Facilities Management

Good Practice Guide

Multi-Unit Residential

FMA AUSTRALIA

Developed through the Hi-RES project with the kind support of

CITY OF MELBOURNE

With further support provided by

FACILITY MANAGEMENT VICTORIA PTY LTD

Version 1.0 | August 2012

Facility Management Association of Australia Ltd (FMA Australia)

ABN: 57 003 551 844

Level 6, 313 La Trobe Street
Melbourne, Victoria 3000
Phone: +61 3 8641 6666
Fax: +61 3 9640 0374

policy@fma.com.au
www.fma.com.au

City of Melbourne was the primary sponsor of this guide. Support was received through the Hi-RES project, which aims to develop and test solutions to help transform Victoria's apartment buildings to become more sustainable. Hi-RES is a City of Melbourne led initiative in partnership with the Cities of Port Phillip and Yarra, Strata Community Australia (Vic), Moreland Energy Foundation and Yarra Energy Foundation, and was supported by the Victorian Government Sustainability Fund. For more information, please visit www.melbourne.vic.gov.au.

Preface

Welcome to the first in a series of Facilities Management Good Practice Guides being developed to provide detailed, objective and independent information on 'key areas of interest' for facilities management professionals and stakeholders in Australia.

This Guide provides an overview of facilities management in multi-unit residential buildings, focusing on common areas and shared services. Its purpose is to provide a common understanding of issues and good practice requirements, helping to bridge knowledge gaps between the various stakeholders involved in the development, construction, operations, maintenance, management and administration of multi-unit residential buildings.

The Guide covers all key areas relevant to those involved with facilities management activities within Multi-Unit Residential facilities, regardless of size, complexity or location.

As the peak national industry body for facilities management, we are proud to have developed this Guide in association with our industry partners and stakeholder Reference Group. Like all Good Practice Guides, this milestone document would not have been possible without the valuable support of our sponsors, including the City of Melbourne's Hi-RES project and Facility Management Victoria.

Our mission is to inspire, shape and influence the facilities management industry and at every opportunity to promote and represent the interests of Facilities Managers nationally and internationally. Publications such as this are essential to support our broader role in representing and supporting all professionals and organisations involved with the management, operation and maintenance of buildings, precincts and community infrastructure throughout Australia.

I hope that you find the content of this Guide valuable in your work and we welcome any feedback you may have to assist with future editions.

Yours sincerely,

Nicholas Burt
Chief Executive Officer
Facility Management Association of Australia

Contents

1 About this Guide

This Guide provides an overview of facilities management in multi-unit residential buildings, focusing on common areas and shared services. The purpose of the Guide is to provide a common understanding of issues and good practice requirements involved in running an efficient building, helping to bridge knowledge gaps between the various stakeholders involved in the development, construction, operations, maintenance, management and administration of multi-unit residential buildings.

Structured to support the requirements of a wide range of users, the Guide can be read as a whole or for its stand-alone elements. It also acts as an initial reference for anyone involved with multi-unit residential facilities, including but not limited to:

- Apartment/unit owners
- Owners Corporation (OC)
- Owners Corporation or Strata Committee members
- Owners Corporation or Strata managers
- Facilities (building) managers
- Developers
- Specialist service providers
- Residents
- Local Government

1.1 Reference Group

This Guide has been developed by the Facility Management Association of Australia (FMA Australia) with the aid of a Project Reference Group that included involvement from the following organisations:

- Carbonetix
- City of Melbourne
- City of Sydney
- Owners Corporation Network of Australia
- Port Phillip City Council
- Facility Management Victoria P/L
- Green Strata
- QIA Group
- Strata Community Australia (Vic)
- Zero Waste SA

FMA Australia

2 What is Facilities Management?

Facilities Management (FM) involves guiding and managing the operations and maintenance of buildings, precincts and community infrastructure on behalf of property owners. Employing over 200,000 people in the commercial and residential markets, the industry contributes over $20 billion annually to the Australian economy, and plays a vital role in the realisation of strategic and operational objectives of business, government and the wider community.

Facilities management is an age-old practice which has existed out of necessity since buildings were first constructed to support human activities. The FM industry is generally acknowledged as having stemmed from services provided by janitors and caretakers during the 1970s.

As an increasing number of multi-unit residential buildings have been developed over recent decades, the demand for facilities management has also grown accordingly.

Today's Facilities Managers require a broad and diverse skill set, much more in line with management and business services than the building trade oriented services of those who once dominated the industry.

Tips for selecting a Facilities Manager

- Ask for experience and track record in similar facilities
- Expect formal qualifications in facilities management or a relevant discipline
- Expect continuing professional development, and ask how this is extended to the FM's staff and contractors
- Expect active involvement in the industry and awareness of current issues and legal requirements affecting the built environment
- Expect to have a good network of suppliers and technical specialists
- Excellent interpersonal skills are a must.

2.1 The role of the modern Facilities Manager

The Facilities Manager organises, controls and coordinates the strategic and operational management of buildings and facilities in order to ensure the proper and efficient operation of all its physical aspects, creating and sustaining safe and productive environments for residents. In residential buildings this is typically conducted at all times of the day, every day of the year.

The Facilities Manager can consist of a single individual or a team, with services able to be delivered by dedicated 'in-house' professionals or 'out-sourced' in whole or part to external providers.

An important role of the Facilities Manager is to provide services, meet varying expectations, support, information, be a good listener, and deal with conflict to create a community environment residents are willing to call home.

Their role includes dealing with various contractors and suppliers in carrying out maintenance and upgrades, and providing services such as security, cleaning, and property maintenance.

In larger buildings the Facilities Manager may be required to manage staff and be part of the recruitment and induction process. Therefore, they are again required to have excellence people management skills. Their relationship with support staff and contractors is critical in ensuring the building is a great place to live and work.

In many areas the actual title of Facilities Manager is not commonly used, however as the wider industry moves toward greater consistency and standardisation more providers and professionals are adopting it.

Also, some professionals use the title Facilities Manager when in fact their role has little or no relationship to facilities management. Care should be taken when engaging a Facilities Manager to ensure their skills and knowledge match your requirements.

Note: For the purpose of simplicity, the term 'Facilities Manager' is used exclusively throughout this Guide.

For reference, the following are some of the alterative titles adopted by professionals who may be Facilities Managers:

- Accommodation Manager
- Building Manager
- Building Supervisor
- Caretaker
- Contracts Manager
- Essential Services Manager
- Maintenance and Services Manager
- Facilities Services Manager
- Facilities Administrator
- Facility Management Consultant
- Facility Operations Manager
- Operations Manager
- Property Manager

Note: A professional with one of the above titles may also not be a Facilities Manager.

2.2 Career progression and training

There are currently four different types of professionals in facilities management supported by FMA Australia, each of which will be involved in the management of a multi-unit residential building. These professionals are supported by on-the-ground staff such as concierge and security officers.

Facilities Officer

An entry-level role providing administrative support and at times overseeing maintenance tasks to ensure the day-to-day smooth operation of a building's infrastructure.

Facilities Administrator

An operational-level role providing administrative support, including budgeting, procurement negotiation, contract liaison and documentation, as well as coordination of staff and equipment during relocation, and at times supervision and physical assistance with maintenance tasks, to ensure the day-to-day smooth operation of a building's infrastructure.

Facilities Manager

Organises, controls and coordinates the strategic and operational management of buildings and facilities in public and private organisations to ensure the proper and efficient operation of all physical aspects, including creating and sustaining safe and productive environments for occupants.

Director of Facilities

Has full accountability and authority for the successful coordination and performance of facilities management activities within their organisation or business unit. Responsibilities may cover numerous sites, multiple types of facilities and can include responsibility for hundreds of staff and associated set up of professional performance standards.

The skills, education and experience requirements for each of these roles increases at each level, with the vast majority of professionals involved in providing facilities management services at the Facilities Manager level. For example, the expectation for a Facilities Manager is expected to have either:

- 2 years minimum experience and a Diploma of Facilities Management or Bachelor in related field
- 5 years minimum experience with no formal education

This is complemented by Continuing Professional Development (CPD) as required to maintain professional competence.

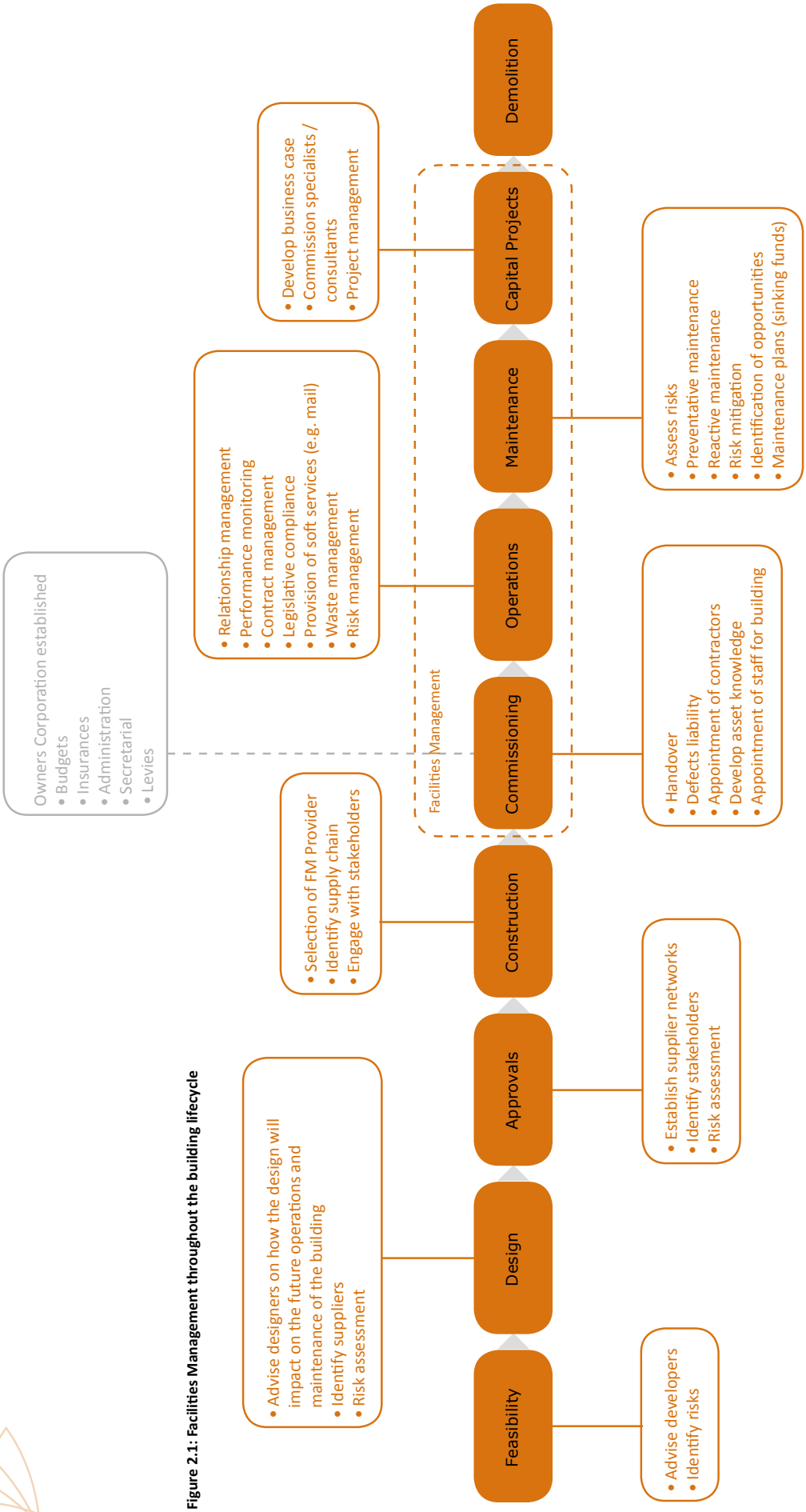


Figure 2.1: Facilities Management throughout the building lifecycle

2.3 Multi-unit residential FM services

Within facilities management, each type of facility brings its own particular challenges, and demands particular skill sets. In the case of multi-unit residential facilities, the large volumes of people living in close proximity to one another dramatically increases the emphasis required on effective communication and relationship building skills. Multi-unit residential facilities operate on a full-time basis seven days a week and involve multiple individual user concerns and requirements, many of which are subjective. Consequently, there is a need to respond and adapt to almost constantly changing conditions.

FM services in the past were confined to building operations only, however today the activities undertaken by Facilities Managers can extend throughout an entire building's life cycle (Figure 2.1).

With the increasing trend toward the development of higher density residential buildings, Facilities Managers have an important role to play in ensuring the assets are well managed and the property's value is maintained. This in turn requires Facilities Managers to have access to ongoing external training and support and resources in order to continually enhance their skill set and knowledge base.

FMA Australia

Figure 2.2: Typical multi-unit residential facilities management services

- Access and egress
- Asset management (mechanical services, etc.)
- Building management control systems
- Building Code and Regulatory Compliance
- Building repairs and maintenance
- Cleaning and general maintenance
- Concierge, mail and other 'soft' services
- Conserving asset value
- Contract and contractor management
- Energy and water management (lighting use, etc)
- Enhancing comfort and amenity for facility users
- Essential services provision (fire systems, etc)
- Gardening and grounds maintenance
- Improving building performance
- Maintaining security for property occupants and assets
- Maintenance planning (equipment, etc)
- Projecting a building's identity and image
- Record keeping (legal requirements, monitoring, etc)
- Reducing operational impacts and life cycle costs
- Responding to complaints and suggestions
- Risk management
- Space management (i.e. effective utilisation of space)
- Sustainability projects and implementation
- Tracking and recording energy & water consumption
- Undertaking larger capital or maintenance projects
- Stakeholder engagement
- Waste management

3 What is Multi-Unit Residential?

Australia is one of the most urbanised countries in the world, and increasingly, Australians are opting for higher density living, with apartments and townhouses now accounting for about one third of all new housing constructed .

3.1 Growing importance of multi-unit residential

Over the next five years, growth in new multi-unit residential apartment construction is forecast to surge, with particularly strong growth in areas such as northern New South Wales, southern Queensland, Western Australia and central Victoria due to existing housing shortfalls in these areas.

The growing trend for Australians to seek higher density living instead of traditional single unit housing stems from a range of factors including preference toward inner city living, escalation in residential land values, and declining average household sizes.

3.2 Understand your asset

Multi-unit residential facilities cover a range of property types and construction styles, from high rise apartments with units stacked horizontally and vertically to low rise villa style complexes with units clustered around central features.

Each type has its own unique features, challenges and opportunities. However, a common theme is they all involve a number of individual property owners sharing in the decision making regarding management, maintenance and operation of common property and shared services, which introduces a different element of complexity to the management of each facility.

A number of factors make multi-unit residential different from other types of buildings such as commercial office facilities:

- It is someone's home (every hour of every day)
- Different types of emotions are involved
- Different priorities (e.g. the need for continuous hot water)

Type 1: Villas and Townhouses

One to two storey with multiple dwellings on the same parcel of land or around central amenity features such as pools or courtyards.

Type 3: Medium-Rise

Four to eight storey developments, often comprising a mix of dwelling si vertically integrated with lift access.

estate, typically clustered

Type 2: Low-Rise

Two to three storey ‘walk ups’ comprising small blocks of units.

izes. Can be ‘walk-up’ or

Type 4: High-Rise

Typically located in or around major activity centres, high rise residential facilities consist of nine or more storeys of vertically integrated accommodation, with lift access to the upper floors.

Images: FMA Australia, Green Strata Inc

For the purpose of this guide, multi-unit residential facilities are considered to include one of the four types above.

3.3 Strata (Owners Corporation) legislation

It is important that Owners, Facilities Managers and Strata Managers alike understand their responsibilities and rights under strata law.

The strata title system is applied to many different property development types (eg townhouses, commercial offices, factories, retail shops, warehouses, etc,) as it provides a framework for the separate ownership and collective management of a building. It has become an increasingly popular method of land development and ownership in Australia.

Owners corporations or bodies corporate are created to manage and maintain the common or shared property created when properties are strata-titled or subdivided. **All lot owners automatically become a member of the owners corporation or body corporate.**

There is currently no national regulatory government body to guide the development of strata legislation, and as a result strata legislation is complex, with terminology and specific requirements varying across jurisdictions.

Table 3.1 shows the primary strata legislation applicable to each Australian state and territory.

Table 3.1: Strata and community title legislation

Australian Capital Territory

- *Unit Titles Act 2001*
- *Unit Titles Act 2001 - Regulations*
- *Unit Titles (Management) Act 2011*
- *Unit Titles (Management) Act 2011 - Regulations*

New South Wales

- *Community Land Management Act 1989*
- *Community Land Management Regulation 2007*
- *Strata Schemes (Freehold Development) Act 1973*
- *Strata Schemes (Freehold Development) Regulation 2007*
- *Strata Schemes (Leasehold Development) Act 1986*
- *Strata Schemes (Leasehold Development) Regulation 2007*
- *Strata Schemes Legislation Amendment Act 2001*
- *Strata Schemes Management Act 1996*
- *Strata Schemes Management Regulation 2010*
- *Strata Schemes Management Amendment Act 2002*

Northern Territory

- *Unit Titles Act*
- *Agents Licensing Act*

Western Australia

- *Strata Titles Act 1985*

Oast House Archive

3.4 What makes up common property?

In multi-unit residential, common property is all those areas of land and building not included in any private lot:

> *In most strata schemes, the lot owner owns the inside of the unit but not the main structure of the building. Usually the four main walls, the ceiling, roof and the floor are common property. The internal walls within the lot (e.g. the wall between the kitchen and lounge room), floor coverings such as carpet and fixtures such as baths, toilet bowls, benchtops are all the property of the lot owner.*
>
> *NSW Fair Trading 2011*

What constitutes common property varies between the various States and Territories in Australia.

Without a good understanding of the various assets within a building and the relationships between them, it is impossible to maintain efficient operations or identify areas to reduce cost, improve performance, or increase value. Within multi-unit residential buildings, major asset components can vary widely and include the building superstructure and its facade, hallway and shared spaces, lighting, pools/spas, gyms, gardens, shared water heating, and car parking areas.

