

Carbon and Energy

FY18

Why this is important to Stockland

We have a longstanding commitment to manage climate change risk and reduce our carbon emissions. We recognise our role to influence the energy efficiency of our assets and have taken a proactive approach to developing energy efficiency programs and implementing action plans over a number of years.

The increasing cost of energy, particularly electricity, poses a challenge for the property industry and for all Australians. As electricity is an increasing proportion of our assets' operating expenditure, improvements in energy efficiency enable us to reduce cost and improve our operational efficiency. Integrating energy efficiency considerations into the design and construction of our assets can also help to reduce the energy requirements (and electricity costs) of our tenants and residents.

The increasing cost of power also means that renewable energy options such as solar have become cost-effective choices for our energy supply. The declining cost of solar infrastructure works in tandem with the increasing cost of conventional energy to make solar a sound business investment. We look to design and technology innovation and access to alternative energy supplies to help us and our customers realise a cost efficient, low carbon future. Improving the energy efficiency of our assets and communities not only improves environmental outcomes, but also provides cost of living benefits and economic advantages for our business.

This Deep Dive document is a component of our FY18 sustainability reporting suite, which is publicly available on our [website](#). Our sustainability reporting is third-party assured and drafted in accordance with the GRI Standards.¹ The material in this Deep Dive is supported by a wider collection of performance metrics contained in our [Environmental Data Pack](#).

This Deep Dive is to be read in conjunction with our published management approach to carbon and energy, available as part of our sustainability reporting suite at [Our Management Approach to Carbon and Energy](#).



Our key achievements

- Completed our largest solar photovoltaics (PV) installation at Stockland Green Hills (NSW, 1.85 MW), as well as an additional installation at Stockland Caloundra (Qld, 0.25 MW), bringing our total portfolio solar PV capacity to 4.36 MW and generating approximately 6,000,000 kWh in renewable energy annually.
- Committed to additional solar PV that brings our total investment in solar to around \$30 million, leading the industry with an expected 16.36 MW of solar PV capacity across our Commercial Property portfolio by the end of FY19.
- Delivered Tesla Destination Chargers and ChargePoint charging stations across our retail town centres, bringing our total to 67 electric vehicle charging stations in 23 locations.
- Completed LED lighting upgrades across a number of our retail town centres that will result in approximately 1,700,000kWh of annual electricity savings.
- Delivered a four-bedroom house at North Shore (Qld) designed to achieve a NatHERS² thermal comfort rating of 9.3 out of 10 and equipped with solar photovoltaics and battery storage, which acts as a sales office and education tool for prospective residents.

¹ The GRI Standards are global standards for sustainability reporting published by the Global Reporting Initiative (<https://www.globalreporting.org/standards/>)

² The Nationwide House Energy Rating Scheme (NatHERS) is a star rating system (out of ten) that rates the energy efficiency of a home, based on its design (www.nathers.gov.au).

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FY18 priorities and progress

Commercial Property

FY18 PRIORITIES	STATUS	FY18 PROGRESS
Achieve a 60 per cent carbon reduction intensity target for Retail Town Centre, Workplace, and Business Parks assets (FY06 – FY25)	In progress	At 30 June 2018, we have achieved a carbon intensity reduction of 52 per cent against FY06 for the Retail Town Centre, Workplace, and Business Parks portfolio.
Reduce carbon intensity in our Retail Town Centre portfolio by 10 per cent by FY20, against the FY17 benchmark	In progress	At 30 June 2018, we have achieved a carbon intensity reduction of six per cent against FY17 for our Retail Town Centre portfolio.
Reduce carbon intensity in Workplace and Business Parks by five per cent by FY20, against the FY17 benchmark	In progress	At 30 June 2018, we have achieved a carbon intensity reduction of two per cent against FY17 for our Workplace and Business Parks portfolio.
Achieve a 4.5 stars NABERS Energy average for our Retail Town Centre portfolio	In progress	Our NABERS Energy average for our Retail Town Centre portfolio is 4.18 stars (up from 3.98 stars at end of FY17).
Achieve a 5 stars NABERS Energy portfolio average in our Workplace and Business Parks portfolio	In progress	Our NABERS Energy average for our Workplace and Business Parks portfolio is 4.35 stars (down from 4.74 stars at end of FY17). The decline is attributable to vacancy in our Workplace portfolio and the installation of new equipment that impacts on base building energy usage at one of our business parks.
Continue to install electric vehicle charging stations across our Retail Town Centre portfolio	In progress	We have installed new ChargePoint chargers at Stockland Hervey Bay (Qld), Stockland The Pines (Vic) and Stockland Green Hills (NSW) in addition to the rollout of 43 Tesla destination chargers at 23 locations across the Retail Town Centre portfolio.

