



# Futureproofing Apartments

WHITEPAPER

1 July 2019



# WATTBLOCK

**Michael Crouch Innovation Centre  
Gate 2, High St, University of NSW 2052**

**Phone: +61 (2) 9977 1801**

**Email: [brent.clark@wattblock.com.au](mailto:brent.clark@wattblock.com.au)**

## Contents

Overview .....	3
Background .....	4
Wattblock .....	5
North Sydney Council Sustainability Strategy .....	6
Problems and Solutions .....	8
Education is Key .....	9
Baseline Assessment Data .....	12
Lack of Attractive Financing Options .....	12
Other Energy Saving Roadmap Components .....	13
Energy Audits .....	13
Retrofit Projects .....	14
Tariff Checks .....	14
Increasing Awareness for Energy Efficiency and Renewable Energy .....	14
Case Studies .....	15
Harbourlights – 102 Alfred St Milsons Point .....	15
Wondakiah Stage 2 – 8-22 King St Wollstonecraft .....	16
Cammeray Square – 11 Amherst St Cammeray .....	17
The Path Ahead .....	18
Conclusion .....	18
Appendix A .....	19
Appendix B .....	20

## Overview

This whitepaper covers the process of improving sustainability and stimulating renewable energy within a large portfolio of duplex, townhouse, medium rise and high rise strata buildings in North Sydney Council local government area. Following smaller trials with other councils and state governments, Wattblock and North Sydney Council undertook a scale approach of assisting 40 apartment buildings in 4 months. This involved a multi-pronged approach across education, benchmarking, analysis, technical expertise, innovative financing solutions and project execution. This whitepaper covers our approach and includes a set of selected case studies.

Based in Sydney and founded in 2014, Wattblock's vision is to create customised energy roadmaps for residential apartment buildings in Australia. Wattblock began this process by becoming the first energy optimisation company to gather typology data from a large strata property portfolio of over 1,600 residential buildings. Wattblock directly managed the upgrade of 90 of these buildings, capturing pre and post upgrade consumption data and demonstrating that, on average, a 45% reduction in energy costs is possible in common areas of residential apartment buildings. This data is now used to determine customised energy and water reduction project costs and payback estimates in residential strata buildings being assessed.

Affiliated industry groups include Strata Community Association, Owners Corporation Network and NSW Office of Environment & Heritage. Given the size and energy footprint of Australia's 320,000 residential strata properties housing 15% of the population, Wattblock's approach and success in North Sydney are of national significance. This is a demonstration of how a scale approach can be taken by a local government in engaging the local strata communities.

## Background

Buildings are the largest source of greenhouse gas emissions. Throughout Australia, there are various benchmarking efforts and regulations to track these emission and consumption figures in commercial real estate properties including NABERS for Offices, NatHERS and Green Star.

In residential strata, the ability to benchmark has been difficult and has not been explored in as great detail. Like commercial properties, residential buildings have much to gain both financially and environmentally by incorporating new energy efficient and renewable energy practices. Moreover, municipal governments across Australia are beginning to stimulate NABERS for Apartment Buildings ratings to pursue energy efficiency initiatives through annual benchmarking, with 97 ratings conducted at the time of writing. Some of the most significant examples of this are North Sydney Council's Futureproofing Apartments program, City of Sydney's Smart Green Apartments, Waverley Council's Building Futures, Kur-ring gai Council's Smart Units program and Willoughby Council's ClimateClever Apartments program. These programs focus on residential apartment buildings in order to reduce the cities' energy consumption and environmental impact. In coordination with these programs, private energy consultants and strata management firms are beginning to get involved in promoting sustainability initiatives.

PICA Group, the largest strata management group in Australia, has begun promoting such initiatives in their properties. With over 11,000 strata properties under management, PICA Group recognised the ability to impart a substantial change on the energy efficiency initiatives on the eastern seaboard. To accomplish this PICA Group engaged Tim Jarvis, Antarctic explorer, as its sustainability champion to be at the front of this initiative. 17 PICA Group managed buildings participated in the North Sydney Council Futureproofing Apartments project.

## Wattblock

Wattblock was founded in 2014 by Brent Clark, Ross McIntyre and muru-d Pty Ltd (Charlotte Yarkoni) to create customised energy saving roadmaps for residential apartment buildings. Conceptualised and launched prior to the national ratings system, NABERS for Apartment Buildings, Wattblock anticipated the need to take a leadership role and set a higher bar for how residential buildings consume energy and water and impact the environment.