Figure 3.2 provides a more detailed breakdown of assets and equipment commonly found in multi-unit residential buildings and their related purpose in overall building operations.

Queensland

- *Body Corporate and Community Management Act 1997*
- *Body Corporate and Community Management Act (Accommodation Module) 2008*
- *Body Corporate and Community Management Act (Standard and Commercial Modules) 2008*
- *Body Corporate and Community Management Act (Small Schemes Module) 2008*

South Australia

- *Community Titles Act 1996*
- *Strata Titles Act 1998*

Victoria

- *Owners Corporations Act 2006*
- *Owners Corporations Regulations 2007*

Tasmania

- *Strata Titles Act 1998*

Source: Strata Community Australia (http://www.stratacommunity.org.au/)

Figure 3.2: Example of asset and components within a multi-unit residential building

Facility Service Area	Service	Indicative Assets and Components
Access & egress	Lifts	Lift cars, lift motors, lift controllers
	Parking	CO detectors Garage doors & security gates Door openers & gate controllers Bike storage facilities Change facilities
Health & wellbeing	Resident lounges / seating areas	Chairs, tables, mirrors, desks TVs, monitors, TV repeaters
	Landscaped areas	Pot plants, garden plants, green roofs, rooftop food gardens, organics composting
	Health & Fitness	Treadmills, training equipment and other gym equipment
	Pools Saunas & Spas	Pool heater, sauna heater Thermostats, heating & ventilation control devices Water pumps, water filters Chemical storage, chlorinator, chlorine controller
	Outdoor entertaining	BBQ stainless steel/electric, BBQ tables, chairs
Security	Video surveillance	Monitors, cameras, video recorders Surveillance cameras (internal and external) Lift and car park surveillance cameras
	Security lighting	Emergency lighting, exit lights, exterior grounds and car park lighting
Safety	Fire protection	Fire doors Fire water storage tank, level indicators Fire hose Reels, hydrant pumps & hydrant valves Fire extinguishers, smoke detectors, smoke alarms, sprinkler system
Energy	Building energy supply	Building electricity management LPG storage bullets and management Transformers Renewable energy installations (e.g. solar, small scale wind, etc.) Energy usage meters (electricity and gas) and related monitoring devices Other lighting (hallway, aesthetic, etc).
Water services	Clean water	Water pumps, flow pumps, booster valves Water filters Water meters and related monitoring devices
	Hot water service	Water heaters (gas solar, electric), hot water tanks In line pumps; solar hot water pumps
Heating, ventilation & air condition (HVAC)	Ventilation	Ceiling fans, air supply, ventilator and extraction fans, rooftop fans Fan motors & controllers
	Heating & cooling	Air conditioning units Boilers, heater controllers Cooling water towers
Owner & Resident services	Front of House	Concierge, reception & mail services Computers, printers, facsimile machines, safes
	Waste	Garbage chute and collection equipment, garbage exhaust fan
	Cleaning	Dangerous goods storage sheds and cabinets, cleaning products storage cabinets
	Catering	Refrigerators, ovens, microwaves, cook tops
	Communications	Intercoms, telephones, data loggers

4 Understanding the Stakeholders

Strata title communities are effectively small democracies and their effective management is as much about people management as it is about building and asset management. Understanding and responding to the needs and requirements of the owners and residents, as well as the various professionals involved in building operations, management and maintenance, is a critical component of multi-unit residential facilities management.

The Property Developer

Generally the developer is the initial owner of the property, however most multi-unit residential developers do not maintain ownership of the property throughout its operational life. The asset is passed to a Strata Scheme (or a sole building owner if the property is not Strata titled). As lots sell each new purchaser becomes a member of an Owners Corporation (OC) with the developer's ownership gradually reducing until all lots are sold. During the transition of ownership, liability for building workmanship may be passed to the developer's contractors and/or transferred to the OC under contract, and the Strata Scheme may carry additional risk associated with the management of defects and liabilities. In many cases there is little dialogue between the developer and future owners or Facilities Managers, and as a consequence some design aspects particular to multi-unit residential facilities (such as provision of adequate waste facilities) can be overlooked. Increasingly, the property industry is seeing the benefit in developers consulting Facilities Managers to ensure operational requirements are understood during the building design stage.

The Owners Corporation or Body Corporate (OC)

All lot/unit owners in strata schemes automatically become members of the OC and in doing so, take on responsibility for all decision making affecting the OC, its assets, common property, and shared services. **An Owners Corporation is a legal entity.** Ultimately, the collective decision making of the OC shapes the overall direction of the facilities management and maintenance, and the decisions made can vary considerably between OCs. An OC can delegate powers and functions to its committee, giving them the authority to make a majority of the decisions on behalf of the OC in between annual general meetings (exclusions do apply).

The Committee

The Committee (also known as Executive Committee, Managing Committee, Committee of Management, or Council) is made up of members of an OC elected at an annual general meeting. They have the authority to act on behalf of the other owners in the maintenance and management of common areas and shared service through a collective decision making process. They may also share responsibility for running administrative and financial aspects of the property.

The Facilities Manager is required to liaise on a needs basis with Committee members and implement their decisions.

The Strata Manager

A Strata Manager (also known as OC Manager, Body Corporate Manager, or Strata Managing Agent) works at the direction of the OC Committee to manage and administer the property and assist to create a safe and appropriate environment for the residents, their guests, and facility employees and contractors. This typically includes:

- Accounting, budgeting and financial reporting
- Invoicing and collecting levies and service charges
- Contract management
- Communication with property stakeholders
- Enforcement of rules/by-laws
- Issuance of notices, orders and certificates
- Meeting preparation and general secretarial tasks.

In smaller facilities, the Strata Manager may act as the Facilities Manager.

The Facilities (Building) Manager

The Facilities Manager organises, controls and coordinates the strategic and operational management of buildings and facilities in order to ensure the proper and efficient operation of all physical aspects, creating and sustaining safe and productive environments for residents..

For larger properties OCs can elect to out-source management and maintenance of their assets to an external provider (such as a facilities management service provider). It is important to note there are currently no minimum industry standards required in order to provide FM services in Australia. OCs must be vigilant ensuring those they engage to provide an external facilities management service have the skills, knowledge, attributes and experience.

The Resident Manager

In some strata properties, caretaking and leasing rights may be out-sourced to a Resident Manager (or Caretaker) by the OC. The Resident Manager may be a company or individual, and typically conducts services for an agreed period, living, owning and working from within a lot in the complex, with their fee paid from owner levies. In some cases, Resident Manager's rights are sold in advance by the property developer.

The Residents

Residents are those individuals who live within a given multi-unit residential building and constitute its local community.

Service Providers

There are various specialist service providers who may be engaged by the OC or Facilities Manager to conduct or support any maintenance or major project (including long term maintenance contracts). Such providers may include:

- Auditors
- Architects
- Asbestos surveyors / removal contractors
- Building trades (plumbing, electrical, etc)
- Energy and environmental consultants
- Interior designers
- Insurers
- Lawyers
- Planners
- Quantity surveyors
- Valuers

As with any engagement, the decision ultimately rests with the OC and it is important to ensure those being engaged are adequately trained and competent to provide the necessary services. Further guidance is provided under 'Contract Management' in Section 14 of this Guide.

FMA Australia

4.1 Stakeholder relationships

Figure 4.1 shows key multi-unit residential stakeholders (note this is indicative only). The Committee acts on behalf of the OC with the power to make decisions in the best interests of all Owners. The Facilities Manager / Strata Manager act as both trusted advisors and service providers to the OC, directing and managing service providers within their respective areas or responsibility. Contracts with utilities, service providers and consultants are usually directly between the OC and the provider.

4.2 Stakeholder engagement

The degree of input and buy-in residents and other facility stakeholders have over decisions affecting their home is a major factor in maintaining harmony amongst the residential community, and can have a significant impact on the effectiveness of any initiatives being planned. Some key principles of effective engagement within a multi-unit residential facility are described as follows.

Resident Expectations

A key component of strata or facilities management within residential buildings is the ability to react and respond to multiple resident issues in a reasonable timeframe. Resident concerns can be mitigated in large part from simply knowing they have been heard and that someone (i.e. the Facilities Manager) is going to take action.

Many issues can also be avoided by providing residents with some degree of control over their environment (e.g. access to blinds and lighting controls). Residents are often more tolerant of varying conditions when they understand how various systems, assets and equipment are supposed to perform and operate. It is critical that there be open and effective communication between Residents, OCs, Strata Managers and Facilities Managers to ensure the expectations of each are able to be understood and met.

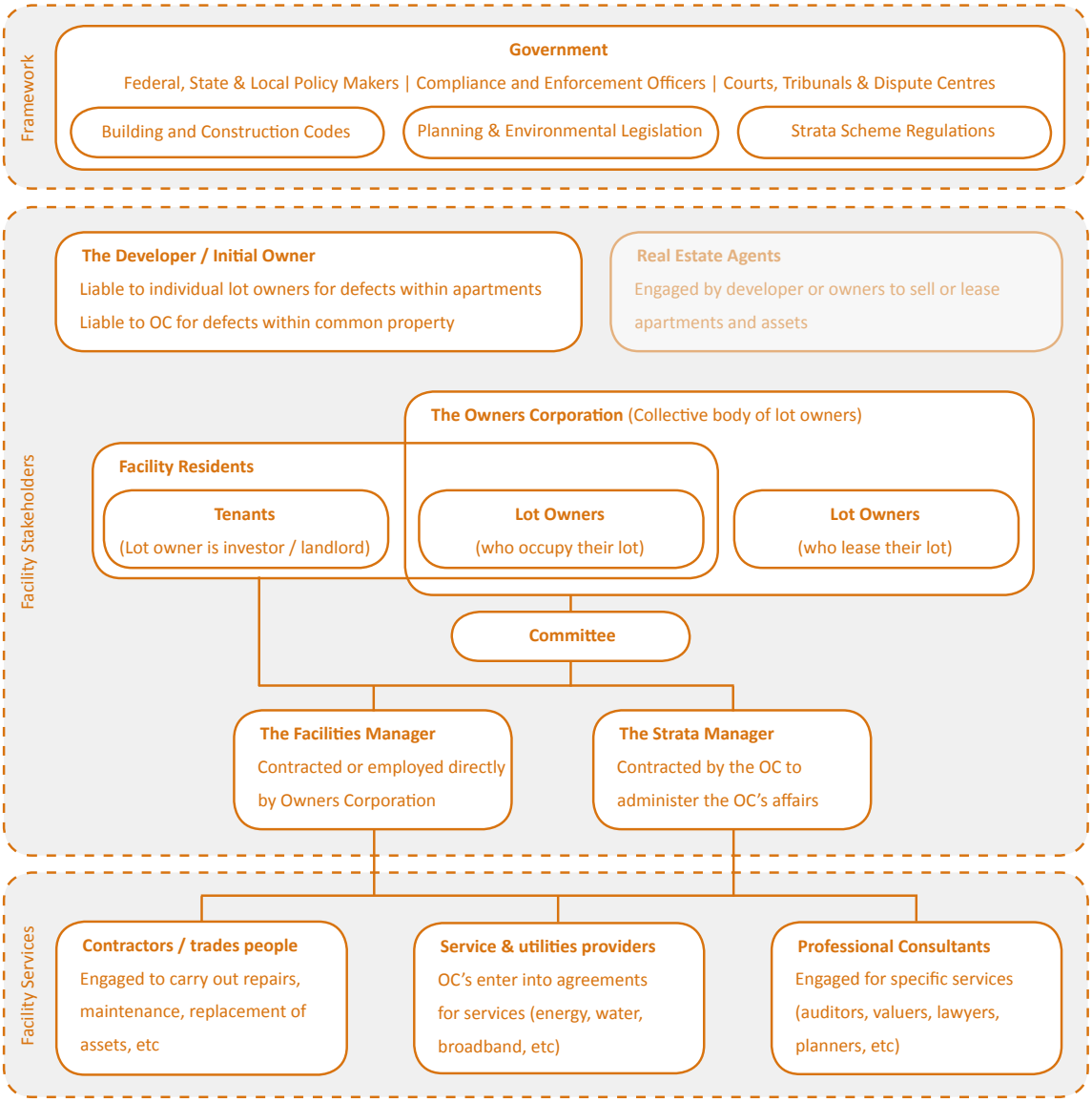
Relationship Building

Good communication between the Facilities Manager and Strata Manager underpins the effective functioning of any strata scheme. When issues occur it usually results from a breakdown in communication. It is therefore critical to get relationships off to a good start, have a close dialogue and a collaborative approach.

Effective Communication

As most building initiatives will inevitably impact upon residents and other facility stakeholders at some point, involving key stakeholders from the outset is more likely to ensure stakeholder 'buy-in' through having been part of the decision making process. This includes communicating any new initiatives using a variety of channels (such as emails, newsletters, notice boards, presentations, etc) to ensure stakeholders are constantly informed.

Figure 4.1: Stakeholder relationships within a multi-unit residential facility



Education and Awareness

Ensuring stakeholders are aware of specific roles, responsibilities and requirements will go a long way towards avoiding many of the issues and delays which can be associated with strata living. This should include effective management and provision of training to key contractors so they understand and adhere to safety and environmental requirements when performing work. Residents and building users should be constantly updated on proposed initiatives or changes, the reasons behind them, and any specific requirements.

Training and awareness should include provision of signage, and mechanisms for provision of feedback or suggestions. Additionally, the environmental performance of initiatives should be shared, so residents and other facility stakeholders are able to see the result of any improvements implemented.

Figure 4.2 displays the degree of engagement that can be used when dealing with stakeholders.

Citizen Committees

One stakeholder engagement technique well suited to multi-unit residential facilities is the use of 'citizen committees'. Also known as public advisory committees, citizen committees consist of a group of representatives from a defined community who are asked to provide comment, input or advice on a particular issue, with participants meeting regularly for the duration of a project or initiative. The technique is commonly applied by local councils to inform planning decisions, but can readily be applied to guide OC decision making processes.

Engaging with non owner residents and other building stakeholders will help to ensure decisions take into consideration multiple stakeholder requirements and perspectives, as well as providing opportunity to leverage value through the experience and resource support of the individuals involved.

Examples of how the approach could be adopted include the establishment of energy, water or waste management committees.

The benefits of this approach include:

- Facilitates involvement of a wide range of people
- Enables consensus to be reached for action on complex issues that affect the entire community
- Effectively disseminates tasks to community members
- Provides opportunity to explore alternative strategies
- Builds on commonalities and alliances
- Allows for detailed analysis of issues, timelines and deliverables, with a focus on outcomes
- Participants gain an understanding of others perspectives leading toward an agreed, integrated outcome
- Builds community capacity and strength.

4.3 Example: Hi-RES Owner's Guide

The following pages display a leading example of stakeholder engagement through an owners guide to strata decision making produced in conjunction with this guide. This has been reproduced with the kind permission of the Hi-RES project, a City of Melbourne lead initiative.

For more information or to download a copy simply visit: www.melbourne.vic.gov.au.

Figure 4.2: Stakeholder Engagement Spectrum

INCREASING LEVEL OF IMPACT

INFORM	CONSULT	INVOLVE	COLLABORATE	EMPOWER
Engagement goal:	Engagement goal:	Engagement goal:	Engagement goal:	Engagement goal:
Provide stakeholders with balanced and objective information to assist them in understanding the problems, alternatives and / or solutions.	To obtain feedback on analysis, alternatives and / or decisions.	To work directly with the public throughout the process to ensure public concerns and aspirations are consistently understood and considered.	To partner with the public in each aspect of the decision, including the development of alternatives, and the identification of the preferred solutions.	To place final decision-making in the hands of the public.
Promise to stakeholders:	Promise to stakeholders:	Promise to stakeholders:	Promise to stakeholders:	Promise to stakeholders:
We will keep you informed.	We will keep you informed, listen to and acknowledge concerns, and provide feedback on how public input influenced the decision.	We will work with you to ensure that your concerns and aspirations are directly reflected in the alternatives developed, and provide feedback on how public input influenced the decision.	We will look to you for direct advice and innovation in formulating solutions and incorporate your advice and recommendations into the decisions to the maximum extent possible.	We will implement what you decide.
Example tools:	Example tools:	Example tools:	Example tools:	Example tools:
• Fact sheets • Web sites • Information sessions	• Focus groups • Surveys	• Workshops • Deliberate polling	• Citizen committees • Consensus building • Participatory decision making	• Citizen juries • Ballots • Delegated decisions

HOW TO MAKE POSITIVE CHANGE AROUND YOUR APARTMENT BUILDING

YOU HAVE A SAY IN WHAT HAPPENS AROUND YOUR APARTMENT

If you own, rent or work within an apartment building you should know that there are things around you that are shared. Because they are shared, all owners share in the decisions that are made about keeping them up to date or improving them. When you buy an apartment, you are automatically a part of a community that has a say about what happens to this shared property. This guide will help you to better understand how this works.

DID YOU KNOW?

OVER 3 MILLION AUSTRALIANS OWN, LIVE OR WORK WITHIN AN APARTMENT BUILDING, JUST LIKE YOU.

AS AN OWNER, DID YOU KNOW YOU CAN CHANGE THINGS AROUND YOUR APARTMENT BUILDING?

BUT FIRST, YOU NEED TO UNDERSTAND A FEW IMPORTANT DIFFERENCES BETWEEN YOUR PROPERTY AND SHARED PROPERTY.

YOUR PROPERTY

To see what is owned by you and what is shared property, you need to look at your Plan of Subdivision or Strata Plan. The boundaries could be interior, exterior or median (middle of the wall), or sometimes only the air itself!

SHARED PROPERTY

Shared property, formally known as common property, will also be shown in your plan. Generally, shared property includes things like hallways, stairwells, foyers, driveways, gymnasiums, pools and elevators.

TIP!

REMEMBER THAT EVERY BUILDING WILL BE DIFFERENT. YOUR PLAN WILL TELL YOU WHAT IS YOURS AND WHAT IS SHARED.

This guide was developed through the MI-RES project, a City of Melbourne led initiative in partnership with the Cities of Port Phillip and Yarra, Strata Community Australia (Vic), Green Strata, Moreland Energy Foundation and Yarra Energy Foundation, and supported by the Victorian Government Sustainability Fund.

