engineers without borders australia

A year like no other

Annual Report
2020–2021

Board Chair's message

What a year! It was our first full year with the full impact of the pandemic. There were many challenges, including financial impacts and our reduced ability to travel to countries to deliver our services, but also opportunities to refocus on the areas where we can make the biggest difference here in Australia as well as overseas.

When the pandemic hit, we had just finished our strategy for the next 10 years. We pivoted and adapted and used Strategy 2030 to guide our focus and our efforts. We've seen the impact of the implementation of the strategy nationally here in Australia, and internationally, for example in Cambodia, Timor-Leste and Vanuatu.

Examples of our work include commencing the project to restore reliable water supply to 50,000 people in Dili, Timor-Leste after the devastating floods in April this year that destroyed key water supply pipelines.

We developed and implemented our Reconciliation Action Plan and worked with our partners to enable remote Aboriginal communities to improve their water supplies.

10,000 university students participated in the EWB Challenge – a first year subject that teaches our future engineers about human-centred engineering. The challenge focussed on practical and appropriate engineering solutions for a remote First Nations community in north Queensland.

EWB CEO Eleanor Loudon and her team played a key leadership role in working with EWB International, the World Federation of Engineering Organizations and UNESCO to redefine engineering as a socio-technical profession.

We've seen extraordinary efforts thanks to all our staff, volunteers and partner organisations. They have all stepped up and stepped outside their comfort zones in their commitment to serving again this year.

So, what difference have we made? There are plenty of excellent examples throughout this report of our work on the ground here in Australia and overseas. We can be proud of the difference we made again this year.

We are grateful for your support and look forward to continuing to work with you, so that together we can create a world where technology benefits all.

Gavin Blakey OAM
Chair EWB Australia
Board of Directors

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Back cover image: Putheavy Ke (ATEC*) and Pavi Kirupakaran (Engineer and EWB Australia Field Professional)
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EWB Australia respectfully acknowledges the Traditional Owners of the Country on which we work.

CEO's message

It is safe to say that the 2020–21 year was a year like no other. For this reason, I need to start with a heartfelt thank you to the EWB team, the Board, our volunteers, our donors and our partners who rode this year with us, so that we were able to continue delivering results with communities and students, seamlessly.

While much of our team in Australia and in our overseas offices worked with lockdown after lockdown, the commitment to our strategic goals gave us a common language and shared purpose.

With a newly articulated approach to engineering, EWB's Technology Development Approach gave us a framework to continue our engineering work remotely as we hired more national staff in Vanuatu, Cambodia and Timor-Leste. We increased our capacity to support in-country teams with dedicated Technology Development roles, resulting in some promising prototypes.

Our Education team was well prepared to deliver our Challenge Program and Research Program remotely, using an online platform and other tools that we had already developed to reduce our travel and emissions. With the support of a new donor, we were able to provide three new Influence for Peace scholarships as part of the EWB Influencer Fellowship Program. Our education programs flourished with a continued focus on First Nations communities, their wisdom, connection to land and culture, and the role engineering can play in supporting their plans.

After deep reflection and excellent conversations with our Advisory Group, we finalised our Innovate Reconciliation Action Plan. And with the generous support of Bindy and David Koadlow, the Reimagining Pathways program gave us the opportunity to reshape our Outreach program for First Nations young people, introducing the possibilities of engineering careers, while also recognising that Aboriginal and Torres Strait Islander communities have been practising engineering for 65,000 years.

The explicit commitment in our strategy to influence the direction of engineering as a socio-technical profession for people and the planet meant that, when the opportunity arose to harness the EWB collective global voice and help shape the proposed changes to engineering graduate attributes and professional competencies, we mobilised quickly. In June 2021 the World Federation of Engineering Organizations agreed to the changes to the competencies. They now reflect a commitment by the sector to the United Nations Sustainable Development Goals, an understanding of the social sciences and articulate the importance of social and environmental ethics.

Our purpose and our commitment to our 1-million-person goal never waned. In fact, it made us stronger as we saw the communities we work with impacted so directly by the effects of the pandemic, coupled with the effects of increasingly damaging weather, and without the same buffer that protects most Australians. In Cambodia, we developed hands-free hand washing stations for pop-up health centres. Because of a new major donor to the water program in Cambodia, we are now able to do even more, which is wonderful. In Timor-Leste we provided safe drinking water to health centres after a devastating cyclone season left Dili without tap water.

Our financial position was substantially reduced, however. Without the ability to send students and professionals on immersive study tours overseas or within Australia, our income immediately reduced by almost 25%. There were costs associated with this income which helped balance this, but sadly some of these costs were staffing and our staff numbers were impacted.

Our donor numbers dropped but the average amount of donations increased, so that our donation income remained stable. One of our major donors gave to our international campaign and then turned around and matched that gift to our First Nations work. Incredible!

Our chapters continued to hold events online and in person where they could, but it was difficult for them to maintain the same levels of engagement as they normally would. The engineers we normally placed overseas to support our teams and work with communities were not able to go. We did, however, have excellent engineering support from remote volunteers. Our volunteer hours dropped by 53% on previous years. This was a slightly more positive outcome than the volunteer sector average of 64%, which was one the hardest-felt impacts of the pandemic for organisations like us who rely on our volunteers.