Wattblock's residential portfolio includes strata buildings in Sydney, Melbourne, Canberra, Central Coast, Gold Coast, Brisbane and Sunshine Coast. Wattblock saw a large opportunity to reduce utility costs across these regions. Wattblock is now well-positioned to affect change across all states and territories in Australia. Wattblock goal is to provide individual apartment owners with a means to reduce their hip-pocket utility expenses by \$350 per apartment per annum.

## North Sydney Council Sustainability Strategy

North Sydney Council's strategy for the Futureproofing Apartments project was to create an Energy Saving Roadmap to most effectively address these issues across 40 residential strata schemes in the North Sydney Council local government area, driving reductions in energy costs and carbon emissions.

The strategy was to leverage NSW government-led programs such as Energy Made Easy, NSW Energy Savings Scheme (ESS), NABERS for Apartment Buildings and Wattblock's project recommendations.

The energy saving roadmap given to each building includes estimates of the national six star energy and water ratings derived from Wattblock's proprietary information database, WattblockData.

Wattblock uses real data from projects in other residential strata buildings to identify opportunities for buildings to reduce costs, improve efficiency and implement renewable energy such as solar photovoltaic and heat pumps. These recommendations are then communicated to strata committee members, strata managers and facilities managers. Following delivery of the recommendations, the results of the projects are tracked to assist with local government planning.





The screenshot shows the North Sydney Council website's 'Futureproofing Apartments' page. The header features the council's logo, navigation links (Contact Us, E-news, Larger Text, Smaller Text), and a search bar. The main navigation menu includes Council & Meetings, Community & Services, Building & Development, Waste & Environment, Recreation & Facilities, Library & Databases, Transport & Parking, and Business & Projects. The breadcrumb trail indicates the path: Home > Waste & Environment > Sustainability > Futureproofing Apartments.

**In this Section**

- Waste & Recycling
- Environmental Protection
- Bushland & Wildlife
- Trees
- The Coal Loader
- Sustainability**
  - What is Sustainability?
  - Smart Energy Future
  - Futureproofing Apartments**
  - Sustainable Business
  - At Home
  - At School
  - Sustainability Information Sheets
  - What is Council Doing?
  - Environmental Levy
  - Get Involved

**Quick Links**

- Credit Card payments form
- Library Catalogue
- Hire a CBD Banner

## Futureproofing Apartments

The aim of this program is to reduce both the cost of living and greenhouse gas (GHG) pollution.

Annual strata fee reduction is a major focus, because the savings potential with energy upgrades is typically a good investment. So analysis will be on the numerous opportunities in common areas.

Often people don't realise how much energy and money is being wasted in the hidden areas and equipment of buildings, so a report by specialists will clearly quantify that, and make recommendations for the owners corporation to follow up on.

Approving upgrades is easier than many people realise, if no more than 25% of the value of the votes cast at the meeting (in person or by proxy) are against the motion. (This is different from the common myth that 75% of all owners need to agree.)

When the options are clearly illustrated with a good report, the thinking becomes... *why wouldn't we upgrade, given the financial benefits!*

### 2019 Program Rollout

61 applications were received for 2019 building assessments and reports. This high level of interest perhaps reflects a strong desire to reduce operating costs and carbon emissions. Their case studies will be... coming soon!

### 2019 Stages

31/1/2019	Applications closed
19/2/2019	Applicants notified of next steps
18/3/2019	Building assessments commence

The program offers - *at no cost*:

- Energy assessments performed by industry specialists.
- Detailed reports which will clearly illustrate the financial case for upgrades.
- Attendance at strata meetings if requested to help communicate benefits of building upgrades.
- General support.
- Workshops and information sessions for apartment residents.



The diagram illustrates various energy and water savings opportunities in a building. It is divided into two main sections: Renewable energy and Energy and water Savings.

**Renewable energy**

- Solar electricity**
  - Common areas
  - Sharing among apartments
  - Peer to peer trading
  - Battery storage, or store energy in hot water system tanks
- Space heating**
  - With reverse-cycle air conditioners
- Hot water**
  - Fuel switching to replace gas for domestic hot water with renewable heat energy (heat pumps)

**Energy and water Savings**

- Cooling towers / HVAC
- Smart controls - for lighting fans & pumps
- Capacity charge \$ savings
- LED lighting
- Water pressure pumps & VSDs
- Swimming pool efficiency
- Electric vehicle charging

Figure 1 - North Sydney Council's Futureproofing Apartments page.

