



WATTBLOCK ENERGY REPORT

PREMIUM ASSESSMENT

Owners Corporation
 1 Sample Street
 Sydney NSW 2000

Block Type: High Rise
 Total Floors: 16 + 4 Parking
 Total Units: 82
 Age of Block: 41 - 50 Years

ENERGY: (Est.) ★★☆☆☆
 WATER: (Est.) ★★☆☆☆

Common Energy: \$38,890 p.a. | Resident Energy: Est. \$129,427 p.a. | Water: Est. \$31,136 p.a.

FAST PAYBACK OPPORTUNITIES

Wattblock estimates the annual utility costs for your building can be reduced by 26% after all fast payback projects.

ESTIMATED COST REDUCTION	ESTIMATED ANNUAL SAVINGS	ESTIMATED PROJECT COSTS (AFTER REBATE)	ESTIMATED PAYBACK
26%	\$52,654	\$246,758	4.7 Years

Note: All figures are GST inclusive.

SUSTAINABILITY ROADMAP

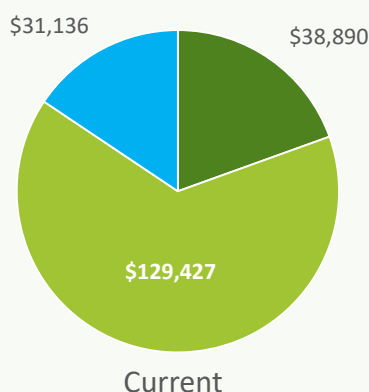
Energy efficiency upgrades (e.g. LED lighting) and renewable technologies can lower your energy bill by reducing grid usage.

Residential energy costs can be reduced through bulk billing systems.

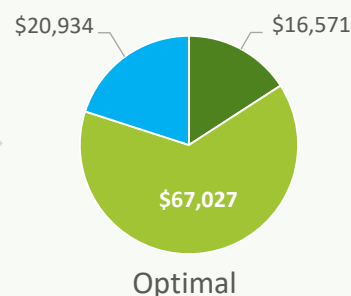
Water savings can be achieved by targeting leakages and efficiency.

Annual Utility Costs

■ Common Energy ■ Resident Energy ■ Water



48%
 Combined Savings Potential



LOW HANGING FRUIT

Wattblock recommends the top projects for your block as summarised in the table.

Consider a \$0 upfront cost payment plan for all recommended projects. Contact Wattblock for further information.

For more detailed analysis of projects see page 9.

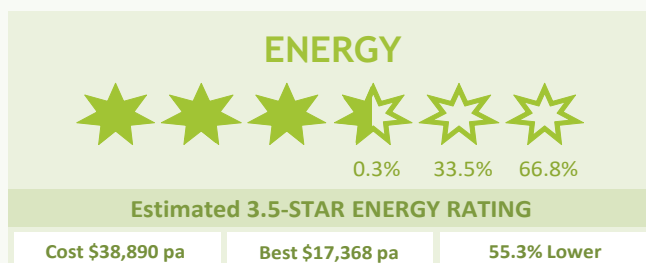
Projects	Description	Est. Savings	Est. Cost	Est. Payback
1 Common Area Lighting	Upgrade lighting in carpark, firestairs, foyers, common areas with dimmable LED.	\$15,656	\$26,670	1.7 Years
2 Heat Pump	Replace your common hot water system with more efficient heat pump technology.	\$31,257	\$130,478	4.2 Years
3 Meterboard Upgrade	Upgrade to AS3000 compliance to reduce fire risks and prepare for solar energy	\$0	\$46,000	N.A.
4 Solar Energy	Install 33 kW solar system for common power supply.	\$5,741	\$43,610	7.7 Years
TOTAL		\$52,654	\$246,758	4.7 Years
> Pay By Savings		Best Plan: \$0 Upfront, 7 Year Term		
		Est. Net Savings	\$4,081	Annual Savings

ENERGY & WATER EFFICIENCY

Benchmarking your strata paid energy and water usage to other buildings of similar size and facilities. Three stars is average and six is market leading.

RATING ESTIMATES

Calculations indicate a 3.5 star energy rating and a 2.5 star water rating based on data provided. Building performance improvements by the % values below will lead to higher star ratings.



Suggested for Investigation: LED Lighting, Solar Power, Water Heating, Water Efficiency, Pool Efficiency, Carpark Ventilation

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. Star ratings can boost property values.

Annual Electricity Usage	166,412	kWh	2029.4 kWh / Unit
Gas Usage (kWh equivalent)	0	kWh	0 MJ / Unit
Less Exclusions	0	kWh	
Adjusted Energy Usage	166,412	kWh	2029.4 kWh / Unit
Green Power	N/A		(2528.9 kWh Typical)
Annual Water Usage	13,900	kL	169.5 kL / Unit
			(143.1 kL Typical)
Number of Apartments	82		
Lift Serviced Apartments	100%		
Central Hot Water	N/A		
Central Cold Water	100%		
Central Aircon	N/A		
Condenser Units	N/A		
Number of Car Spaces	126		
Naturally Ventilated	N/A		
Gym	No		
Swimming Pool	Unheated		

Six Star Energy
66.8% lower

Six Star Water
77.5% lower

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

Why Get a NABERS Star Rating?