Green Strata · strata community australia · Moreland Energy Foundation · Yarra Energy Foundation · City of Melbourne

OWNERS CORPORATIONS

SHARED PROPERTY AND SHARED SERVICES ARE CONTROLLED BY THE OWNERS CORPORATION, FORMERLY CALLED A BODY CORPORATE...

1

WHAT IS AN OWNERS CORPORATION?

Think of an owners corporation as the group of all the apartment owners in a building or development where there is shared property. An owner is anyone who owns a 'lot'.

A 'LOT' IS THE FORMAL TERM FOR AN APARTMENT, BUT IT COULD ALSO BE AN 'ACCESSORY LOT', SUCH AS A STORAGE UNIT OR EVEN A CAR PARK! NO MATTER WHAT IT IS, ALL LOT OWNERS ARE MEMBERS OF THE OWNERS CORPORATION.

DID YOU KNOW?

WHO IS INVOLVED?

Running an owners corporation involves people with different roles and accountabilities.

OWNER

When you buy an apartment, you automatically become part of the owners corporation for that building.

OWNERS CORPORATION COMMITTEE

Helps administer and manage the owners corporation's responsibilities. Any owner can be on this committee and help manage and improve your building. Committee members are elected.

OWNERS CORPORATION

The group consisting of all owners.

BUILDING/FACILITIES MANAGER

Oversees or undertakes onsite work and maintenance of shared property and services and the operations of building systems like heating, air conditioning and waste disposal.

OWNERS CORPORATION MANAGER

Helps the owners corporation do its job. This may include coordinating meetings, arranging insurance, and managing finances.

DID YOU KNOW?

OWNERS CORPORATION MANAGERS ARE NOT LIKE REAL ESTATE AGENTS. THEY ARE THERE TO WORK TOGETHER WITH YOUR OWNERS CORPORATION AS A TEAM AND COORDINATE ACTIVITIES RELATING TO SHARED PROPERTY.

WHAT DOES AN OWNERS CORPORATION DO?

The primary focus for an owners corporation is to manage and maintain shared property and services. Owners corporations are also required to:

Insure the shared property for replacement and public liability insurance.

Administer the finances and apartment owners' common funds.

(These are your owners corporation fees or levies).

Convene meetings of owners, document minutes and deal with all correspondence.

Manage the dispute resolution process for any owner disputes.

Ensure that the rules of the owners corporation are upheld.

WHAT ARE THE RULES THAT GOVERN AN OWNERS CORPORATION?

The *Owners Corporations Act 2006* and *Owners Corporations Regulations 2007* govern what every Victorian owners corporation is required to do and what its accountabilities and activities should be.

The Act requires all owners corporations to have rules for the control, management, use or enjoyment of shared property and lots. These rules can differ between buildings and cover day to day issues such as parking, pets and noise.

If your owners corporation does not make its own rules, a set of model rules outlined in the *Owners Corporations Regulations 2007* applies.

Each state is different and while the guiding principles for owners corporations may be similar, it's important to ensure you know the requirements for Victoria.

Further information can be found at the Consumer Affairs Victoria website: www.consumer.vic.gov.au

OWNERS CORPORATIONS ARE LEGALLY REQUIRED TO FULFIL THESE RESPONSIBILITIES AND KEEP YOUR BUILDING HEALTHY.

IF YOU KEEP YOUR BUILDING IN GOOD NICK, IT KEEPS ITS VALUE LONGER.

TIP!

ACCOUNTABILITY

The owners corporation is ultimately accountable for all decisions and actions to do with shared property.

For example, a committee that makes a decision on behalf of the owners corporation might not be held accountable for the outcome. The owners corporation may also revisit a decision of the committee.

An owners corporation manager and building manager implements the decisions of an owners corporation but does not directly make any decisions.

WHAT ARE THE BENEFITS OF SUSTAINABLE RETROFITS?

WHEN YOU CHANGE THINGS THAT ARE SHARED PROPERTY OR SERVICES, IT IS EASY TO MAKE THESE CHANGES SUSTAINABLE ONES.

AND THERE ARE PLENTY OF REASONS WHY YOU SHOULD DO JUST THAT...

2

DID YOU KNOW?

INVESTING IN MAKING YOUR BUILDING SUSTAINABLE IS MORE THAN JUST BEING GREEN. IT CAN ALSO:

- SAVE YOU MONEY.
- IMPROVE THE LIFE AND RESILIENCE OF YOUR PROPERTY.
- INCREASE THE MARKET VALUE OF YOUR PROPERTY.
- ALLOW FOR A HEALTHIER INDOOR LIVING ENVIRONMENT IN YOUR BUILDING.
- REDUCE YOUR ECOLOGICAL FOOTPRINT.

PEOPLE OFTEN THINK

SUSTAINABILITY IS EXPENSIVE...

RETROFITTING WILL MAKE LITTLE DIFFERENCE TO OUR ENVIRONMENTAL FOOTPRINT...

SUSTAINABILITY HAS NO IMPACT ON PROPERTY VALUES...

TECHNOLOGY IS UNPROVEN OR CHANGING SO RAPIDLY IT'S BEST TO WAIT...

IT'S ALL TOO HARD TO DO ANYTHING IN MY OWNERS CORPORATION...

BUT!

SUSTAINABLE RETROFITS CAN BE DELIVERED TODAY WITH NO UPFRONT COST

In fact, some opportunities won't cost you a penny, while others can pay for themselves in two years or less. There are easy finance options available for the changes that require upfront investment, removing the need to raise money or drain your maintenance fund. And what you save in energy can go to paying off your loan!

RETROFITS OF SHARED PROPERTY HAVE SHOWN ENERGY REDUCTIONS OF UP TO 20–30%!

This helps reduce your owners corporation fees through lower energy bills but also helps reduce your building's impact on the environment.

The building sector in Australia is responsible for 23 per cent of Australia's total greenhouse gas emissions. Common sense upgrades can halve energy demands in residential and commercial buildings and help Australia achieve the required 60 per cent cut in greenhouse gas emissions by 2050.

TENANTS AND OWNERS ARE INCREASINGLY LOOKING FOR SUSTAINABLE BUILDINGS TO LIVE IN – AND ARE WILLING TO PAY A PREMIUM TO DO SO.

Sustainability is already seen as a 'must have' in the commercial sector and the residential market isn't far behind. Green buildings already enjoy the highest returns in rent and sale with the trend set to continue.

Melbourne's apartment market is moving toward oversupply. A sustainable building upgrade will give your property the needed edge to attract prospective buyers and renters in an increasingly competitive market.

LUCKILY, MANY BUILDINGS HAVE ALREADY ACTED AND THERE ARE CASE STUDIES AND EXAMPLES FROM OVERSEAS AND AUSTRALIA THAT PROVE THE TECHNOLOGIES WORK.

Technology is always changing but waiting means you just extend the amount of time you're paying more than you have to. Check out some case studies from Green Strata: **www.greenstrata.com.au**.

OWNERS CORPORATIONS MAY SEEM COMPLEX, SURE – BUT THEY DON'T HAVE TO BE IMPOSSIBLE TO LIVE, OWN AND WORK WITHIN... THAT'S WHAT THIS GUIDE IS FOR. TO HELP SHOW YOU THE WAY!

Ultimately, it's the value of your property at stake so it's worth making the effort now. Getting sustainable change to happen is much easier once you know how the system works.

Now that you know the benefits of a sustainable building, you can share your knowledge with the rest of the owners corporation and encourage them to work with you to support sustainable change.

UNDERSTANDING UTILITIES

TO BE ABLE TO MAKE SUSTAINABLE CHANGES YOU CAN START BY CHECKING YOUR UTILITIES...

YOU CAN FOLLOW THESE UTILITIES MAPS TO SEE HOW TO DO THIS FOR ENERGY AND WATER USAGE.

3

DID YOU KNOW?

UP TO 20% OR MORE OF YOUR OWNERS CORPORATION FEES COULD BE RELATED TO UTILITIES CHARGES? UNDERSTANDING YOUR CONSUMPTION IS AN IMPORTANT FIRST STEP TO IDENTIFY HOW TO REDUCE COSTS AND BEGIN MAKING YOUR BUILDING MORE SUSTAINABLE.

TIP!

YOU CAN MAKE A BIG DIFFERENCE JUST BY CHANGING HOW THINGS ARE OPERATED AND MAINTAINED. WORK WITH YOUR BUILDING MANAGER AND CONTRACTORS TO ENSURE YOUR BUILDING IS BEING RUN AS EFFICIENTLY AS IT CAN.

START HERE

1 GET A COPY OF THE BILLS

- Contact the owners corporation manager.
- Make sure you get all the pages of your bill.

2 UNDERSTAND THE BILLS

- Work out whether your bill is based on actual or estimated readings.
- If the reading is estimated, find out why and how to ensure future readings are actual.
- Work out what portion of your owners corporation fees are from utilities costs.

PAGE 2 (a)= actual (e)= estimated

ELECTRICITY & GAS

3 UNDERSTAND THE ELECTRICITY & GAS BILLS

- Work out your electricity and gas consumption.
- Find out the total kilowatt hours (kWh) for electricity.
- Find out the total megajoules (MJ) for gas.

4 UNDERSTAND YOUR USAGE

- Organise a professional energy audit with owners corporation approval, or you can arrange an informal audit conducted by walking around your building to find sources of energy consumption.
- A level 1 energy audit is suitable for small buildings and a level 2 audit is best for large buildings.
- Use this audit as a baseline for current consumption.

5 IDENTIFY WHERE YOU CAN SAVE

- Work out how you can decrease your consumption.
- You can do this by working with your building manager to ensure the plant and equipment are efficient, well maintained and operating only when it needs to.
- A professional audit will also show you different retrofit projects you could undertake to make change.

WATER

3 UNDERSTAND THE WATER BILL

- Work out your water consumption.
- Find out the total kilolitres (kL) for water.

4 UNDERSTAND YOUR USAGE

- Organise a professional water audit with owners corporation approval, or you can arrange an informal audit conducted by walking around your building to find sources of water consumption.
- Find out if the water consumption includes usage from shared property only or if it also includes water use from apartments.
- Use this audit as a baseline for current consumption.

5 IDENTIFY WHERE YOU CAN SAVE

- Work out how to decrease consumption in shared property.
- You can do this by working with your building manager to ensure the plant and equipment are efficient, well maintained and regularly checked for leaks.
- Work out how to decrease consumption in your apartment.
- Your water provider can help you make changes to reduce water consumption in your home.
- A professional audit will also show you different retrofit projects you could undertake to make change.

6 SHARE THESE LEARNINGS WITH THE OWNERS CORPORATION COMMITTEE AND THE OTHER APARTMENT OWNERS.

PROCESS TO MAKE CHANGE

4

ONCE YOU HAVE AN IDEA ABOUT WHAT YOU WANT TO CHANGE, THIS IS THE PROCESS FOR HOW TO MAKE THAT HAPPEN...

1. DECIDE ON A PROJECT AND WORK OUT THE SCOPE.
2. GATHER 3 QUOTES FROM EXPERIENCED CONTRACTORS.
3. CREATE A BUSINESS CASE OUTLINING PAYBACK AND PROJECT FUNDING.
4. SHARE THE BUSINESS CASE AT THE OWNERS CORPORATION MEETING.
5. GET OWNERS CORPORATION APPROVAL AND SECURE FUNDING.
6. NOTIFY RESIDENTS AND KICK OFF THE PROJECT WITH YOUR CONTRACTORS.
7. WHEN THE PROJECT IS FINISHED EVALUATE ITS SUCCESS.

DID YOU KNOW?

THERE ARE A NUMBER OF WAYS YOU CAN FUND YOUR PROJECT. BE ON THE LOOK OUT FOR ANY REBATES, SUBSIDIES OR GREEN LOANS THAT MAY HELP YOU REDUCE THE PROJECT COST!

HOW DO I CHANGE THINGS?

Changes and other important decisions are determined by voting during a General Meeting, Committee Meeting or by ballot. What people vote upon is called a motion. If the motion receives enough votes it will be successful and become a resolution.

WHAT IS A RESOLUTION?

When a motion passes it becomes a resolution of the owners corporation. This means that the proposal for change that was presented will be put into action.

There are different resolutions required for different types of change.

THE THREE MAIN TYPES OF RESOLUTIONS

- 50% OR MORE — ORDINARY RESOLUTION/ MAJORITY CONSENT
- 75% — SPECIAL RESOLUTION
- 100% — UNANIMOUS RESOLUTION

COMMITTEE RESOLUTIONS

These are resolutions that result from a Committee decision. Committees only make resolutions via majority consent.

DID YOU KNOW?

ALL OWNERS HAVE THE RIGHT TO APPOINT A PROXY TO ATTEND, SPEAK OR VOTE ON THEIR BEHALF AT A MEETING.

WHO ARE THESE MEETINGS FOR?

A GENERAL MEETING
Is a meeting of all owners.

A COMMITTEE MEETING
Is a meeting of the elected representatives.

TO LEARN MORE ABOUT THE INTRICACIES OF DECISION MAKING RIGHTS AND UNDERSTAND WHICH RESOLUTION YOU'LL NEED FOR YOUR PROJECT, ASK YOUR OWNERS CORPORATION MANAGER OR VISIT CONSUMER AFFAIRS VICTORIA AT WWW.CONSUMER.VIC.GOV.AU OR STRATA COMMUNITY AUSTRALIA (VIC). AT WWW.VIC.STRATACOMMUNITY.ORG.AU

TIP!

WHAT IS A SPECIAL RESOLUTION?

Most major changes will need a special resolution. A special resolution will be required if you are proposing a project that includes one or more of these:

- A significant alteration to the use or appearance of shared property;
- A change for the purpose of upgrading, renovating or improving common property where:
  - A building or planning permit is required and/or;
  - It is at a cost greater than two times the total annual fees of the owners corporation;
- A requirement for the owners corporation to provide a lease or license for use of the common property.

HOW A SPECIAL RESOLUTION WORKS

1 SPECIAL RESOLUTION

- A major change is proposed.
- A special resolution is needed for approval.
- All owners are required to vote.

IF 75% SAY YES → SUCCESS!

IF 50%-74% SAY YES → NOT ALL IS LOST... GO TO AN INTERIM SPECIAL RESOLUTION

IF LESS THAN 50% SAY YES → UNSUCCESSFUL... REVIEW YOUR PROPOSAL AND TRY AGAIN

2 INTERIM SPECIAL RESOLUTION

- A notice of interim special resolution is sent to all owners within 14 days of the meeting.
- Owners are given 29 days to present a petition against the proposed change.

IF LESS THAN 25% SAY NO → SUCCESS!

IF MORE THAN 25% SAY NO → UNSUCCESSFUL... REVIEW YOUR PROPOSAL AND TRY AGAIN

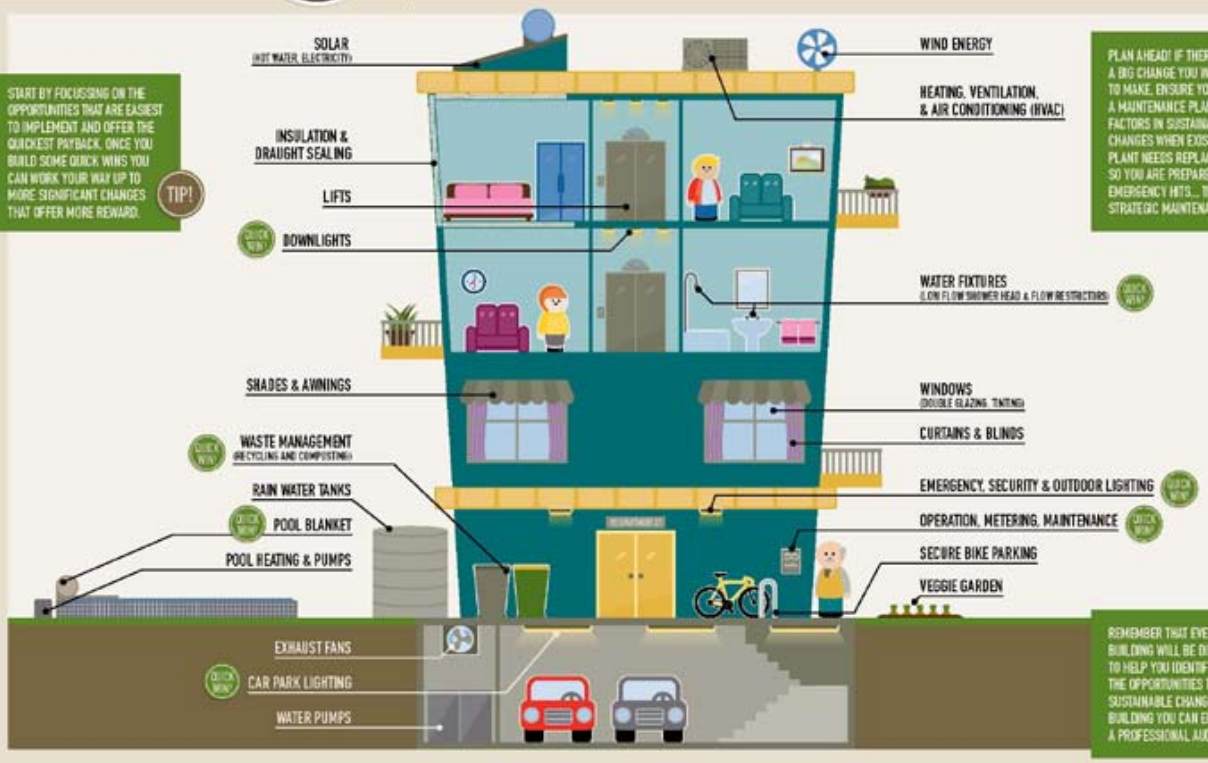
TAKING ACTION

5

WHEN YOU'VE DONE IT ONCE, YOU CAN DO IT AGAIN! USE THIS BUILDING AS A GUIDE TO IDENTIFY WHERE SUSTAINABLE CHANGE COULD BE MADE IN YOUR BUILDING.