## Problems and Solutions

The challenge undertaken by Wattblock was to work with residential strata buildings within the North Sydney Council portfolio to assess and determine the correct approach to maximise energy efficiency, help realise possible savings through retrofits and renovations and, where appropriate, help prepare buildings to implement renewable energy such as solar photovoltaic and electric heat pumps for hot water.

As Wattblock began this process, various obstacles were encountered such as the lack of education, baseline assessment data, and the lack of attractive financing options to enable project execution.

In addition to many of the more common challenges facing energy efficiency and renewable energy efforts, the team needed to liaise with an internal facilities manager, as well as engage with and influence a strata committee at each and every building. These strata committees are made up of anywhere from 2 to 11 individuals, putting in time on a volunteer basis, few of whom have professional experience in property management or technical facility related issues. They generally meet once per quarter or sometimes once per year and need to deal with a large variety of issues. Hence getting energy and water saving on their radar screens is difficult and getting them to commit their focus and limited resources to making energy related changes is no small challenge.

One of the Futureproofing Apartment program's greatest obstacles is getting the strata committee member's attention, and then repeating that for each and every building, as each of these are separate and independent entities.

Following agreement to participate from the strata committee, the next challenge is engaging the strata management community. In the North Sydney project this involved engaging with BCS, Mason & Brophy, Dynamic Property Services, NSW Strata, Bright & Duggan, Real Property Services, Strata Choice, Jamesons, Forshew Strata, Civium Strata, Strata Partners and Clisdells. The project also involved engaging with facilities management companies such as BFMS, Annabell Commercial Property Services, Excel Building Management, T&M Management and independent building managers.



## Education is Key

While there are various benchmarking efforts for the category of commercial buildings, such as Green Star, NABERS for Offices and Calculating Cool, there are no current comprehensive databases of residential buildings' energy usage post sustainability upgrades. (Note: the NABERS for Apartment Buildings database only has "as is" operational data, no pre and post upgrade data on residential apartment buildings.) This lack of empirical data regarding what can be accomplished through energy efficient renovations makes it difficult for buildings to understand potential savings. Strata committees are often sceptical that capital investments in energy management will develop into real savings for the property. This doubt around environmental issues actually improving building finances, and scepticism around suppliers who recommend retrofits for commissions, strata committees need additional material and education as to the return on investment. In June 2019, the World First Fuel Report estimated that if Australia adopted leading international practices, the energy bills of households and businesses could be slashed by \$7.7 billion a year. It would also create 120,000 extra jobs and help reduce carbon emissions, potentially delivering half of the abatement needed to meet Australia's carbon emissions reduction target of 26-28 per cent by 2030. The report also recommends strengthening building construction codes and introducing a national program to rate the energy efficiency of residential properties when they are put for sale or lease.

To address this issue, Wattblock has developed WattblockData over the past 4 years. This is a proprietary database that compiles and compares data on over 1,600 residential strata buildings. This database not only allows buildings to gauge their energy efficiency in relation to others, but also enables Wattblock to target high usage sites, make energy assessments and recommend appropriate energy management strategies based on renovations undertaken in comparable properties. Wattblock also leverages the database to issue pre-assessment reports, giving residential strata buildings a cost effective estimate of what their star energy and water ratings are likely to be under the national standard, NABERS for Apartment Buildings. These ratings assist strata committees to be aware of how their property compares to others, nationally.

Wattblock staff initially collected the detailed building system characteristics or typology information. This has subsequently developed into a customised online typology form that is filled out by the strata committee member, strata manager or facilities manager and then automatically populates the Wattblock analysis tool set.

The estimation of the NABERS for Apartment Buildings energy and water ratings were developed to compare and benchmark an individual property within the portfolio against similar properties. NABERS for Apartment Buildings takes into account differing facility characteristics such as size, amenities, HVAC systems and fuel sources. The NABERS for Apartment Buildings rating score uses a scale of 1 to 6 stars, with 1 star being poor and 6 stars being market leading.

The NABERS for Apartment Buildings energy rating estimate is issued to each building evaluated by Wattblock. A pre-assessment report provides buildings with a comprehensive look into their energy use and cost, yearly energy use, fuel cost breakdowns, historic energy consumption and carbon footprint in terms of annual emissions and also, percentage improvements required to get higher star ratings. Wattblock Reports tangibly show strata committees how they compare to similar buildings. This assists to open dialogue between the building and Wattblock staff to improve efficiency and lower monthly operating expenses.

