Futureproofing Apartments Case Study

5 Lot Residential Strata Scheme

Waverton NSW 2060

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Sustainability Case Study – 5 Lot Residential Strata in Waverton

A boutique apartment block of 5 units implemented sustainability upgrades after participating in the North Sydney Futureproofing Apartments Program in May 2021

Projects

- LED Lighting upgrade in common areas - $4,785
- Existing gas hot water plant replaced by heat pump from Reclaim Energy - $6,659 (Oct 2021)
- Re-used existing hot water meters and a new electricity sub-meter for heat pump to bill residents for the use of hot water. Residents can choose to disconnect their gas meter for further savings
- Switchboard modification to prepare for the installation of solar - $1,319
- Installation of an 8.19kW solar system for the common areas by Soltek Energy - $12,510 (Jan 2022)

Solution

A committee member enrolled the building for the Futureproofing Apartments Program to receive a sustainability report and zoom call

8.19kWp
Solar system

5kW & 420L
Heat pump & hot water storage tank size

$25,273
Capital cost for entire program of works (including LED)

Benefits

>60%
Reduction in hot water heating costs (assume 35c/kWh for heat pump electricity use)

~5.8 years
Est. payback for entire program of works

>12 tonnes
CO2 reduced per year

Solar & Heat Pump Projects

Program of Works Summary for 5 Lot Strata in Waverton

Project	Cost	Savings	Payback (years)	Emissions Reduction (tonnes p.a.)
LED Lighting	$4,785	$659	7.3	2.1
Heat Pump	$6,659	$2,665	2.5	3.9
Solar Photovoltaic	$13,829	$999	13.8	6.3
Program of Works	**$25,273**	**$4,323**	**5.8**	**12.3**

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Cost and savings (Heat Pump)

Heat Pump Retrofit	
Cost of heat pump system	$6,659*
Annual gas energy reduction (Megajoules)	124,830MJ
Greenhouse Gas (GHG) emissions mitigation	3.9 tons
Annual gas bill savings	$4,446
Add back in electricity consumption of heat pump	$1,781
Annual net heat pump total savings	$2,665
Simple payback on Hot Water System	2.5 years
(Project cost if done with new rebates)	**$4,549**
(Simple payback if done with new rebates)	**1.7 years**

NOTES:
(*Quote b- $16,400, Quote c- $17,900)

a/ Whole of strata figures are extrapolated from a single (average) apartment
b/ Many gas bills have 'estimated' readings
c/ Heat pump is well optimised on size, 2 other quotes were being conservative, and/or over-engineered, or allowed larger safety margin, though were almost 3 times the cost of the installed system
The installer offered to add extra heat-pump if existing didn't fully cater for needs.

New rebates available since project
NSW Energy Savings Scheme ESCs = $450
North Sydney Council rebates = $1,660

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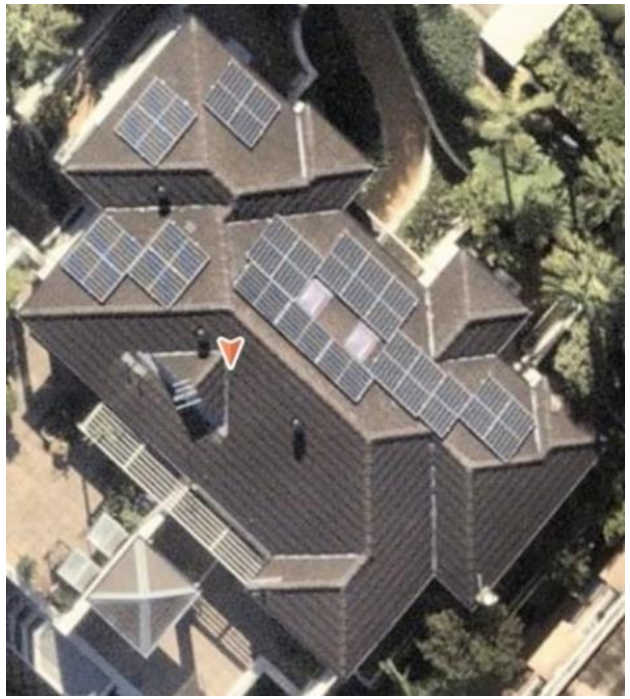
Combining heat pump and rooftop solar - *A perfect combination!*



8.19kW solar PV connected to ‘common area’ meter
(the same electricity meter the heat pump hot water system is connected to)

Common area upgrades		
Total costs	$25,273	LED + PV + Switchboard + Heat pump
Emissions reduction	12.3 tons	Carbon neutral – (due to unused solar to grid)
Annual net savings	$4,322	
Simple payback - years	5.8	

Equipment cost breakdown	
Heat pump (including new kWh meter)	$6,059*
New cabling from heat pump to switchboard to new electricity meter Meterboard upgrade for solar photovoltaic (PV)	$600 $1,319
Rooftop solar photovoltaic (PV)	$12,510
LED lighting	$4,785

Gas metering details for hot water (& cooking)

- Legacy gas meters are owned by the Jemena Gas network. Retained while gas is still used for cooking.

- Costs to remove them ~$1,380 for main meter.
- $134 each for ‘disconnection’ individual meters (Jemena fees).
- Zero cost to leave them in place (but wastes space & resources).

Lockout tag –
One owner has disconnected their gas cooktop & shut their gas account.

- Re-circulating pump for the hot water ring mains.

NOTE:
Gas bills are now dominated by daily charge since Heat Pump installation, Shutting gas account would save a further $252/year per unit.

Payment for hot water consumption

Electricity meter installed to measure heat pump energy, in kWh *(including 1x spare)*

- The Owners Corp charges each unit the standard commercial electricity bill rate per kWh. (Currently $0.35per kWh)
- In practice, the Hot Water System is partially powered with solar electricity and the cost would be lower.

Allocation of costs to residents

Previously each unit would be charged directly by the providers for the gas consumed to heat their hot water.

They now “divide” the cost of electricity used by each unit and pay this back to the strata.

Water consumption from the original legacy.

hot water meters is used to allocate the cost of energy for hot water.

Legacy hot water meters with digital display

Before & after

Old gas boiler

Their existing gas hot water heater was due to be replaced. It was no 'sacrifice' for them to change to heat pump because they had already budgeted for a replacement.

New system: Reclaim Energy heat pump with 420 litre tank which services all 5 apartments.

CO2 refrigerant gas has a Global Warming Potential (GWP) of 1.

Heat pump – Outdoor unit

(needs regular cleaning of fan coils for dust, cobwebs, leaves, moss, etc.)

Tank for heat pump

Further information

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Electrify Strata

Futureproofing Apartments Program:
https://www.northsydney.nsw.gov.au/Environment_Waste/Get_Involved/Futureproofing_Apartments

North Sydney Council Sustainability Rebates:
https://www.northsydney.nsw.gov.au/homepage/174/sustainability-rebates

Heat Pump Fact Sheets:
https://www.northsydney.nsw.gov.au/downloads/download/458/futureproofing-apartments-fact-sheets

North Sydney/City of Sydney/Waverley webinar on heat pumps for strata:
https://www.youtube.com/watch?v=OPBqAU_GaFA

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