NABERS for Apartment Buildings was launched in 2018 for energy and water. Evidence from the commercial sector indicates that a higher rating translates to higher rental yields and property valuations. More efficient services also mean lower operating costs which can be passed on through reduced strata levies.

NABERS scope is common area billing only. However, this typically includes apartment water usage if paid by the strata.

What are Rating Estimates?

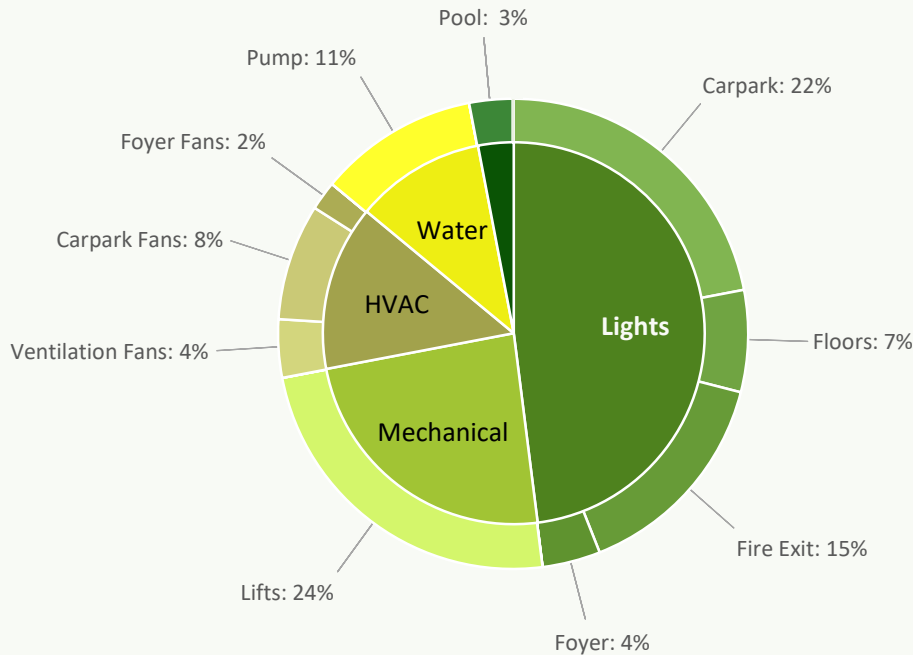
Our ratings estimates help to gauge where you stand before investing in a formal rating.

- Estimated energy and water ratings we expect you will achieve today.
- Precise reductions required to achieve higher ratings.
- Indicative cost comparison to 'Best' six star buildings.
- Key building assumptions noted.
- Accurate to 0.1% of NABERS rating tool with same inputs.
- Independently verifiable.
- Detection of anomalies in interval data that could effect rating results.
- Private and un-official.

COMMON AREA ENERGY CONSUMPTION

Understanding which assets are likely to be contributing to your block's common area energy consumption is the first step in building an energy reduction roadmap.

* Split by energy costs



Energy Rates:
Electricity: 18.6c / kWh

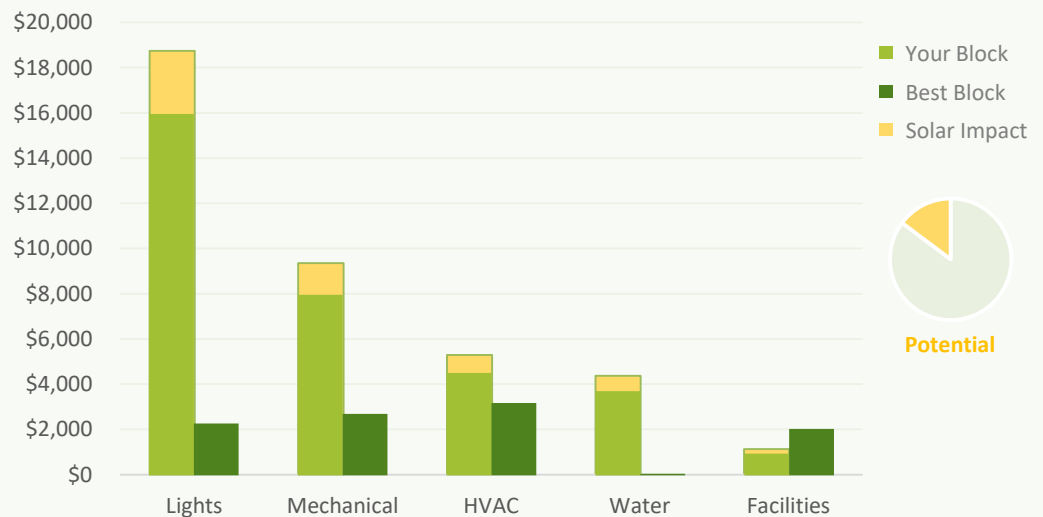
COMMON AREA ENERGY SAVINGS

Annual common energy cost of \$38,890 includes \$30,983 in energy billing and an estimated \$7,907 in maintenance (eg bulbs).