We have seen an increase in institutional grants over the year including the Women in STEM and Entrepreneurship grant from the Department of Industry, Science, Energy and Resources and a partnership with DFAT, Be'e Timor-Leste (the Timor-Leste water utility), Cardno and PARTISIPA to repair the water transmission lines to Dili after the cyclone season.

Our corporate partnerships remained strong, although for some the amount they were able to give dropped. Aurecon increased their commitment with pro bono support. Our partnership with Arup continued to deepen with increased pro bono commitment. They also supported us to develop and pilot Impact Bootcamp, a training package for industry, and spontaneously donated funding to develop our online training modules, which was a welcome surprise!

It's been a tough year and I am so proud of where we are now. EWB is standing strong alongside communities who have borne the brunt of this pandemic and all the repercussions it has brought with it. I am grateful to everyone who has supported us and believes in us because we can only do what we are doing because of you.

I look forward to seeing you in person soon!

Eleanor Loudon
Chief Executive Officer
Engineers Without Borders Australia

Our year in numbers

July 2020 to June 2021

EWB Engineering

EWB worked with 74 organisations across 4 countries

♂ 17,361
♀ 18,433
= 35,794

First Nations Australia

5 formal partnerships with Aboriginal and Torres Strait Islander organisations

14 organisations participating in projects (8 Aboriginal community organisations)

♂ 950
♀ 953
= 1,903

Cambodia

EWB's COVID-19 response benefitted 13,528 people

♂ 13,174
♀ 14,239
= 27,413

EWB Challenge Series

67 student reports submitted

9,230 first-year university students

4 special student engagement events

20 universities participated

RESEARCH CHALLENGE

- 88 university students participated
- 29 research projects completed
- 37 research projects commenced
- 9 universities involved
- 5 research partner organisations involved

Timor-Leste

♂ 2,743
♀ 2,841
= 5,584

Vanuatu

♂ 494
♀ 400
= 894

Training

2 new training programs initiated

5 Influencer Fellows graduated into the workforce

EWB Network

Over 190 volunteers delivered the EWB School Outreach Program

6 EWB Region Chapters

15 EWB University Chapters

464 volunteers engaged across network

9,052 volunteer hours contributed

1. Aboriginal and/or Torres Strait Islander organisations

Engineering Education

Our strategic pillars

EWB will monitor and evaluate our performance using an Impact Framework which is aligned with EWB's new ten-year strategy to 2030. Throughout this year we have been collating the baseline data needed to measure our progress against key strategic aggregate and specific pillar indicators. We have also been reviewing our monitoring, evaluation and learning systems to ensure that the capture and assessment of this data is embedded in all activity. EWB will also assess our direct contributions towards the most relevant SDGs, as part of our commitment to the 2030 Agenda for Sustainable Development.

OUR IMPACT FRAMEWORK & THE FIVE PILLARS

Pillar 1 EWB Education

Engineers in Australia are capable of consistently designing, developing, implementing and enabling technology that benefits all.

Pillar 2 Our Network

EWB is a network of values-aligned people, institutions and companies who educate, donate, volunteer and advocate for solutions that benefit all.

Pillar 3 Engineering Technology

The lives of more than 1,000,000 people have been improved through equitable, sustainable and scalable technology.

Pillar 4 Influence

Engineering is redefined as a socio-technical sector, which views delivering work which benefits all people and the planet as achievable and expected.

Pillar 5 The Organisation

EWB is an agile, resilient organisation with a talented network of staff and volunteers.

STRATEGIC OUTCOMES

Outcome 1: Credibility – Education & Training

EWB Australia has a reputation for leading practice education and training programs that build the awareness, knowledge and skills of engineers in the development of technology that benefits all.

Outcome 2: Knowledge & Awareness

All Australian engineering students are graduating university with an understanding of how to develop technology that benefits all, and why this matters.

Outcome 3: Capability & Confidence

Professional engineers affiliated with the EWB Australia community have the skills, attributes and motivation required to develop technology that benefits all.

Outcome 1: Mobilise

We have an extended bank of experienced alumni representing our approach, living our principles and advocating for the organisation.

Outcome 2: Influence

Individuals, institutions and companies in our community understand their sphere of influence, what they can influence and have the ability and courage to do this.

Outcome 3: Foster

People feel connected with EWB and like-minded others.

Outcome 4: Contribute

Our community are contributing regularly to EWB.

Outcome 5: Share

The EWB community is providing peer-to-peer learning opportunities.

Outcome 1: Equitable & Resilient

Communities are able to participate in successful technology projects such that technology can be accepted, developed and owned by communities.

Outcome 2: Appropriate

Technology developed is equitable and effective throughout the life-cycle and leads to increased positive social and economic outcomes.

Outcome 3: Scale

1,000,000 people are accessing EWB technology.

Outcome 4: Sustainable

All implemented technology is sustainable throughout its entire planned life-cycle.

Outcome 5: Enabling Systems

Appropriate, equitable, scalable and sustainable technology development is effectively implemented by the national and local governments, NGOs and private sector.