Communities

Residential

FY18 PRIORITIES	STATUS	FY18 PROGRESS
Exceed relevant minimum energy related compliance standards by 10 per cent within our residential communities	Achieved (in part)	We modelled the performance of three residential communities: Brightwater (Qld) exceeded compliance standards by 35 per cent, Arve (Vic) exceeded compliance standards by 39 per cent, and Altrove (NSW) exceeded compliance standards by 9.5 per cent.
Complete an alternative water and energy infrastructure delivery feasibility study to better understand how we could partner with a utility provider to deliver more sustainable supply of energy and water to our residential communities	In progress	We commissioned a review of infrastructure opportunities across the various types of our Residential developments, to inform the development of an alternative water and energy infrastructure strategy.

Retirement Living

FY18 PRIORITIES	STATUS	FY18 PROGRESS
Exceed relevant minimum energy related compliance standards by 10 per cent in all new developments	In progress	No new developments commenced in FY18; 10 per cent reduction target to be applied to all new developments commencing in FY19.



FY18 PRIORITIES	STATUS	FY18 PROGRESS
Install at least five solar photovoltaic systems across village clubhouses by FY20	In progress	Installations have been completed in FY18 to village community centres at Fig Tree (Qld) and Wamberal Gardens (NSW).
Achieve a five per cent energy reduction target by FY20 (for villages with sub-metering)	In progress	Our pilot sub-metering and monitoring program has led to a 4.9 per cent decrease in energy consumption at Tarneit Skies (Vic) and 0.05 per cent increase in energy consumption at The Willows (NSW).
Formalise solar guidelines and supporting documentation that apply to village residents	In progress	Solar guidelines for village teams and residents have been drafted and will be formally released in FY19.

Future priorities

Commercial Property

- Achieve net zero carbon by 2030 for our Industrial portfolio and Corporate Head Offices based on the World Green Building Council “Net Zero Carbon Buildings Commitment”.
- Achieve a 60 per cent carbon intensity reduction for Retail Town Centre, Workplace and Business Parks assets (FY06 – FY25).
- Reduce carbon intensity in our Retail Town Centre portfolio by 10 per cent, and in our Workplace portfolio by five per cent, by FY20 (FY17 baseline).
- Achieve an average NABERS Energy rating of 4.5 stars for our Retail Town Centre portfolio, and 5 stars for our Workplace portfolio.
- Install a further 12 MW of solar photovoltaic capacity across eleven retail town centres by the end of FY19.
- Continue to install electric vehicle chargers across our Retail Town Centre portfolio.

Communities

Residential

- Exceed relevant minimum energy related compliance standards by 10 per cent within our residential communities.
- Develop an alternative energy infrastructure strategy to help drive appropriate delivery of renewable infrastructure in our residential developments.
- Deliver solar and battery packages to 72 homes within our Highlands (Vic) project in partnership with a large industry supplier, and monitor the performance of these homes to understand how solar and battery can be more efficiently delivered and used by home owners.

Retirement Living

- Achieve net zero carbon by 2030 for our Retirement Living portfolio based on the World Green Building Council “Net Zero Carbon Buildings Commitment”.
- Exceed relevant minimum energy related compliance standards by 10 per cent in all new developments.
- Continue to roll-out solar installations to meet or exceed our target of 5 installations across clubhouses and community centres in our retirement living communities by FY20.
- Implement an operational efficiency review at three of our most energy intensive operational villages.
- Implement key recommendations from our pilot sub-metering and monitoring program and share lessons learned.

FY18 performance and case studies

Total greenhouse gas (GHG) emissions

We reduced our Scope 1 emissions in FY18, primarily due to decreases in our Communities business construction and delivery emissions. We also reduced our Scope 2 emissions, largely due to reduced gross energy consumption at Commercial Property assets and an improvement in Communities energy data acquisition.

