

03 Environment

The Smallest Footprint

We are committed to minimising our environmental impact and building operational resilience to the effects of climate change for our business and the communities.

The Singtel Group Environment Strategy guides our focus on climate action and product stewardship (see Figure 1). More information is on our [website](#).

Figure 1:
Singtel Group’s Environment Strategy



ADDRESSING CLIMATE CHANGE

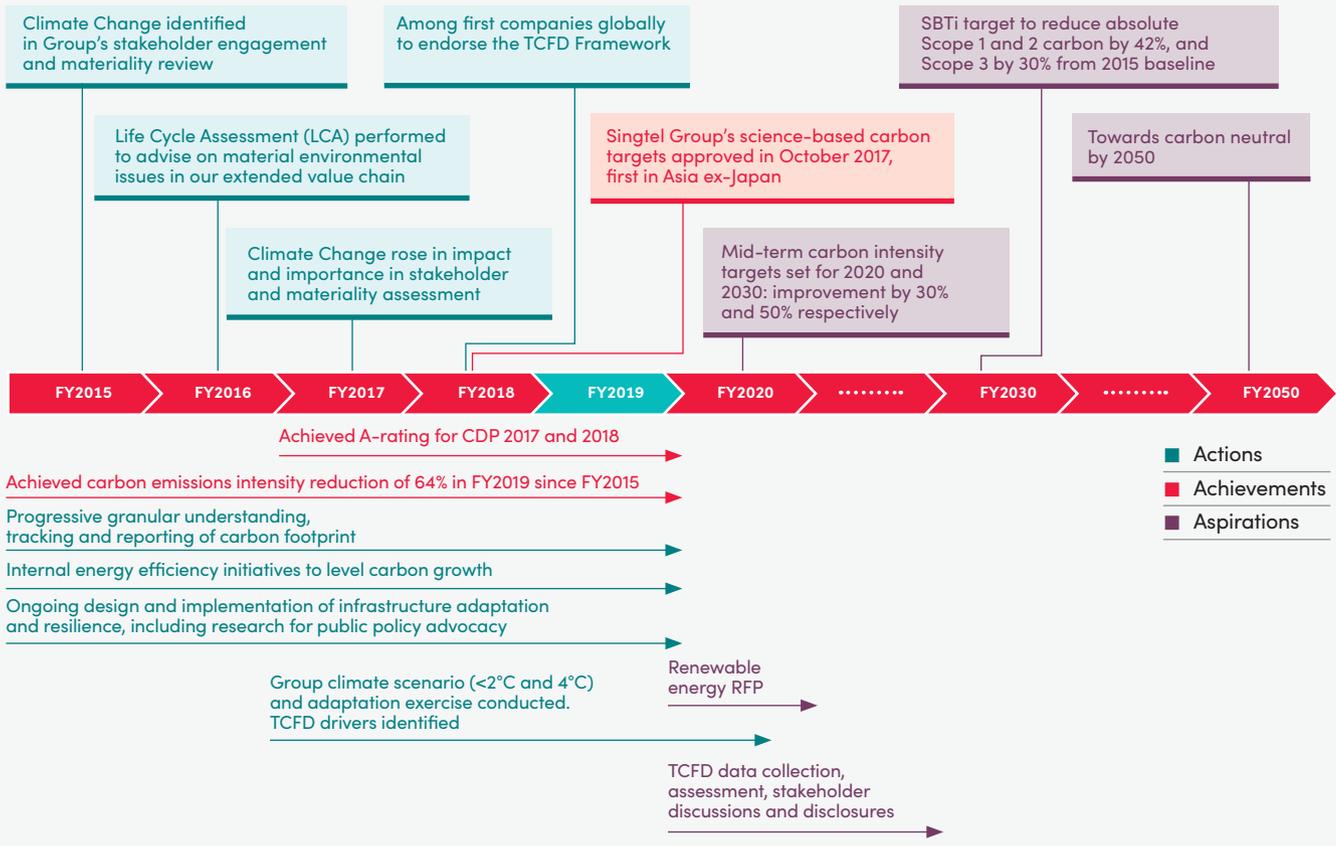
CLIMATE CHANGE AND CARBON

Singapore named 2018 the ‘Year of Climate Action’ and 2019 the ‘Year towards Zero Waste’. In October 2018, the Intergovernmental Panel on Climate Change (IPCC) Report targeted global warming to below 1.5 degrees Celsius by the end of the century, compared to the earlier 2 degrees Celsius. It forewarned disastrous consequences if the target is not met.

Singtel’s journey in climate action and environmental sustainability began much earlier, as we recognised that it is not an overnight journey (see Figure 2 and Table 1).

