

The *Residential Apartment Sustainability Plan* is a supporting document to the *Environmental Action 2016 – 2021 Strategy and Action Plan* that was endorsed by the City of Sydney in March 2017. The City's most up to date set of environmental targets and actions are contained in *Environmental Action 2016 – 2021 Strategy and Action Plan*.

Sydney2030/Green/Global/Connected



# Residential Apartments Sustainability Plan

A plan to achieve environmental performance in new and existing apartment buildings

August 2015

# 2025 Net Zero Housing

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# Executive summary

This plan sets actions to achieve better environmental performance within the residential apartment community. By adopting the actions in this plan for new and existing apartment buildings, the City stands to reduce apartment-sector greenhouse gas (GHG) emissions by 40 per cent and water consumption by 7 per cent by 2030, as well as divert 70 per cent of waste from landfill by 2021, generate jobs and save money for residents. These environmental targets are important, ambitious and account for considerable growth in the sector.

## Apartment living

Around three-quarters of the City's residents currently live in apartment buildings. By 2030, the population is forecast to grow by over 45 per cent from 2011. By then, approximately 80 per cent of residents will be living in apartments and at least 90 per cent of the new dwellings built will be high-rise buildings (buildings with more than 6 storeys). Apartment buildings are currently responsible for approximately 10 per cent of the City's GHG emissions<sup>1</sup>, 38 per cent of potable water consumption<sup>2</sup> and 14 per cent of the City's total waste generation<sup>3</sup>.

## Challenges and opportunities

Apartment living is often seen as more sustainable than single houses, given the proximity to transport and services. However, at a building level the utility consumption per person is greater in high-rise apartments than low-rise apartments and detached dwellings.

Up to 60 per cent of an apartment building's total energy can be used in common areas. This is particularly high in buildings with centralised plant and equipment, and underground car parks. Water use inside apartments is often extremely high. Residents in apartments recycle half the amount that residents in houses do. The environmental impact of this sector matters.

A recent review of 30 apartment buildings identified that on average, apartment buildings' energy consumption can be reduced by 30 per cent, water use by 25 per cent and waste management improved significantly, all through cost-effective measures. Owners in these buildings are already implementing 40 per cent of the opportunities identified in their buildings.

Achieving these environmental performance outcomes is unlikely to occur without intervention and assistance. For existing buildings, assistance is required to address the key barriers prohibiting action including: access to independent and accurate information; lack of time, expertise and support; and the long complex decision-making processes in strata buildings. For new buildings, the environmental performance standard could be improved cost-effectively such that new buildings have a significantly lower environmental footprint at the start of their life.

## Why we need to act

Our analysis shows the greatest levers to achieve sector-wide environmental outcomes are to increase minimum environmental performance standards in new buildings and to introduce a performance benchmark for existing apartment buildings.

These long-term initiatives will also generate jobs and savings for households. But the City cannot realise these opportunities for the apartment sector and achieve Sustainable Sydney 2030 targets without government, industry and community action.

## What we will do

This plan recognises that we need to work with state and federal government, as well as empower communities if we are to attain truly exceptional environmental performance.

The City will:

- **Foster innovation** in sustainable design and construction of new apartment developments;
- **Raise the bar** by advocating for increased minimum environmental performance targets in new buildings;
- **Build capacity** of owners and building managers to identify, approve and implement projects;
- **Activate upgrades** through incentives and support to overcome the challenges to implementation in strata buildings; and
- **Empower communities** to engage in sustainable choices and positive resident behaviour change.

These actions will help consumers realise the broad range of benefits which better environmental performance in apartment buildings affords.

## 01

# Apartment buildings in Sydney

Over 20,000 buildings in the local government area contain private dwellings. Of these buildings, over 1900 are apartment buildings. Looking specifically at these 1900 apartment buildings, 40 per cent are low-rise (3 storeys and less), 30 per cent are medium-rise (4-5 storeys) and 30 per cent are high-rise buildings (6 storeys and above).<sup>4</sup>

While the number of apartment buildings is smaller than other residential building types, they accommodate the vast majority of dwellings. Of the almost 100,000 dwellings in the City, approximately 75 per cent are accommodated in apartments.

Apartment living is often assumed to be more environmentally efficient than other dwellings based on lower transport emissions with proximity to public transport. However, occupants living in high-rise apartment buildings produce more greenhouse gas emissions than people living in detached houses, mid-rise and low-rise apartments, and townhouses. This is a result of the large energy consumption by centralised equipment systems on the common property of high-rise developments, which increases with building height.<sup>5</sup>

Looking ahead, approximately 20,000 dwellings are expected to be built in the next eight years; over 90 per cent will be in new high-rise building developments.<sup>7</sup>

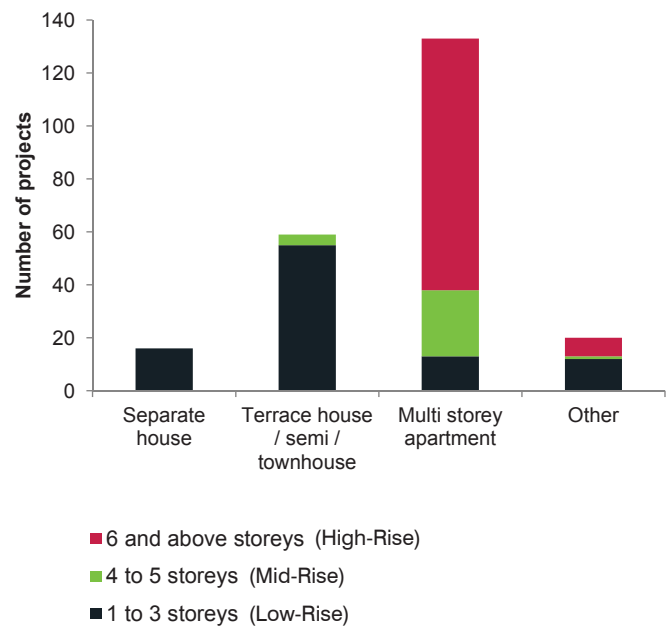


Figure 2 – New residential building projects expected to be completed in the next 8 years<sup>8</sup>

Each of these new developments is an important opportunity to secure long-term environmental performance and lower running costs for our residents. The environmental performance of new apartment buildings is driven by NSW State Government BASIX targets.

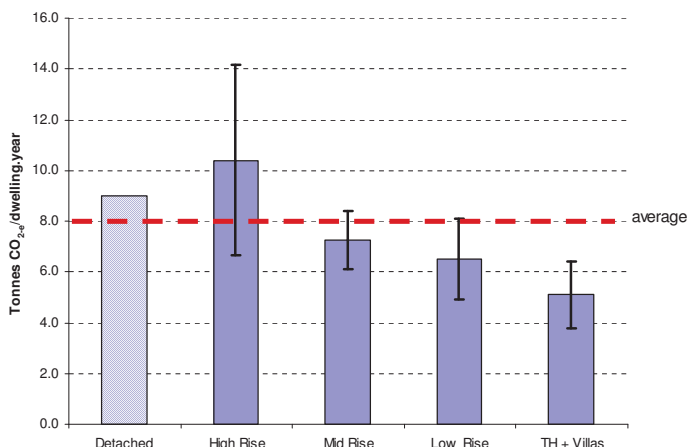


Figure 1 – Total dwelling greenhouse gas emissions versus housing type<sup>6</sup>



## 02

# New apartment buildings - challenges and opportunities

## Sustainability tools and targets

All new residential dwellings in NSW since 2004 must be designed in line with the Building Sustainability Index (BASIX). BASIX mandates sustainability standards in residential developments by assessing the consumption of mains-supplied water, energy and thermal performance.