START BY FOCUSSING ON THE OPPORTUNITIES THAT ARE EASIEST TO IMPLEMENT AND OFFER THE QUICKEST PAYBACK. ONCE YOU BUILD SOME QUICK WINS YOU CAN WORK YOUR WAY UP TO MORE SIGNIFICANT CHANGES THAT OFFER MORE REWARD.

TIP!



TIP!

PLAN AHEAD! IF THERE IS A BIG CHANGE YOU WANT TO MAKE, ENSURE YOU HAVE A MAINTENANCE PLAN THAT FACTORS IN SUSTAINABLE CHANGES WHEN EXISTING PLANT NEEDS REPLACING SO YOU ARE PREPARED WHEN EMERGENCY HITS... THAT'S STRATEGIC MAINTENANCE!

TIP!

REMEMBER THAT EVERY BUILDING WILL BE DIFFERENT. TO HELP YOU IDENTIFY ALL THE OPPORTUNITIES TO MAKE SUSTAINABLE CHANGE IN YOUR BUILDING YOU CAN ENGAGE A PROFESSIONAL AUDITOR.

5 Sustainability

Sustainable or green buildings are defined by the Green Building Council of Australia as a building that incorporates design, construction and operational practices that significantly reduce or eliminate its negative impact on the environment and its occupants. A sustainable building not only uses resources efficiently but creates healthier environments for people to live and work in.

Over the past decade, this concept of sustainability has shifted from a niche market to the mainstream. Many sustainability efforts and initiatives previously seen as voluntary or optional have now become de facto requirements, largely as a result of rising consumer awareness and expectations. Within the property sector improved value is being placed on sustainable buildings, as owners, investors, residents and tenants place a higher priority on social and environmental sustainability.

City of Port Phillip

Sustainable design and operation of buildings encompasses the following principles:

- Energy and water efficiency
- Waste avoidance and minimisation
- Ecological conservation
- Conservation of building materials
- Enhancement of indoor air quality
- Appropriate landscaping
- Enhancement of community life.

Key factors influencing the uptake of sustainability initiatives within multi-unit residential buildings include:

Liveability

Studies show there is a strong link between efficient building design and improved indoor air quality with improved livability, increased productivity, and wellbeing.

Economics

As building design and operation becomes increasingly sustainable, operating costs are reduced as a result of reduced resource expenditure and utilities charges. Increased plant and building life cycles through sustainable design and operations can also offer significant long-term cost savings.

Government Regulation

Governments around Australia have introduced minimum performance standards for new residential buildings, and are looking at introducing mandatory disclosure of building performance. Increasing compliance requirements are also being applied to existing buildings, as discussed throughout this Guide.

Market Pressure

The Australian property market is increasingly valuing environmental performance in leasing and sales decisions, with trends moving towards property premiums for environmentally friendly buildings.

Awareness

As consumer awareness increases, there is growing pressure from owners, residents and investors to ensure environmental impacts associated with building operations are minimised and social benefits such as health, liveability and amenity are maximised.

6 Energy

Multi-unit residential buildings consume more energy than other housing types. This is due to the provision of shared space and common area facilities and services, and the fact that most existing facilities in Australia were not specifically designed for operation in a low carbon economy. Improving energy efficiency and management is one of the key actions which can be undertaken to future-proof owners and facility occupants against rising electricity costs, as well as reducing greenhouse gas emissions associated with the burning of fossil fuels for generation of electricity.

Drivers and Barriers for Improving Energy Efficiency

As a contributor of up to 40% of the Australia's greenhouse gas emissions, the property sector plays a significant role in government strategies to transition to a low carbon economy in order to minimise the ongoing impacts of climate change.

Around 11.9% of Australia's energy consumption is for residential purposes, with reported data indicating that on a per capita basis people living in urban areas consume more energy than those in rural areas.

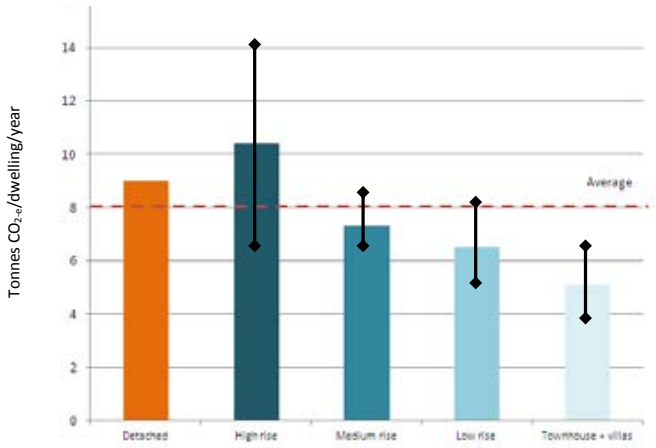
Various strategies and incentives have or are in the process of being introduced at all levels of government in order to reduce greenhouse gas emissions associated with the burning of fossil fuels, and central to these is Clean Energy Future: a package which includes introduction of the carbon price, distribution of household assistance, the Clean Energy Finance Corporation, and Energy Efficiency Grants. Other government mechanisms include mandatory greenhouse gas reporting requirements, renewable energy targets, and state government energy efficiency schemes.

While reducing greenhouse emissions associated with energy usage will help minimise costs passed on to end users associated with introduction of a price on carbon, it is important to be aware that regulated energy prices are rising significantly, independent of the price on carbon - in order to become sustainable, owners and facility/strata managers need to future proof now.

Energy Consumption in Multi-unit Residential Facilities

Studies show there is an increasing proportion of greenhouse gas emissions associated with high rise residential apartment complexes compared with low rise and multi-unit villa complexes and a clear relationship between the height of the building and the proportion of consumed energy attributable to shared spaces.

Figure 6.2: Greenhouse gas emissions for multi-unit residential buildings



Source: Multi-unit Residential Buildings Energy & Peak Demand Study, Energy Australia, 2005

A number of factors contribute to energy consumption within shared spaces, including:

- Lighting in common areas
- Efficiency of lift motors
- Water pumping costs (particularly for high rise facilities)
- The age, condition, and design of existing buildings and infrastructure
- Air conditioning (heating and cooling)

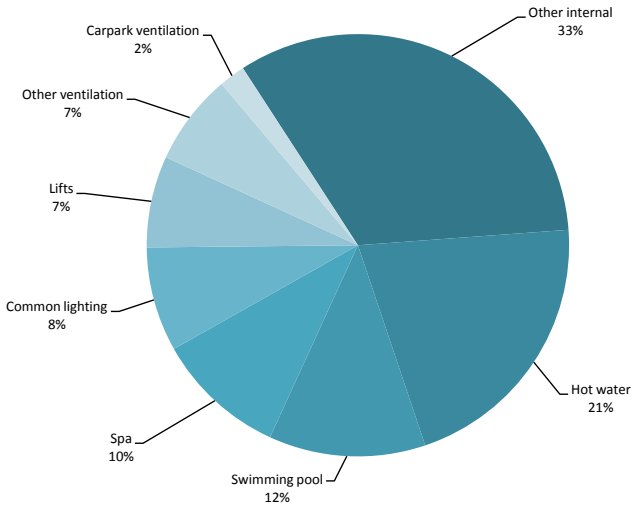
Understanding how and where energy is consumed is critical to understanding a building's performance and potential to optimise consumption patterns. Typical common area or shared spaces, and individual (end uses) in multi-unit residential developments are shown in Figure 6.3.

FMA Australia

Figure 6.3: Typical electricity consumption sources in multi-unit residential buildings

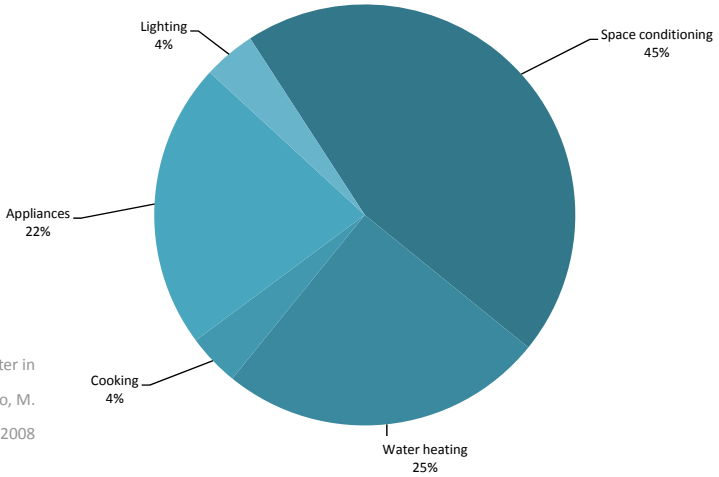
Common spaces	Individual uses
• Lifts	• Hot water heating
• Building external lighting	• Interior lighting
• Lighting in lobbies, stairs & hallways	• Individual apartment space heating and cooling
• Hot water supply and circulation pumps	• Domestic uses (i.e. televisions and appliances, etc)
• Carpark ventilation	• Internal exhaust fans
• HVAC exhaust fans	• Refrigerators
• Pool & spa water filtration & pumps	• Washing machines
• Security systems, doors & gates	• Clothes driers
• Cooling tower pumps/fans	• Dishwashers
• Cold water supply (lift and pressure pumps)	• Cooking appliances

Figure 6.4: Greenhouse gas emissions for high rise residential buildings



Source: Multi-unit Residential Buildings Energy & Peak Demand Study, Energy Australia, 2005

Figure 6.4: Residential energy consumption by end use (Australia)



Source: Energy use in the provision and consumption of urban water in Australia and New Zealand S.J. Kenway, A. Priestley, S. Cook, S. Seo, M. Inman, A. Gregory and M. Hall, Published by CSIRO, December 2008

6.1 Energy management process

Energy efficiency retrofits and improved management practices have the potential to result in significant cost savings and operational efficiency gains from common areas and within private dwellings. However, before planning and undertaking works, the following steps should be undertaken:

Establish an energy baseline

An energy baseline outlines current energy performance and provides a basis from which to measure change. Baseline data can be collected from energy invoices, building management system (BMS), and utility provider's reports, and should include at least twelve months to account for seasonal variations.

Develop an operational energy profile

Develop a picture of how the building operates throughout the day by liaising with residents, and by understanding the building's energy supply contracts (including off peak & peak times and charges and usage levels that trigger tariff changes).

Undertake an energy audit

Energy audits are essential in the energy improvement process; however there are different levels of detail, and a basic audit may not suffice to develop a business case for improvements. It is usually beneficial to engage an energy consultant to ensure critical elements are not overlooked.

Set performance targets

Develop targets taking into consideration the energy baseline, identified opportunities, and available resources. Other factors may include building performance ratings, resident expectations and budget constraints.

Identify preferred energy improvement initiatives

Evaluate opportunities to improve energy performance based on the return they offer against targets and the feasibility / practicality of implementation.

Develop monitoring and reporting processes

Establish a system to collect, analyse and report on energy consumption and develop or purchase a system that records consumption and enables tracking against targets. Measure consumption against the initial energy baseline in order to assess energy performance trends, the effectiveness of initiatives implemented, and further opportunities to improve.

Communicate with residents & owners

Discuss energy efficiency intentions with identified stakeholders to establish intentions and communication mechanisms, and seek input or support from residents.

A comprehensive energy audit should:

- Identify meters and sub-meters, and lack of metering
- Verify which equipment/circuit they supply
- Measure light levels and compare with recommended Australian Standards
- Provide an inventory of all energy consuming equipment (lighting, chillers, fans, pumps, standby generators etc) including equipment size, type, and condition
- Identify areas of poor performance, competing plant, and damaged or non operational plant
- Identify control systems for all energy consuming equipment and correct scheduling or set points
- Identify any power factor correction equipment
- Identify the location or potential of any energy efficiency measures (e.g. variable speed drives on pumps).

6.2 Energy efficiency retrofits

An energy efficiency retrofit is a complex and dynamic process involving many steps including opportunity planning, identification, tendering and procurement (i.e. consultants), developing work specifications and contractor requirements, project management and contractor monitoring during implementation, and measurement and verification of results post implementation. Beyond that, an ongoing effort is necessary to maintain and sustain the retrofit benefits.

Each building is different, and there is no such thing as a 'standard retrofit'. The process of identifying energy efficiency opportunities, then implementing and maintaining them requires a wide range of skill and competencies including project management; knowledge of government and building standards; ability to perform cost-benefit analysis and develop business cases seeking funding; awareness of energy efficiency technologies; and stakeholder engagement and management.

Renewable Energy Installations

Renewable energy fixtures such as photovoltaic panels are generally less cost effective per dwelling in multi-unit developments since there is less available roof space per unit – however they can be very effective for offsetting the energy usage and associated costs of common and shared spaces, and associated services.

HVAC Management Strategies

Heating, ventilation and air conditioning (HVAC) is a significant energy consumer in multi-unit residential buildings, and can often consume up to a third of total electricity usage.

Energy savings strategies relating to HVAC include:

- Review and tune HVAC settings through the BMS
- Select realistic operating hours - every extra hour per day of operation represents around 7% additional air-conditioning energy
- Select realistic space conditions. Controls should be set to provide a dead band between 20°C and 23°C where neither heating nor cooling will occur
- Fresh air control. When it is cooler outside than inside, it is often possible to cool buildings using outside air
- Optimum start/stop routines. These routines monitor the time taken for the building to reach design conditions in the morning and to depart from design conditions when the HVAC is shut off at night
- Install Variable Speed Drives on pumps and fans
- Install CO monitoring to control fresh air intake.

Building System Tuning

Over a building's life time, the performance of its systems will tend to decrease for a variety of reasons. Building tuning involves a series of processes applied to HVAC, control and electrical systems to counter this and optimise performance, in order to help the building retain its energy efficiency performance for longer. This involves:

- Calibrating controls such as thermostats and sensors
- Adjusting operating schedules to ensure equipment is on only when needed
- Checking for improperly operating equipment
- Adhering to maintenance schedules.

FMA Australia

6.3 Energy management techniques

Power Factor Correction

Power factor is a measure of how efficiently certain equipment makes use of the electricity network. Inductive loads, such as electric motors and fluorescent lights, draw more current from the electricity network than they need to perform the useful work they are designed to do. These additional currents are out of phase with the supply voltage and perform no useful work, but are required to maintain the magnetic fields within the devices. This means you may end up paying for more power than you actually need through the peak demand portion of your tariff. The concept is expressed as the ratio of power consumed (kW) to current flow required (kVA). A power factor of 1.0 is perfect.

Power factor correction settings

Ensure power factor correction equipment is operating correctly, and the power factor is ideally above 0.98, or at least, >0.95.

Controls Strategy

Developing a controls strategy can be one of the most effective ways to reduce building energy consumption. This should take into consideration factors such as temperature set points, thermal comfort boundaries and hours of operation.

Peak Demand Management

Peak demand management is essentially minimising electricity consumption during peak periods and maximising consumption during off-peak or shoulder periods in order to minimise cost. Understanding which loads can be reduced without impacting building operations enables Facilities Managers to manage consumption in a way that will maximise cost savings.

Thermal Mass

Many multi-unit residential facilities have large concrete structures such as stairwells or lift shafts which provide a large volume of thermal mass which can be used for the benefit of heating or cooling purposes.

Actions as simple as installing motion sensors in stairwells so that lights are switched off when stairwells are not in use can ensure this thermal mass provides cooling services to the building rather than heating. This can have flow on benefits such as reduced demand on apartment air conditioning within multi-unit residential buildings, and reduced electricity consumption costs for the base building.

Green Strata Inc

Lighting

Lighting in common areas is an area where substantial cost savings (often >50% and in some cases >80%) can be achieved. More efficient lamps reduce heat gain, which in turn reduces air conditioning costs, and longer-life lamps need replacing less often, reducing maintenance costs. Installing energy efficient lighting technologies and controls requires capital expenditure. However, payback periods (the time taken for savings to reach the same level as the initial project cost) can be less than three years, and are often between 2-4 years, as highlighted in the following case study.

Lighting initiatives

- Establish mechanisms to ensure lights are turned off when not in use (e.g. motion sensors in stairwells)
- Provide clear signage encouraging responsible lighting practices (e.g. turning lights off when not in use)
- Remove light bulbs in overlit areas (de-lamping) or where high luminance is not critical (e.g. stairwells)
- Lamp replacement – T5 fluorescent lamps are 38% more efficient than standard T8 lamps and compact fluorescent lamps, consume 75% less energy than incandescent lamps, and last up to 13 times longer.
- Reflector replacement – specula reflectors direct more light downward from fittings than standard reflectors
- Motion sensors – automatically activate lights when a person enters a room, through heat or movement detection (e.g. common area bathrooms or gyms)
- Daylight-linked dimming system - photocell dimming controls sense natural light levels and turn lights down or off when sufficient daylight is available
- Identify measures to show reductions in energy consumption.

Case Study

Freshwater Place, Melbourne

Freshwater Place is a luxury high rise residential facility in Melbourne with 530 apartments over 62 levels. In 2010 the Freshwater Place Committee of Management engaged a consultant to undertake an energy audit in order to:

- Assess overall energy consumption and establish energy consumption benchmarks
- Identify practical opportunities to reduce consumption and costs
- Develop a 5 year strategy to reduce electricity use, exposure to increasing electricity prices and carbon levies
- Achieve additional benefits such as improved service quality, maintainability and operability.

The total annual GHG emissions for Freshwater Place are equivalent to 3223 cars or 1074 homes. This equates to approximately 6 cars (2 homes) per apartment. The below data shows costs and GHG emissions (common area only).

Utility	% of total cost	GHG emissions	
		Tonnes/CO2/yr	% of total
Electricity	70.4%	10,598	82.2%
Natural Gas	19.4%	2,296	17.8%
Water	5.3%	0	0%
Waste water	4.9%	0	0%

The audit identified a number of opportunities to reduce energy consumption with lighting and HVAC (heating, cooling and air-conditioning) changes. The greatest visual impact for residents was lighting (e.g. the car park, corridor lighting, gym & change rooms, and foyers). These areas represented around 12% of total electricity consumption. Of this, 42% was associated with the car park and 33% the corridors.

The Committee allocated $40K to replace 1,200 20 watt halogen down lights with a 6 watt LED and driver for the whole building. A project plan was developed incorporating measures of improvement, the ROI, and methods for getting the message out to the residents.