We continue to adopt a holistic approach in addressing the threat of climate change through mitigation and adaptation efforts, focusing on improving our energy performance and efficiency measures, as well as building resilience across our operations.

Figure 2: Singtel Group's Climate Action Journey Towards 2050

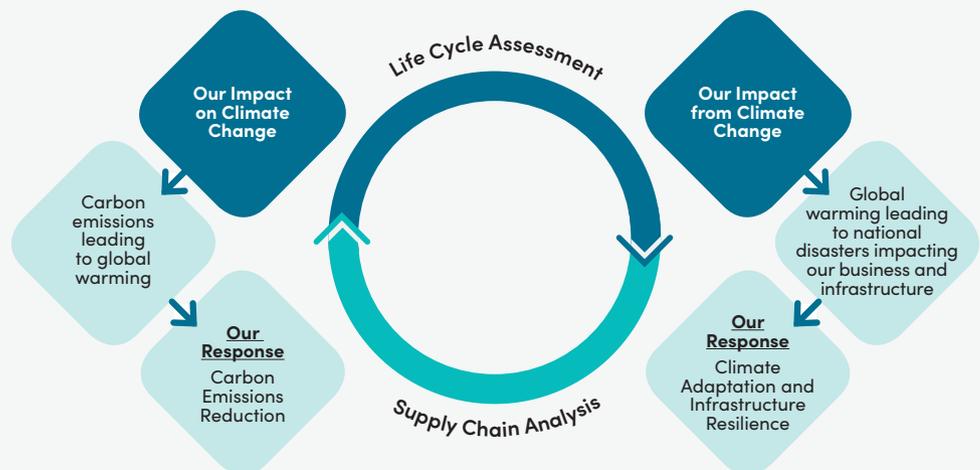


In our formal 2015 stakeholder engagement and materiality exercise, climate change emerged as a concern of moderate importance by our stakeholders. They also assessed that its impact to our business is moderate. Energy efficiency was then Singtel Group's key concern given our growing network infrastructure.

We proceeded to embark on a series of investigations and work which proved to be invaluable to our climate strategy and roadmap, helping us to identify the complexities and interdependencies of the issue. In our following 2017 stakeholder engagement and materiality review, our stakeholders assessed that our

key impact on climate change was mainly from the business' growing carbon footprint. Our business resilience and continuity during major natural climate disasters were the major business risks we faced from the potential impact of climate change (see Figure 3).

Figure 3: How We Look at the Climate Change Issue



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Climate Change and Carbon

As it is important to understand our initiatives in the past and how they interrelate to our current focus and strategy going forward, we have summarised the major actions, insights and milestones in our climate strategy and journey (see Table 1).

Table 1:
Major Environmental Initiatives by the Singtel Group

YEAR	INITIATIVES/ MILESTONES	RELEVANT INSIGHTS INTO CLIMATE CHANGE AND CARBON	OUR ACTIONS	REPORT
2010 to present	Progressive depth and breadth of carbon disclosure, reporting and external assurance	Understanding our carbon footprint and drivers.	Continuous refinement and validation to achieve a comprehensive view of our carbon footprint.	Sustainability Reports and CDP
2013 to present	Founding member of the Australian Business Roundtable for Disaster Resilience and Safer Communities (ABR)	Research and insights into social and economic impact of natural disasters. Advocacy of government policy and budget in support of adaptation and building resilience, and address the interdependencies under the topic.	Five research reports.	ABR Reports from 2013 to November 2017
2015	Stakeholder and Materiality Assessment	Climate change emerged as a topic of moderate importance and moderate impact.	Mid-term energy and carbon intensity targets set for 2020 and 2030: improvement by 30% and 50% respectively. Widen depth and scope of carbon reporting to CDP for Singapore and Australia.	SR2016
2016	Life Cycle Assessment	Climate change and carbon were the most material environmental issues of concern. Almost two-thirds of our carbon footprint were in our supply chain. This was highly relevant in setting science-based Scope 3 carbon reduction targets.	Environment strategy updated to strengthen focus on climate change and carbon. Climate risk and carbon assessment updated for our Sustainable Supply Chain Management framework.	SR2016
2016	Climate Scenario Assessment: Undertook <2°C and 4°C climate scenario modelling to understand localised climate and business impact to Singapore and Australian operations	<2°C adopted as main scenario for adaptation planning and subsequent target setting under SBTi. Increased risks of inundation affecting business continuity and operations, from combination of future sea level rise and intensity and frequency of rainfall and cyclonic activity. Impact from major interdependent infrastructure such as power networks (e.g. outage), and transport infrastructure (e.g. diversity routing and facilities access). Bushfire risks only moderate given main impact in lower density regional areas.	Adaptation planning and initiatives such as raising equipment levels, draining and flood management at risk prone sites. Upgrade of power generators for redundancy and longer self-sufficient operations. Self-generating power backup at all major points of interconnection. Transmission diversity to minimise impact from single point of failure.	SR2016 – present