Outcome 1: Sector Shift

The engineering sector in Australia is applying and embedding principles and approaches that lead to the creation of technology that benefits all in their work.

Strategic Outcomes related to Influence included in other Pillars:

P1.O1 Credibility – Education & Training

P2.O2 Influence

Outcome 1: Financial

EWB's funding base provides a foundation for agility, strategic investment in the organisation and the best decisions for impact.

Outcome 2: Systems

EWB's internal infrastructure and processes are future-ready and adaptive.

Outcome 3: Governance

EWB has a diverse board, who are ensuring solid governance and representation of the organisation.

Outcome 4: People & Culture

EWB's staff, team and network are operating with purpose, passion and strategic results, regardless of where they are or what role they are in.

Outcome 5: Building Awareness

We have inspired a broad and strong community who are passionate about EWB's commitment to the development of technology that benefits all.

SUSTAINABLE DEVELOPMENT GOALS

4. Quality Education
5. Gender Equality

4. Quality Education
6. Clean Water & Sanitation
13. Climate Change
17. Partnerships for Goals

1. No Poverty
6. Clean Water & Sanitation
7. Affordable & Clean Energy
9. Industry, Innovation & Infrastructure
10. Reduced Inequalities

6. Clean Water & Sanitation
17. Partnerships for Goals

ANU and EWB's 10-year partnership

In 2020, EWB and the Australian National University (ANU) celebrated a significant milestone – 10 years of partnership. Having evolved significantly over the decade, the partnership is among EWB's longest and strongest links with universities in Australia. It is a prime case study of how universities and EWB work hand-in-hand to nurture the kind of future leaders that we know the engineering sector needs.

SDGs

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In 2010, the first year of the partnership, EWB had introduced a handful of program initiatives to universities – an undergraduate research program, the EWB Challenge and the School Outreach volunteering program. Jeremy Smith – who was working at both EWB and ANU at the time – saw the opportunity to link these programs as one formal offering. Together with EWB colleague Lizzie Webb they developed the formal university partnership program, and what they created that Friday afternoon became the foundation of ANU and EWB's long-spanning collaboration.

It was also the catalyst for what is now a multi-layered partnership program that engages universities across Australia and New Zealand each year. ANU was one of two universities to pilot EWB's university partnership program and Jeremy, who pitched it to his fellow ANU colleagues, says the university recognised its potential straight away.

"There weren't many organisations in engineering or technology that had a national profile for doing that kind of engagement. It opened up new opportunities for students – both within the student experience and in what was being taught. It allowed ANU to open up how people view engineering," reflects Jeremy, who is now a Senior Lecturer at ANU.

ANU's engineering undergraduate degree has a system engineering basis, which made the inclusion of humanitarian engineering education easier to incorporate. In the following years, ANU continued to develop its humanitarian engineering education program. This was led by Jeremy who completed a Graduate Certificate in Teaching and Learning and, later, a PhD in humanitarian engineering education to aid the discipline's implementation.

In 2015, ANU collaborated with EWB to offer the first dedicated later-year humanitarian engineering elective in Australia. The evidence of its worth quickly became clear. One of the first students to graduate was Becky Watts, who was inspired to take the humanitarian engineering pathway after participating in the first year EWB Challenge program. After graduating, Becky became a Facilitator for EWB Australia's Appropriate Technology initiative in Cambodia.

Through the years, both EWB's partnership with ANU and the university's humanitarian engineering offering have continued to expand. ANU now offers a formal minor in humanitarian engineering, which is attracting more and more socially conscious students. Among the first to enrol was Adele van der Winden who, while studying at the Queensland University of Technology, travelled to Canberra to additionally complete the new ANU minor. Having gained valuable insight into the fundamental issues behind the need for humanitarian engineering, Adele was selected as a 2021 EWB Influencer Fellow.

"I strongly feel these skills would greatly benefit all engineering students, and I would love to see more universities teach humanitarian and sustainable engineering," says Adele.

The impact of the EWB ACT Chapter, which is mainly composed of ANU students and alumni, also speaks to the strength of the partnership. The ACT Chapter excelled at the 2020 Danny Awards – EWB's annual recognition of the most outstanding volunteers in EWB's Chapter network. It was an impressive feat considering the ACT Chapter has the smallest membership base. Current ACT Chapter President Louise Bardwell enrolled at ANU with humanitarian engineering in mind – she knew of ANU and EWB's commitment to humanitarian engineering education and wanted to be involved. According to Louise, the partnership broadens horizons and provides excellent project-based learning opportunities.

"The EWB/ANU humanitarian engineering partnership provides ANU students with ongoing and active engagement with EWB, extending a students' university degree beyond just their studies, to practical community-focused projects. Students have the opportunity to employ the new engineering skills they are learning to real-world design challenges, allowing them to witness first-hand the meaningful impact that engineering can have in local communities," said Louise.

ANU's humanitarian engineering alumni are already proving to be the early adopters that are shaping the future of the engineering sector. Liam Highmore, a 2019 ANU systems engineering graduate, won the Undergraduate Research Award at the Global Undergraduate Awards for a thesis project that was part of the EWB Research Challenge.