BASIX is a NSW Government environmental planning instrument. Council's environmental planning instruments, including the Local Environment Plan and the Development Control Plan cannot require energy or water efficiency, GHG emissions or thermal comfort different or beyond the BASIX standard. The City can, however, encourage and/or offer incentives for the voluntary adoption of such measures beyond those required by BASIX.

More than 140,000 dwellings have been built in NSW under BASIX since it was launched in 2004, but no post-occupancy investigation of new apartment buildings has yet been conducted. In 2013 a BASIX compliance audit program of single and dual occupancy developments across NSW revealed inconsistencies in certification checks and documentation.<sup>9</sup> A separate review of BASIX certified detached and semi-detached dwellings revealed the median performance fell short of the 40 per cent BASIX energy target.<sup>10</sup> The Cooperative Research Centre for Low Carbon Living is now investigating the energy performance of BASIX certified apartment buildings.

The Green Building Council of Australia (GBCA) released the Green Star Multi Unit Residential rating tool in 2009. Green Star aimed to promote sustainability in design and construction in new residential apartments. Since its introduction, eight developments within the City Local Government Area (LGA) have used this tool to demonstrate sustainability. The Green Star Design and As Built tool launched in October 2014 encompasses apartment buildings, retail, schools, health care and industrial buildings.

In the international arena, Zero Net Energy and Zero Net Emissions policies and initiatives are gaining traction. While their scope and definitions vary, their intent is to significantly reduce the environmental impact of buildings.

Europe has a target for all new buildings to have zero net emissions by 2019. In the United Kingdom, all new homes are to be zero carbon by 2016. California has a net zero action plan targeting commercial building owners. Seattle aims to reach net zero greenhouse gas emissions by 2050. Canada is running a net zero energy pilot program. In Australia, Melbourne has a strategy to be net zero emissions by 2020.<sup>11</sup>

The City's planning department reports that some developers argue that sustainability features beyond compliance are not cost-effective and consumers are unaware of their benefits. Other persistent challenges include the network infrastructure needed to support distributed energy generation, credible benchmarks to distinguish the performance of apartment buildings, and incentives to make zero net energy buildings feasible.

## Energy

BASIX currently requires detached and semi-detached houses to emit 40 per cent less GHG, whereas high-rise apartment buildings are only required to emit 20 per cent less GHG than the NSW per capita benchmark. NSW Department of Planning and Environment is currently reviewing the BASIX targets and has proposed an increase in GHG targets to 50 per cent for detached and semi-detached houses and 25 per cent for high-rise apartments.

Assuming the proposed increased targets are adopted, brand new high-rise apartment buildings will fall approximately 45 per cent short of the City's 70 per cent GHG reduction target.

Building Type	Current BASIX GHG Targets	Proposed BASIX GHG Targets
Detached and semi-detached	40	50
Low-rise (3-storey units)	35	45
Mid-rise (4-5 storey units)	30	35
High-rise (6 storey units and higher)	20	25

## Water

Similar to GHG, BASIX sets lower targets for water efficiency in high-rise than low-rise apartment buildings. While the review proposes a 5 and 10 per cent increase in water targets for mid and low-rise apartments respectively, there is no proposed increase for high-rise buildings over 6 storeys.

Australia's Water Efficiency Labelling Scheme (WELS) requires clothes washers, dishwashers, taps, toilets and showerheads to be registered and rated according to the amount of water they use. Around 50 per cent of all new multi-dwelling homes commit beyond BASIX water targets and WELS standards.<sup>12</sup>

Building Type	Current BASIX Water Targets	Proposed BASIX Water Targets
Detached and semi-detached	40	50
Low-rise (3-storey units)	40	50
Mid-rise (4-5 storey units)	40	45
High-rise (6-storey units and higher)	40	40

Most existing apartment buildings have only one main water meter. This makes it challenging to do even simple measurement and management of water consumption in buildings. Sydney Water requires individual apartment water metering for all new developments as of 1 September 2014. This enables the billing of actual water consumption costs to individual residents.

Water metering and dual-plumbing infrastructure is extremely expensive to retrofit.<sup>13</sup> BASIX does not set any specific requirements or guidance on dual plumbing, water harvesting and/or recycling.

BASIX targets are the key opportunity to increase compliance level sustainability in all new apartment buildings.

### Case Study – La Valentina residential apartments

The new La Valentina projects are the first near net-zero energy residential apartment buildings in Sacramento Municipal Utility District's territory. 18 affordable apartments in two buildings (pictured) range in size from studios to three bedrooms. Residents benefit from rooftop solar photovoltaic (PV) power, energy-efficient appliances, water-saving fixtures, on-site water retention basins, retail stores and an on-site community centre.

The buildings exceed California's recently updated Title 24 Building Standards which require buildings to be "solar ready" with updated energy efficiency. La Valentina North uses 23 per cent less energy (both electricity and natural gas) than comparable buildings that meet California's new standards.

## Waste

Many existing buildings have insufficient space for waste management and resource recovery. With increasing land prices and the pressure to maximise floor space, new developments could see space for bins and collection services erode further. This will impact on our residents' ability to re-use and recycle and the City's ability to effectively provide waste services.

The City's revised Waste Management in New Developments policy specifies adequate space for recycling and reuse bins in chute rooms, basements and car parks. Integrating these recommendations into the City's development control plans (DCPs) is important to ensure the policy is implemented by developers.

## Climate change adaptation

As well as ensuring strong environmental performance, apartment building design must adapt to the effects of climate change. In Australia, the predicted rise in average temperatures is a great concern. The urban heat island effect means inner city temperatures can be a few degrees warmer than regional areas.

Dual aspect dwellings provide more effective natural ventilation, avoiding overheating and excessive reliance on air conditioning systems. Shading devices can be built into designs as fixed structures. Materials should be effective in providing heat insulation.

The City is developing a Climate Change Adaptation Plan. This will include research on the built environment and land use planning to adapt to the possible impacts of climate change.



# 03

## Existing buildings - challenges and opportunities

Owners corporations that implement cost-effective and quality sustainability upgrades in their building will improve the performance of their building and reduce running costs. There are, however, barriers preventing them from doing so.

One key barrier is that there is no suitable benchmark of environmental performance for occupied apartment buildings, and therefore no way an owners corporation choosing to invest in their building's performance can credibly communicate its performance and benefits.

International studies demonstrate that high-performance buildings attract higher rent, sales prices and occupancy rates.<sup>14</sup>

Many cities have passed legislation to mandate environmental performance benchmarking and disclosure for residential buildings including energy and water consumption, and GHG emissions.

The Australian Government has mandated benchmarking and disclosure for commercial office buildings but not residential apartment buildings to date.

### Strata

Apartment buildings are managed collectively by the owners corporation with the assistance of strata managers and sometimes a building manager. The governance protocols for strata apartment buildings are stipulated in the Strata Schemes Management Act 1996. Decision making is slow, complex and often problematic.<sup>15</sup>

Many buildings are unaware of the benefits of sustainability upgrades or government subsidies available to them; others lack the knowledge to identify and implement sustainability projects. Simply providing this information is not enough to secure quality upgrades. Many buildings will not have the time and skills required to implement projects.

Upgrading buildings can be technical and complex and usually requires someone to prepare a business case, commission quotes, compare options, decide on the best solution, manage the project and then verify and report outcomes and savings.