YEAR	INITIATIVES/ MILESTONES	RELEVANT INSIGHTS INTO CLIMATE CHANGE AND CARBON	OUR ACTIONS	REPORT
2017 and 2018	Singtel Group achieved A- (Leadership) for carbon reporting in CDP	Strong environment strategy as well as baseline and external assurance of carbon footprint. Also critical for basis to perform forward projection and modelling for SBTi and TCFD.	Preparatory groundwork for SBTi began in FY2017.	SR2018 and SR2019
2017 and 2018	Early adopter to support recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) in June 2017	Structured framework and approach to progressively strengthen Governance, Strategy, Risk Management and Metrics/Performance of climate-related financial risks.	<p>Governance Singtel Board approves material topics, including climate change strategy and targets, reviews progress and performance of business.</p> <p>Strategy Scenario planning already completed for network adaptation and carbon reduction targets setting.</p> <p>Risk Management Climate change updated to Singtel Group's risk register and discussed at Risk Management Committee.</p> <p>Metrics and Targets Carbon and energy intensity and SBTi-approved carbon reduction targets. Work-in-progress for climate-related financial drivers and modelling.</p>	SR2018
2017 and 2018	Science Based Targets initiative (SBTi) approved Singtel's absolute carbon reduction target, first in Asia ex-Japan in October 2017	42% absolute reduction in Scope 1 and 2, and 30% reduction in Scope 3 carbon between 2015 and 2030 for Singtel Group's Singapore and Australia operations.	<p>Ongoing initiatives to improve energy and carbon efficiency in the business.</p> <p>Investigation of larger scale renewable energy sources.</p>	SR2018 and SR2019

Singtel's Efforts on SBTi and TCFD

SBTi

We provide a progress update of our ongoing efforts and results from organic energy efficiency initiatives in this report. However, these efforts alone will not be able to move the needle in achieving a significant reduction in our carbon footprint. Hence, we are currently requesting for proposals from suppliers of larger scale sources of renewable energy over a longer period of time leading up to 2030, and aligned with our SBTi targets.

We plan to report on the assessment outcome in next year's report.

In October 2018, the IPCC released an updated report calling for governments and corporates to work towards a more aggressive target of <1.5°C. Singtel was an early adopter of the SBTi in 2016, having our carbon targets based on <2°C approved in 2017. SBTi acknowledged the early work of companies like Singtel and has given

us up to five years from the original approval date to update our scenarios and targets.

While this needs to be done before 2022, our current focus and priority are to identify the roadmap and initiatives we can take to exceed our original approved absolute carbon reduction targets. We also plan to work towards a more aggressive aspiration target of being carbon neutral by 2050.

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Climate Change and Carbon

Table 2:
Singtel's Indicative Climate Risk Related Financial Indicators

	INCOME IMPACT	BALANCE SHEET IMPACT
<p>Physical Risks Climate-related natural disasters affecting business performance and network resilience and continuity</p>	<ul style="list-style-type: none"> Revenue impact Market share impact Insurance premiums Operational cost of disaster recovery Supply chain risks Customer revenue from ICT service diversity 	<ul style="list-style-type: none"> Asset impairment or write-down from damage Capital investment for adaptation or resilience building Capitalised cost of disaster recovery
<p>Transitional Risks Towards a low carbon economy</p>	<ul style="list-style-type: none"> Carbon tax Energy costs Carbon offsets Renewable energy purchase ICT solutions enabling carbon footprint reduction for customers 	<ul style="list-style-type: none"> Investments in energy efficient technologies or upgrades (e.g. chillers and lighting) Renewable energy projects
<p>Liability Risks Contractual and legal obligations</p>	<ul style="list-style-type: none"> Service Level Agreement with enterprise customers 	<ul style="list-style-type: none"> Provisions for contingent liabilities

TCFD

We endorsed the TCFD recommended framework in mid-2017 and have made progress towards its adoption. The topic of climate risks has since been embedded in our updated corporate risk register and reviewed at various levels of management and the Board with mid to long-term targets.

During the year, we began our engagement with various parts of the business to identify key indicators

and business drivers which may have a direct or indirect financial impact from the long-term effects of climate change. We summarise what some of these climate-related financial risks and opportunities may be, organised by physical, transitional or liability risks that have an impact on Singtel Group's income and balance sheet performance in the long run (see Table 2). Our next steps include verifying the financial data and modelling to validate how material these indicators are to Singtel's long-term financial performance.