The table below outlines our Scope 1, 2 and 3 emissions over the last five years. For a detailed breakdown of our Scope 1, 2 and 3 emissions please refer to our [Environmental Data Pack](#).

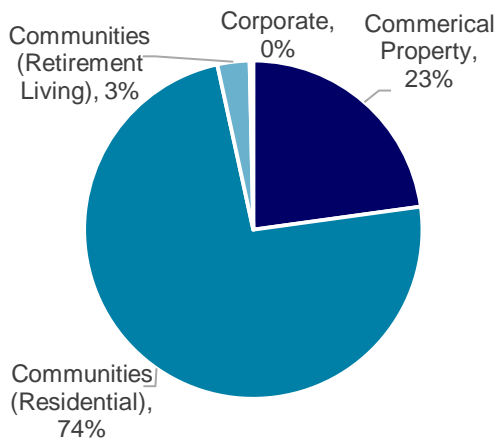
SCOPE 1, 2 AND 3 EMISSIONS (tCO₂-e)

	FY18	FY17	FY16	FY15	FY14
Scope 1 ³	25,453	26,884	35,036	26,368	22,102
Scope 2 ⁴	82,591	87,860	89,881	97,763	99,927
Total Scope 1+2 emissions	108,044	114,743	124,917	124,131	122,029
Scope 3 ⁵	33,866	31,115	39,628 ⁶	21,002	23,556

Total Scope 1 emissions by business unit

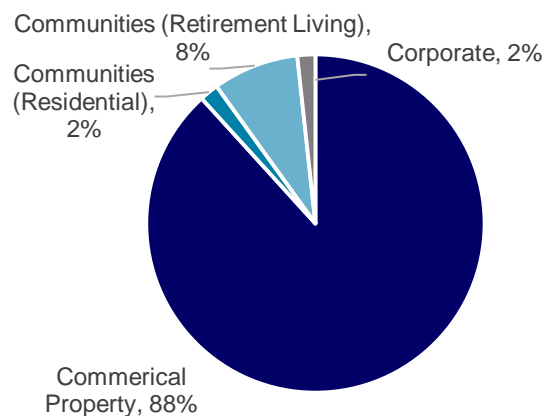
The chart below outlines the percentage allocation of our Scope 1 emissions by business units. Communities constitutes the largest proportion of our Scope 1 emissions due to contractor construction activity during development.

Examples of Communities construction projects in FY18 include Elara (NSW), Newport (Qld), Foreshore (Qld) and Sienna Wood (WA).



Total Scope 2 emissions by business unit

Commercial Property constitutes our largest proportion of Scope 2 emissions and remains the focus of our strategic energy efficiency initiatives.



Commercial Property

NABERS ratings

Following the NABERS ratings undertaken in FY18 on our Retail Town Centre portfolio, the area weighted portfolio average for NABERS Energy has improved to 4.15 stars (3.98 stars in FY17). Nine assets out of 25 achieved an improved energy rating in FY18, and four assets achieved a lower rating.

In our Workplace and Business Parks portfolio for 2017, the area weighted portfolio average has reduced to 4.52 stars (4.61 stars in FY17) for our Workplace portfolio and reduced to 4.22 stars (4.42 stars in FY17) for our Business Parks portfolio. The combined portfolio average for Workplace and Business Parks is 4.35 stars which is a reduction on the FY17 result of 4.74 stars. From 20 assets rated, two achieved a higher energy rating in FY18 while three achieved a lower rating. We expect this portfolio rating to increase toward our FY20 target with increased occupancy and installation of additional sub-metering.

³ Scope 1 emissions are direct emissions, i.e. emissions from fuels that are combusted on site (including natural gas, diesel and petrol from fleet) as well as refrigerant leakage. This includes direct emissions reported by contractors where we have operational control (typically residential community projects).

⁴ Scope 2 emissions are indirect emissions from the consumption of electricity only. This includes indirect emissions reported by contractors where we have operational control (typically residential community projects) and emissions from base building electricity across the Workplace and Business Parks, Retail Town Centre, Logistics, Residential and Retirement Living assets for which we have operational control.

⁵ Scope 3 emissions are other indirect emissions, including hire cars, rental vehicles and airline travel, transmission and production losses from purchased electricity, gas and fleet fuel and operational waste from our Commercial Property portfolio.

⁶ From FY16 we expanded our boundary to include Scope 3 emissions from waste generated at our Commercial Property assets.