Service providers should see the market opportunity to provide sustainability services to apartment buildings. Unfortunately, strata schemes have a reputation for onerous and slow decision making. Many service providers choose to target the commercial sector which requires less work to secure contracts and deliver services.



### Residents

Most residents in apartment buildings rent and turnover of tenants is high. Attempts to engage residents will need to be continually refreshed to consider the changing capacity and needs of tenants.





### Energy

In many cases, it is well within the interest of the owners corporation to act on energy-efficiency opportunities. The Smart Green Apartment program found that on average, apartment buildings could save over 30 per cent of their common property energy costs. The capital spend would payback in 2-5 years, i.e. the costs are covered by savings.

High-rise apartment buildings (above 6 storeys) with centralised heating and ventilation systems and common area services such as pools and underground car parks are more energy intensive per capita relative to low-rise apartment developments. Most low-rise buildings (3-storey 'walk ups') do not have centralised plant and equipment and common area energy use can still be around 30 per cent of total building energy consumption, mainly for lighting.<sup>16</sup>

### Water

There is widespread inefficiency in water consumption in apartment buildings. Studies highlight that direct water use by residents inside apartments (in particular showers, leakage and taps) is responsible for the majority of water consumption (80-90 per cent) rather than pools and gardens as often perceived.<sup>17</sup>

The lack of water metering of individual apartments is a key challenge for building management and maintenance.<sup>18</sup> Owners are only allowed to pass on water bills to tenants when consumption is metered. Apartment tenants therefore have no incentive to reduce their consumption, report leaks or allow access for repairs and water-efficiency upgrades.

### Waste

Apartment residents recycle approximately half the amount that detached and semi-detached houses do. Around 20 per cent of their waste is recyclable.<sup>19</sup> The City's waste and recycling improvement program found that apartment buildings often had inadequate space, a lack of interest from residents and language barriers in buildings with multicultural resident populations.



## 04

# Partnering for sector transformation

Our investigations show that the greatest potential for sector-wide GHG emissions reductions in new buildings is to improve compliance with BASIX and increase BASIX targets<sup>20</sup>, while maximising voluntary sustainability through Voluntary Planning Agreements.

The greatest opportunity for GHG abatement in existing apartment buildings is the development of a performance benchmark or rating tool with mandatory disclosure of building ratings upon sale or lease of apartments within buildings.<sup>21</sup>

BASIX improves the minimum performance in new buildings and major renovations, but does nothing to address existing buildings. A credible rating scheme would help owners and building managers benchmark building efficiency, encourage performance improvements and unlock the retrofit market for apartment buildings in a way similar to the commercial sector.

Implementing all actions in this plan across low, medium and high-rise apartment buildings can achieve a 40 per cent reduction in GHG emissions compared to 2006 levels cost effectively.

Figure 3 presents the proportional abatement potential of cost effective policy measures in high-rise apartment buildings. The chart clearly shows that a benchmark with mandatory disclosure for apartment buildings has the greatest potential GHG abatement of all the measures.

Rating tools provide a proven, credible and standardised system for enabling tenants and owners of property to understand the performance of buildings and thereby inform decisions to renovate, rent or buy property. NABERS for commercial buildings and residential rating schemes in the US and Europe have proven that credible benchmarks and consumer information not only drives the performance of buildings but also improves their market value.

Second to mandatory disclosure of performance ratings is a building retrofit program, encouraging building owners to undertake performance improvements with large financial and environmental benefits, followed by higher BASIX targets.

Given the scale of GHG abatement of increased BASIX targets and mandatory disclosure a performance rating for apartment buildings, the City will advocate strongly for these measures which are outside the realm of Council. The City is well placed to support NSW Planning, the NSW Office of Environment and Heritage and the NABERS National Steering Committee on community engagement and pilot testing.

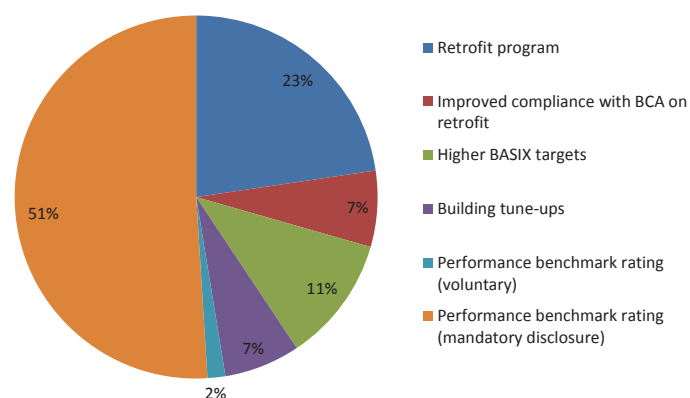


Figure 3 – Proportional GHG abatement of cost effective policy measures in High-Rise Apartment buildings <sup>22</sup>

# 05 Outcomes

While the resource intensity of apartment buildings presents a significant challenge for our Sustainable Sydney 2030 environmental vision, this sector presents an opportunity for significant environmental savings in both new and existing buildings.

To realise opportunities in new and existing buildings, we need to work with industry, state and federal governments and strata communities to:

- **Foster Innovation** – The business case for innovating beyond minimum environmental performance standards in new apartment developments must be clear to developers;
- **Raise the Bar** – Building performance standards must be complied with and targets for environmental performance increased;
- **Build Capacity** – Capacity should be built on energy and water efficiency and solar technologies by providing information, tools and support for owners and their managers to identify, approve and implement projects;
- **Activate Upgrades** – Access incentives and support to overcome the challenges to implementation in strata buildings; and
- **Empower Communities** – Focus on communities to lead the way, value environmental performance and choose sustainable apartments and behaviours.