Best Block indicates the levels required for a six star energy rating for your building. This is based on proven savings in other best-in-class buildings.

Note: HVAC stands for Heating, Ventilation and Air Conditioning systems.

Annual Energy Spend



	Your Block	Best Block	Difference	
Lights	\$18,740	\$2,290	\$16,450	✓
Mechanical	\$9,360	\$2,716	\$6,644	
HVAC	\$5,298	\$3,196	\$2,102	✓
Water	\$4,368	\$68	\$4,300	✓
Facilities	\$1,125	\$2,040	-\$915	

✓ Low risk and easy upgrade opportunity

ASSESSOR SITE NOTES

Additional detail provided by the Assessor following the site visit. This is provided to assist understanding of energy and water systems and potential projects.

LIGHTS

Lighting paid by strata for different common areas.

Good LED lighting opportunity.

MECHANICAL

Motors for things like lifts and entrance gates.

Lifts: 2 x Geared DC maybe 50 years old. 1 x large electric gate.

HVAC

Central HVAC systems (Heating, Ventilation, Air Conditioning).

Carpark fans not on variable speed drive. No timer. Common ventilation system for apartments (bathrooms, kitchen, laundry). Garbage ventilation. Foyer ventilation.

WATER

Central water services such as heating and pumping.

Resident water usage in the typical usage range. Common gas hot water system - billed directly to residents. Cold water pumps. Hot water pumps.

FACILITIES

Energy used by common area facilities such as pools, gyms and common laundries.

1 x non heated indoor swimming pool. No timer on pool filter.

RESIDENTS

Energy and water services connected and paid for directly by residents.

Gas connected for cooking and/or space heating. Gas hot water. Everything else electrical.

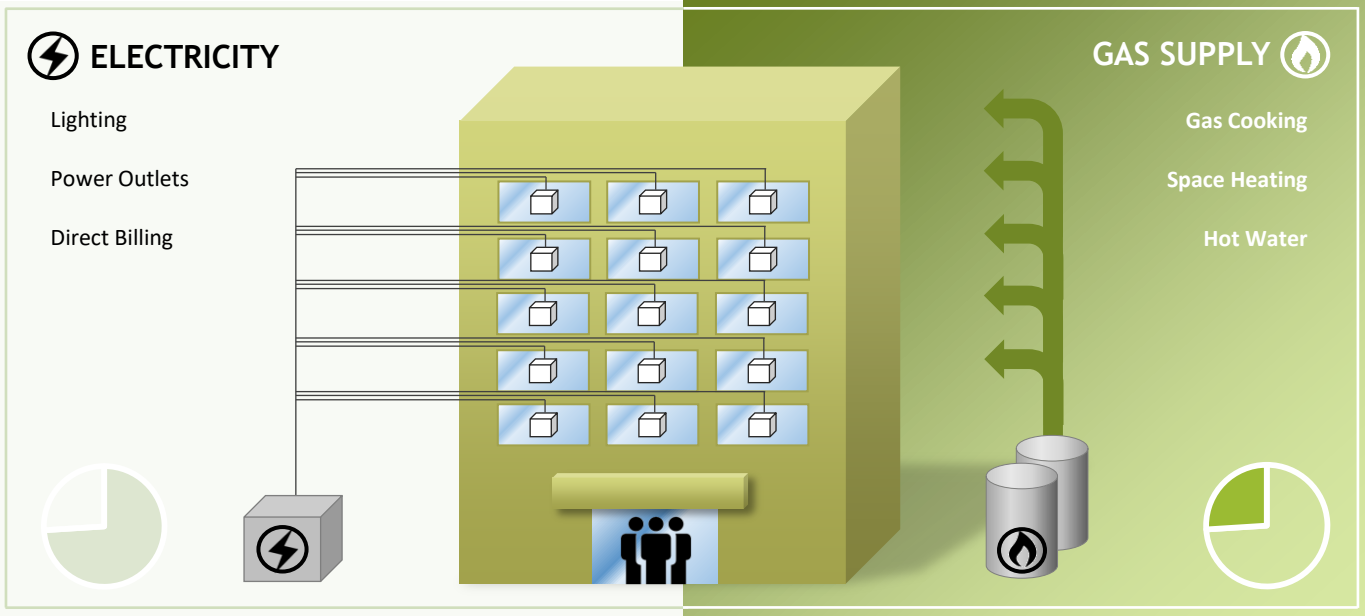
SOLAR POWER

Current or potential impact of solar energy on energy usage.