For ANU's Jeremy Smith, the success of humanitarian engineering education at the university, and the partnership with EWB, is in seeing students like Liam, Becky, Adele and Louise become the next generation of leaders who are engineering with social purpose.

Over 3,000 ANU students have participated in 9 different EWB and ANU partnership programs and projects

EWB research projects have been delivered by latter-year ANU students

7,000

ACT Chapter's Outreach program has engaged nearly 7,000 school students

Image: Alumnus Becky Watts on the EWB Yawuru Broome intensive

EWB Award-win for engineering education excellence

The Australasian Association for Engineering Education (AAEE) has recognised EWB and its university partners team for engineering excellence for the Humanitarian Design Summits in the Engineering Education Engagement category.

The awards, presented at the AAEE Annual Conference in December 2020, were judged by a panel of experts drawn from across Australasia. The award recognises the fostering of an excellent standard of purposeful and successful engagement with multiple stakeholders in Australasian Engineering Education – such as colleagues, industry and students. The award also represents a collegiate approach to quality learning and teaching practice and/or research and a sharing of educational expertise across multiple contexts.

The EWB-led Humanitarian Design Summits are two-week immersive cross-cultural study-abroad programs that embed human-centred values and approaches in engineering, design and technology. This has been a key offering to university students prior to COVID-19, and is currently on hiatus until international travel safely resumes. EWB's first Digital Design Summit was launched in late 2021 – an alternative, equally expansive experience, but in an online environment.

Since the first EWB Summit in January 2015, over 1,500 students from 35 universities have participated. Sustained success has derived from purposeful engagement with multiple stakeholders, including EWB, 32 Australian and three New Zealand universities, university students, academics, and dozens of local partner organisations.

The award recognises the contribution of many in bringing the transformative Humanitarian Design Summit experience to life, specifically acknowledging Nick Brown and Tanja Rosenqvist (RMIT), Jeremy Smith (Australian National University), Eva Cheng (University of Technology Sydney), Cris Birzer (University of Adelaide) and Jennifer Turner (Swinburne University of Technology), alongside EWB's Education team of Alison Stoakley, Sarah Herkess and Beatrix Neville. In reality, this small team represents dozens of academics, educators and practitioners who have contributed to the design and delivery of the Humanitarian Design Summit program over the past six years.

Delivering the Humanitarian Design Summits has resulted in approximately $4,800,000 in student mobility funding and almost $500,000 in universities' administrative funding, much from consortia applications.

Through this engagement with Humanitarian Design Summits, universities across Australasia have produced graduates with greater global awareness, understanding of the implementation of engineering and technology within society, and stronger consideration of the social impacts of engineering. EWB summits are raising the quality of engineering education across Australasia and redefining engineering as a human-centred profession.

Over 1,500 students participated

35 universities AU/NZ

SDGs

Image: Facilitators Matthias Dorfstaetter (left) and Emily Allen (centre) with EWB's Beatrix Neville (right) at a Humanitarian Design Summit in Cambodia, February 2020

A return to Regioneering

Following a pandemic-induced hiatus and with the easing of COVID-19-related restrictions in some states, EWB reactivated its Regioneering program throughout Western Australia (WA) and the Torres Strait Islands. This program is an important initiative facilitated by our many Chapters and provides regional and remote school students with a positive, motivating and engaging STEM experience.

CONVOY THROUGH THE WEST

In June, 13 EWB volunteers from EWB's WA Chapters took a four-car convoy for a week-long trip, regioneering their way through the state's south-west. Over the course of the trip, the group visited nearly 20 primary and secondary schools, engaging with almost 1,500 students, 46% of these students were female – as an underrepresented cohort in the engineering sector, this program has a particular focus on engaging female students as just one way to encourage and inspire future female engineers.

The volunteers led students through creating and designing sustainability-based engineering ideas, an activity that also demonstrated the differing roles engineers play in everyday life. Almost half of all students found this the most enjoyable aspect of the workshop. Students also learnt about the role that EWB plays in supporting community engineering projects in developing countries. Among high school students, interest in pursuing a career in engineering increased by 8.2% (10.1% for students identifying as Aboriginal or Torres Strait Islander) on completion of the workshop. For primary school students, interest in science or engineering as a career increased by 5.1% overall. With workshops lasting around an hour, the engagement among students realised meaningful results in a short period of time.

Image: Kyel, a facilitator from EWB UQ, runs a workshop at a school in the Torres Strait Islands

TRIP TO THE TORRES STRAIT ISLANDS

The University of Queensland (UQ) Chapter was also able to deliver a Regioneering program in the Torres Strait Islands this year. The return of the Regioneering program also meant that long-time EWB volunteer Erin Hughes, who provides ongoing local coordination support to the UQ Chapter's Regioneering efforts in the Torres Strait Islands, was able to continue her research into the program's educational impact.