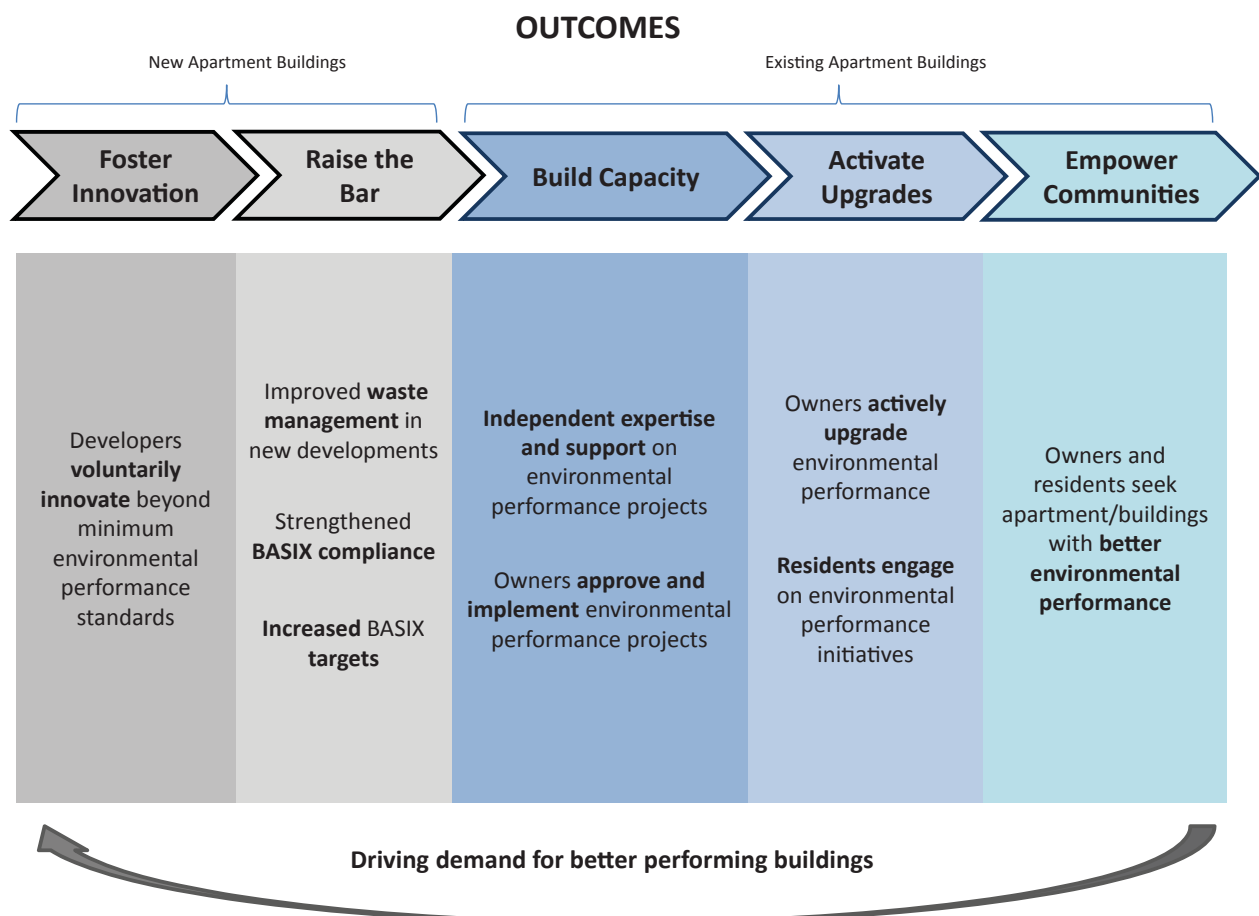


Figure 4 – Environmental outcomes in new and existing residential apartment buildings

# 06 Actions

The actions in this plan build on the work of the City's Sustainability Master Plans and the City's programs to develop tailored solutions that address specific challenges. The recommended actions aim to enable the Sustainable Sydney 2030 vision to be realised in both existing and new apartment buildings.

## Implementation

Actions are outlined in the next sections and listed in Appendix 1. They have been prioritised based on the needs of the sector as well as where the City can lead in an efficient and effective manner.

The City will prioritise 'now' actions for delivery, plan for 'next' actions as well as establish partnerships and commence advocacy for actions noted for delivery 'later' acknowledging that partnerships and policy reform requires detailed planning and longer timelines for delivery.

**Now** – projects and programs underway or starting in the near future;

**Next** – project and programs commencing in the medium term; and

**Later** – projects and programs to be delivered in the medium to longer-term.

Commencement dates of programs and initiatives will be confirmed annually as they are developed and resources are allocated for delivery.

## ACTIONS

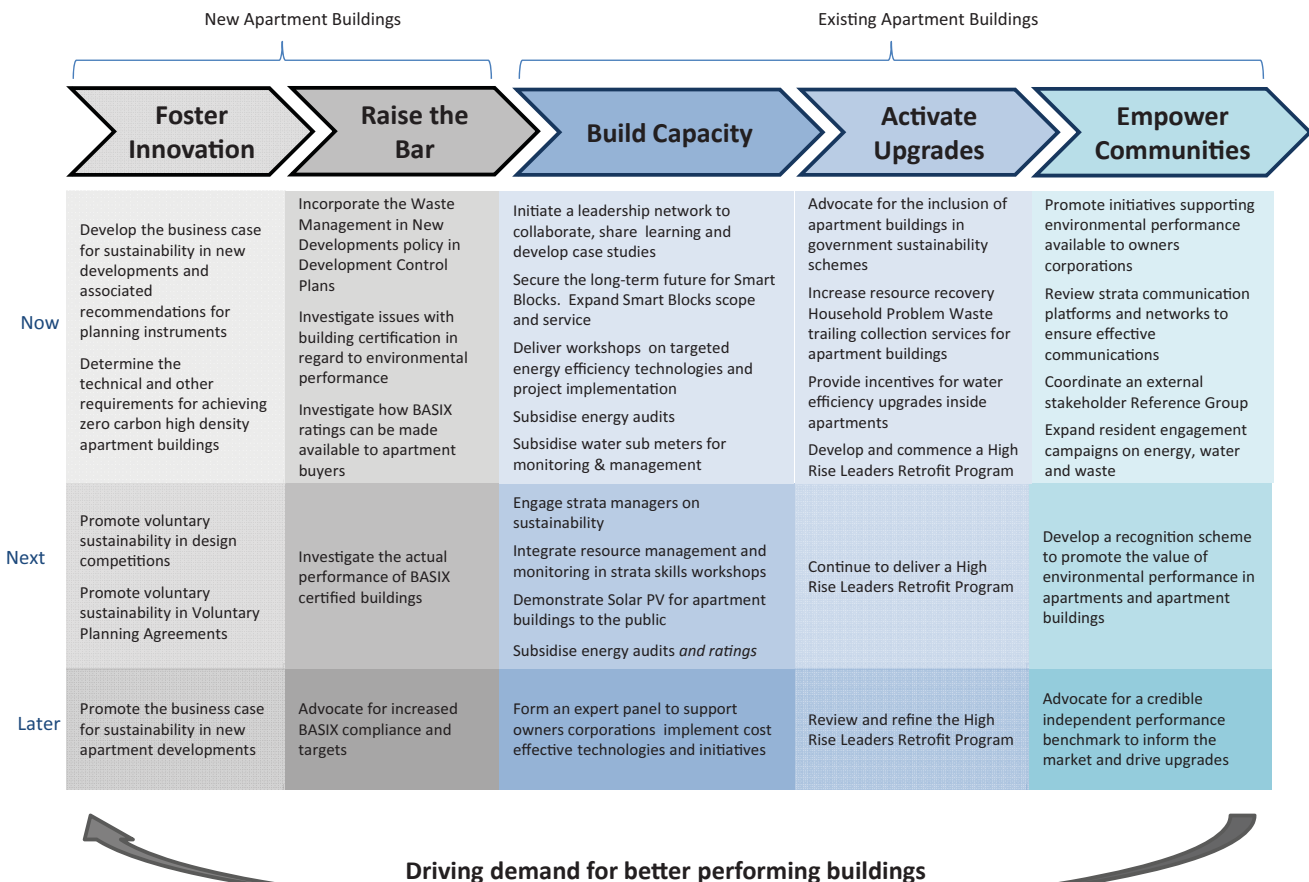


Figure 5 – Environmental actions in new and existing residential apartment buildings





### Foster innovation

#### **Outcome – Developers voluntarily innovate beyond minimum environmental performance standards**

New buildings which incorporate best practice sustainability design and construction will deliver better environmental performance and lower running costs for new households. New developments such as Central Park have secured significant wins for sustainability.

Reviewing new developments with sustainability features for cost effectiveness, contribution to the City's environmental objectives and value to owners and investors will inform sustainability guidelines and discussions with developers. This will ultimately aid better environmental performance in new developments.

We will showcase the benefits of sustainable residential buildings to help consumers understand that environmental performance means lower running costs and increased value, and build the business case for developers to voluntarily build beyond BASIX.

We will also determine technical and other requirements for achieving zero net energy high-density apartment buildings.