In addition, Wattblock frequently updates its website with press releases and case studies that highlight the achievements of its team in creating savings for buildings through various energy management strategies including retrofits, procurements, energy bill audits and subsidised upgrades.

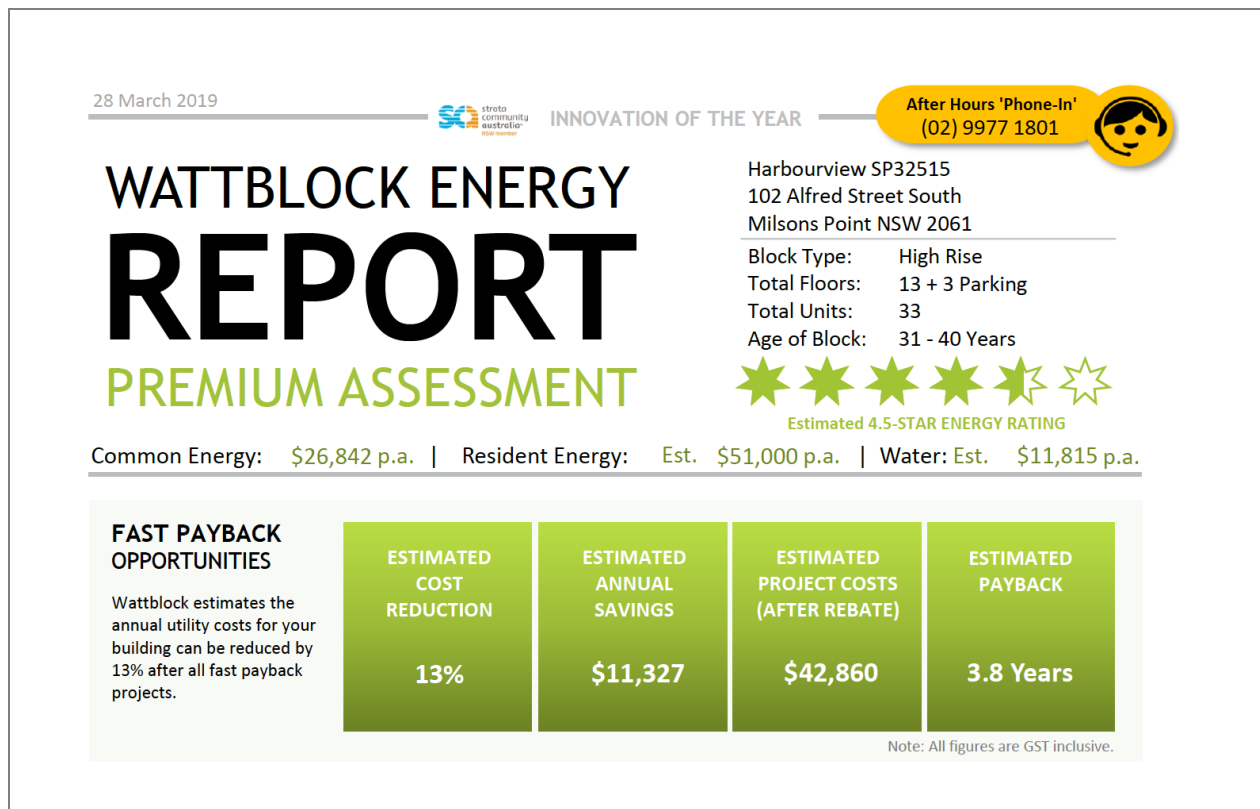


Figure 2 - Sample excerpt of Energy Report with an estimated 4.5 star energy rating.

6 June 2019



INNOVATION OF THE YEAR

After Hours 'Phone-In'  
(02) 9977 1801


# WATTBLOCK ENERGY REPORT PRE-ASSESSMENT

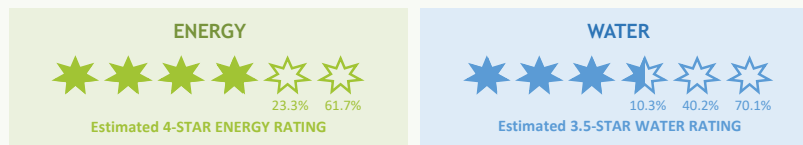
Harbourlights SP32515  
102 Alfred Street South  
Milsons Point NSW 2061

Block Type: High Rise  
Total Floors: 13 + 3 Parking  
Total Units: 33  
Age of Block: 31 - 40 Years

Common Electricity: 106,720 kWh | Common Gas: 0 MJ | Common Water: 5,560 kL

## RATING ESTIMATES

Estimations indicate a 4 star energy rating and a 3.5 star water rating based on lodged data.