Maximum usable roof area allows for up to 35.5kW of Solar. Solar requires switch board upgrade estimated to cost \$46,000. Crane required to access roof for installing panels.

RESIDENTIAL
ENERGY CONSUMPTION

Coordinating energy purchases across common areas and individual residences provides mutual benefit.

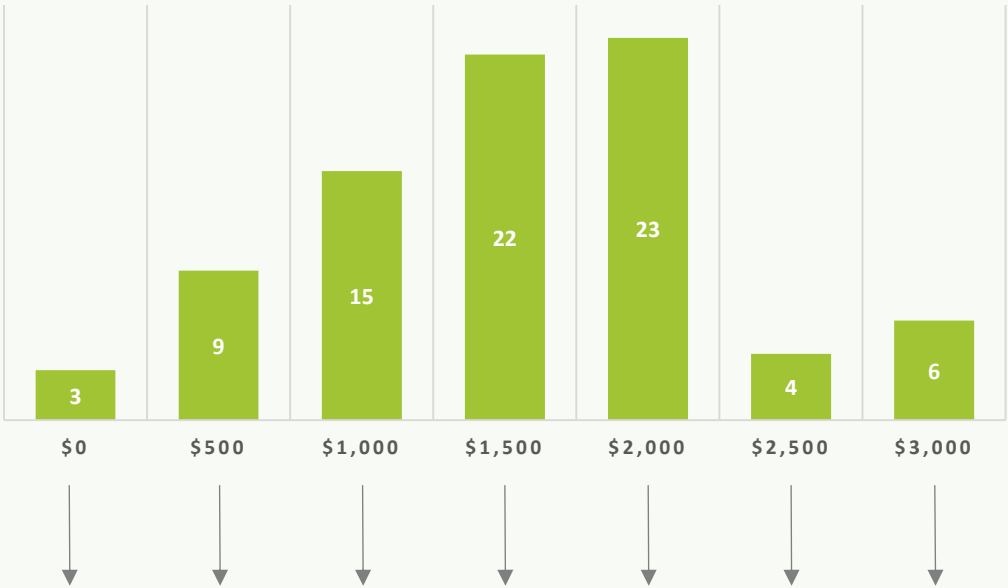


INDIVIDUAL
ENERGY BILLING

Wattblock estimates the annual energy cost for all residents to be \$129,427 p.a. This cost is distributed among 82 lots as follows.

For example, it is estimated that there are 23 lots that are spending about \$2,000 per year on energy usage.

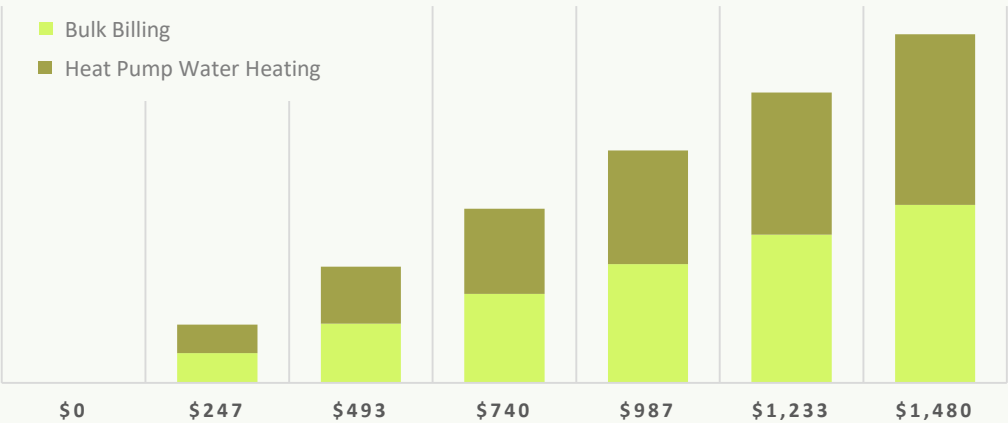
Annual Energy Billing Distribution



INDIVIDUAL
ENERGY SAVINGS

The Owners Corporation can secure energy for residents at lower rates. Savings can be passed on to residents or provide additional income to the Owners Corporation.

Example: A lot currently spending \$2,000 p.a. could reduce their bill by \$987.





WATER USAGE ASSESSMENT

Average water usage is compared against benchmark data to provide an indication of potential water savings opportunities including elimination of base flow leaks.

Note: Figures are based on statistical averages only. Contact Wattblock to add actual water billing data.

WATER SAVINGS OPPORTUNITY

Estimated cost saving opportunity includes elimination of water leaks and other water efficiency measures.



Note: Excludes fixed charges.