#### **Actions:**

##### **Now**

- Develop the business case for sustainability in new apartment developments and associated recommendations for planning instruments; and
- Determine the technical and other requirements for achieving zero carbon high density apartment buildings.

##### **Next**

- Promote voluntary sustainability in design competitions; and
- Promote voluntary sustainability in Voluntary Planning Agreements.

##### **Later**

- Promote the business case for sustainability in new apartment developments.

### Raise the bar

#### **Outcome – Strengthened BASIX compliance and increased BASIX targets**

We need to secure compliance with the City's revised Waste Management in New Developments guidelines and with BASIX regulations. Then we need to increase BASIX targets beyond NSW Planning's proposed targets to maximise environmental performance in design and construction.

To do this, we will collaborate with the relevant agencies to investigate actual performance of BASIX-compliant apartment buildings. This will inform improvements to the BASIX tool and aid BASIX compliance in all new residential apartment developments.

To increase the BASIX targets, we will establish the business case for higher BASIX targets, engage developers on overcoming the barriers, and advocate for NSW Planning to increase targets.

#### **Actions:**

##### **Now**

- Incorporate the Waste Management in New Developments policy in Development Control Plans;
- Investigate issues with building certification in regard to environmental performance; and
- Investigate how BASIX ratings can be made available to apartment buyers.

##### **Next**

- Investigate the actual performance of BASIX certified buildings.

##### **Later**

- Advocate for increased BASIX compliance and targets.

### Building capacity

#### Outcomes –

**Independent expertise and support for environmental performance projects**

**Owners approve and implement environmental performance projects**

#### Networking and cases studies

The fundamental barriers to sustainability in existing buildings is the awareness and capacity of and support for owners corporations to act on environmental performance opportunities in their building.

Peer-to-peer networking has proven valuable to Smart Green Apartment participants and could be extended to non-participant stakeholders committed to leading sustainability in apartment buildings. At each network meeting, case studies were presented which proved crucial, not only to demonstrate the technical and practical aspects of projects but to showcase savings and other benefits to buildings considering their own projects.

#### Smart blocks

Launched in June 2013, Smart Blocks has been built by Strata Community Australia with initial Federal Government funds to provide a simple 'how to' guide for energy efficiency in strata buildings. Funding for this key resource ends in 2014.

#### Strata managers

Strata managers have the most extensive networks for information dissemination to the sector. Only a handful of strata management companies understand the benefit of sustainability for their clients and their business and advocate sustainability. We will engage strata management companies managing buildings in the City's local area on overcoming the barriers to sustainability in strata.

#### Energy-efficiency technology

The most cost-effective energy saving opportunities identified by Smart Green Apartments were lighting upgrades. Also cost-effective were timers and controls for pools, heating and ventilation systems. Targeting solutions relevant for low, medium and high-rise buildings, the City will develop skills workshops and technical support on technology upgrades for environmental performance.

For buildings wanting to do more than the minimum, energy audits provide tailored information on opportunities and business cases for major upgrades. Subsidised energy audits, linked to targets and reporting would assist owners corporations to investigate opportunities and implement larger energy-efficiency projects.

#### Resource management

Apartment buildings generally only have one water meter, which does not provide a breakdown of consumption to allow for the identification of leaks. While retrofitting individual water metering of apartments is not feasible, sub-meters provide a breakdown of water consumption and assist in the identification of leaks and areas in need of maintenance.

Even collating bills and the necessary data to effectively understand a building's resource consumption and the associated costs can be time consuming and problematic. As utility prices increase, resource management will become integrated into strata management practice. On finalisation of new strata legislation, we will integrate resource management into the Strata Skills 101 workshop series.

#### Solar photovoltaic

The upfront capital investment cost for solar photovoltaic (PV) can be significant, and implementation in strata difficult to navigate. Solar PV is often most feasible supporting hot water systems, pools or other equipment that presents significant base-load energy consumption. Supporting the establishment of apartment buildings with solar demonstration projects would explain to the public the range of relevant issues in order to use Solar PV, including technology, system connection, potential savings and strata governance issues.

#### Implementation support

Most owners, especially those within a building without a building manager, need support to implement sustainability measures. This support could include independent technical advice, presentations and facilitation at AGMs and extraordinary general meetings (EGMs), and assistance with commissioning, implementing and verifying sustainability projects. The City will set up a panel of specialist support contractors who can provide advice and support for relevant technologies.

#### Actions:

##### Now

- Initiate a leadership network for owners and their managers to collaborate, share learning and development case studies;
- Secure the long-term future for Smart Blocks and expand its scope and service;
- Deliver workshops on targeted energy-efficiency technologies and project implementation;
- Subsidise energy audits and environmental performance ratings (once available); and
- Subsidise water sub-meters for monitoring and management.

##### Next

- Engage strata managers on sustainability;
- Integrate resource management and monitoring in strata skills 101 workshops;
- Demonstrate solar PV for apartment buildings to the public; and
- Subsidise energy audits and environmental performance ratings (once available).

##### Later

- Form a sustainability expert panel to support owners corporations implement cost-effective technologies and initiatives.





## Activate upgrades

**Outcomes –**  
**Owners actively upgrade environmental performance**  
**Residents engage on environmental performance initiatives**

### Inclusion in government initiatives

Legislative reforms aimed at encouraging the upgrades of properties for improved environmental sustainability such as the Energy Savings Scheme (ESS) and the National Australian Built Environment Rating System (NABERS) have not adequately covered residential apartment buildings, to date.

### Household problem waste

Many apartment buildings have high resident turnover creating large quantities of reusable furniture and appliances when residents move out. Building managers rely heavily on the City's large household items and white goods collection service to dispose of bulky items.

While the average bin comprises only 1 per cent of electronic waste (e-waste), this hazardous material is potentially toxic in landfill and contains recyclable metals. Onsite e-waste collection service either by the City or by private service providers is popular with apartment buildings. Fewer apartment residents participate in the current e-waste drop-off service despite the City's efforts to promote the service.

### Water efficiency

There are three key opportunities to achieve reduction in water consumption in apartment buildings: replacing shower heads; low-flow regulators in taps, and leak investigation and repair. For buildings built prior to 2006 (when WELS was introduced), the average payback period for water-saving options is very low: in most cases, less than one year. However, engaging residents to allow access to apartments makes projects time-consuming and complex. Incentives for water-efficiency retrofits inside apartments will aim to overcome this issue.

## High-rise leaders retrofit program

Activating upgrades will involve disseminating technology, building support and capacity building for implementation. However, given the low levels of sustainability uptake in the sector, there is a clear role for the City to foster leadership, as well as develop a critical mass of practical examples of the possibilities and benefits of sustainability.

To catalyse uptake and long-term systemic change, a 'high-rise leaders retrofit program' would provide hands-on support to high-rise buildings for retrofitting their building. Buildings would commit to a reduction target in exchange for a broad program of support. The program would diagnose sustainability opportunities in line with the building's objectives; develop a business case engaging all stakeholders; gain approval from the owners corporation and support project management, including commissioning and implementation. This would be followed up with measurement and verification of savings and outcomes, and the development and documentation of a case study.

### Actions:

#### Now

- Advocate for the inclusion of apartment buildings in government sustainability schemes;
- Increase the resource recovery of Household Problem Waste trialing collection services for apartment buildings;
- Provide incentives for water-efficiency upgrades inside apartments; and
- Develop and commence a High Rise Leaders Retrofit Program.

#### Next

- Continue to deliver a High Rise Leaders Retrofit Program.