As a MECCA M-Power grant recipient – a program that empowers and engages young Australian women demonstrating vision and leadership in STEM – Erin has been evaluating whether this long-term engagement approach has been achieving its aims. The research was delayed due to the pandemic and this year Erin was able to return to the Torres Strait – the place where she grew up – to continue gathering data. While the research is ongoing, preliminary findings indicate that the tailored program is proving effective. Responses from student surveys have shown that students who have undertaken multiple EWB workshops were able to communicate a greater understanding of what engineers do, are less likely to assume the common stereotype that engineers are male, and demonstrated a better ability to link engineering to their local context. Once the research is complete, Erin will present her findings to the participating schools before sharing them further.

This year the program was supported by ebm-papst, Arup and Aurecon. With new sponsorship agreements currently underway, the program is set to be given an extra funding boost in the next financial year, meaning even more school children can experience the wonders of engineering.

WA REGIONEERING

17 schools

1,472
students

63

63 workshops

TORRES STRAIT REGIONEERING

7 schools
on 4 islands

640
students

42

workshops

SDGs

4

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Reimagining Pathways: what is tangible, relevant and possible?

As part of our commitment to advancing the representation of Aboriginal and Torres Strait Islander peoples in engineering, EWB launched the Reimagining Pathways program in December 2020.

In order to solve challenges faced by the world today and into the future, engineering must include a higher representation of Aboriginal and Torres Strait Islander people. The experiences and viewpoints of First Nations people are, and will continue to be, critical in creating a future that is fit for all people, protects and regenerates the planet, and delivers impactful innovation.

Reimagining Pathways is a program that aspires to build organisational awareness of the ecosystem that impacts and enables a higher representation of Aboriginal and Torres Strait Islander people in engineering, STEM learning and STEM vocations. In doing so, it identifies areas in which EWB and its partners can collectively support the development of a growing cohort of First Nations STEM leaders.

Understanding what currently exists

The initial phase of the program has focused on researching existing pathway initiatives and literature, exploring engineering sector change, scoping a collaboration with Engineers Australia's Indigenous Engineers Group (IEG), and designing creative outreach approaches tailored for Aboriginal and Torres Strait Islander youth. EWB has engaged a range of stakeholders, including Aboriginal and Torres Strait Islander representatives (existing partners, and engineering and STEM professionals), EWB volunteers, program staff, educators, community development practitioners and STEM organisations. Research, semi-structured interviews, focus group sessions and co-creation workshops informed a literature review and a working project document that were released in March 2021. This will evolve to address gaps and incorporate insights and knowledge distilled from lived experiences and practice throughout the project.

Building a culturally safe engineering sector

The Pathways program is also concerned with pathways to a decolonised, socially engaged and culturally safe engineering sector – addressing the need for the engineering sector (in both professions and education), and for non-Indigenous people, to change. This aspect of the program involves reflecting on individual and organisational roles in shaping engineering as a profession that is tangible, relevant and possible for Aboriginal and Torres Strait Islander people. Part of this pathway is building individual and organisational cultural competencies and culturally safe workplaces. Another part is probing and progressing questions like: what would a decolonised engineering sector look like? And what individual and organisational change is needed for this to happen?

An engineering sector that values and learns from Aboriginal and Torres Strait Islander knowledge will lead to more contemporary Aboriginal and Torres Strait Islander engineers and, in doing so, support the continuance of First Nations innovation and design that has been in place for tens of thousands of years. It will also support better engineering design and nation-building that integrates Aboriginal and Torres Strait Islander ways of knowing, being and doing with contemporary engineering.

SDGs

Piloting creative approaches to engagement

As part of the first phase of this program, the Aboriginal Education Consultative Group (AECG) invited EWB to support one of their regular STEM camps. AECG camps are run across NSW and aim to address the generational change that is needed for students to achieve better outcomes at school and to support learning and employment in STEM. The camp provided an opportunity for EWB to pilot creative approaches to outreach and gain feedback from students.

More than 70 primary and high school Koori students from 10 schools on Gundungurra and Darug Country – the Blue Mountains region of New South Wales – participated in AECG's camp and EWB's workshop. The pilot drew on research conducted as part of the formative stages of Reimagining Pathways, alongside EWB's experience in school outreach and over ten years of experience working with Aboriginal and Torres Strait Islander individuals and organisations.

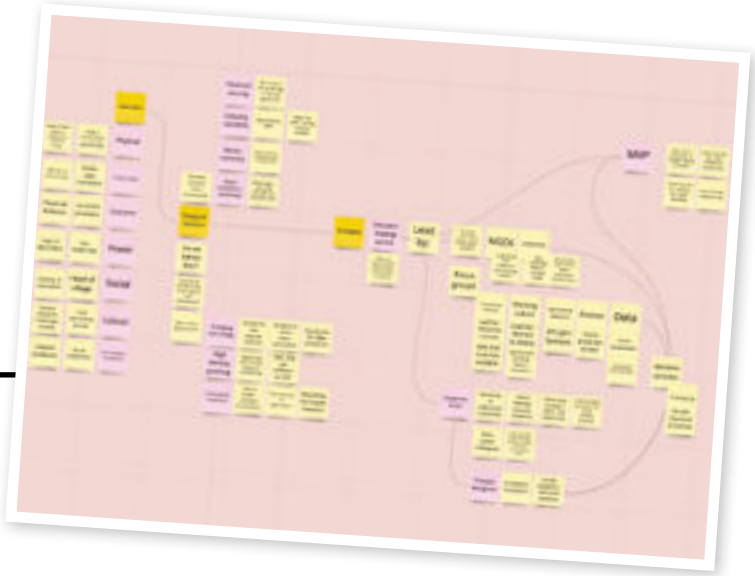
Creative outreach approaches used in the camp included forming a culturally and gender diverse facilitation team, and using teaching resources that emphasised Aboriginal and Torres Strait Islander STEM role models to illustrate different types of engineering careers. The workshop also featured a design challenge that was geographically relevant – in this case, rainwater treatment in a Blue Mountains bushfire scenario. Resources for further STEM learning and career pathways, specifically targeted at young Aboriginal and Torres Strait Islander people, were also shared.