Comparison between halogen and LEDs showed that making the change would reduce electricity consumption by 62,231 kWh/yr and reduce CO2 emissions by 84,012 kg/year, with a payback of 2.32 years and an ROI of 39.40%. Residents were given the opportunity to purchase LEDs at the same bulk price negotiated for the common areas

7 Water

Water is a precious commodity, and as the effects of climate change continue to increase drought and flooding conditions across the country, water efficiency and management is likely to become increasingly important. Water consumption and efficiency are key indicators of building performance with potential to provide significant operational savings. Increasingly, governments, organisations and businesses are demanding water efficient buildings for their operations.

Water Use in High Rise Residential Developments

Within strata developments a Facilities Manager is likely to face challenges of reduced ability to control water efficient outcomes. For example, while an OC typically has control over water usage in shared spaces, the vast majority of water usage within the complex is associated with residential use. For some residential buildings separate / sub-meters for common and private uses have not been installed, presenting further issues for determining and managing water use.

While it may be easy to assume the majority of water use is associated with pools and spas in shared spaces, metering shows this is rarely the case – up to 90% of water use is usually associated with water use inside apartments, from showers, toilets, taps, leaks, dishwashers and washing machines.

7.1 Key water efficiency principles

Achieving water efficiency within multi-unit residential facilities is a difficult practice which requires a sustained approach and good communication and engagement with residents as the primary water users. Leak detection and management is generally recognised as the 'low hanging fruit' for water efficiency, as lighting replacement is for energy efficiency.

Did you know?

- A water-efficient washing machine may use only one-third the water of an inefficient model
- An old-style single-flush toilet could use up to 12 litres of water per flush, while a standard dual flush toilet uses just a quarter of this on a half-flush
- A standard showerhead may use up to 25 litres of water per minute whereas water-efficient showerhead might use as little as seven litres per minute, which is less than a third.

Source: Water Efficiency Labelling and Standards (WELS) Scheme (http://www.waterrating.gov.au/)

The difficulty in practice however, is that energy and water management should be considered together and an integrated solution developed (i.e. pumping water around a building has an associated energy cost).

The following steps should be undertaken as a guide:

Develop a water baseline

A water baseline provides a basis from which to measure change. Data can be collected from retail water invoices from utility providers, and metering. At least twelve months data should be collected to give an indication of seasonal fluctuations.

Develop an operational water profile

Develop a facility water use profile by collecting water consumption data and monitoring the consumption patterns of residents.

Engage with residents

While collecting consumption and other relevant data engage with residents to gauge their interest in having water improvements undertaken within their apartments. Consider establishing a water management committee to guide water efficiency initiatives, monitor performance, report achievements and promote awareness.

Set performance targets

Establish short and long term targets with consideration of the water baseline and available benchmarking data (see HiRise Case Study on page 32). Targets should reflect the environmental objectives of the owner or OC, budget constraints, and what can realistically be achieved given the age and condition and age of the property. Targets are usually expressed in kL/day or kL/apartment.

Evaluate and implement initiatives

Evaluate opportunities to reduce water consumption based on the return they offer against targets and the level of difficulty for implementation.

Monitor consumption and check for leaks

Monitor water consumption and regularly inspect water fixtures and outdoor areas for signs of dampness/leakage. Implement a proactive water leak detection policy that identifies where and to whom leaks are to be reported through clear and obvious signage.

Report performance and communicate results

Regularly measure water consumption against the initial water baseline, consumption trends, and reduction targets. Report performance and achievements to residents and other building users.

7.2 Inspections and collecting baseline data

To assist in identifying opportunities to reduce water consumption and associated costs, it may necessary to physically inspect each unit or apartment where these are not normally separately metered (this may present issues for some OCs depending on the arrangements for each particular building). Such an inspection also presents the opportunity to assess the condition of common property that can only be seen inside an apartment (such as common walls). An example of the type of data that can be collected during this process is shown below.

Figure 7.1 Inspection and Baseline Data Collection (Water)

Kitchen	
Tap flow rates	How water – 9L/min or less
	Cold water – 9L/min or less
	New flow regulators installed & tested
Water leaks	Minor water leaks identified & rectified
	Major water leaks identified
Air vents	The air vents are functioning correctly

Bathrooms	
Shower	Shower flow rate – 9L/min or less
	New shower flow regulators installed & tested
	Minor water leaks identified and rectified
	Major water leaks identified and rectified
	Tiles & seals in good waterproof condition
Bath	Minor water leaks identified and rectified
	Major water leaks identified and rectified
	Seals in good waterproof condition
Basin	Hot water flow rate - 5L/min or less
	Cold water flow rate - 5L/min or less
	New flow regulators installed and tested
	Minor water leaks identified and rectified
	Major water leaks identified and rectified
Toilet	Dual flush toilet
	Flush volume reduced (single flush)
Air vents	The air vents are functioning correctly

Laundry	
Tub & washing machine	Minor water leaks identified & rectified
	Major water leaks identified & rectified
Air vents	The air vents are functioning correctly

Source: Green Strata Inc.

City of Port Phillip

7.3 Water conservation initiatives

In a multi-unit residential facility it is often possible to achieve a 30 - 40% reduction in water consumption through behavioural modification and minor works. Some of the options available are shown above and below. As with energy, for existing buildings, the time to capitalise on many of the opportunities is during building maintenance and refurbishment, or through more intensive capital project works following a successful business case.

Water conservation initiatives (common areas)

- Seek opportunities to install sub-metering
- Install flow controllers on existing taps, and consider installing sensor taps
- Proactively maintain cooling towers to minimise loss through overflow, leaks, evaporation, bleed, and drift. A constant flow of water from overflow pipes is an indicator of a problem with the valve cut off height
- Where cooling towers are installed close to boilers, consider installing a heat exchanger to use the heat from the condensers to pre-heat water going into the hot water heaters. This has the added benefit of reducing load on both the boilers and cooling tower.

Water conservation initiatives (grounds)

- Plant native and indigenous species which require less water than exotics
- Use mulch on garden areas to prevent water loss
- Irrigate after sunset to reduce evaporation loss
- Capture and store water from routine fire services testing for re-use in other suitable applications
- Install moisture sensors or sub-surface drip irrigation systems
- Instal rainwater tanks for irrigation and washdown of plant and equipment using rainwater harvested from roofs and balconies
- Consider stormwater harvesting (refer to case study).

Water conservation initiatives (apartments)

- Install flow controllers on existing taps, and consider installation of sensor taps
- Insert flow controllers in cisterns to reduce the volume of water per flush
- Improve the WELS rating of internal fixtures, by replacing taps and showerheads with higher WELS rated fixtures
- For new fixtures, specify a minimum 5 star WELS rating for any water fixtures and white goods.

Case Study

HiRise Pilot Project (NSW)

High rise residential developments consume significant amounts of energy and water associated with occupant use and the provision of services in shared spaces and common areas, however detailed resource use data for this type of facility is limited.

The HiRise pilot project was a Sydney Water initiative which added to the existing data and knowledge base by undertaking detailed water efficiency audits of 22 high rise multi-unit residential facilities in Sydney, with the aid of consultants BMT WBM. Each audit involved a walkthrough of common equipment areas and shared spaces, review of historical water consumption patterns from billing data, checking flow rates in a sample number of aprtments and installation of submeters for better analysis of specific use areas.

The findings of the study showed that the dominant water consumption source was by far from resident activities within their apartments; with showers representing on average 39% of total usage, and toilets, washing machines and taps adding a further 9-10%. Leaks represented another substantial opportunity area (10% of total consumption) (Figure 7.2).

The study confirmed that some areas traditionally perceived as those to focus water efficiency efforts (e.g. cooling towers, pools, spas, irrigation) represented only small proportions of the total water consumed. As a consequence, remedial actions recommended as a result of the study show preference for activities such as replacement of shower fittings and repair of leaks, as these make up the largest proportion of identified savings (Figure 7.3). While leaks were detected across all sites in plant and equipment such as irrigation equipment, float valves and cooling towers etc., the majority of leaks detected again originated inside apartments, from worn toilet valves and tap / shower washers.

Approximately 28% of recommended savings related to the following activities:

- Install lower flow shower fittings in apartments
- Install flow regulators in apartment basin taps
- Install flow regulators in apartment kitchen sink taps
- Reduce toilet flush volume

Overall, the combination of leak repair, new shower fittings and tap flow regulators across the 22 sites represented 93% of all savings recommended. This highlights the potential associated with programs targeting these areas, combined with resident behavioural change engagement and awareness strategies.

Another important contribution arising from the HiRise Pilot Project was the development of suggested benchmarking data which can be used for comparative purposes in high rise residential facilities. Figure 7.4 shows the proposed benchmarks, which include an ‘aspirational’ target of <130 L/bedroom/day.

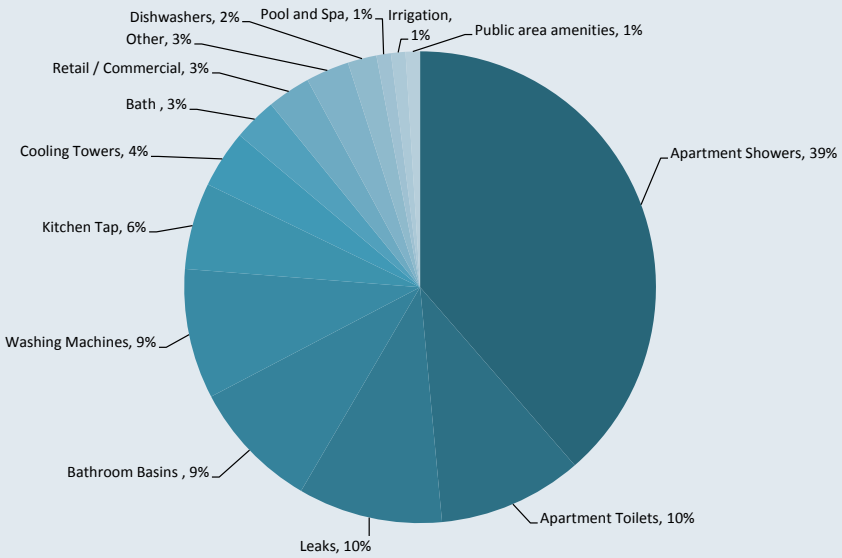
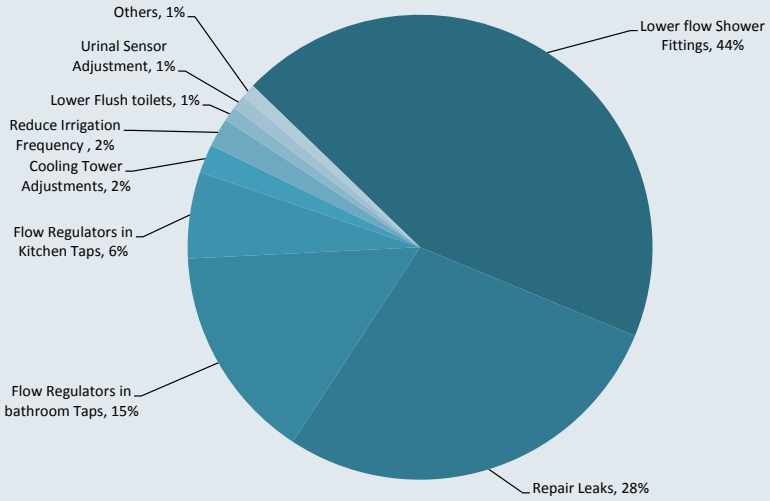


Figure 7.2: Breakdown of water consumption

Source: HiRise Pilot Summary Report, Overall Findings from Completed Water Audits, Sydney Water & BMT WBM Pty Ltd' June 2011

Figure 7.3: Breakdown of identified water savings



Source: HiRise Pilot Summary Report, Overall Findings from Completed Water Audits, Sydney Water & BMT WBM Pty Ltd' June 2011

Figure 7.4: Suggested Benchmark Categories

Category	Water use per bedroom benchmark (L/bedroom/day)
Higher use	300 and higher
Typical	200 to 300
Current best practice	Less than 200
Unachieved target	Less than 130

Source: HiRise Pilot Summary Report, Overall Findings from Completed Water Audits, Sydney Water & BMT WBM Pty Ltd' June 2011

Case Study

Ardoch Estate Stormwater Harvesting

Ardoch is a heritage listed residential estate in St Kilda East, Victoria. It is a unique environment covering 2.2ha, with 92 apartments in 15 stand-alone buildings (shown above). The property is subject to Conservation Management Plan requirements and owners/residents are obliged by legislation to maintain landscaped areas, most of which are specified as being of 'primary significance'. Many of the estate's trees are classed as significant trees and require special care and attention, including English-style planting in accordance with the era.

Exemptions from water restrictions over recent years were not sufficient to prevent significant distress to the gardens and trees during the drought period. A concept plan was developed to address the long term issue of the Ardoch water cycle and to work towards a sustainable solution to maintain and enhance Ardoch's grounds and gardens. The solution incorporated an innovative, holistic approach to stormwater harvesting, with potential to significantly improve the benefit to cost ratio over conventional stormwater harvesting techniques, using practices pioneered by Melbourne's Royal Botanic Gardens.

The projected outcome is a benefit to cost ratio of 2 to 1, with cost savings over stand-alone stormwater harvesting, in the order of 22% (gained primarily by substantially reduced required storage volumes). At the same time, potable water supply to the estate can be reduced by 80% (or from 10 ML to 2 ML) per annum.

Other benefits of stormwater harvesting such as reduced downstream pollution (in this case affecting Port Phillip Bay) and flood mitigation are also achieved. The cost of providing this water is less than alternative public supply means (25% less than desalination) and is significantly more cost effective and efficient than rain water tanks.

Source: Ardoch Heritage Environment Preservation Project Business Case, 2011

8 Waste

Waste represents inefficient use of resources and energy. Reducing waste is an immediate, tangible and measurable way of reducing costs and improving environmental performance. However, there are a number of challenges to effective segregation and management of waste within multi-unit residential developments. Landfills, where the majority of waste is currently sent, consume valuable space and pose threats to waterways through the leakage of hazardous materials, and contaminate the atmosphere through methane (a greenhouse gas) produced from decomposing waste.

8.1 Environmental impacts and benefits

The need to transport waste to disposal sites further increases emissions of greenhouse gasses. It is known that methane is more than twenty times more potent a greenhouse gas than CO2.Through recycling organic waste, the methane emitted can be harvested as an energy source in the form of household gas.

Implementing waste management initiatives within multi-unit residential developments can bring about the following benefits:

- Cost savings: recycling is cheaper than waste disposal, and reducing waste management costs has an immediate impact on financial bottom lines and the potential to offset rising waste collection and disposal charges
- Streamlining building operations: separating out recyclables leaves a much smaller amount of putrescible waste to be handled.

Most state governments in Australia have or are in the process of introducing various policy instruments such as increased landfill disposal fees and levies in an attempt to encourage recycling and reuse of waste streams.

Waste Challenges in Multi-unit Residential Facilities

Many older style multi-unit residential developments present unique waste management challenges, which differ depending on the type of development. For example, most existing high rise residential facilities have a single chute which is accessed from each level via a service compartment. The chute empties garbage into one or more garbage skips, typically located in the basement or carpark.

Recycling facilities are generally not provided on each level due to a lack of available designed space and, where provided, there is an associated cost of removing the items on a regular basis. Therefore residents wishing to recycle must either physically carry recyclables to the lower floor waste collection area (which may be somewhat of a deterrent) or utlise a separate recycling chute if provided.

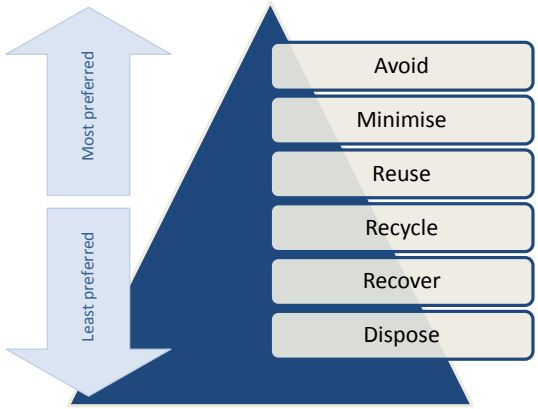
Amenity Considerations

Waste collection, manual handling and disposal within a multi-unit residential development can give rise to a number of nuisance, health and amenity related impacts such as noise from the garbage chute and collection vehicles, odour, possible hygiene issues from waste awaiting collection, and traffic hazards from vehicles reversing and manoeuvring to collect waste (particularly where there are space constraints).

8.2 The waste hierarchy

The waste hierarchy should be adopted as a basis for all decision making involving waste management within a building or facility, however in some cases effective use of this hierarchy requires a change in mindset and an ability to view waste as a resource. The hierarchy recognises that disposal to landfill is environmentally the least preferred option when dealing with waste, and avoiding generation of waste in the first instance is the primary goal.

Figure 8.1: The Waste Hierarchy



Terminology

Opportunities for improving performance include waste avoidance and minimisation. Waste minimisation includes reduction, re-use, repair and recycling during a facility's operational life. Waste avoidance is best achieved during fit-out and refurbishment and is mainly a function of design.

Responsibilities

Reducing waste through the day-to-day operations of the building generally comes down to the resident's responsible practices, however the design and layout of the facility may determine to what extent waste can be effectively segregated and recycled. The Facilities Manager typically plays an important role in supporting waste minimisation through:

- Provision of separate storage and recycling spaces
- Provision of hard waste collection locations
- Provision of charity bins in waste rooms or car parks
- Managing cleaning subcontractors to ensure that waste is separated and appropriately disposed of
- Monitoring and reporting on waste performance
- Educating residents on waste efficiency.

During building maintenance and refurbishment, waste should be managed through the promotion of reuse and recycling, and packaging reduction.

8.3 Waste efficiency options

Opportunities to improve waste management practices within multi-unit residential facilities relate to the following considerations.

- Design
- Refurbishment
- Recycling and reuse
- Education and awareness
- Purchasing and procurement
- Contracts & agreements.