Internal: Having identified the relevant indicators, our focus for the next two years is to engage our internal stakeholders in progressively identifying the financial data sources to build, test and refine the historical data allocated to climate-related risks. We believe that baselining historical financial information is critical before we begin overlaying forward-looking assumptions and modelling, which will be based on previous and emerging scenarios as well as sensitivity analysis on the different climate change scenarios.

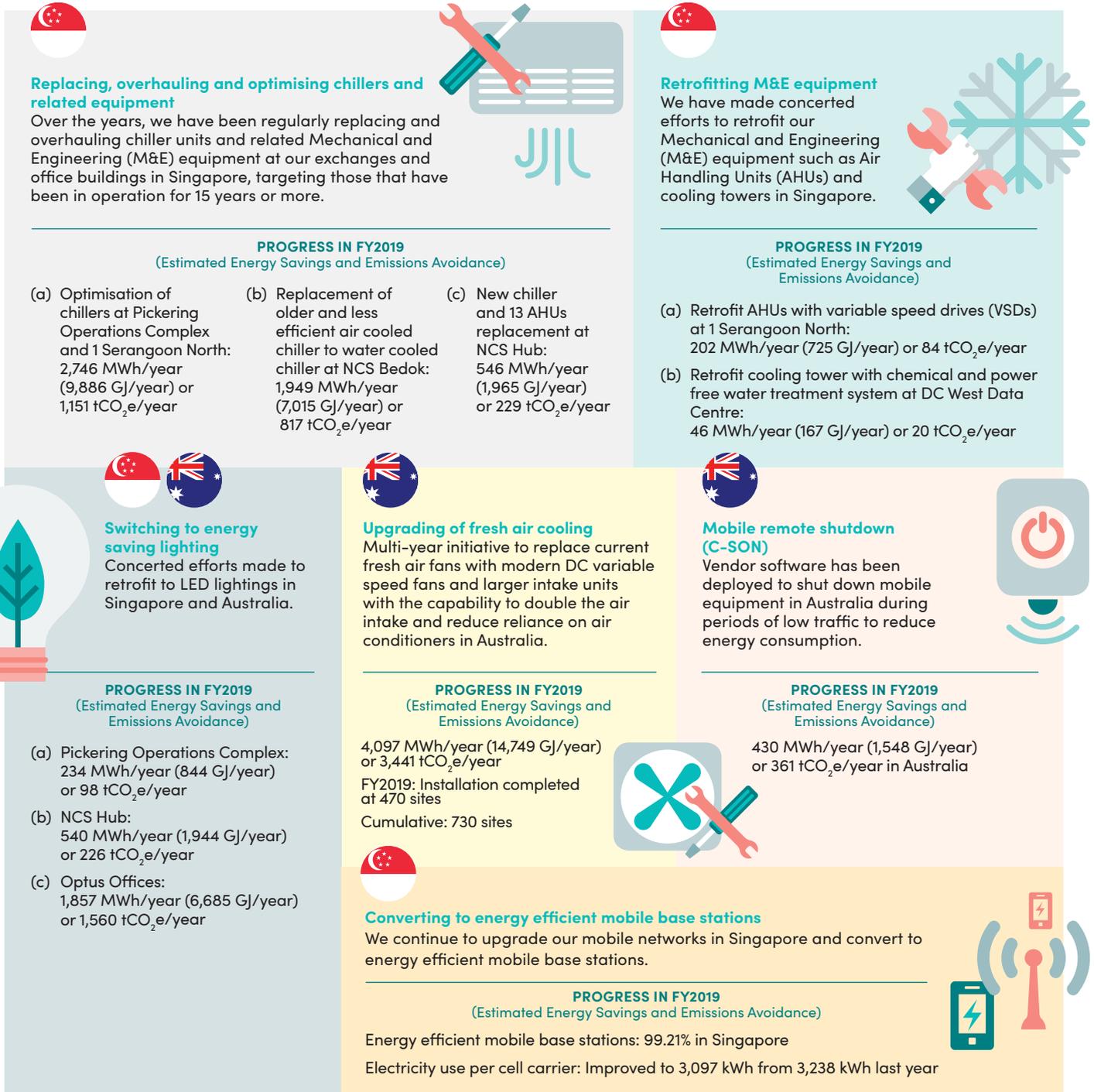
External: We will engage our external stakeholders to test and refine these indicators identified above, especially with the growing interest by investors and major funds. We also recognise that these stakeholders are also starting their own journey of understanding and applying the TCFD guidelines.