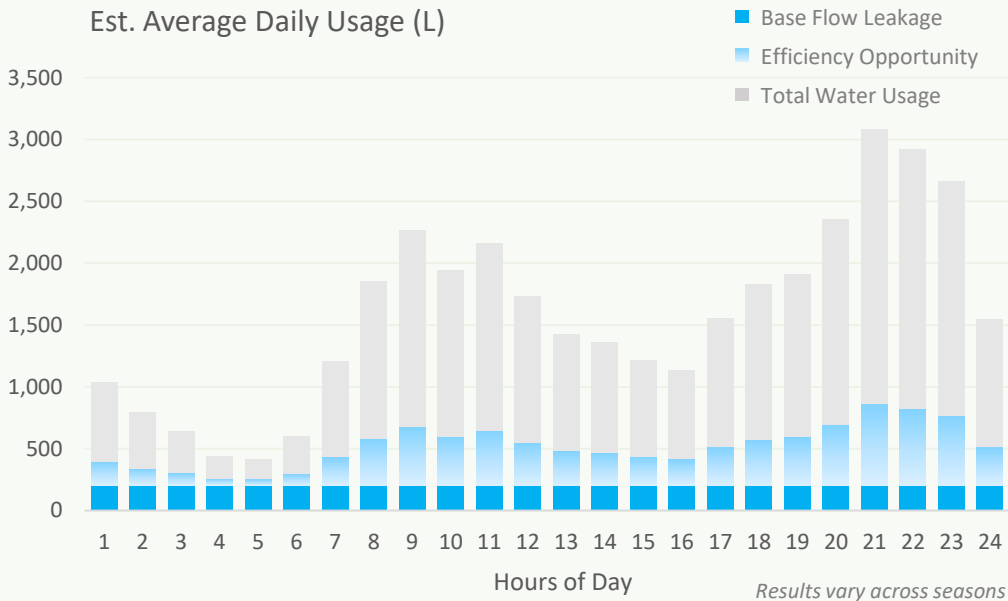
DAILY USAGE PROFILE

Analysis shows peaks in the morning and evening.

Total savings opportunity of \$124 per lot can be split between \$75 of water efficiency gains and \$49 of water leak fixes.



100% Central Services

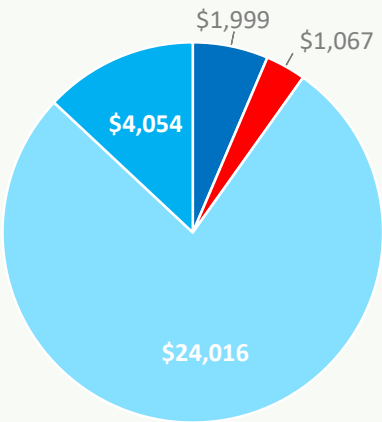


TOTAL COST BREAKDOWN

Water savings in common areas like pools and toilets can be achieved through inspection by plumbers and other professionals.

Further savings can be achieved through engaging individual lots with information and checklists.

Total Annual Cost Breakdown



- Base Flow Leakage
- Common Areas
- Resident Usage
- Biggest Waster

Rank	Cost	kL	People*
1	\$1,067	476	7
2	\$747	334	5
3	\$676	302	4
4	\$569	254	3
5	\$534	238	3

*Estimated people based on usage

Daily Usage Per Lot (L)



SOLAR + BATTERY IMPACT ASSESSMENT

Solar energy viability depends largely on available roof space for solar panels, the electrical usage over the day and across seasons of the year. Adding batteries enables a larger solar system to be installed.

ENERGY SAVINGS OPPORTUNITY

This entire page assumes all energy efficiency projects (e.g. LED lighting) have already been completed.

Add Batteries

Based on Tesla Powerwall

SOLAR SYSTEM SIZE	ESTIMATED ANNUAL COST SAVINGS	ESTIMATED PROJECT COSTS	ESTIMATED PAYBACK
33 kW 118 Solar Panels	\$5,741	\$43,610	7.7 Years
36 kW 129 Solar Panels	\$7,474	\$101,925	15.2 Years

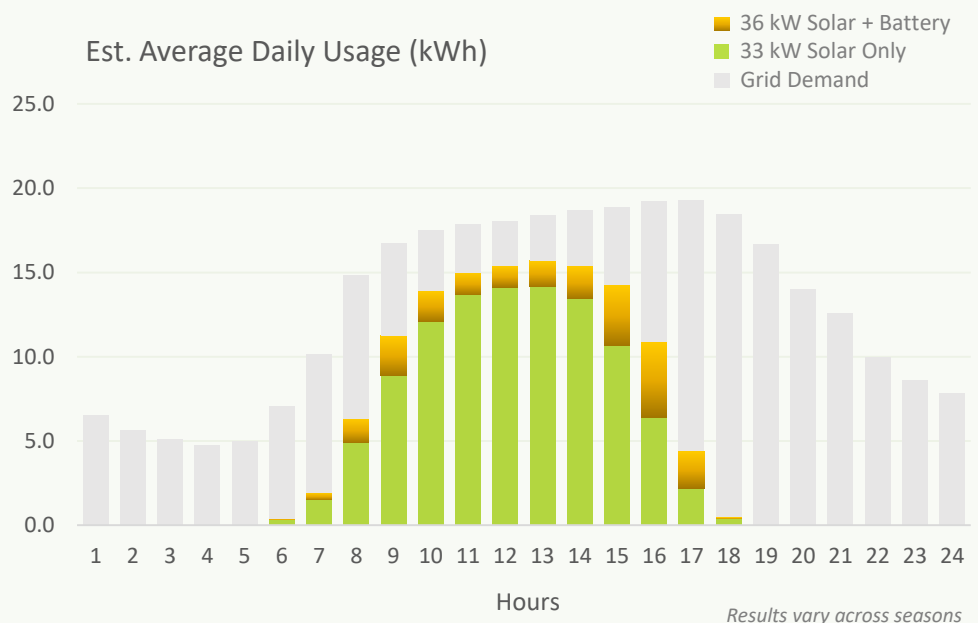
Note: Contact Wattblock for alternative system configurations.