## STRATA SCHEME ASSUMPTIONS

The estimated ratings in this report are based on inputs and assumptions about the strata scheme. Where data is inaccurate or out of date a revised report should be obtained.

Contact Wattblock if you would like to obtain an official NABERS for Apartment Buildings rating. Official ratings require payment of assessment and lodgement fees and are valid for 12 months.

Wattblock is also able to assist with recommended projects to improve star ratings.

	TOTAL		PER UNIT	
Annual Electricity Usage	106,720	kWh	3,233.9	kWh
Annual Gas Usage	0	MJ	0.0	MJ
Less Exclusions	0	kWh		
Adjusted Energy Usage	106,720	kWh	3,233.9	kWh
Green Power	0%		4,652.4	Typical
Annual Water Usage	5,560	kL	168.5	kL
			188.8	Typical
Number of Apartments	33			
Lift Serviced Apartments	100%		Six Star Energy	61.7% lower
Central Hot Water	100%			
Central Cold Water	100%			
Central Aircon	100%		Six Star Water	70.1% lower
Condenser Units	0%			
Number of Car Spaces	33			
Naturally Ventilated	0%			
Gym	No			
Swimming Pool	No			

Contact Wattblock  
Phone: (02) 9977 1801  
support@wattblock.com.au

The information, statements, statistics and commentary contained in this report have been prepared by Investment Advantaged Software Pty Ltd, trading as Wattblock. Wattblock does not express an opinion as to the accuracy or completeness of the information provided, the assumptions made or any conclusions reached. Wattblock may in its absolute discretion, but without being under any obligation to do so, update, amend or supplement this report at any time. The information contained in this report has not been subject to an energy audit by a certified industry practitioner. The information must not be copied, reproduced, distributed, or used, in whole or in part, for any commercial purpose without the written permission of Wattblock.

© Wattblock



www.wattblock.com

Figure 3 - Pre-assessment Report page detailing site's energy and water intensity with similar buildings and showing 23.3% reduction required to achieve 5 stars and 61.7% reduction to achieve 6 stars for energy.

## Baseline Assessment Data

The development of Wattblock's energy analysis tools enabled us to create portfolio wide and site specific baselines for energy utilisation after testing these on over 250 datasets. The database tracks buildings' energy usage pre and post retrofit and holds valuable lessons on the best way to formulate new plans for comparable buildings, streamlining the creation of roadmaps. It also allows us to monitor a building specific and portfolio level pre and post energy savings initiatives. Since this type of data did not exist on a large scale for residential strata properties, Wattblock had to start the process of recording the historic energy consumption for its initial customers. Beginning with the formation of WattblockData, Wattblock has reviewed the Futureproofing portfolio's energy consumption and carbon emissions and this can be viewed in Appendix A and B. WattblockData also enables the issuance of NABERS for Apartment Building energy and water estimates that, in addition to educating strata committees and residents, can drive competition among buildings that seek to not only become more energy efficient but increase property valuations in the process.

## Lack of Attractive Financing Options

Energy renovations can be capital intensive, especially when replacing entire boiler or chiller systems or implementing solar photovoltaic systems. Buildings are often unable to finance major capital investments themselves and are forced to take out unsecured strata loans. This can pose serious risks and drawbacks including long-term, high interest payback periods and the need for a special resolution to take out a strata loan. As a result, many buildings choose to forego renovations or upgrades, paying the price of unnecessarily high operating expenses necessitated by inefficient or failing equipment. North Sydney Council has previously found the EUA (Environmental Upgrade Agreements) to not work effectively in the residential apartment segment, although there is optimism around a new form of EUA being released into the market. This project explored innovative financing models entering the market such as those from Locality Planning Energy (LPE) and Power Ledger.

## Other Energy Saving Roadmap Components

Beyond Energy Savings Reports and Pre-assessment Reports, Solar Feasibility Studies and Specific Assessments, Wattblock employs a variety of other tools and programs that can be integrated in each customised energy management plan for buildings seeking to reduce their energy consumption. As illustrated in Figure 4, the Wattblock database is used to identify and drive specific energy efficiency opportunities in buildings.