ENERGY PERFORMANCE AND EFFICIENCY: INITIATIVES AND OUTCOMES

We have been working on a number of programmes targeting energy reduction across key energy intensive touchpoints of our operations in Singapore and Australia, such as network infrastructure, data centres, satellite earth stations and office buildings (see Figure 4). For more details on our approach, please refer to our [website](#).

Figure 4:
Examples of Energy Programmes and Achievements



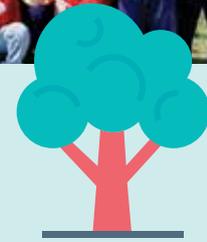


CREATING AN IMPACT: OUR TEN-YEAR JOURNEY WITH NPARKS

Singtel has been working with National Parks Board (NParks) in the past ten years for our annual Plant-A-Tree Day in Singapore. We engage staff to get close to nature by planting local tree species at various national parks to raise their awareness of the importance of environmental conservation and minimising our environmental footprint to reduce adverse impact on Mother Nature.

For our tenth Plant-A-Tree Day, 200 staff volunteers and 20 APSN Tanglin School students planted 100 tree saplings along the Changi Coastal Park Connector Network.

In support of 2018 as the Year of Climate Action in Singapore and celebration of our tenth anniversary, we collaborated with WWF to reforest Rimbang Baling, which is part of the UNESCO Tropical Rainforest Heritage of Sumatra, Indonesia. Home to the critically endangered Sumatran Tigers, as well as 170 plant and 50 mammal species, Rimbang Baling has been vanishing at the rate of three football fields a minute. Every Singtel staff volunteer pledged support through WWF Forest Cards and each adopted tree was planted by WWF in Rimbang Baling.



10 years of Plant-A-Tree Day

- 1,205 trees planted
- 2,320 staff volunteers
- 85 APSN Tanglin School students
- S\$331,000 donated to the Garden City Fund

CLIMATE CHANGE RESILIENCE

Climate change resilience is important to the Singtel Group as we continue to integrate resilience and adaptation into our business and network operations. It is critical for us to review current and new climate related risks and trends in countries such as Australia that are prone to major cyclones and inundations so we can take the necessary steps to prepare and respond to these risks.

We continue to contribute as a founding member of the Australian Business Roundtable for Disaster Resilience and Safer Communities (ABR). We are pleased that ABR's previous research and policy recommendations have been recognised with the Australian Government's formation of the National Resilience Taskforce in 2018 and development of the National Disaster Risk Reduction (NDRR) Framework launched in April 2019, a copy of which can be viewed [online](#). ABR will continue to be actively involved in the NDRR Industry Advisory Forum, which an ABR representative will chair and shape the implementation of the NDRR framework.

During the year, we continued to upgrade mobile sites with power generators and batteries to last up to seven days without utilising the public grid in cyclone prone regions in Australia, as the public power grid is often adversely affected during cyclones and inundations. We also invested in transmission and last-mile diversity and redundancy paths for other cyclone prone areas. To strengthen our network diversity and redundancy, we invested A\$2.14 million in another diverse transmission path along the critical Brisbane-Sydney-Melbourne route to reduce any impact if both Optus coastal and inland routes are simultaneously cut.

We spent another A\$600,000 on two new SATCATS (mobile cell on wheels) to support communities affected by bushfires in New South Wales and Western Australia and cyclones in Queensland. These provide extra network capacity and coverage during disaster response efforts.

Our climate adaptation and resilience efforts are not only limited to our infrastructure. During times of natural disasters, we deploy Optus Trucks which enable the public to charge their mobile phones during extended power outages in their communities, as we recognise how important it is to stay in touch with loved ones when natural disasters strike.

GIVING A HELPING HAND



The Optus Truck at Huon Valley in Tasmania

In early 2019, bushfires burned in the Huon Valley, south of Hobart in Tasmania, depicting contrasting disaster scenes in Australia. At its peak, more than 700 residents were living at the bushfire evacuation centre in Huonville. Our team drove one of our ten Optus Trucks down to the centre to lend a helping hand to the local community.

The Optus Regional LED Screen Truck is a 5,100 kg Fuso Canter 615 wide cab decked out with 3.5m x 1.7m screen. We set it up in the neighbouring showground area to provide charging stations for mobile devices, free Optus prepaid handsets and prepaid vouchers as well as water, bags and battery packs. We also live-streamed 16 channels of emergency service updates on TV screens and broadcast updates about the bushfire situation from a local radio station. For the young ones, we played a daily movie on the TV screen and handed out sweet treats.