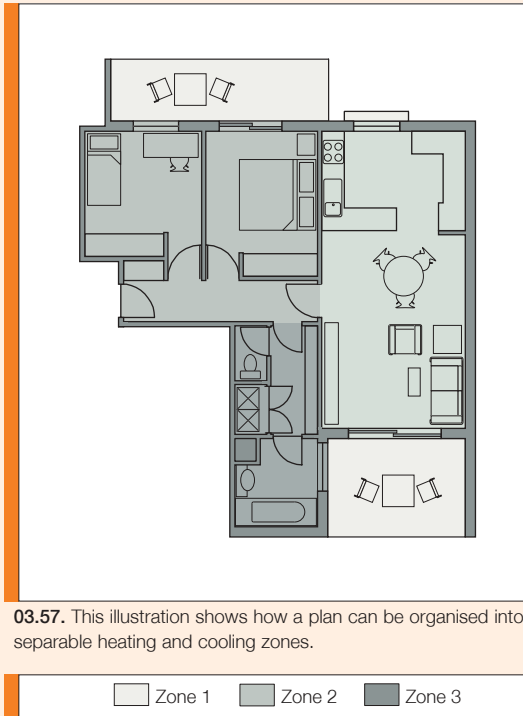


.Building Performance

.Energy Efficiency

The ability of the residential flat development to optimise thermal performance, thermal comfort and daylighting will contribute to the energy efficiency of buildings, provide increased amenity to occupants and reduce greenhouse emissions and, with them, the cost of supplying energy.



03.57. This illustration shows how a plan can be organised into separable heating and cooling zones.

Objectives

- To reduce the necessity for mechanical heating and cooling.
- To reduce reliance on fossil fuels.
- To minimise greenhouse gas emissions.
- To support and promote renewable energy initiatives.

Better Design Practice

- Incorporate passive solar design techniques to optimise heat storage in winter and heat transfer in summer by:
 - maximising thermal mass in floor and walls in northern rooms of dwelling/building
 - polishing concrete floors and/or using tiles or timber floors rather than carpets
 - limiting the number of single aspect apartments with a southerly aspect (SW-SE) to a maximum of 10 percent of the total units proposed
 - insulating roof/ceiling to R2.0, external walls to R1.0 and the floor - including separation from basement car parking - to R1.0.
- Improve the control of mechanical space heating and cooling by:
 - designing heating/cooling systems to target only those spaces which require heating or cooling, not the whole apartment
 - designing apartments so that entries open into lobbies or vestibules and are isolated from living areas by doorways
 - allowing for adjustable awnings and blinds to be attached to the outside of windows to keep the heat out in summer
 - providing gas bayonets to living areas, where gas is available
 - providing reversible ceiling fans for improving air movement in summer and for distributing heated air in winter.
- Provide or plan for future installation of photovoltaic panels by:
 - designing the roof so that photovoltaic panels can be mounted parallel to the roof plane
 - locating trees where they will not shade existing or planned photovoltaic installations.
- Improve the efficiency of hot water systems by



- insulating a hot water system or systems with a Greenhouse Score of 3.5 or greater and which suits the needs of the development and/or individual dwellings
- installing water-saving devices, such as flow regulators, AAA rated shower heads, dual flush toilets and tap aerators.
- Reduce reliance on artificial lighting by:
 - providing a mix of lighting fixtures, including dimmable lighting, to provide for a range of activities in different rooms
 - designing to allow for different possibilities for lighting the room, for example, low background lighting supplemented by task or effect lighting for use as required
 - using separate switches for special purpose lighting
 - using high efficiency lighting, such as compact fluorescent, for common areas
 - using motion detectors for common areas, lighting doorways and entrances, outdoor security lighting and car parks.
- Maximise the efficiency of household appliances by:
 - selecting an energy source with minimum greenhouse emissions
 - installing high efficiency refrigerators/freezers, clothes washers and dishwashers
 - providing areas for clothes to be dried through natural ventilation.
- See Daylight Access and Natural Ventilation for additional energy efficiency information.