More information on our NABERS ratings across our portfolio is provided in the [Asset Rating and Certification Deep Dive](#) and [Environmental Data Pack](#).

CASE STUDY

Powering up our portfolio with Tesla Destination Chargers

We are delivering a \$200,000 national rollout of Tesla Destination Chargers across up to 31 retail town centres from Cairns to Melbourne. Tesla owners can now charge their cars for free in our retail town centres, boosting convenience for customers while they shop, dine, or spend time with family and friends.

Louise Mason, Stockland Group Executive and CEO Commercial Property, said: "In the ever changing retail landscape, technology is increasingly critical to drive innovation, efficiency and engagement with our customers.

"We know electric vehicles are part of the future and we look forward to offering more features like this to meet continuing Australian demand."

Hon Craig Laundy MP joined the Stockland team to launch the initiative, and to charge up the first Tesla vehicle at Stockland Cammeray in Sydney.

Mr Laundy said it was great to see two companies with corporate philosophies that were committed to sustainability - in Tesla and Stockland - working together to expand low emissions technology.



Once complete, Tesla owners will enjoy the convenience of charging locations at our retail town centres from Cairns to Melbourne.

The 43 Tesla Destination Chargers rolled out to date in 23 locations complements our 24 free ChargePoint facilities in 13 locations throughout Australia, which have been used more than 3,600 times by customers since 2015.

We are proud to be leading the sector by investing in both EV charging capacity and renewable energy, both of which are crucial to the future of our retail town centres and cities.

Energy efficiency

We have actively invested in energy efficiency improvements across our commercial property developments and operations since we set our first energy and emissions targets in FY09. Energy is an important operational expenditure item for our business and as a result we have adopted an active management approach to deliver strong financial returns whilst reducing our carbon footprint.

Our energy efficiency investments made in FY18 are projected to generate energy savings of approximately 2,000,000 kWh annually. These investments include the installation of a heating, ventilation and air conditioning (HVAC) chiller optimisation unit at Stockland Balgowlah (NSW) to reduce electricity consumption by better managing chiller demand and load. This upgrade is projected to save approximately 150,000 kWh per annum which equates to approximately eight per cent of the total base building annual consumption. We also approved a building management system (BMS) upgrade at Stockland Nowra (NSW) which will improve the control strategy of the air conditioning system so it operates efficiently without compromising on thermal comfort

We continued our LED lighting upgrades across our retail town centres, with upgrades at Stockland Merrylands (NSW), Stockland Bathurst (NSW), Stockland Baulkham Hills (NSW), Stockland Point Cook (Vic) and Stockland Rockhampton (Qld). The upgrades are expected to achieve approximately 1,700,000 kWh electricity savings annually.

We continue to realise energy efficiency opportunities through our sub-metering systems and have installed additional metering at our retail town centres at Stockland Green Hills (NSW) and Stockland Wendouree (Vic) in FY18.

Renewable energy

At 30 June 2018 we have installed 4.36 MW of solar PV capacity across five of our shopping centres, including our largest installation of 1.85 MW at Stockland Green Hills (NSW) and our most recent 250 kW installation at Stockland Caloundra (Qld).

We are in the middle of a national solar installation project that will result in an additional 12 MW of solar PV capacity installed across an additional eleven retail town centres by the end of FY19. The installations will bring the total investment in

renewable energy to over \$30 million providing a total of 16.36 MW of generating capacity and producing an estimated 20,000,000 kWh of renewable energy annually.

The table below illustrates our solar generation over the past five years, and estimated capacity at end of FY19.

RENEWABLE ENERGY GENERATED USING SOLAR POWER

	FY18	FY17	FY16	FY15	FY14	FY19 CAPACITY
Energy generated using solar PV (kWh)	3,274,463	2,387,168	1,940,689	292,124	175,374	
Per cent of Retail Town Centre portfolio electricity usage	5.1	3.6	2.8	0.4	0.3	
Total solar PV capacity at end of reporting period (MW)	4.36	2.26	1.36	1.36	0.05	16.36

CASE STUDY

Our industry-leading solar rollout

We are continuously improving how we source and use energy throughout our assets. A large focus in FY18 has been the rollout of 6.4 hectares of solar panels across ten of our retail town centres; the largest rooftop solar project ever undertaken by a landlord in Australia. Early in FY18 we announced the \$23.5 million investment, which involves the installation of more than 39,000 photovoltaic (PV) panels across the roof space on retail town centres including Stockland Merrylands (NSW), Stockland Burleigh Heads (Qld), Stockland Point Cook (Vic) and Stockland Wendouree (Vic).