LOAD PROFILE ASSESSMENT

This load profile is based on system modelling.

Taking into account the available roof space and the common area energy usage, a total 33kW solar energy system is possible.

This can be increased to a 36kW system with 9.246kWh of batteries.

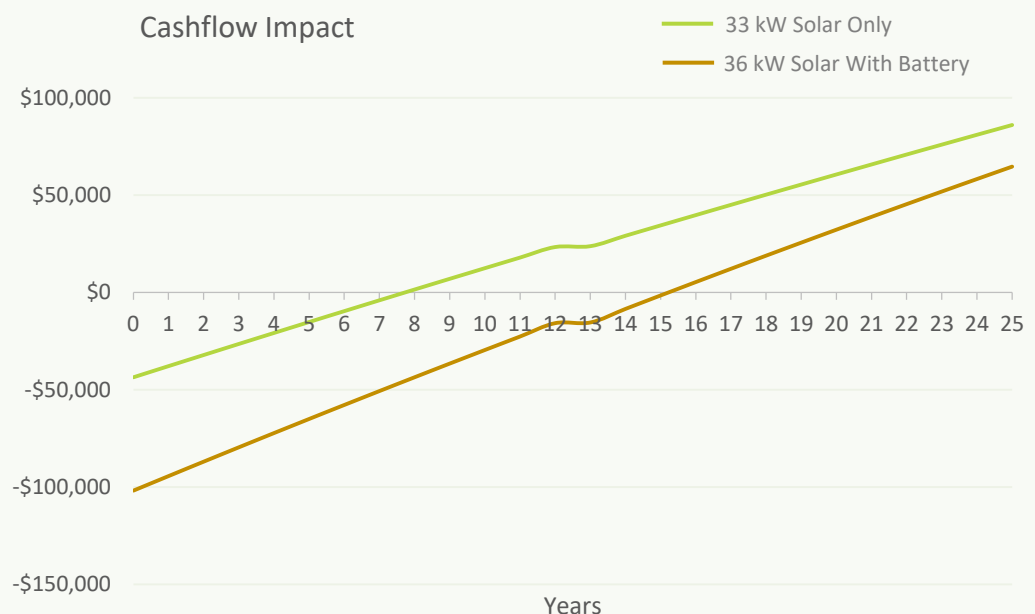


SOLAR PAYBACK ASSESSMENT

The 33kW of solar is estimated at \$43,610 with a 7.7 year payback.

36kW of solar with 9.246kWh of battery is estimated at \$101,925 with a 15.2 year payback.

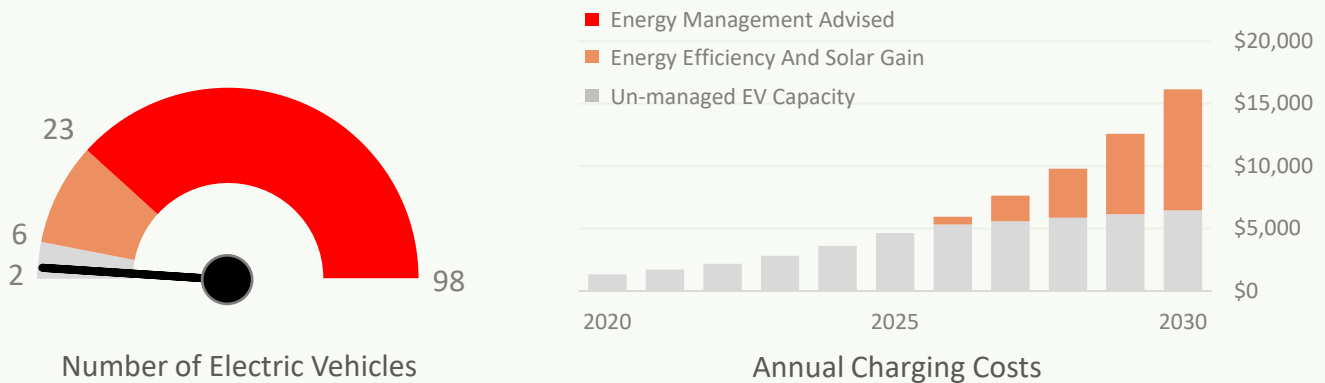
Suppliers may offer a no upfront cost installation via a Power Purchase Agreement (PPA).