Design Considerations

In accordance with the waste hierarchy 'designing out' waste is the best way to reduce waste in the long term. For new buildings, several options are now available for improved waste management. The following options to improve waste efficiency can be implemented during building design.

Design related waste opportunities (construction)

- Write into the designer's brief that they minimise waste and reuse/recycle materials wherever possible
- Use durable materials and furnishings
- Use materials that can be (or are) refurbished or remanufactured (e.g. carpet tiles)
- Require designers to develop a waste management plan for construction
- Reuse demolition materials on-site (for example, timber, partitions, light fittings, glass)
- Specify minimal, returnable or recyclable packaging from suppliers.

For existing buildings where it is too costly or impractical to retrofit improvements to existing waste facilities (e.g. installation of second waste chute or single chute dual stream technology), effective and low cost segregation facilities can still be established with a little coordination between stakeholders, provided there is sufficient space within the facility (e.g. car park area).

Design related waste opportunities (Operations)

- Require designers to develop a waste management plan for facility operations. WMP must comply with the relevant Council's guidelines or planning controls
- Consider on-site compaction of garbage to reduce collection frequencies
- Ensure garbage and recycling streams are made equally as easy to dispose of
- Ensure long term costs of managing recycling and garbage are minimised. Promote dual chutes or single chute dual stream technology
- Ensure there are adequate separate storage and recycling spaces
- Ensure there are adequate separate spaces for hard waste and charity goods
- In high density developments designers should consider onsite loading of waste to avoid loss of local amenity and noise due to on-street collections.

Refurbishment Initiatives

Waste reduction can be achieved during refurbishment and retrofit related construction work as follows:

Waste opportunities during refurbishment

- Use a company that deconstructs rather than demolishes
- Require demolishers to develop a waste management plan
- Use a demolition company that has its own retail outlet for second-hand building materials
- Get receipts from the waste company documenting the amount reused, recycled and diverted from landfill
- Some of the materials may be left onsite for reuse by the builder (e.g. glass, timber and carpet underlay)
- Use a builder who is flexible and can reuse materials
- Have materials 'made to measure', to minimise off cuts, particularly plasterboard.

Recycling and Reuse

Segregation of waste streams in older facilities is often limited to paper/cardboard, glass, aluminium and recyclable cartons, and there is often no space for large bulky items such as hard waste or unwanted items which could be collected by Council.

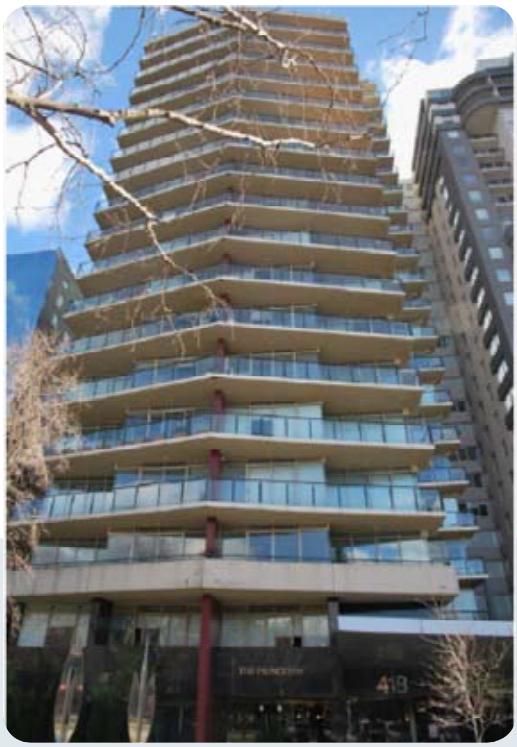
Good practices in waste segregation include provision of bins and collection services for various waste streams including:

- Paper and cardboard
- Containers (glass, plastic and metal)
- Computers and electronic equipment
- Mobile phones and batteries
- Fluorescent lamps
- Electrical equipment
- Charity goods.

The case study over page provides a good example of where this has been successfully implemented for minimal cost outlay, reducing the volume of waste diverted to landfill and at the same time providing additional resource streams and social benefits.

Education & Awareness Tips

- Educate facility residents and contractors about recycling processes and why they have been established
- Inform cleaners and other contractors of the recycling system in place, what their responsibilities are, and which waste streams are to be separated from general waste
- Promoting awareness and understanding of waste requirements amongst all subcontractors.



Case Study

Princeton Apartments, Melbourne

Princeton Apartments, St Kilda Rd, Victoria is a high rise residential facility comprising 128 apartments over 28 stories. Members of the OC participated in the City of Port Phillip's SOCS (Sustainable Owners Corporations) and Blocks Program, targeting improved environmental management in high rise apartments.

Andrew Foulkes, a member of the OC indicated waste is one area which has been very successful as part of this process:

> *"There are bins for rubbish, paper and cardboard, general recycling, corks, batteries, print cartridges, mobile phones, cards and charity bins. The content of all these bins would have gone into the rubbish if they had not been there, and we would have to pay for it to be taken away. The two most successful of these are the general recycling and the charity bins. The amount of clothing that used to get thrown in the rubbish was amazing - when moving it is easier and quicker to throw it in the rubbish rather than taking it down to the nearest charity. So if you haven't got charity bins that would be a good place to start. We fill two charity bins every week".*

Examples such as this demonstrate that despite some obvious design challenges, OCs can still obtain significant savings and benefits by implementing practical measures and involving members of the residential community.

9 Maintenance

Optimising the performance of a building is the best 'first step' in ensuring it is financially and environmentally sustainable. For example, maintenance for greater energy efficiency is mandatory for new and refurbished buildings under the National Construction Code and requires a maintenance program to ensure all equipment is operating correctly and efficiently.

The following sections provide a general guide to maintenance in multi-unit residential buildings in Australia.

9.1 Maintenance planning

Maintenance activities fall into two basic categories – planned (i.e. routine maintenance) and unplanned (i.e. breakdowns). Manuals and specification documents should be used as a guide when developing a maintenance program which should clearly outline what needs servicing and when, as well as general routine maintenance tasks, who will undertake them and when.

Establish Policies and Objectives

Ensure policies are in place and objectives developed taking into account the needs and aspirations of the OC, residents and other key stakeholders.

Develop Maintenance Strategies

Ensure a maintenance strategy and supporting plan is in place with benchmarks and KPI's included for contractors. Consider incentives for maintenance contractors to enhance efficiency in operations and maintenance.

Allocate Resources

Ensure there is sufficient budget from OC levies to carry out maintenance, and sufficient rigor over management of the associated budget. Employ suitably trained and experienced professionals to carry out maintenance activities and associated monitoring, seeking professional advice where necessary.

Document Requirements

Ensure key documentation is in place and accessible to contractors (e.g. O&M Manuals, As Built Drawings, Maintenance Log Books, Commissioning Data). Consider developing and distributing a building user guide to relevant stakeholders to ensure that equipment and maintenance requirements are understood and adhered to.

Monitor Progress

Hold regular progress meetings and encourage a team effort from all stakeholders in conducting their duties. Carry out monitoring using specialists where necessary.

Planned maintenance strategy types

Preventative Maintenance: where a contractor regularly inspects, maintains and calibrates building plant and equipment, providing reports to the owner (i.e. typically OC) or their designated managing agent (i.e. typically the Facilities Manager), who approves any required work.

Comprehensive Maintenance: similar to the above, however the contractor typically pays for the work and sets their own work plan within a full service contract commissioned by the managing agent for a set period.

Performance-based Maintenance: where the maintenance contractor is responsible for delivery of planned maintenance services, sets their own program, and is paid based on the reliability of services provided.

Areas to include in planned maintenance include:

- Air handling units (AHU)
- Boilers
- Building Management System
- Chiller system
- Cooling towers
- Fire systems
- Humidification and dehumidification
- HVAC
- Lighting
- Pumps and fans
- Packaged HVAC systems
- Power Factor Correction System
- Safety controls

9.2 Maintenance and sinking funds

The primary source of funding for the maintenance of multi-unit residential buildings under strata schemes is from Owners through the use of levies. These funds are used in a recurrent budget or Maintenance Fund or a Sinking Fund (the terms vary depending on context) to cover the cost of works.

The balance of funds and the detail of its associated maintenance plan vary depending on the complexities of the building, its size and age.

Despite not being ideal, it is common for maintenance and budget planning in residential strata schemes to occur on an *ad hoc* reactionary basis (i.e. when something needs to be fixed, it is). This approach can represent poor financial management, often leads to a lack of funds to pay for required works and can result in Owners being burdened with excessive short-term costs.

To fund capital replacement, Owners have the option to adopt a sinking fund budget that adequately provides for the future needs of their buildings and assets – these budgets are usually based upon a report prepared by a property professional such as a quantity surveyor, builder or building cost estimator.

Alternatively they may adopt a sinking fund budget that is not adequate and supplement the short falls in the sinking fund balance with additional special levies to pay for a particular project such as painting, fencing or guttering.

Another option available is to take out a loan with a financial institution to cover the costs of works and have repayments paid by Owners from existing fees or a special levy.

In many states and territories it is a requirement for Owners of strata schemes to develop and implement a 10 year Maintenance Plan or Sinking Fund Plan. This may be based upon a user pays system whereby the Owner living in a strata 'uses' the common property and 'pays' for what they use. For example if an owner owns a unit for 5 years they have used 5 of the 10 years of the life of the paint and should pay for 5 years worth of the cost to repaint in their sinking fund levies.

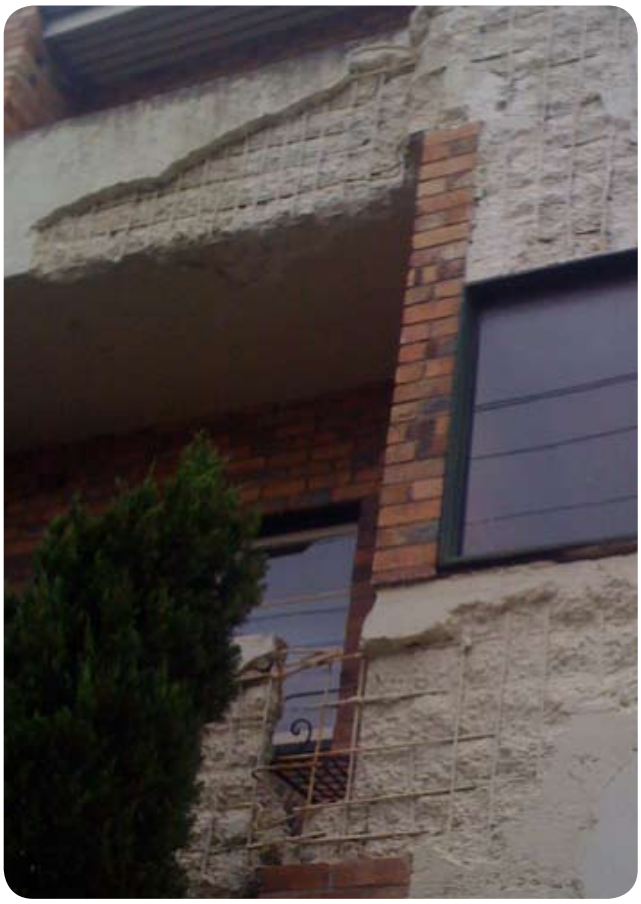
If a Maintenance or Sinking Fund Plan is properly determined in the first place, Owners will contribute a required amount over a period of time towards the replacement of major capital items. This approach is usually the easiest to manage and pay – it is something like a superannuation plan for a building.

A Maintenance or Sinking Fund Plan should take into account all of the costs of a capital or non recurring nature such as replacement of fencing, gutters, downpipes, plant and equipment and items such as repainting. The Plan will generally apportion costs into 1 of 3 categories and provide funding for them accordingly:

1. Costs for items with a known life span within the 10 year time of the Maintenance Plan – e.g. painting of a building will generally be required every 8-10 years.

2. Costs for items that will require replacement over a 10 year time frame but for which the life of the item is not determined – e.g. external lighting will generally need to be replaced over a 10 year time frame but not all of the lights will fail at the same time and so will be replaced somewhere between years 5 and 10.

3. Costs for items that will be replaced outside of the 10 year time frame for which Owners need to collect a proportion of the eventual replacement cost – e.g. replacement of fencing will generally be required 30 years from installation, so Owners will collect up 1/3 of the eventual replacement cost of the fencing in the 10 year Maintenance or Sinking Fund Plan.



FMA Australia

9.3 Risk management

Within any facility there are critical pieces of equipment (assets) which have a greater impact on overall performance. There is a need to identify what equipment is critical in ensuring the safety, comfort and amenity of a building. Particularly in larger buildings, the OC may wish to plan for major plant failure by purchasing these critical assets and having in place a process to minimise downtime and inconvenience to residents.

The following are some suggested key steps in identifying critical assets and managing the risk associated with them.

Identify critical assets and asset audit trail

An asset audit trial should be undertaken to understand the interdependency of assets upstream and downstream – very few critical assets are stand-alone entities (e.g. electrical supply and a machine's electrical controls are both required in order for the machine to do work).

Identify and document replacement lead time

If assets or parts are able to be replaced promptly without significant impact on building operation, they are unlikely to be critical and should be addressed as routine maintenance.

Identify and document replacement cost

Assets or components which are readily available but have such a high replacement cost that they cannot be funded may be critical assets and should therefore be managed strategically as distinct from routine maintenance.

Conduct risk assessment

Fire is one of the greatest threats to the effective operation of assets and equipment, however other threats may include flood, water ingress, vandalism, mould, or smoke damage. Credible threats to the performance of each asset should be documented and a risk assessment conducted on each asset.

Protect critical assets

The risk assessment process should determine the controls necessary to manage threats to each critical asset, such as alarms, values, detectors or response equipment and processes.

9.4 Record keeping

Records of all works should be kept for all maintenance carried out in multi-unit residential buildings on behalf of the OC. A building management system (BMS) may be used to meet this requirement as well as provide control over some or all building systems.

All programmed maintenance, in particular essential service maintenance, must be recorded accurately and be readily available. Contractors must ensure each scheduled inspection is recorded and signed by the person carrying out the maintenance.

Logbooks must be provided for activities relating to essential services.

Maintenance records also assist in planning for future asset replacement.

Maintenance Contractor records should include:

- Date of inspection, test or maintenance
- Name of person carrying out the inspection / maintenance
- Details of any faults identified.
- Action taken to rectify any faults, including the date they were rectified
- Cost of any rectification works outside the scope of the agreement with the FM.

Spare equipment can be stored in convenient locations to minimise downtime, such as this condenser water pump motor and associated lifting equipment. (images courtesy of FMV)

10 Safety

Owners, Facilities Managers and their employees have a clear legal and moral obligation to provide a safe physical environment for residents, contractors and visitors to a building.

The provision of a safe environment is critical for the long-term success of any building and presents an essential aspect of the duty of care that must be demonstrated by the various stakeholders with the ability to do so.

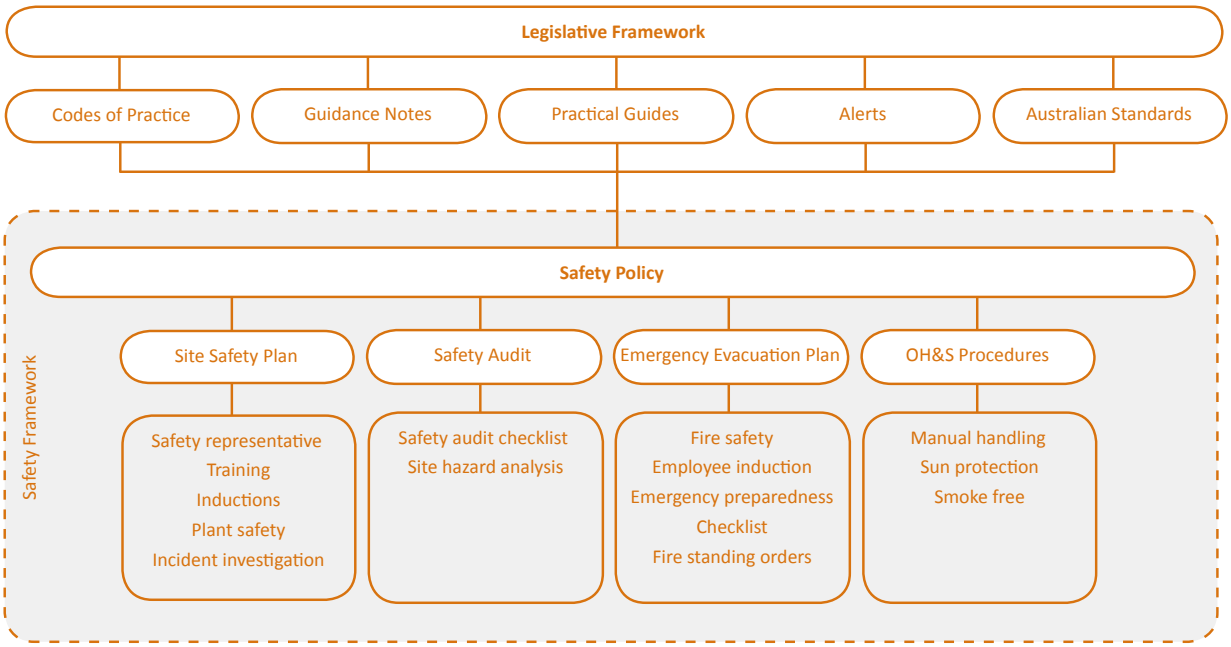
While identifying and mitigating existing safety issues is important, so too is safety planning, ensuring the systems and processes are in place to identify and deal with safety issues as they arise throughout the life of a building. Figure 10.1 displays a general approach to safety within a multi-unit residential building.

Effective safety planning also limits the consequences that can arise from poor safety procedures (such as higher insurance premiums resulting from a serious incident).

Safety management and planning is no less critical than for residential buildings, where there is a far wider variety of building users (i.e. compared to a commercial office) and with the building typically occupied to some degree all day every day.

FMA Australia

Figure 10.1: General approach to safety planning



11 Dangerous Goods

Storage and use of dangerous goods and flammable substances within apartment facilities has potential to cause damage to property, the environment and the building's occupants. The use of chemicals for routine activities such as cleaning can give rise to significant impacts on indoor environment quality, as well as affecting the health of cleaners or those in the immediate facility.