With the project expected to generate 17.2 GWh of additional renewable energy every year, it will account for 20 to 25 per cent of retailers' baseload and usage, excluding supermarkets and department stores. Near the conclusion of FY18, we added another three sites to the rollout, which brings our total investment in solar to around \$30 million. Once complete, the investment will increase our combined retail town centre solar generation capacity to 16.36 MW over 16 sites generating an estimated 20,000,000 kWh per annum.

Mark Steinert, Managing Director and CEO, said, "Investing in technology like solar energy is not only environmentally sustainable, it also makes good business sense. Our forecast average yield over a 10 year period is 11.6 per cent on capital invested, generating strong shared value for both our investors and our communities."

The project reaffirms our position as a global leader in sustainability, and provides potential for future participation in the national energy market. It also brings us closer to our target of a 60 per cent carbon intensity reduction for our Retail Town Centre, Workplace and Business Parks assets over the FY06 – FY25 period.



Solar panels now extend across the roof of Stockland Merrylands (NSW), scheduled for commissioning in early FY19.

Performance against emissions reduction targets

We track our greenhouse gas emissions on a per square metre intensity basis as a means to understand our energy impacts while taking divestments and investments into account. Our greenhouse gas emissions intensity has been steadily decreasing across all commercial property asset classes and we will continue to monitor and invest in technology to assist us in achieving our FY20 target (10 per cent intensity reduction in Retail Town Centres, five per cent reduction in Workplace and Business Parks, from FY17 baseline).

The table below outlines our greenhouse gas emissions intensity data since FY14.

COMMERCIAL PROPERTY GREENHOUSE GAS EMISSIONS INTENSITY (kg CO₂-e/m²)

	FY18	FY17	FY16	FY15	FY14
Workplace and Business Parks	60.41	61.70	64.98	67.32	67.55
Retail Town Centres	49.54	52.92	56.58	58.32	59.34
Commercial Property	52.00	54.93	58.55	60.66	61.52

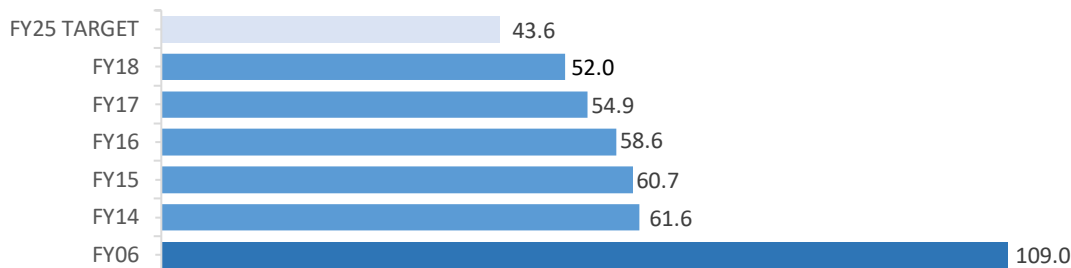
In FY18 we reduced our Retail Town Centre portfolio emissions intensity by six per cent compared with FY17, and reduced our Workplace and Business Parks emissions intensity by two per cent compared with FY17. These decreases are attributable to continued energy monitoring and capital investments in efficiency initiatives such as LED Lighting, heating, ventilation, and air conditioning optimisations and solar PV.

The table below outlines our Commercial Property year-on-year emissions intensity reductions over the last five years.

COMMERCIAL PROPERTY ANNUAL CHANGES IN EMISSIONS INTENSITY

	FY18	FY17	FY16	FY15	FY14
Workplace and Business Parks	-2%	-5%	-4%	0%	-6%
Retail Town Centres	-6%	-6%	-3%	-2%	-4%
Commercial Property	-5%	-6%	-4%	-1%	-5%

We have set emissions reduction targets every three years in support of our overarching target to reduce emissions intensity by 60 per cent across our Commercial Property portfolio by FY25 (using FY06 baseline). The chart below indicates progress toward our FY25 target.