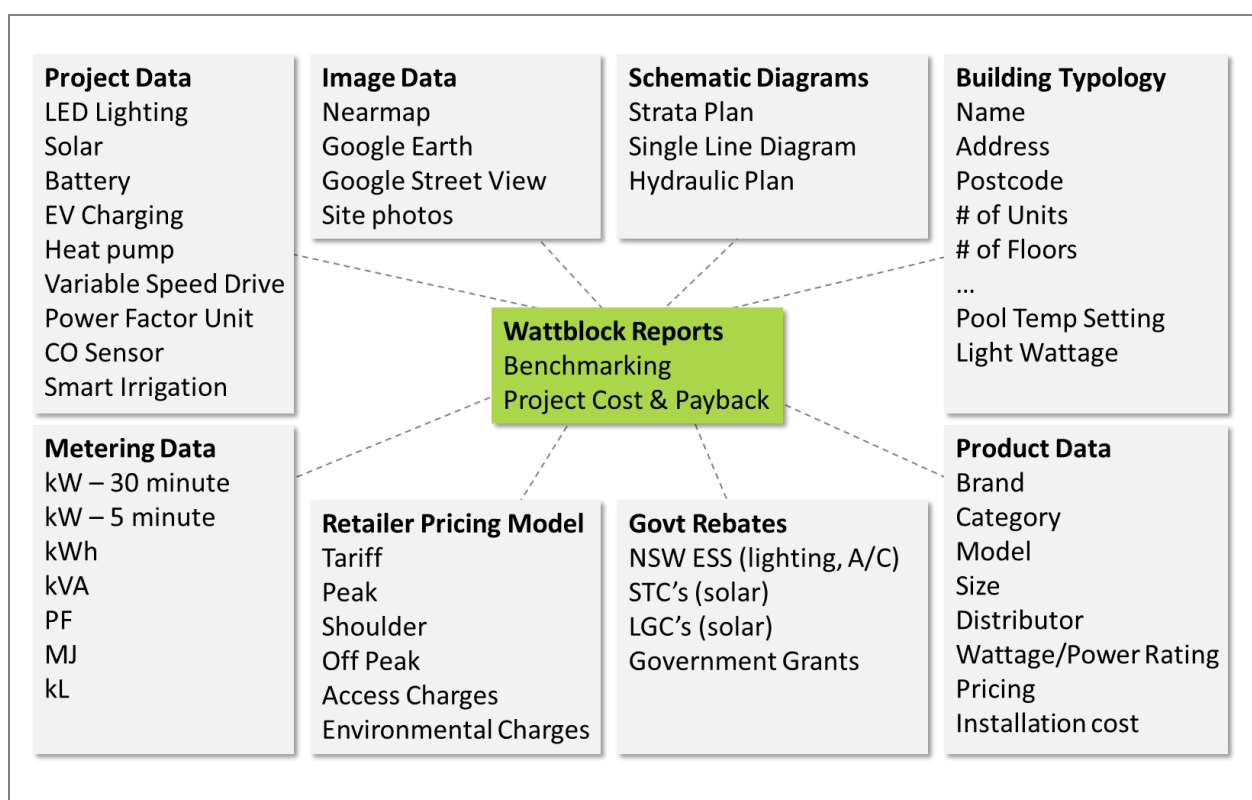


Figure 4 - Wattblock database and analysis acts as the base from which the Wattblock Energy Report deploys the appropriate recommendations to assist properties within the portfolio.

## Energy Audits

Both Wattblock Energy Savings Reports, Solar Feasibility Studies and Specific Assessments are provided to those facilities that have expressed interest in reducing their energy costs. Wattblock has accredited NABERS for Apartment Buildings assessors and has been trained on Type 2 Energy Audits by the Energy Efficiency Council, as well as having in-house solar engineers and electrical engineers.

## **Retrofit Projects**

Energy retrofit projects are the most costly capital improvements yet yield the highest return in the long run. While the desire to work with our buildings to perform comprehensive energy retrofit projects, we recognise that many strata committees neither have the resources nor the desire to make that first step. When such opportunities exist, we nurture them and work with the strata committee to develop a holistic approach. In practical terms, however, we have found that it is sometimes more feasible to help implement individual upgrades on equipment or systems, and then build upon that success. Wattblock can assist strata management companies and facilities management companies to build longer term relationships with their customers. In both cases Wattblock works to provide viable suggestions for the strata committee seeking to improve efficiency and reduce costs.

## **Tariff Checks**

Wattblock maintains strong relationships with energy retailers to advocate on behalf of customers to get better energy rates. During the Futureproofing Apartments program, Wattblock used the NSW government website “Energy Switch comparison tool” to do tariff checks for the small market electricity contracts in the program. This resulted in a number of apartment buildings immediately switching retailers.