The term 'dangerous goods' covers a wide range of materials and products, many of which are commonly stored and used within multi-unit residential developments, such as:

- Paints
- Fuel
- Kerosene
- Diesel
- Petrol
- Paint thinner
- Primer
- Oil
- Glue
- Solvents
- Cleaning chemicals
- Dry cleaning chemicals
- Pool chemicals.

Irresponsible disposal of chemicals (such as pouring them down the drain) can cause significant impacts to water and waste water drainage systems, waste treatment process, and the natural environment.

Terminology

It may seem easy to confuse dangerous goods with hazardous substances, however they are classified according to different criteria. Dangerous goods are classified on the basis of potential immediate physical or chemical effects, such as fire, explosion, corrosion and poisoning, affecting property, the environment or people; whereas hazardous substances are classified on the basis of health effects alone (whether immediate or long-term). As a consequence of the need to control the different risks they present, dangerous goods and hazardous substances are administered by separate legislation.

Dangerous goods management involves:

- Knowing the type and volume of each of the dangerous goods used within the facility, and the disposal requirements associated with each type
- Providing appropriate storage, signage and segregation of dangerous goods
- Providing spill kits for clean-up of oil and diesel spills
- Ensuring Material Safety Data Sheets (MSDS) are available at the point of use for all dangerous goods
- Storing and using chemicals in accordance with MSDS recommendations to avoid fumes and odours
- Storing flamable goods in a lockable metal fireproof cabinet
- Ensuring service providers (such as cleaning and waste removal contractors) are adequately trained in the safe storage and handling of the dangerous goods they use, and incorporate requirements into contracts
- Ensure large volumes of dangerous goods (such as underground fuel storage tanks) are notified to the relevant Authority (generally this is the Work Cover Authority at the state government level) and that any licensing requirements are adhered to.

12 Hazardous Materials

The term 'hazardous materials' applies to a group of materials that are classified based on the human health risk they present. Within a multi-unit residential building, particularly those built prior to 1990 in Australia, there is a good chance the following hazardous materials may be present:

- *Asbestos Containing Materials (ACM)*
- *Synthetic Mineral Fibres (SMF)*
- *Lead Based Paint*
- *Polychlorinated Biphenyl Compounds (PCBs)*
- *Ozone Depleting Substances (ODS).*

12.1 Asbestos-containing materials

Asbestos was widely used in housing in Australia due to its excellent construction properties. Common uses of asbestos within multi-unit residential buildings include:

- Asbestos cement downpipes and guttering
- Vinyl floor tiles
- Electrical switchboards and backing boards
- Grouting around pipes and windows
- Asbestos cement sheeting used as wall partitions
- Rope lining around ovens and dangerous goods sheds
- Fire insulation
- Sprayed decorative finishing.

Figure 11.1: General rules for asbestos

The year 1990 is recognised as the 'safe cutoff date' for the use of asbestos containing materials (ACMs) in building construction within Australia. Any building constructed before this date, including residential properties of any size may contain ACMs.

For buildings constructed before 1990, an asbestos audit should be undertaken by a competent person and a register developed including a risk assessment of each identified instance, taking into account the location, condition, frequency of access, volume and other factors. The register is the primary tool for managing identified ACM within a facility, and should be provided to any contractors doing work on identified ACM, such as cleaners and painters.

12.2 Synthetic mineral fibres

Synthetic Mineral Fibre (SMF) is a generic term which covers a range of man-made fibrous materials made from glass, rock, alumina and silica. SMFs have been widely used as alternatives to asbestos in insulation and fire-rating products, as well as reinforcement in cement, plaster and plastic materials. They have also been used extensively in residential buildings for insulation from temperature and sound, one of the most common applications being acoustic noise ceiling tiles. There are four main groups:

- Continuous Glass Filaments
- Fibreglass, glass fibre or glasswool
- Rockwool
- Ceramic fibres.

For some years, there were concerns SMF may cause health effects akin to asbestos, due to its similar appearance and use in building applications. Research has since proven SMF to present altogether different effects:

- Skin and eye irritation from short term exposure (e.g. reddening, burning, itching, scaling, thickening and inflammation around the fingernails)
- Upper respiratory tract irritation during exposure to high concentrations of airborne SMF).

The World Health Organisation (WHO) classifies rockwool, ceramic and glass fibre as Class 2B carcinogens (meaning they are possibly carcinogenic to humans), however general scientific consensus is that chronic health effects caused by SMF will not occur as long as appropriate precautions are undertaken. This includes minimising potential for generation of dust during removal activities, and wearing appropriate personal protective equipment (PPE).

12.3 Lead-based paint

Before 1970, paints containing high levels of lead were used in many Australian homes. While lead-based paint itself is not usually an issue, the paint chips and dust that humans can ingest can present a major health risk. Children and elderly people in particular are considered the most negatively affected: children, as they absorb more lead into their bloodstream on a relative basis, and elderly people due to heart risk.

Lead-based paint is most likely to be found on window frames, doors, skirting boards, kitchen and bathroom cupboards, exterior walls, gutters, metal surfaces and fascias. It can also be found on interior walls, ceilings and areas with enamel paint (particularly pink and red primer paints). Lead paint on building exteriors can leech into soil around the structure, creating hazards for gardeners or for children playing in the garden or landscaped areas.

FMA Australia

Paint removal activities undertaken by contractors during maintenance and refurbishment activities such as by blasting, burning, dry scraping, dry sanding and using power tools creates the most serious danger as the particles are small enough to be inhaled or deposited in furnishings or carpet, making removal extremely difficult.

Lead based paint in good condition (i.e. not flaking or chalking) or which is covered by well maintained lead free paint, does not present a hazard in itself, however anyone painting or doing maintenance on buildings constructed in the 1980s or earlier is undertaking an activity with potential exposure risk.

12.4 Ozone depleting substances

The Federal *Ozone Protection and Synthetic Greenhouse Gas Management Act 1989* and its Regulations help ensure Australia meets legal obligations under the Montreal Protocol on Substances that Deplete the Ozone Layer (the first environmental protocol to be ratified globally) and the United Nations Framework Convention on Climate Change. The Act controls the manufacture, import and export of all ozone depleting substances (ODSs) and synthetic greenhouse gases (SGGs) while the Regulations control major end-uses.

Compliance Obligations

In Australia, the complete phase out of HCFCs is required by 2020. Within multi-unit residential buildings the most common use of these substances in existing buildings is the use of refrigerant gases for cooling purposes, the most common being the refrigerant R-22 in air conditioning systems (visit www.environment.gov.au for more information).

13 Health & Amenity

Developing and maintaining a high standard of health and amenity is a major factor influencing livability and satisfaction for residents within multi-unit residential buildings. Studies show there are strong linkages between sustainable and efficient building design and management with improved indoor air quality and amenity, which in turn leads to improved livability and increased productivity.

Facilities Managers have a key role to play in implementing processes to ensure residents and building staff are able to live and work in a healthy environment.

13.1 Indoor air quality

Indoor Air Quality (IAQ) is used to assess the impact of facilities on the wellbeing of occupants and is a product of measurable physical parameters (such as temperature) and subjective parameters, which may vary based on individual perceptions and preferences. It includes measures of the quality of the following attributes:

- Air quality
- Thermal comfort
- Visual amenity (glare, lighting and views)
- Acoustics
- Pollutants (e.g. from maintenance and cleaning).

Poor IAQ within multi-unit residential buildings can result in health issues ranging from non specific symptoms such as watering eyes, dry skin, sore throat, and fatigue, to severe health conditions such as asthma, allergies, cancer, and legionnaire's disease. In addition to minimising health risk for building occupants and inhabitants, there is mounting evidence suggesting there is a strong correlation between improved indoor air quality (particularly heating, cooling, lighting, ventilation and noise) with increased productivity and satisfaction.

In maintaining optimal indoor air quality, an overall goal should be to obtain a balance of air temperature, air movement, relative humidity and radiant temperature of surrounding surfaces.

Establishing an IAQ profile involves measuring various parameters and comparing the results with accepted standards, and speaking with residents and other building users to establish awareness and satisfaction levels, and behavioural practices. USe the checklist below as a guide.

13.2 Lighting and visual environment

Within a multi-unit residential development different parts of the facility may require different lighting levels and quality, depending on the users and activities undertaken in these areas. In addition to task based lighting, visual amenity is an important consideration within a residential building. This may include for example, arranging the layout of seating in lounges and common areas to maximise views and minimise distractions.

Lighting and visual environment strategies

- Integrate natural and artificial lighting through appropriate lighting layout
- Use high frequency electronic light ballasts to reduce flicker
- Ensure windows are cleaned regularly
- De-lamp over lit areas
- Provide flexible lighting options via dimmers and switches
- Install external shading or internal blinds which can be manually adjusted to reduce glare
- Consider window tinting, west and north facades, or automatic window blinds for shading options

Indoor air quality actions

- Resolve identified issues such as fixing leaks, unblocking vents and diffusers, and replacing flickering lights
- If temperature is identified as an issue commission a consultant to undertake thermal modelling
- Flush out stale air and contaminants by ensuring high air change effectiveness, optimal ventilation rates and fresh air intakes
- Select building materials, paints, and furnishings with low volatile organic compounds (VOC)
- Isolate machines with high emission rates to separate rooms with exhausts directly to the outdoors
- Install carbon dioxide monitoring (best practice - one CO_2 sensor per air return duct)
- Implement an annual HVAC maintenance program with separate temperature controls for summer and winter
- Educate residents on building operations and performance through development of a Building or Facility User Guide

13.3 Space management

To create and maintain an enjoyable living environment, OCs must decide on how best to utilise what is often limited space in the facility, including general grounds and garden areas, common lounges and seating areas, carparks and shared areas, including provision of waste facilities, and utilisation of rooftop space (refer to the case study overleaf as an example).

13.4 Thermal comfort

Thermal insulation in apartment buildings has only been recently introduced to the National Construction Code (formerly the Australian Building Code). Many multi-unit residential developments built in accordance with minimum standards will be unlikely to maintain their thermal performance over the lifetime of the building without applying controls. When considering how to improve thermal comfort in existing buildings, strategies should be based around building infiltration, insulation and shading. Refer to the box for a list of items which should be checked during ongoing monitoring.

More advanced strategies include thermographic (infra-red) surveys of the building fabric and roof to check for heat loss, or investigating the feasibility of painting rooftop areas with solar reflective paint (e.g. white roofs).

Thermal comfort actions

- Check building entrance automatic doors are operating properly and not open for excessive periods
- Inspect external doors for gaps/leaking door seals
- Inspect the condition of windows, frames and seals
- Regularly check for doors left open unnecessarily
- Check ceiling tiles are in place and in good condition with no gaps
- Inspect inside ceilings for displaced thermal insulation
- Inspect the condition and adequacy of roof insulation
- Inspect for perimeter air leakage
- Inspect floor– wall-ceiling joints for air gaps
- Check the correct operation and use of shading devices
- Where possible, redirect conditioned air to more needed areas (i.e. by closing ducts)

The provision of an air-lock by assists in isolating the internal environment from climatic external variations. (FMV)

13.5 Noise and acoustics

Regardless of the type of development, noise in multi-unit developments can affect livability and amenity values, and requires consideration and management on an ongoing basis. Many issues associated with noise can be mitigated during design, or in existing buildings, during refurbishment and retrofits.

Noise improvement actions

- Separating noisy equipment from quiet areas
- Using sound absorbing materials and sound barriers in noisy areas, and decoupling partitions from structures to reduce structure-borne sound transmission
- Limiting the transmission of noise from building services and outside, by using low sound transmission walls between quiet and noisy spaces
- Selecting surface finishes which reduce reverberation; and using insulation and sound absorbing materials.

Where noise levels appear excessive, an acoustical (noise) consultant should be commissioned to undertake noise monitoring in accordance with the recognised Australian Standard for Acoustics, AS 2107-1987.

Acoustic isolation of a running machine to minimise noise transfer (FMV)

13.6 Sustainable transport

The use of bicycles as a mode of transport and recreation has steadily increased in recent years as the health and environmental benefits of cycling become widely accepted. With state and local governments promoting sustainable transport options and facilities such as dedicated bicycle lanes, there has become an increased need for bicycle parking and storage facilities.

Bicycle parking facilities for residents require dedicated parking areas and devices that bicycles can be locked to or secured in.

As these basic requirements can add up to a significant expense, it is important to design bicycle parking facilities that meet the needs of cyclists or the facility risks being unused and bicycles parked in unsuitable locations. Ideally, bicycle parking areas should be located in the most convenient location for cyclists and close to building entrances or lifts. The parking area should be sheltered from weather, in clear view of the public or under surveillance, and be sufficiently lit at night.

When selecting and retrofitting bicycle parking products, it is important to consider security, vandal resistance, weather resistance, durability and the most efficient use of available space. In addition, the products should be attractive by design, easy to use and be positioned to allow easy access in and out of the facility. AS2890.3 Parking Facilities provides useful guidance in the design and installation of bicycle parking facilities and outlines the following 3 Classes of bicycle parking facilities:

Class 3

Bicycle racks and rails that are designed to minimise damage to a bike by supporting the bike frame and maximise security of a bike by allowing the wheels and frame to be locked to the parking device using the cyclist's own lock. Class 3 racks can be surface or wall mounted.

Class 2

Bicycle rooms and compounds protected from the weather and accessed via an attendant or key system. Class 3 bike racks and rails are provided within the compound to allow secure locking of bikes.

Class 1

Fully enclosed, weather protected, individual bicycle lockers with unique key or electronic access.

Cora

14 Essential Services

Also referred to a 'essential safety measures', essential services are the fire and safety protection items installed in a building to protect the safety of its occupants and inhabitants.

The maintenance of essential services will ensure that the safety systems (such as those dealing with fire situations within the building) remain at the required operational level throughout the life of the building. The type of maintenance depends on the complexity of the service, equipment or feature.

What is an essential safety measure?
Essential services are the fire and life safety items installed or constructed in a building to ensure adequate levels of fire safety over the life of the building. They include all traditional building fire services such as sprinklers, mechanical services, but also include passive fire safety such as fire doors, fire rated structure and other building infrastructure items such as paths of travel to exits.

The following are some examples from the Victorian Building Commission (www.buildingcommission.com.au) of essential services defined under the building regulations:

- Air conditioning systems
- Emergency lifts and lighting
- Emergency power supply
- Emergency warning systems
- Exit doors and exit signs
- Fire control centres
- Fire curtains and doors
- Fire detectors and alarm systems
- Fire extinguishers
- Fire hydrants
- Fire isolated stairs, passages ramps
- Fire rated materials
- Fire windows
- Mechanical ventilation
- Path of travel to exits
- Smoke alarms
- Smoke control systems
- Sprinkler systems

A critical role of a Facilities Manager is to identify what services are essential for their building (i.e. through the Annual Audit Report and Occupancy Permit) and to then ensure that these are well maintained and operate as designed.

Green Strata Inc

FMV

FMV

15 Emergency Management

Good practice in emergency management should include development of an Emergency Management Plan that outlines responsibilities (Fire Wardens, etc), identification of high risk areas and appropriate responses, clear identification of safe areas during an emergency, an evacuation plan for vulnerable persons, and an emergency training program and maintenance schedule.

Emergency Management Plans should include:

- Evacuation floor plans clearly displayed on each floor
- Display of an overall site plan, including north point and emergency contact details
- Display of a current version of the Annual Fire Safety Statement
- Maintenance records for Essential Fire Safety Measures should be readily available.
- Consideration of the need for fire first response training
- Facility evacuation procedures
- Clear signage and procedures for building users.

An Emergency Management Plan may include any of the following, depending on the nature of the building involved:

- Emergency contact list
- Building safety features
- Emergency Control Organisation
- Warden duties
- Evacuation procedures
- Stages of evacuation
- Site/floor plans
- Building security
- Checklists

AMagill via Fotopedia

15.1 Evacuations

One of the most critical periods in any building is when occupants are required to evacuate (such as in the event of a fire). Building systems and procedures are tested as the Emergency Management Plan is put into action.

A well managed building will be able to achieve a smooth and orderly evacuation in the minimum amount of time. Lives can be placed at increased risk should the building be poorly managed.

Australian Standard AS 3745-2010 outlines the minimum requirements for the establishment, validation and implementation of an emergency plan for a facility to provide for the safety of occupants of that facility and its visitors leading up to, and during an evacuation.

Example evacuation plan (FMV)

16 Security

Security is an essential component of creating and maintaining a safe environment for residents and other key stakeholders, which also encompasses protection of the physical assets and infrastructure. Maintaining security for large groups of people living together in a residential context brings a unique set of challenges and mix of required attributes.

16.1 Security audits

Best practice in security management includes undertaking a security audit or review of Security practices and processes, using a security consultant (local police may also be available to assist). The methodology for this process typically involves a series of inspections, interviews and documentary reviews, and may reference a number of different standards and guidelines in the development of a crime prevention policy.

Key standards and guidelines

- AS/NZS4360:2002 Risk Management
- AS/NZS4081:2000 Auditing OHS Management Systems
- AS/NZS3745:2001 Emergency Management
- AS HB167 Security Risk Management
- AS3745:2002: Emergency control organisation and procedures for buildings, structures and workplaces
- AS 3745-2010 Planning for emergencies in facilities.

A security audit should include:

- Perimeter protection
- Access and traffic management
- Emergency management
- Internal security
- Systems management.