PROGRESS TOWARD OUR FY25 EMISSIONS INTENSITY TARGET (kg CO₂-e/m²)


Communities

Residential

The energy targets set for our Residential portfolio (set in FY17) focus on energy and emissions efficiency of residential product that we build (as opposed to also encompassing product built by third party builders on land that we sell). These targets aim to deliver a 10 per cent improvement by FY20 on existing energy and carbon compliance benchmarks established by regulation within the states where we operate, and apply to our built form product.

During the year we modelled and analysed the performance of our built form product to understand what initiatives deliver on our compliance requirements, and what we would need to include to achieve our 10 per cent improvement target. We piloted the modelling and analysis methodology on three projects during the year. At Brightwater (Qld) we achieved a 35 per cent improvement over Queensland compliance requirements, largely attributable to the installation of LED lighting and electric-booster hot water. At Arve (Vic) we achieved a 39 per cent improvement over Victorian compliance requirements, largely attributable to inclusion of gas boosted solar hot water, LED lighting, gas cook tops, and a proportion of homes designed to high thermal comfort standards (7 star NatHERS or greater). At Altrove (NSW) we achieved a 9.5 per cent improvement over New South Wales compliance requirements, largely attributable to the installation of solar photovoltaics and solar hot water on a selection of homes. Our results in New South Wales tend to be lower because there is a higher standard for energy efficiency within compliance requirements and so less opportunity for us to exceed these requirements.

We will begin to include these initiatives in our projects being designed from this year onward. Some examples of broader energy and carbon reduction initiatives delivered within our Residential portfolio during FY18 are:

- installation of LED street lighting across projects including Birtinya (Qld), Aura (Qld) and Bokarina Beach (Qld)
- delivery of a new sales office at North Shore (Qld), which is a four-bedroom house designed to achieve a NatHERS thermal comfort rating of 9.3 out of 10 and equipped with solar photovoltaics and battery storage
- installation of solar powered car park lighting outside of our Altrove (NSW) sales office, pedestrian access way to the train station and in the link park, equipped with motion sensors to save energy use during periods of low activity
- expansion of our cool roof policy in force at Bells Reach (Qld) to Promenade (Qld) and to all Sunshine Coast projects
- construction of a solar-powered public toilet block in community open space at Whiteman Edge (WA).

Retirement Living

Our energy sub-metering and monitoring pilot at Tarneit Skies (Vic) and The Willows (NSW) has continued to identify a number of opportunities to improve the operational performance of the villages, such as:

- use of motion sensors to enhance lighting efficiency
- seasonal recommendations to adjust HVAC settings for more efficient operation year-round
- reviewing pool operations and gas heating.

We have targeted a five per cent energy efficiency improvement for the FY18 to FY20 target period for those villages included in the sub-metering pilot (against June 2016 baseline). For FY18, Tarneit Skies (Vic) achieved an 4.9 per cent decrease in energy consumption, whereas The Willows experienced a 0.05 per cent increase in energy consumption. Our Sustainability Team continues to work closely with the National Operations and Village Management Teams to implement the recommendations and identify quick wins that can be scaled across the portfolio.

We currently have solar installations across 22 clubhouses and community centres across our Retirement Living portfolio. At Fig Tree Retirement Village (Qld), solar PV infrastructure was installed on its Town Hall building in November 2017 and is expected to save the village \$3,500 per year in electricity costs. The solar PV panels generate 89 per cent of the Town Hall's energy requirements and provides renewable energy to individual residents' homes through the village embedded network during periods of inactivity in the common areas. The setup has also allowed for a new electric pool heater to be installed so that the village pool may be used all year round.

We completed an extensive refurbishment of the existing clubhouse at Patterson Lakes (Vic) including several initiatives that reduce the building's carbon footprint, such as:

- capturing more natural light
- airlock to main foyer
- upgraded ceiling insulation
- energy efficient lighting, heating and ventilation
- double glazed UV resistant windows
- water saving tapware and plumbing
- energy efficient refrigeration and other commercial equipment.

We continue to explore opportunities to integrate energy efficiency and renewable energy solutions into future refurbishments and upgrades. We also continued our informal resident sustainability awareness sessions at a number of villages including Golden Ponds (NSW) and Wamberal Gardens (NSW).



To access the complete list of documents in Stockland's Sustainability Deep Dive Series, [click here](#).