## **Increasing Awareness for Energy Efficiency and Renewable Energy**

Wattblock is committed to reducing strata schemes’ operating expenses and environmental impact and places a high value on educating residents and strata committee members on the energy efficiency options available for their building. Through direct communication with strata committees and facilities managers (if any), we keep buildings informed in order to allow them to determine what is best for their building. Examples of this include Wattblock Energy Reports, “Strata Energy News” newsletter and speaking engagements such as “Tech Solutions to Benefit your Building” and “Solar and Batteries for Apartment Buildings”.



## Case Studies

The following are case studies of several facility projects completed since the start of the North Sydney Council Futureproofing Apartments effort.

### **Harbourlights – 102 Alfred St Milsons Point**

Harbourlights is a mixed-use complex consisting of 33 apartments and 7 commercial suites. It has an ageing common air conditioning system, which is not providing the desired amenity. It has completed LED lighting upgrades in the carpark, fire stairs and ground level entrance but has not done this in the lift lobbies. There are also opportunities to reduce the costs of carpark ventilation through the use of carbon monoxide sensors, install a smart watering system to irrigate a common garden and also install solar for common areas. Wattblock conducted a NABERS for Apartment Buildings energy and water rating for this site.



Figure 5 - Harbourlights.

## Wondakiah Stage 2 – 8-22 King St Wollstonecraft

Stage 2 of Wondakiah consists of 100 apartments across 5 separate buildings with a common carpark on a revitalised gas works site. Stage 2 has done LED lighting upgrades, installed variable speed drives and retired a jet water feature. They engaged Wattblock for an Embedded Network and Solar Feasibility Study, Electric Vehicle Charging Report and a NABERS for Apartment Buildings energy and water rating. This had to consider the shared facilities, e.g. pools, gyms, gardens shared with Wondakiah Stages 1 and Stage 3 making it a complex NABERS for Apartment Buildings site.



Figure 6 - Wondakiah.

### Cammeray Square – 11 Amherst St Cammeray

Cammeray Square is a Stockland development consisting of 39 residential apartments across 4 buildings, co-located with restaurants and a Harris Farm Markets. They have already started LED lighting upgrades and were looking to the next step. Further LED lighting opportunities were identified, as well as tariff optimisation, solar and an embedded electrical network. Cammeray Square has received a NABERS for Apartment Buildings energy and water rating.



Figure 7 - Cammeray Square.

## The Path Ahead

Following the success in North Sydney, Wattblock is preparing a rollout of energy management services into other major local council areas throughout Australia.

## Conclusion

Although there is a historic lack of information available on residential strata buildings' energy consumption, companies such as Wattblock are leading the way in forging new energy efficiency initiatives to make buildings and cities more energy efficient and less harmful to the environment. With a large strata building portfolio of over 1000 buildings, Wattblock has been able to achieve significant energy reduction results through a holistic approach to energy management. By developing innovative ways to educate, benchmark and secure finance, Wattblock is working to develop a full suite of solutions for strata schemes that make increased energy efficiency the one of "two futures". With the strategic foresight and support of local and state governments, Wattblock has been able to leverage their innovative solutions and their customised approach to energy management to redefine how strata management companies assist their strata schemes in reducing energy expenses and make a sizable impact on lowering energy consumption and carbon emissions.

## Appendix A

Table 1 - Summary of recommendations across population of 23 buildings in North Sydney Council Futureproofing Apartments project which received a Wattblock Energy Report.

Recommendations	Number	Cost	Savings	Payback	NPV	CO2 tonnes
Renewable Energy	30	\$849,887	\$94,942	9 years	\$352,659	399.8
LED Lighting	21	\$246,054	\$91,241	2.7 years	\$867,315	497.7
Water Efficiency	19	\$628,546	\$112,269	5.6 years	\$765,581	729.0
Energy Supply	15	\$202,335	\$149,261	1.4 years	\$1,604,924	4.4
Carpark Area	7	\$20,180	\$5,900	3.4 years	\$56,299	35.7
<b>TOTAL</b>	<b>92</b>	<b>\$1,947,002</b>	<b>\$453,613</b>	<b>4.3 years</b>	<b>\$3,646,778</b>	<b>1,666.6</b>



## Appendix B

Table 2 - Summary by suburb of 23 participants in the North Sydney Council Futureproofing Apartments program which received an Energy Report.