At the conclusion of the pilot, almost two-thirds of the students indicated they had a better understanding of what engineering is, and an understanding of the relevance of engineering to themselves and to their families. As a result of the pilot, AECG has asked EWB to continue to support their STEM camps across NSW. Going forward, EWB also hopes to partner with the Indigenous Engineers Group to support their outreach work as the IEG network grows. Another opportunity EWB will be seeking to pilot is workshops in which young people design for Country. Here, Traditional Owners would set the design topic and participants would bring their creative design thinking and contribute their ideas. An example of this might be integrating young people's design ideas into Engineering on Country projects or feeding into existing Traditional Owner aspirations.

This program is generously supported by Bindy and David Koadlow.

Image: Students on the AECG camp

Impact Bootcamp pilot



What does it mean to be a reflective practitioner? This question framed a pilot training program held in April 2021, conducted with early career engineering and professional services staff from EWB corporate partner, Arup Australia.

28 participants

SDGs

4

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17

Over a three week period of multiple sessions, the program, called the Impact Bootcamp, asked participants to engage with and explore a number of concepts. As practising engineers, their careers will be inevitably consumed by the pressures of our current era. Transitions, mitigation and adaptation during the Anthropocene will influence the careers of all working and future engineers. What skills should effective leaders, and effective engineers, seek to develop in order to navigate these challenges? Participants in the Impact Bootcamp explored this through a number of different lenses: through cultural systems, and how they affect design; how to problem-solve in unfamiliar contexts; understanding wicked problems; power distribution and problem ownership; and community engagement.

Using real-life case studies from Fiji and Cambodia, the participants navigated complex challenges to design novel solutions, applying new and developing skills. In their solutions they were supported and guided by EWB's facilitation team of Luke Barbagallo and Emma Kettle. Their combined experiences in education, international development, intercultural practice and social entrepreneurship supported participants in their efforts to design effective and culturally appropriate community engagement strategies, in partnership with appropriate technologies for the local contexts.

The Impact Bootcamp challenged the participants to approach engineering problems with holistic and intersectional lenses, and the results were very encouraging. Through the workshop sessions, all of the participants displayed attributes and competencies that have recently been included in the new International Engineering Alliance (IEA) Graduate Attribute and Professional Competency Framework (GAPC), which was recently reviewed and expanded by the UNESCO IEA World Federation of Engineering Organisations Working Group (see full story page 13) to acknowledge that human 'soft' skills, emerging technologies, diversity and inclusion, critical thinking and innovative processes, and the SDGs must be incorporated into engineering practice if we are to develop technology that will benefit all.

The participants on the Impact Bootcamp were particularly knowledgeable in and adept at exploring concepts related to the SDGs, diversity and inclusion, critical thinking and innovation, ethics and sustainability. The Impact Bootcamp served as an opportunity for EWB to engage with early career professionals and create a learning environment that builds upon the work we have been engaged in at the undergraduate level for the past decade.

The engineering sector, and particularly young engineers, are already leading the way towards a more inclusive, sustainable and equitable future. The new GAPC competencies are catching up to the young leaders already in our midst. EWB aims to evolve the offerings for professional engineers in order to support this learning even more.

Influencing change in the global engineering competencies

With just ten years to meet the UN Sustainable Development Goals (SDGs), international branches of Engineers Without Borders, including Engineers Without Borders Australia, united to influence change at the highest level of engineering governance.

In June 2021, these reforms were largely accepted, marking a transformation of engineering competencies towards greater beneficial impact for people and the planet. They have also been ratified by UNESCO. This revised Graduate Attributes and Professional Competencies Framework (GAPC) will now filter down from the international level into national-level frameworks, such as the Engineers Australia Stage 1 and 2 competencies.

In July 2020, a draft submission on proposed updates to the global benchmarks for engineering graduate attributes and professional competencies was submitted to the International Engineering Alliance (IEA), with the World Federation of Engineering Organizations (WFEO) facilitating the consultation process. EWB organisations within the EWB international network collaborated to give feedback on the proposed changes. In October 2020, the coalition issued an open letter to support the changes and suggested they were an opportunity to critically reflect on the role of engineers. EWB's input was welcomed as the voice of the future of engineering, and for helping the changes pass in June 2021. The amendments represent the most significant reform since the 1990s, and constitute a radical overhaul of what it means to be an engineer, and the responsibility of the profession itself.