#### Later

- Review and refine the High Rise Leaders Retrofit Program.



### Empower communities

#### Outcome – Owners and residents seek apartment buildings with better environmental performance

##### Promoting sustainability opportunities

Owners corporations are often unaware of policies, programs and incentives available for environmental upgrades of their building. Smart Blocks is currently dedicated to providing information and support on energy efficiency. Green Strata is another online resource focusing on sustainability in apartment buildings and covers a wider set of issues. Neither has ongoing funding for content development, updates and web maintenance. Since 2009 the City's Green Villages program has been engaging our residents on sustainability, building awareness, knowledge and capacity around sustainable living.

We will review strata communication platforms and networks to determine what changes are required to ensure effective and efficient communications with key target audiences.

With the completion of Smart Green Apartments (SGA) program and the development of this plan, the SGA external stakeholder reference group will also be reviewed to assess how best they can support outcomes in this plan.

##### Tenant engagement

Generally, tenants cannot make major adjustments to a dwelling or common property without approval by their owner and the owners corporation. Tenants can, however, instigate and support sustainability initiatives like improving recycling, switching off lights, buying efficient appliances and allowing access to their apartments for water-efficiency retrofits. Apartment tenant engagement campaigns will target behaviour change on energy and water efficiency and waste avoidance.

##### Recognising environmental performance

Owners and managers who make progress on sustainability upgrades currently have no credible means of measuring performance improvements and distinguishing their building's performance against other buildings. Good and best practice initiatives, as well as progress towards sustainability, should be measurable and recognised. It will ultimately attract better tenants and investment premiums.

Research shows that consumers do value sustainability but may not call it 'green' or 'sustainable'. Instead, they look for comfort and low running costs. This may be a key barrier or gap between the demand and supply of sustainable housing. The real estate firm LJ Hooker has recently launched the 'Liveability' campaign a "collaborative initiative that supports people to live the life they want, sustainably". The Office of Environment and Heritage (OEH) has recently launched its Collaborative Sustainable Housing Initiative to explore how industry collaboration could build consumer demand for sustainable housing. The City will collaborate with these initiatives to ensure they adequately address the needs of apartment buildings as distinct from houses.

A recognition scheme needs to be developed to acknowledge good and best practice as well as progress towards sustainability, in a way that increases value for the building by attracting better tenants and investment.

A rating system similar to NABERS for commercial buildings has the potential to catalyse upgrades and unlock the energy and water-efficiency market for apartment buildings. A national rating scheme is envisaged to commence on a voluntary basis, allowing buildings to measure and improve their performance, and service providers to establish business models to support the sector. A critical mass of buildings would, however, need to embrace the rating system in order to maximise environmental and economic benefit. Therefore, a move to mandate disclosure of ratings either annually or with real estate transactions would be necessary after an adequate transition period.

Given the potential to catalyse sector-wide upgrades, the City will advocate strongly for a benchmark rating system for apartment buildings and support its development. The City is well placed to support pilot testing and subsidised ratings.

##### Actions:

###### Now

- Continue to promote initiatives supporting environmental performance available to owners corporations;
- Review strata communication platforms and networks to determine what changes are required to ensure effective and efficient communications with key target audiences;
- Continue to coordinate an external stakeholder Reference Group; and
- Expand resident engagement campaigns on energy and water efficiency and waste reduction.

###### Next

- Develop a recognition scheme to promote the value of environmental performance in apartment buildings.

###### Later

- Advocate for a credible independent performance benchmark to inform the market and drive upgrades.

# 07

## Measuring success

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### Targets

Sustainable Sydney 2030 sets a vision to make our city as green, global and connected as possible by 2030. Direction 2 of the Sustainable Sydney strategy is to become an environmental leader, and sets out sustainability targets to reduce energy, water and waste demands.

By 2030, given the rapid uptake of all actions in the plan in low, medium and high-rise apartment buildings, we can achieve:

- A 40 per cent reduction in apartment buildings' GHG emissions from 2006 levels;
- A 7 per cent reduction in apartment buildings' potable water consumption from 2006 levels; and
- The continued diversion of 70 per cent of waste from landfill by 2021.

The GHG target relies heavily on the introduction of increased BASIX targets and a building performance rating scheme.

The 30 per cent shortfall from the City's 70 per cent GHG reduction target will need to be compensated for in sectors that have greater capacity for reductions.

The interim target for GHG emissions is 6 per cent and 2 per cent for water by 2020.

### Monitoring and evaluation

This is a 10-year plan. Advocacy to external agencies for policy reform and retrofitting sustainability in existing apartment buildings will take time.

This plan is based on the findings of the Smart Green Apartment program and extensive research. However, the sector is rapidly changing as are relevant frameworks and initiatives.

On endorsement of the plan, an implementation strategy will be developed as well as a comprehensive monitoring and evaluation plan.

The implementation plan will prioritise 'now' actions for delivery, plan for 'next' actions as well as establish partnerships and commence advocacy for actions noted for delivery 'later' acknowledging that partnerships and policy reform requires detailed planning and longer timelines for delivery.

We will monitor activities and progress against milestones and targets and regularly review the plan's actions to ensure we achieve our targets and outcomes for the community.

Progress against targets will be reported annually over the life of the 10-year plan. The first major review will be conducted in five years, (2020) in line with interim targets. A second review in 2025 would inform a revised plan to ensure we reach our targets by 2030.

# Appendix 1

## Action plan

### Actions focusing on new apartment buildings

What we'll do	How we'll do it	Who are the partners we need to make it happen	Now	Next	Later
<b>Fostering Innovation</b>  Developers voluntarily innovate beyond minimum environmental performance standards	Develop the business case for sustainability in new apartment developments and associated recommendations for planning instruments	Property Council of Australia	✓		
	Determine the technical and other requirements for achieving zero carbon high-density apartment buildings	Property Council of Australia	✓		
	Promote voluntary sustainability in design competitions	Property Council of Australia		✓	
	Promote voluntary sustainability in Voluntary Planning Agreements	Property Council of Australia		✓	
	Promote the business case for sustainability in new apartment developments				
<b>Raising the Bar</b>  Improve waste management in new developments	Incorporate the Waste Management in New Developments policy in Development Control Plans	NSW Planning Fair Trading	✓		
	Investigate issues with building certification in regard to environmental performance	Developers NSW Planning	✓		
<b>Strengthened BASIX compliance</b>					
<b>Increased BASIX targets</b>	Investigate how BASIX ratings can be made available to apartment buyers	NSW Planning	✓		
	Investigate the actual performance of BASIX certified buildings	Cooperative Research Centre for Low Carbon Living NSW Planning		✓	
	Advocate for increased BASIX compliance and targets	NSW Planning			✓



## Actions focusing on existing apartment buildings

What we'll do	How we'll do it	Who are the partners we need to make it happen	Now	Next	Later
<b>Building Capacity</b>  Independent expertise and support on environmental performance projects  Owners approve and implement environmental performance projects	Initiate a leadership network for owners and their managers to collaborate, share learning and develop case studies	Owners Corporation Network Australia Green Strata Strata Community Australia	✓		
	Secure the long-term future for Smart Blocks and expand its scope and service	Smart Blocks Steering Committee	✓		
	Deliver workshops on targeted energy efficiency technologies and project implementation	Smart Blocks Green Strata Office of Environment and Heritage	✓		
	Subsidise water sub-meters for monitoring and management	Sydney Water	✓		
	Subsidise energy audits	Office of Environment and Heritage	✓		
	Integrate resource management and monitoring into Strata Skills 101 workshops	NSW Fair Trading Office of Environment and Heritage Owners Corporation Network		✓	
	Demonstrate Solar PV for apartment buildings to the public	Smart Blocks Green Strata Office of Environment and Heritage		✓	
	Subsidised energy audits and environmental performance ratings (once available)	Smart Blocks Green Strata Office of Environment and Heritage		✓	
	Engage strata managers on sustainability	Strata Community Australia		✓	
	Form a sustainability expert panel to support owners corporations implement cost effective technologies and initiatives	Smart Blocks Green Strata Office of Environment and Heritage Energy Efficiency Council			✓