Participant Summary				Common Energy Assessment				Renewable Opportunity		Electric Vehicles		Environmental Opportunity	
Suburb	Partic- ipants	Units	Resi- dents	MJ/YR/ Resident	Total MJ/YR	Current CO2	NABERS Energy	Solar (kW)	Solar w Battery (kW)	Current EVs	Future EVs	CO2 Savings	Trees
Cammeray	1	39	69	25,469	1,757,338	292.5	0.0	19	19	1	47	97.2	1,459
Cremorne	6	84	147	16,775	2,465,940	415.1	4.1	69	136	1	101	11.3	169
Cremorne Point	1	8	14	20,418	285,849	48.1	0.0	7	14	0	10	11.7	175
Crows Nest	2	17	31	19,410	601,718	97.1	2.3	19	35	0	20	15.1	226
Kirribilli	1	36	61	21,542	1,314,091	228.4	0.0	11	22	1	43	49.5	743
Milsons Point	2	174	297	28,284	8,400,424	1,448.9	4.5	32.6	37	5	209	485.3	7,279
Neutral Bay	2	22	38	17,471	663,881	113.2	4.0	16	24	0	26	3.6	54
North Sydney	2	229	392	24,468	9,591,423	1,649.8	5.0	28	49	6	275	387.1	5,806
Waverton	1	32	55	18,390	1,011,461	173.3	4.0	5	10	1	38	20.4	306
Wollstone- craft	5	179	331	26,322	8,712,546	1,386.7	1.3	90	164	5	214	464.6	6,969
<b>TOTAL</b>	<b>23</b>	<b>820</b>	<b>1,435</b>	<b>24,254</b>	<b>34,804,670</b>	<b>5,853.0</b>	<b>2.9</b>	<b>296.6</b>	<b>510</b>	<b>20</b>	<b>983</b>	<b>1,545.8</b>	<b>23,186</b>



**Who is Wattblock?**

Wattblock was co-founded by Brent Clark, Ross McIntyre and Charlotte Yarkoni (muru-D Pty Ltd) in 2014. They are joined by Jacky Zhong and Wilson Huang solar engineers and a team of interns from UNSW.

**What is Wattblock's mission?**

The energy wasted in Australia's strata buildings has a bigger impact on carbon emissions than the cars driving on the roads. Wattblock aims to **crowdsource** the achievement of Australia's national carbon emission reduction target.

**How many strata buildings has Wattblock assisted?**

Wattblock has assisted approximately 1,000 strata buildings across Australia with energy reports. Wattblock has also directly project managed the upgrade of 90 buildings with LED lighting, solar, ventilation and hot water. To date it has identified locations for 9MWh of solar photovoltaic installations and worked with 87 different strata management companies. Over 130 strata buildings have participated in electric vehicle recharging studies.

**Who is partnering with Wattblock?**

Jobs for NSW, Advance Queensland, North Sydney Council, Microsoft CityNext, Telstra's muru-D, UNSW Entrepreneurship, Griffith University, University of Queensland and Queensland University of Technology.

**Who is covering Wattblock in the media?**

SBS, North Shore Times, Foxtel, BRW, The Australian, Business Insider, Computerworld, StartupSmart, StartupDaily, LookupStrata, Technode, Fifth Estate, One Step Off the Grid, Renew Economy, Inside Strata, Beyond Zero Emissions, Your Strata Property Online, Impakter and Telstra's Behind the Mic.

**Wattblock Awards**

Innovation of the Year - Strata Community Australia (NSW), Best Social Change Entrepreneur 2015 (Start-up Smart) Energy Winner at 1776 Challenge Cup Sydney, CeBIT Community Support Finalist (2015).

**Who is backing Wattblock?**

Wattblock has received investment from muru-D as part of Telstra's startup accelerator program, Eastern Hill Investments, an Asian-based environmental engineer, a UK-based energy company consultant, a U.S.-based hi-tech investor, a NZ sustainability funds manager, a Sydney-based environmental impact investor, a Sydney-based clean tech consultant, a Sydney-based clean technology finance consultant and an innovation laboratory research director.

**Where is Wattblock located?**

Wattblock is based at Michael Crouch Innovation Centre at UNSW in Sydney.

---

The information, statements, statistics and commentary contained in this report have been prepared by Investment Advantaged Software Pty Ltd, trading as Wattblock. Wattblock does not express an opinion as to the accuracy or completeness of the information provided, the assumptions made or any conclusions reached. Wattblock may in its absolute discretion, but without being under any obligation to do so, update, amend or supplement this report at any time. The information must not be copied, reproduced, distributed, or used, in whole or in part, for any commercial purpose without the written permission of Wattblock.

---