Includes inverter + battery replacement in year 12.

ELECTRIC VEHICLE CHARGING

Understanding how Electric Vehicles (EVs) will affect common area and individual energy costs will help committees in working with current and future EV owners.



Number of Electric Vehicles

Annual Charging Costs

The building has an estimated 2 electric vehicles today, growing to 15 by 2030 with a charging cost of \$16,150 p.a. Based on similar buildings, your common energy supply can support an estimated 6 charge stations before energy management is advised.

Energy management regulates EV recharge to avoid excess demand charges or disrupting other facilities such as lighting and lifts. Number of electric vehicles include hybrids and is based on statistical averages unless an EV sub-metering system is in place.

Hazard Warning

SOLUTION 1 UNMETERED USERS



This solution is most common where there are power outlets in the carpark. There are no set-up costs but the strata pays for the usage.

**WHO PAYS
STRATA**

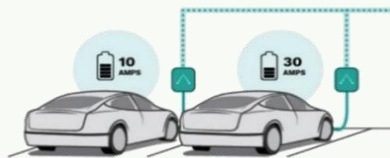
**SET-UP COST
\$0**
Per Electric Vehicle

**OPERATING COST
\$661 p.a.**
Based on 15,500 km p.a.

**COST PER 1,000 KM
\$42.63**
Electric Powered km

RECOMMENDED

SOLUTION 2 MANAGED CHARGING



User pays sub-metering of common power for EV recharge enables lower cost and helps with power management.

**WHO PAYS
OWNER**

**SET-UP COST
Est. \$2,500**
Excluding Charging Unit

**OPERATING COST
\$790 p.a.**
Based on 15,500 km p.a. + billing fees

**COST PER 1,000 KM
\$27.75**
Electric Powered km

SOLUTION 3 PRIVATE CONNECTION



Connecting an EV charger to private power still requires strata approval. This can be costly to set-up and usage costs will be higher as well.

**WHO PAYS
OWNER**

**SET-UP COST
Est. \$8,000**
Excluding Charging Unit

**OPERATING COST
\$896 p.a.**
Based on 15,500 km p.a.

**COST PER 1,000 KM
\$57.81**
Electric Powered km

NOTE: Cost per 1,000km for a typical car using petrol is approximately \$110.50 (eg Toyota Corolla)

PROJECT DETAIL COSTS AND BENEFITS

Projects can vary in the types of benefits they yield. Projects with the best financial payback may not yield the best long term value or have the best environmental impact.

Projects	Cost	Annual Savings	Payback	IRR	NPV	CO ₂ tonnes
1 Common Area Lighting Upgrade lighting in carpark, firestairs, foyers, common areas with dimmable LED.	\$26,670	\$15,656	1.7 Years	59%	\$163,224	105.4
2 Heat Pump Replace your common hot water system with more efficient heat pump technology.	\$130,478	\$31,257	4.2 Years	24%	\$254,366	210.5
3 Meterboard Upgrade Upgrade to AS3000 compliance to reduce fire risks and prepare for solar energy	\$46,000	\$0	N.A.	0%	N.A.	0.0
4 Solar Energy Install 33 kW solar system for common power supply.	\$43,610	\$5,741	7.7 Years	13%	\$28,529	38.7
TOTAL	\$246,758	\$52,654	4.7 Years	21%	\$446,119	354.6

Definitions

Cost	Estimated total upfront project cost including GST. Where relevant includes estimated labour for installation and commissioning.
Savings	Estimated annual savings including GST. Includes impact on usage costs and capacity demand charges where relevant. The savings also represent the cost of not doing the project. For example the cost of delaying the project by 6 months would be approximately half the annual savings.
Payback	Estimated simple payback based on the estimated cost and savings. Does not account for potential changes in the annual savings estimate due to inflation or other factors.
IRR	Internal Rate of Return indicates the percentage annual return on the estimated investment in the project. This is comparable to interest rates that could be achieved by putting the same amount of funds in a term deposit.
NPV	Imagine someone hands you a cheque for the calculated NPV amount. Executing the project is worth that much money in today's dollar value. Savings, based on energy prices, assume 0% growth. Discount rate is 8% (offsets sinking funds) with terminal value in year 10.
CO ₂ tonnes	Estimated annual carbon abatement impact of the project. This is measured in tonnes of carbon dioxide.