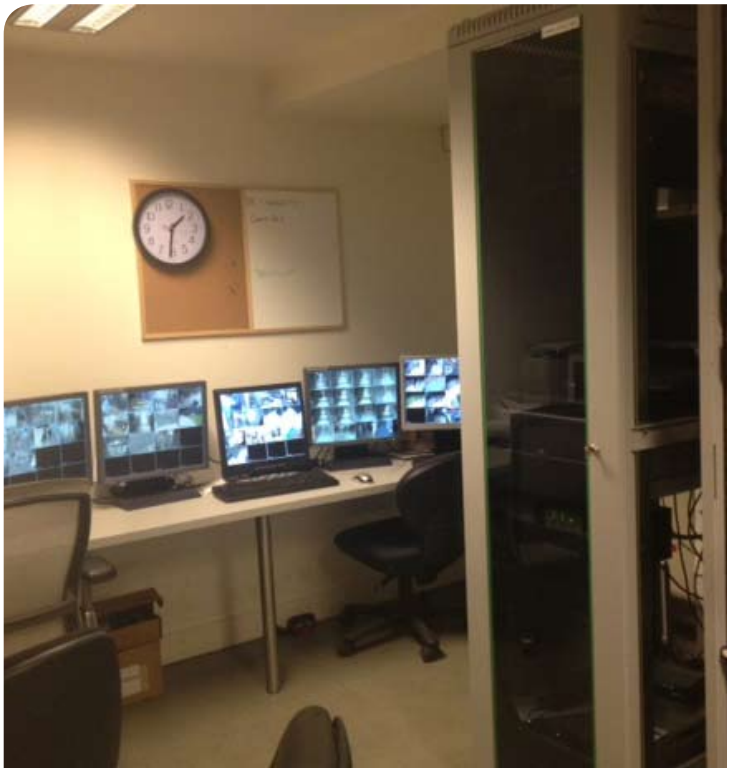
Actions and recommendations arising from security or access audits can include the following:

- Additional security cameras
- Changes or improvements to lighting
- Changes to door hardware
- Improved access control and traffic management
- Removal of easy access points
- Resident education
- Upgraded signage
- Restricting access to floors
- initiating security patrols

FMV

Residential apartment security tips

- Ensure security systems restrict access to residents only (e.g. swipe card access)
- Secure storage areas with quality locks
- Always lock accessible doors and windows even if you're just going out for a few minutes
- Never leave fire exit doors propped open
- Never leave lower floor balcony doors unlocked or open even in warm weather
- Don't provide easy access to upper level balconies, for example; wheelie bins, lattice, trees, nearby fences
- Don't let people that you don't know into your building even if they seem trustworthy
- Never give out copies of building or apartment keys to trades people or friends
- When driving into garage areas, avoid allowing anyone follow you through the garage entry door
- Fit main apartment doors with high quality deadlocks, noting if they are fire rated and/or required for emergency purposes.



17 Contract Management

Contracts and out-sourcing are fundamental components of facilities management, and central to this is the identification and selection of a good network of contractors and suppliers. While the majority of skills necessary for building and facilities maintenance can be readily found, Facilities Managers increasingly require negotiation and management skills due to a growing diversity and complexity within the industry.

17.1 Contracts and relationships

Contract relationships for procurement of facilities management and maintenance generally fall into two broad categories, traditional procurement, and alliancing/partnering. Traditional procurement involves strict adherence to a defined specification or scope of work, whereas both partnering and alliance arrangements involve greater flexibility, and generally include incentives to encourage the delivery of better service.

Outsourcing is any task, operation, job or process contracted to a third party for a period of time. The majority of skill sets required for multi-unit residential facilities management and maintenance services (e.g. cleaning, air-conditioning maintenance, etc) are relatively predictable and readily available (and therefore have predictable pricing). Any specialist skill sets which may be required at some point for facility operations and management should be identified and sourced well ahead of time.

Knowledge gained should be shared and recorded.

17.2 Contractor management

Contractor Induction

It is important to ensure all contractors and suppliers working within the facility are adequately inducted. Consistent contractor induction processes should be developed and implemented including the following minimum requirements:

- A record of all employees and contractors inducted, including the date of induction
- An introduction to the facility (building) management team and other relevant personnel
- Provisions for security cards and access keys
- Verification of the ability to operate or maintain equipment
- An outline of any work conditions or requirements (e.g. use of lifts, safety or environmental requirements, etc)
- Copies of relevant contractor certificates, registrations, licences, etc
- Work schedules
- Details of the system used for recording time
- Specific occupational health and safety requirements

Contractor Management Systems

An important element of consistency in contractor management is the development of a Contractor Management System, outlined in the box below:

Contractor management systems should include:

- Contractor induction arrangements for ensuring all safety, environmental and building user requirements are adhered to
- Contractor registration and identification system, (e.g. display of professional licence or contractor sticker)
- Documentation listing names, positions and responsibilities of all contractors
- Details of arrangements for managing occupational health and safety incidents, including contact details for all person(s), available to prevent, prepare for, respond to and recover from occupational health and safety incidents
- Outline of site safety rules and arrangements for ensuring all contractors, employees or visitors are aware of the rules
- Other specific task or activity-specific training requirements
- Safe work method statements for all activities assessed as having safety risks (including electrical, welding, working at heights, etc)
- Recorded and file filed copies of insurance certificates.

Figure 14.1 Contract relationships

Traditional contracts are well suited to situations where:	The scope can be adequately defined The potential for variation during the contract period is low The risk of failure of the service to the client is low
Alliance contracts may be more effective where:	The scope of services is difficult to define There is higher risk and greater uncertainty The services are critical to building operations and/or performance The services need to be commenced early Innovative solutions are required from the service provider Creative management is required by the OC

Provisions to include in contracts

- **Technical specification** – define rules and requirements expected from contractors or suppliers
- **Evaluation** – develop measuring criteria that correspond to the technical specification
- **Management** – Establish a Service Level Agreement (SLA) to monitor the performance of contractors or suppliers.

Figure 14.2 The procurement process

Project Objective	Outline the objective to be achieved by the procurement
Background Information	Provide context to the procurement and what is to be achieved by it
Scope	Set out the scope of procurement i.e.: • Inclusions (e.g. research an issue and provide report) • Exclusions (e.g. to supply, but not to install and item) • Optional (e.g. extensions for which proposals are sought) • Key logistic / supply chain impacts
Business case	Refer to or attach an approved business case or provide other justification for the procurement
Estimate of costs	Provide an estimate of the total cost of the procurement project, including the cost of the resultant contract, and whole of life costs.
Budget	Provide information on the status of budgetary provisions in place now and budget review mechanisms
Stakeholder expectations	Outline the results of stakeholder analysis, highlighting key issues
Risk analysis	Highlight key risks and attach the Risk Management Plan (if required)
Method of procurement	Outline the selected method of procurement and approval status
Tender evaluation plan	Outline evaluation criteria
Probity plan	Highlight key elements of the probity plan and attach a copy

17.3 Sustainable procurement

Sustainable procurement looks beyond the traditional procurement focus of value for money, taking into consideration broader factors such as the impact the product, good or service has on the environment; social aspects such as local sourcing and labour conditions; and the performance and track record of the contractor or supplier. Under a sustainable procurement approach, cost becomes one of many factors considered and a longer term approach to measurement of costs and benefits is adopted, with contracts awarded on overall value.

Durability

Durability is an important element in product selection: durable products generally impose a lesser burden on the environment than those requiring frequent replacement. Products with replaceable parts tend to reduce waste and resource consumption, and are also likely to cost less over their life time.

Product Selection

While the initial construction of a building has a large material impact, the ongoing maintenance, refurbishment and resident turnover accounts for a building's largest material impact through high rates of resource use and waste. Typical products used include paints, partitioning, carpets, glazing, floor coverings, furniture, cabling and wiring, and adhesives. The impact of these products and materials should be considered when making purchasing decisions, and sustainable purchasing criteria embedded into contracts (e.g. requiring hydrocarbon and solvent-free cleaning products to be used in cleaning contracts).

Close the Loop on Materials Flows

Facilities Managers and others involved in the operations and maintenance of the complex can achieve more from less by striving to close the loop on materials flows.

Contract strategies for 'closing the Loop'

- Look for opportunities for suppliers to take back products at the end of their life
- Investigate leasing arrangements for products which include maintenance, repair and replacement/upgrade during use
- Rather than leaving the OC and residents to carry the cost of disposal of producer-generated waste, require contractors to take back packaging used for transport when they deliver products/materials.

Life Cycle Costing

Life cycle costing is an important consideration in sustainable procurement. As an example, while green products are often perceived to be more expensive than conventional products, based on higher upfront costs; they usually cost less than conventional products when life cycle costing is applied, due to lower operating costs as a result of less water, energy and consumables required.

Sustainable purchasing considerations

- Is the product water and/or energy efficient?
- Is the product Australian made?
- Will the product release volatile organic compounds (VOC's) such as formaldehyde, or other chemicals which reduce indoor air quality?
- Does the product contain toxic or hazardous materials?
- Can the product or its components be readily reused or recycled at the end of their life?
- Does the product have recycled content?
- Will the supplier take the packaging back?
- Is the timber obtained from renewable and sustainably harvested sources?
- Are there instructions for installing, operating, storing and disposing of materials or products?
- Does the product have independent third party certification?
- Does the product contain upgradeable, repairable or replaceable parts?
- Is the product durable?

18 Monitoring and Reporting

To meet growing demands for disclosure and transparency, trends in business reporting on sustainability performance have increased dramatically. Where reports once focused primarily on operations, they now also look at products from a life-cycle perspective, from raw materials and resources to the final disposition of goods at the end of their useful lives. Facilities Managers similarly need to adapt to more sophisticated data collection and reporting processes, and involve and educate owners about the performance of their assets, taking into account broader stakeholder requirements.

Drivers for Monitoring and Reporting

One of the main drivers for sustainable monitoring and reporting is community attitudes. Communities are showing greater interest in understanding how organisations are mitigating their business activities to reduce environmental risk whilst creating value. They want to see more than financial indicators and as a result are demanding good corporate governance and transparency. The same applies to residential communities within a multi-unit development, and this demand can be met through sustainability reporting.

To be able report on sustainability, sustainable practices must be implemented, objectives established and targets identified to monitor performance against these objectives. Reports can then be provided to stakeholders to indicate sustainability performance in line with accepted standards. One of the most commonly adopted reporting frameworks is the Global Reporting Initiative. This framework sets out the principles and indicators for organisations to measure and report their sustainable practices around the three pillars of economic, environment and social outcomes.

FMA Australia

18.1 Objectives, targets and performance indicators

To measure the performance of planned initiatives or improvements, objectives and measurable performance targets should be implemented in advance. For initiatives involving resource use, short and long term targets should be developed taking into consideration identified baselines, industry benchmarks and best practices. Where possible, targets should take into account social and environmental objectives, budget constraints, and what is achievable given the age and condition of the facility.

Figure 15.1 shows the type of data and associated units relevant to monitoring and reporting on resource use within multi-unit residential facilities.

Figure 15.1: Data types and associated units

Indicator		Definition	Units
ENERGY	Total energy use	Total of all non-renewable and renewable energy	kWh
	Non-renewable energy	Non-renewable energy is energy generated by fossil fuels such as gas, oil, etc	MJ
	Renewable energy	Renewable energy includes solar, wind, hydro, biomass	kWh / MJ
	CO_2 Equivalent Emissions	Total amount of carbon dioxide produced and released into the atmosphere	CO_2 tonnes
WATER	Total water use	Total of all sourced and recycled water use	kL / volume m^3
	Sourced water use	Sourced water is water from mains water or water extracted from onsite bores or water courses	kL / volume m^3
	Recycled water	Recycled water is any waste water that is recycled and reused or any harvested rain water	kL / volume m^3
WASTE	Total waste	Total of all non-recycled and recycled waste	tonnes
	Non recycled waste	Non-recycled waste is any waste that is produced and is not recycled or reused.	tonnes
	Recycled waste	Recycled waste is any waste that is composted, recycled or reused	tonnes

19 Continual Improvement

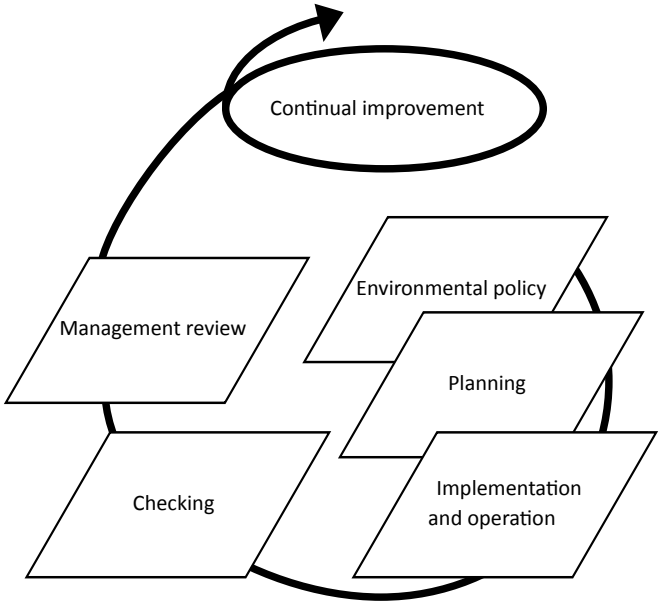
Multi-unit residential developments are small communities which are dynamic and constantly changing as a result of internal and external factors. As the facilities management industry has evolved and adapted over time, there is a need to adopt an adaptive management approach to the management of multi-unit residential facilities and communities.

19.1 Key principles

Framework for Continual Improvement

The most commonly adopted and recognised framework for continually improving systems and processes is the continual improvement loop promoted by ISO14001:2004 – Environmental Management Systems: Specification with Guidance for Use, shown below. Based on the Japanese concept of Kaizen (which loosely translates to: 'change for the better') this framework establishes a process for capturing data, responding to change, and implementing processes within an overall goal or set of objectives. The framework has been universally applied to manufacturing, engineering, and management decision making across most industry sectors.

Figure 16.1: Continual Improvement Loop (based on ISO14001:2004)



Key Standard:
ISO14001:2004 Environmental Management Systems - Specification with Guidance for Use.

Knowledge Retention and Transfer

One of the most common factors associated with systems failure is information access. Maintaining current and accurate records of a facilities systems and performance is essential to maintaining continuity of facility operations and will assist in identifying problem areas, and opportunities to improve. Good documentation and records management systems help ensure valuable time is not lost as a result of a change of OC members, Facilities Managers, key contractors, or other stakeholders. All information relating to the building should be the intellectual property of the OC and should be readily accessible and retrievable. Where possible, electronic systems are recommended. Investing in good documentation management systems will help drive greater performance by continually building on the knowledge developed by preceding operators.

Summary of key building documentation

- Building Manual describing how it is intended to operate under normal and abnormal conditions
- Complete set of design and construction specifications and drawings, noting any changes to the original design
- Complete set of maintenance manuals including as installed drawings
- Complete and update set of schematics of all air, water, power, gas and hydraulics systems
- A complete asset register
- Metering register linking meters to assets
- Building Management System (BMS) functional description (inc. data gathering and controls strategies)
- Schedule showing base building equipment and any resident equipment connected to the building BMS
- List of residential equipment including uses of chillers, heating, condenser water or outside air to enable assessment of constraints on system capacity
- Current OH&S manual
- Fit out manual defining building design criteria and fabric performance limitations to ensure fit outs comply with building limitations
- Register of switchboards with all connected loads and metering available on each board.

Glossary of Terms & Abbreviations

ACM	Asbestos Containing Materials
AHU	Air Handling Unit
AIRAH	Australian Institute of Refrigeration Air-conditioning and Heating
AS	Australian Standard
BMS	Building Management System
CCTV	Closed Circuit Television
CO	Carbon Monoxide
CO2	Carbon Dioxide
FM	Facilities Management
HCFC	Hydrochlorofluorocarbons
HVAC	Heating, Ventilation and Air Conditioning
IAQ	Indoor Air Quality
ISO	International Standards Organization
kl	Kilolitre (1,000 litres)
kPa	Kilopascal (pressure measurement unit)
KVA	kilo Volt Amps
kW	Kilo watts
LED	Light Emitting Diode
MSDS	Material Safety Data Sheets
NCC	National Construction Code
O&M	Operation and Maintenance
OC	Owners Corporation
ODS	Ozone Depleting Substances
OH&S	Occupational Health & Safety
PCBs	Polychlorinated Biphenyl Compounds
PF	Power Factor
PPE	Personal Protective Equipment
ROI	Return on Investment
SGS	Synthetic Greenhouse Gases
SLA	Service Level Agreement
SMF	Synthetic Mineral Fibres
VAV	Variable Air Volume
VOCs	Volatile Organic Compounds
VSD	Variable Speed Device
WELS	Water Efficiency Labelling and Standards Scheme
WHO	World Health Organisation
WMP	Waste Management Plan

References

Common property and the lot Fact Sheet, NSW Far Trading, December 2011

Effective Engagement: Building Relationships with Community and other Stakeholders Volume 3, Department of Sustainability and Environment, 2005

Facility Perspectives, March Edition, Facility Management of Australia, March 2012

Guide to Best Practice for Waste Management in Multi-unit Developments (Sustainability Victoria, 2010).

Guide to Best Practice Maintenance & Operation of HVAC Systems for Energy Efficiency, Council of Australian Governments (COAG) National Strategy on Energy Efficiency, January 2012

HiRise Pilot Summary Report, Overall Findings from Completed Water Audits, Sydney Water & BMT WBM Pty Ltd, JUne 2011

IBIS World Report: E4112:Multi-Unit Apartment and Townhouse Construction in Australia

Innovative Procurement Solutions for Service Delivery, FMA Australia, March 2009

Lead Alert – the Six Step Guide to Painting your Home (3rd Edition) Department of the Environment, Water, Heritage and the Arts, 2009.

Multi- Unit Residential Building Energy and Peak Demand Study', Myers, P, O'Leary, R and Helstroom, R, 2005 Energy News, Vol.23, No.4, December 2005

State of Australian Cities 2011, Department of Infrastructure and Transport Major Cities Unit, March 2010

Top Water Wise Tips for Apartment Buildings (Adam Jones, BMT WMB Pty Ltd, 2010).

What's next?

This Guide has been developed as the first of its kind in Australia. As part of the Good Practice Guide Framework, the content is will be reviewed two years from the date of publication, with the expectation that an update be provided within three years.

As part of this process, FMA Australia welcomes feedback on the structure, content and focus on this Guide, as well as the broader Good Practice Guide Framework.

Facility Management Victoria

Facility Management Association of Australia Ltd

ABN: 57 003 551 844

Level 6, 313 La Trobe Street
Melbourne, Victoria 3000
Phone: +61 3 8641 6666
Fax: +61 3 9640 0374

policy@fma.com.au

www.fma.com.au