THE KEY CHANGES ARE:

- Accommodate future needs of engineering professionals and the profession – strengthen the required attributes on team work, communication, ethics, sustainability.
- Emerging technologies – incorporate digital learning, active work experience, lifelong learning.
- Emerging and future engineering disciplines and practice areas – while retaining a discipline-independent approach, enhance the skills on data sciences, other sciences, lifelong learning.
- Incorporate UN SDGs – in the development of solutions that consider diverse impacts: technical, environment, social, cultural, economic, financial and global responsibility.
- Diversity and inclusion – include these considerations within ways of working in teams, communication, compliance, environment, legal systems, etc.
- Intellectual agility, creativity and innovation – emphasise critical thinking and innovative processes in design and development of solutions.

These changes are a meaningful validation to EWB Australia's pioneering role over almost two decades – a human-centred approach grounded in our observation that the future-fit engineers we need to solve complex global problems have equal social and technical expertise. At EWB we have fostered this approach – role-modelling it to our 600+ volunteers across the country each year, as well as to over 10,000 students who annually pass through our engineering education programs (comprising two-thirds of the first-year cohort for the whole of Australia every year).

The coalition for these reforms also led to greater collaboration between EWBs around the globe, and ratified our shared vision for engineering. The coalition of EWBs included Engineers Without Borders International, Australia, UK, Canada and its research offshoot Engineering Change Lab, Brazil, India, the Netherlands, the Philippines and USA. The process has formed a strong foundation for continued alignment globally and shared activity and learning, as we support our respective engineering sectors to take a leadership role in creating a world where technology benefits all.

SDGs

Mentorship program expands with new partner

Now in its second year, the EWB Influencer Fellowship is a year-long, transformative mentorship program that supports individual students who have already displayed a particular drive and commitment to using their skills to address inequality and sustainability, with a new 'peace' lens added for 2021.

5

students participated in the second year of the program

Five students participated in the 2021 program, selected from exceptional students completing their final year at one of EWB's ten strategic university partners. Three of these students received an Influence for Peace Scholarship supported by the Medical Association for Prevention of War (MAPW) Australia.

MAPW is a national network of health professionals working to prevent the harms of war, and is the founder of the 2017 Nobel Peace Prize Laureate, the International Campaign to Abolish Nuclear Weapons. These fellowships are designed to empower engineers to explore how their skills can be used to prevent, rather than perpetuate, the harms of war and militarism. The three students awarded an Influence for Peace Scholarship were:

- **Bec Micallef – RMIT, Sustainable Systems Engineering & Industrial Design**
- **Ally Moodie – Queensland University of Technology (QUT), Civil Engineering (Honours)**
- **Adele van der Winden – QUT, Civil Engineering (Honours)**

"Technology can be a powerful force for peace, but the industries that perpetuate insecurity and conflict are major recruiters of engineers. In Australia, major weapons companies are shaping the STEM education ecosystem – from as early as primary school. We're delighted to provide a counterweight to their influence through our partnership with EWB. We look forward to supporting students to build fruitful careers that address our greatest social challenges, and contribute to lasting peace and human security. MAPW thanks our generous donor who has made these Influence for Peace Fellowships possible."

– Elise West, MAPW

SDGs

Two additional students were also supported by two of EWB's valued university partners – University of Technology Sydney (UTS) and Australian National University (ANU). These universities partner with EWB to support student education across a number of initiatives, including curriculum embedded real-world research and engaging student-led Chapters that activate grassroots activity, including school outreach workshops. The two students were:

- **Emily Gerrard – UTS, Structural Engineering**
- **Yafet Bereket Araya – ANU, Mechanical and Renewable Energy Engineering**

The EWB Influencer Fellowship seeks to foster a network of progressive graduates helping to reform practice and culture in the engineering sector, creating a more diverse human-centred sector supporting equitable and sustainable development. Over two semesters, fellowship students receive professional mentoring training (supported by development mentoring partner WhyDev) and education, which helps skills-development and building the networks needed to help them influence the changes they want to see in the world.

"Australia needs to be producing innovative, capable and motivated engineering graduates who have an understanding of the complex challenges of our world, and a willingness to enact change. In its inaugural year last year, fellows reported feeling much more confident in creating and leading opportunities for engineering to have positive social and environmental impact. They feel able to shape a career that truly reflects their values. The Influencer Fellowship is the bookend to EWB's deep student engagement pathway, and gives our fellows an incredibly empowering platform to kick-off their professional journey."

– Eleanor Loudon, CEO, EWB.

Sharing knowledge and experiences

The EWB team continues to embrace opportunities to amplify awareness of EWB's impact and share our knowledge and experiences to support and inspire others. It feeds into our 'Influence' strategic pillar and is key in building awareness of our work and our credibility as an organisation. In curating spaces to hold these conversations, as well as participating in the forums of others, we have been able to contribute to discussions across a range of themes relating to our work. From webinars to workshops, radio interviews to podcasts, here are some of this years' highlights.

FIRST NATIONS

NAIDOC Week and National Reconciliation Week are two important opportunities for EWB to activate conversations about how our organisation and the people connected to it can contribute to advancing a more equitable world for our First Nations people. It also contributes to EWB's Reconciliation Action Plan commitments. One webinar this year focused on what a reconciled Australia might look like 20 years from now. The event prompted robust discussion, and the video and materials are now being utilised by EWB's Chapters to further these conversations with their members.