.Building Performance

.Maintenance

Detailed design and material selection support long-term maintenance of residential flat development. On-going maintenance ensures the longevity of quality architectural and landscape design, sustains and increases the value of property and minimises the life-cycle cost of a development to owners.

Objective

- To ensure long life and ease of maintenance for the development.

Better Design Practice

- Design windows to enable cleaning from inside the building, where possible.
- Select manually operated systems, such as blinds, sunshades, pergolas and curtains in preference to mechanical systems.
- Incorporate and integrate building maintenance systems into the design of the building form, roof and facade.
- Select durable materials, which are easily cleaned and are graffiti resistant.
- Select appropriate landscape elements and vegetation and provide appropriate irrigation systems (see Landscape Design).
- For developments with communal open space, provide a garden maintenance and storage area, which is efficient and convenient to use and is connected to water and drainage.



.Building Performance

.Waste Management

The minimisation and management of waste from residential flat development can contribute to the visual and physical amenity of the building as well as limiting potentially harmful impacts on the environment. Minimising waste is relevant to all stages of the building's life cycle, from construction to demolition. It also includes the way in which waste is stored and collected.

Objectives

- To avoid the generation of waste through design, material selection and building practices.
- To plan for the types, amount and disposal of waste to be generated during demolition, excavation and construction of the development.
- To encourage waste minimisation, including source separation, reuse and recycling.
- To ensure efficient storage and collection of waste and quality design of facilities.

Better Design Practice

- Incorporate existing built elements into new work, where possible.
- Recycle and reuse demolished materials, where possible.
- Specify building materials that can be reused and recycled at the end of their life.
- Integrate waste management processes into all stages of the project, including the design stage.
- Support waste management during the design stage by:
 - specifying modestly for the project needs
 - reducing waste by utilising the standard product/component sizes of the materials to be used
 - incorporating durability, adaptability and ease of future services upgrades.
- Prepare a waste management plan for green and putrescible waste, garbage, glass, containers and paper.
- Locate storage areas for rubbish bins away from the front of the development where they have a significant negative impact on the streetscape, on the visual presentation of the building entry and on the amenity of residents, building users and pedestrians.
- Provide every dwelling with a waste cupboard or temporary storage area of sufficient size to hold a single day's waste and to enable source separation.
- Incorporate on-site composting, where possible, in self contained composting units on balconies or as part of the shared site facilities.

References

Waste Planning in Multi-Unit dwellings: Best Practice Design Guidelines, 'Inner Sydney Waste Board'.



Rules of Thumb

- Supply waste management plans as part of the development application submission as per the NSW Waste Board.



.Building Performance

.Water Conservation

Water is our most precious resource. Residential flat design can contribute to environmental sustainability by integrating measures for improved water efficiency. Water can be conserved in two ways:

1. by reducing water demand from the mains
2. by re-using water which would otherwise be lost as run off or waste water.

Objectives

- To reduce mains consumption of potable water.
- To reduce the quantity of urban stormwater run off.

Better Design Practice

- Use AAA rated appliances to minimise water use.
- Encourage the use of rainwater tanks.
- Collect, store and use rainwater on site. This may be used for car washing, watering the garden, toilet flushing, laundry and clothes washing. Once treated, rainwater can also be used for potable supply.
- Incorporate local indigenous native vegetation in landscape design (see Landscape Design).
- Consider grey water recycling.

References

AS/NZS 3500 1.2: Water Supply - Acceptable Solutions provides guidance for the design of rainwater tanks with dual water supply systems.

NSW Dept. of Health: Guidance on the use of rainwater tanks.

NSW Code of Practice: Plumbing and Drainage.

Committee on uniformity of Plumbing and Drainage Regulations in NSW, 1999.

✓ Rules of Thumb

- Rainwater is not to be collected from roofs coated with lead- or bitumen-based paints, or from asbestos-cement roofs. Normal guttering is sufficient for water collections provided that it is kept clear of leaves and debris.