## Residential Apartments Sustainability Plan



Regatta Wharf

What we'll do	How we'll do it	Who are the partners we need to make it happen	Now	Next	Later
<b>Activating upgrades</b>  Owners actively upgrade environmental performance  Residents engage on environmental performance initiatives	Advocate for the inclusion of apartment buildings in government sustainability schemes	Office of Environment and Heritage Strata Community Australia Owners Corporation Network Green Strata	✓	✓	✓
	Increase resource recovery of Household Problem Waste trialling collection services for apartment buildings	Charity organisations Environment Protection Authority	✓		
	Provide incentives for water efficiency upgrades inside apartments	Sydney Water	✓		
	Seek funding to deliver a High-Rise Leaders Retrofit Program	Office of Environment and Heritage	✓		
	Deliver a High Rise Leaders Retrofit Program	Smart Blocks Green Strata Facilities Management Australia Office of Environment and Heritage Owners Corporation Network	✓	✓	



Mondrian

What we'll do	How we'll do it	Who are the partners we need to make it happen	Now	Next	Later
<b>Engaging communities</b> Owners and residents seek apartment buildings with better environmental performance	Continue to promote initiatives supporting environmental performance available to owners corporations	Office of Environment and Heritage Strata Community Australia Green Strata Owners Corporation Network	✓	✓	✓
	Continue to coordinate an external stakeholder Reference Group		✓		
	Expand resident engagement campaigns on energy and water efficiency and waste reduction	Green Living Centre Green Strata Office of Environment and Heritage	✓		
	Review strata communication platforms and networks to ensure effective and efficient communications	Strata Community Australia Green Living Centre Green Strata Smart Blocks Owners Corporation Network	✓		
	Develop a recognition scheme to promote the value of environmental performance in apartments and apartment buildings	Office of Environment and Heritage		✓	
	Advocate for a credible, independent performance benchmark to inform the market and drive upgrades	Relevant state and federal government departments Other councils			✓



# Appendix 2

## Current initiatives

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### Sustainable Sydney 2030

During 2007–08, the City undertook the most comprehensive community consultation in its history. The City spoke to residents, workers, students, business operators, industry associations, community organisations and visitors about their vision, goals and aspiration for the future of the city. The result is Sustainable Sydney 2030, a comprehensive plan to achieve a green, global and connected city by 2030.

Since then, the City has worked closely with stakeholders and industry partners to develop master plans for decentralised water and energy solutions and that will accelerate the expansion of renewable-energy generation within the city.

### Smart Green Apartments program

To investigate how apartment buildings can contribute to Sustainable Sydney 2030, the City piloted the Smart Green Apartments (SGA) program with 30 buildings between 2011 and 2013. Working with owners and their managers, the City provided independent environmental assessments (energy audits, water assessments and waste and recycling upgrades), implementation support and resources to engage residents. The program received overwhelmingly positive feedback. Many more buildings have expressed their interest in future assistance from the City. Data and information from this program also provided the needs assessment and evidence base for this plan.

### SGA reference group

The SGA external stakeholder reference group was established in 2011 to inform the development and delivery of the SGA program and also provide a platform to enable cross-sector engagement on sustainability in the apartments sector. The reference group has been engaged on the development on this Residential Apartment Sector Sustainability Plan.

The reference group includes but is not exclusive to: the NSW Fair Trading, the NSW Department of Planning and Environment, the NSW Office of Environment and Heritage, NSW Land and Housing Corporation, City Futures Research Centre - UNSW Built Environment, Green Strata, Strata Community Australia, the Owners Corporation Network Australia, the Green Building Council of Australia, the Australian Resident Accommodation Managers Association, Ausgrid, Jemena, Sydney Water, the Clean Energy Finance Corporation and LJ Hooker.

### Strata Skills 101

Concurrent to the SGA program, the City developed a series of skills development workshops titled Strata Skills 101. These popular workshops focus on increasing the capacity of residents to resolve common areas of conflict within apartment buildings, resulting in improved amenity, social cohesion and resilience. By fostering understanding, improved decision-making and governance in apartment buildings, this program also supports owners and residents wanting to improve the environmental performance of their buildings.

### Green Strata

Green Strata is a non-profit incorporated association focused solely on helping owners of apartment buildings improve the environmental performance of their common property and their community of residents. Their website was created through a City of Sydney environmental grant and includes information and case studies on topics such as energy and water efficiency, renewable energy, green roofs and active transport.

### Smart Blocks

In partnership with Strata Community Australia, the City of Melbourne, Green Strata and the Owners Corporation Network of Australia, the City collaborated in the development of Smart Blocks. The Smart Blocks program is a simple 'how to' guide for energy efficiency in strata. Information, case studies, calculators and templates are all available in a step-by-step guide for sustainability champions to engage stakeholders and work through energy-efficiency projects in their building. The program was funded by the Australian Government's Department of Industry as part of their Energy Efficiency Information Grants Program.

### LJ Hooker's Liveability

The City of Sydney recently partnered with LJ Hooker's Liveability program, a collaborative initiative that supports people to live sustainably by providing information to renters, owners and investors. There are two key components of the program, an online community hub showcasing sustainable living and design; and specialist real estate agents who are trained to appraise and list properties highlighting sustainable features to assist people in buying, selling or renting homes.



# Appendix 3

## References and supporting studies

- 1 CCAP City of Sydney Greenhouse Gas Emissions database
- 2 Institute for Sustainable Futures Decentralised Water Master Plan – Water Efficiency Plan, January 2012
- 3 2011 City of Sydney, Interim Waste Strategy: Managing the City of Sydney's resources for a sustainable future
- 4 City of Sydney Floor Space and Employment Survey 2012
- 5 2005 Multi Unit Residential Building – Energy and Peak Demand Study, Energy Australia
- 6 2005 Multi Unit Residential Building – Energy and Peak Demand Study, Energy Australia
- 7 City of Sydney Development Monitoring Statistics (estimate)
- 8 City of Sydney Development Monitoring Statistics (estimate)
- 9 Review of BASIX Compliance Audit Program Final Report April 2013
- 10 BASIX Monitoring Report Electricity Consumption for 2007–08 and 2008–09, EnergyAustralia for the NSW Department of Planning
- 11 C40 Network and desktop media search
- 12 NSW Planning and Environment [basix.nsw.gov.au/basixcms/2006-2009-multi-dwelling-outcomes.html](http://basix.nsw.gov.au/basixcms/2006-2009-multi-dwelling-outcomes.html)
- 13 BMT WBM Smart Green Apartments Water Efficiency Summation Report
- 14 Studies showing ENERGY STAR and LEED-certified commercial buildings perform better, IMT Institute for Market Transformation
- 15 2012 City Futures Research Centre UNSW, Governing the Compact City: The role and effectiveness of strata management
- 16 Green Strata [greenstrata.com.au/category/know-where-your-energy-used](http://greenstrata.com.au/category/know-where-your-energy-used)
- 17 BMT WBM Smart Green Apartments Water Efficiency Summation Report 2013
- 18 BMT WBM Smart Green Apartments Water Efficiency Summation Report
- 19 Seasonal Waste Audit, APC Environmental Management, September 2012
- 20 Pitt & Sherry GHG Abatement Cost Curves for the Residential Sector 2013
- 21 Pitt & Sherry GHG Abatement Cost Curves for the Residential Sector 2013
- 22 Pitt & Sherry GHG Abatement Cost Curves for the Residential Sector 2013

# Appendix 4

## Glossary of terms

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### A

**Annual General Meeting (AGM)** – An annual general meeting held by the owners corporation of a building.

### B

**BASIX (Building Sustainability Index)** – A NSW Government initiative that ensures new homes are designed and built to use less water and energy. It is an online program that assesses a house or unit design, and compares it against energy and water reduction targets. The design must meet these targets before a BASIX Certificate can be printed.