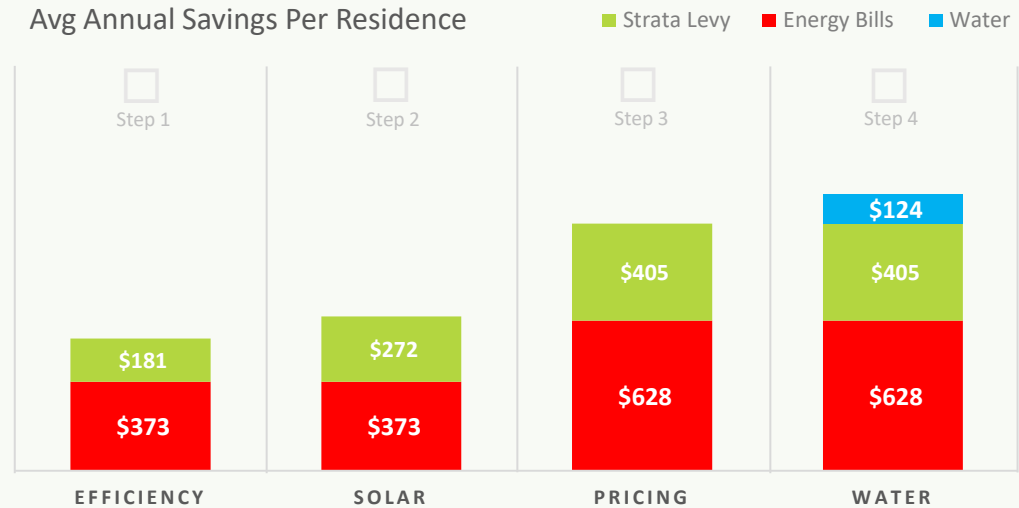
COST OF DELAY

\$4,388	\$13,164	\$52,654
<i>missed if these projects are delayed by one month</i>	<i>missed if these projects are delayed by one quarter</i>	<i>missed if these projects are delayed by one year</i>

CUMULATIVE COST REDUCTION

Individual residences are estimated to save \$405 p.a. on strata levies, \$628 p.a. on residential energy bills and \$124 p.a. on water bills after completing all potential initiatives.

Avg Annual Savings Per Residence

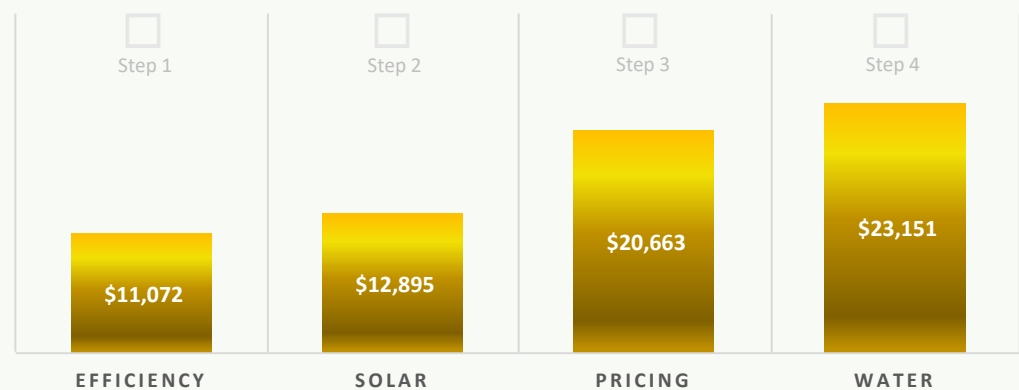


PROPERTY VALUATION IMPACT

A building with lower operating costs is worth more because net income to property owners is increased.

Total valuation increase represents an average of \$23,151 per apartment.

Valuation Impact Per Apartment



Note: Valuation impact is based on 20x multiple of cash flow.

ENVIRONMENTAL ACHIEVEMENT

Following sustainability initiatives your block will exceed the national carbon reduction target of 5% set for 2020. If every block did this, we would be well on our way to exceeding the target.



PROPORTION OF PEOPLE LIVING IN THIS BLOCK TYPE	AVERAGE OCCUPANCY RATE PER RESIDENCE	NUMBER OF BLOCK RESIDENTS	ENERGY USE PER RESIDENCE (MJ / YR)
3.8%	2.1	175	25,045
CURRENT BLOCK CO ₂ EMISSIONS (TONNES/YR)	EMISSIONS SAVINGS OPPORTUNITY (TONNES/YR)	EQUIVALENT NUMBER OF TREES PLANTED	NATIONAL CO ₂ REDUCTION TARGET 2020 CONTRIBUTION
605	118	1,767	390%

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Who is Wattblock?

Wattblock was started by Brent Clark and Ross McIntyre in 2014. They are joined by Jacky Zhong solar engineer and NABERS assessor, Wilson Huang solar engineer and Peter Langley, industry analyst.

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 fast track 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 100 buildings with LED lighting, solar, ventilation and hot water. To date it has identified over \$25m of annual energy waste across townhouses to high-rise residential skyscrapers. Over 140 strata buildings have participated in electric vehicle recharging studies.

Who is partnering with Wattblock?

NSW Innovate, Advance Queensland, North Sydney Council, Microsoft CityNext, Telstra's muru-D, the University of NSW, 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.

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.