**Building manager** – The owners corporation can engage, under contract, a caretaker or building manager to assist in the management of common property, controlling the use of common property by tradespersons and other non-residents, and the maintenance and repair of common property.

### C

**Collaborative Sustainable Housing Initiative** – Led by the NSW Office of Environment and Heritage (OEH) this initiative explores how industry collaboration could build consumer demand for sustainable housing.

**Committee** – See Executive Committee.

**Common property** – All the areas of the land and building not included in any lot. It is jointly owned by all owners. The owners corporation is responsible for its management. The common property boundaries of each lot are generally formed by the upper surface of the floor, the upper surface of the ceiling, and all external or boundary walls (including doors and windows).

### E

**Energy Savings Scheme (ESS)** – Established under NSW legislation, its main objective is to assist households and businesses to reduce electricity consumption and electricity costs.

**Environmental footprint** – Also known as ecological footprint, this is a measure of human demand on the Earth's ecosystems. It is a standardised measure of demand for natural capital that may be contrasted with the planet's ecological capacity to regenerate.

**Executive committee** – (Also see owners corporation) The Executive Committee represents owners or owners nominees and consists of members of the owners corporation elected at each Annual General Meeting (AGM). The members decide who is to hold the positions of chairperson, secretary and treasurer. A committee must ensure state strata law and its own by-laws are adhered to.

**Executive Committee Meeting (ECM)** – A meeting of the Executive Committee members. Non-committee members can attend but can only speak with permission from the committee.

**E-waste (electronic waste)** – Discarded electronic appliances such as mobile phones, computers and televisions.

### G

**Green Building Council of Australia (GBCA)** – A national, not-for-profit organisation committed to developing a sustainable property industry for Australia by encouraging the adoption of green building practices. It is supported by both industry and governments across the country.

**Greenhouse gas (GHG) emissions** – Any of the gases whose absorption of solar radiation is responsible for the greenhouse effect, including carbon dioxide, methane, ozone and fluorocarbon.

**Green Living Centre (GLC)** – A joint initiative of the City of Sydney and the Marrickville Council, the GLC is a local sustainability education centre.

**Green Star** – Is a comprehensive, national, voluntary environmental rating system that evaluates the environmental design and construction of buildings and communities.

**Green Strata** – A non-profit association based in Sydney, it is governed and managed by owners and residents in strata schemes. Their focus is to help owners and occupiers of residential multi-unit properties improve the sustainability of their common property and their community of residents through a website, workshops and advocacy.

## H

**High-rise** – Residential apartment buildings 6 or more storeys high.

## L

**Liveability** - Founded by the LJ Hooker Liveability Real Estate team in collaboration with community and knowledge partners. Liveability supports people to create homes that are healthy, efficient, comfortable and connected to the community.

**Lot** – A portion of a property that can be separately owned and sold. In a strata scheme, a lot is generally an apartment, townhouse or car park.

**Low-rise** – Residential apartment buildings up to 3 storeys high.

## M

**Mid-rise** – Residential apartment buildings 4-5 storeys high.

## N

**NABERS (National Australian Built Environment Rating System)** – A performance-based rating system for existing buildings. NABERS rates a commercial office, hotel or residential building on the basis of its measured operational impacts on the environment.

**NSW Fair Trading** – NSW Fair Trading administers the Strata Schemes Management Act and safeguards the rights of all consumers and advises business and traders on fair and ethical practice.

## O

**Office of Environment and Heritage (OEH)** – Cares for and protects NSW's environment and heritage, which includes the natural environment; Aboriginal country, culture and heritage; and built heritage. OEH supports the community, business and government in protecting, strengthening and making the most of a healthy environment and economy in NSW.

**Owners corporation** – Also see Executive Committee. Made up of all owners in the strata scheme, it has the responsibility for maintaining and repairing the common property of the strata scheme, managing finances, taking out insurance, keeping records, administering by-laws for the strata scheme. An owners corporation may also employ a strata managing agent and/or caretaker or building manager. An owners corporation can make rules which are binding on the corporation, owners and tenants regarding the use of common property and the lots, providing that the rules do not contravene legislation governing strata schemes or other laws.

**Owners Corporation Network (OCN)** – An organisation of owners of residential strata lots who aim to protect the rights of present and future strata owners who have experience in strata living and have developed strategies for dealing with strata issues, which enable other owners to do the same.

## P

**Payback** – The length of time required to recover the cost of an investment.

**Potable water** – Water fit for human consumption.

## R

**Retrofit** – (also see Upgrade) The addition of new technologies and features to older systems to improve sustainability or environmental performance.

## S

**Sector transformation** – A process of strategic intervention in the sector to bring about widespread, permanent change.

**Smart Blocks** – A national program helping apartment owners save money by improving the energy efficiency of common property.

**Smart Green Apartments** – A program developed by the City of Sydney that aims to help create more cost-effective buildings, improve performance of shared services and amenities, and minimise environmental impacts.

**Strata Community Australia (SCA)** – Brings together and supports strata managers, lawyers, accountants, insurance brokers, and trades people working in the strata sector.

**Strata manager or strata managing agent** – May carry out some or all of the functions, duties or powers of the owners corporation. The owners corporation appoints, instructs and can overrule the agent.

**Strata plan** – The plan that subdivides the land and building(s) of a strata scheme into lots and common property.

**Strata Schemes Management Act 1996** – An Act that governs the management of strata schemes and the resolution of disputes in connection with strata schemes.

**Strata Scheme (or Strata Title)** – Is a building or collection of buildings where individuals each own a portion known as a 'lot' (for example, an apartment or town house) but where there is also common property (e.g. external walls, windows, roof, hot water systems, pools, gardens etc.). Every owner shares the ownership of the common property. (Also see common property).

**Sustainability** – Living/operating within the limits of what the environment can provide without compromising the ability of future generations to live/operate within their means. For apartment buildings sustainability could include improvements to building performance, minimising environmental impact and fostering community.

**Sydney Water** – Australia's largest water utility, its area of operations includes Sydney, the Illawarra, and the Blue Mountains regions. It is a statutory State Owned Corporation, wholly owned by the New South Wales Government.

## T

**Tenant** – A person who occupies land or property rented from a landlord.

## U

**Upgrades** – Also see Retrofits. The addition of new technologies and features to older systems to improve sustainability or environmental performance.

## W

**Water Efficiency Labelling Scheme (WELS)** – Australia's system requiring certain products to be registered and labelled with their water efficiency in accordance with the Water Efficiency Labelling and Standards Act 2005.