GENDER

EWB continues to attract women in numbers that far exceed the sector average. As such, EWB has a unique opportunity to share the experiences of women in engineering as an important way to inspire emerging female engineers, and to enable them to "see what they can be". This year, these stories were shared in two key forums. A webinar on International Women's Day spotlighted stories of five women who are thriving in the technical sector. In Vanuatu, the journeys and challenges of women engineers were shared at the launch of a new community group: Women in Engineering Pacific and Timor-Leste.

CLIMATE CHANGE

Exploring a world at three degrees of warming, its potential negative effects, and how the technical sector can facilitate the mitigation and avoidance of these outcomes was the theme for a webinar with two guest speakers, respectively sharing a pessimistic and optimistic view. A focus on climate mitigation remains a strategic goal of EWB, and these forums provide an opportunity for engineers to reflect on the actions they must take in how they can address this wicked problem.

SOCIO-TECHNICAL ENGINEERING

EWB staff, Board and alumni were key speakers and facilitators in Engineers Australia's new Humanitarian Engineering Community of Practice webinar series, exploring such topics as humanitarian engineering in the time of COVID-19, and how the EWB Challenge readies emerging engineers. Mainstreaming the concept of socio-technical engineering has been a focus through the year, and we have done this through presenting at corporate organisations (such as Worley) and discussing EWB's Technology Development Approach with the La Trobe Ethics and Technology podcast. Internationally, the EWB Brazil Congress Panel provided an opportunity to share EWB's refreshed mission to 2030 with our international counterparts. Canada's Engineering For Change podcast talked through our work on Sanitation in Challenging Environments, and ABC Radio ran a story on the Vanuatu Tumble Drum project. Our approach in designing an on-site wastewater disposal system in peri-urban communities in Port Vila, Vanuatu was featured at the International Tropical Islands Water Conference.

As we begin to build and formalise EWB's Influence strategy as part of our 2030 vision, EWB aims to amplify these opportunities for direct engagement and to broaden sharing stories of our impact.

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Futur-neer Outreach program awarded WISE grant

Images: EWB's WA Chapter conducts Outreach workshops in a local school

EWB's "Futur-neer" Outreach program was given a boost with a sizeable grant from the Australian Government's Women in STEM and Entrepreneurship (WISE) program. The funding will help to promote engineering as a values-aligned, socio-technical profession to increase diversity in the workforce.

WISE grants encourage the participation of girls and women in science, technology, engineering and mathematics, leading to STEM education and careers. The WISE program has provided $9.95m in funding to date for projects across every state and territory, and EWB was granted $200k in the most recent round of funding. These funds will support EWB's Outreach program which provides an experience of the engineering profession that is essential to, and active in, creating equitable, sustainable solutions for people and the planet; a message that resonates with and inspires girls and other diverse individuals.

EWB's Outreach is a program delivered within schools across the country by EWB volunteers who are trained in facilitation delivery. Modules are hands-on, creative and designed to illustrate the human-centred nature of an industry often misunderstood as purely technical.

The grant will enable EWB to increase the accessibility and efficiency of the program for greater reach to girls, and will also focus on the delivery of a national conference for EWB's volunteer network, of which emerging female engineers are a strong cohort.

The current EWB Outreach volunteer network is an incredible community of inspiring and values-driven individuals. Their work is key in shifting the perception of what engineering is, communicating the role engineers play in the world, and portraying diverse examples of what an engineer looks like. The grant enables EWB to further unlock the potential of this network and this message, while supporting the volunteers themselves to connect deeply with their own engineering identities and the communities around them.

SDGs

Enabling gender mainstreaming through policy and programming

Image: EWB and partners supporting the 2020 Sydney Mardi Gras

Five of EWB's 11 Board members are women, placing EWB well ahead of the Australian 2021 average of 29%, and the global average of 27%. Over the next three years, that figure is set to increase and be maintained at at least 50%, as EWB's Board of Directors announced its increased commitment to diversity and gender equality in October 2020.

EWB staff received the news enthusiastically, acknowledging the clear research which links diversity at the decision-making level and results in increased profitability, productive economies and flourishing businesses.

In a socio-political backdrop of revelations of bad behaviour and sexual harassment of women in the workplace in Australia, EWB was also eager to take further steps to ensure the EWB workplace is safe, inclusive and diverse. A subsequent revision of EWB's Diversity and Belonging Policy aimed to embed practices of diversity and equality throughout EWB's programming and across the organisation. This is supported by awareness initiatives, guidelines and a training program to apply "gender mainstreaming", a term first introduced in 1995 at the United Nations Fourth World Conference on Women, and endorsed as a critical and strategic approach for achieving gender equality commitments.

The policy refresh demonstrates EWB's commitment and enables EWB to share experiences of and lessons learned about diversity and inclusion in the areas of gender equality, disability and inclusion, social inclusion and Aboriginal and Torres Strait Islander people. It contributes to EWB furthering its role as an enabler of gender equality, and leading the way in the broader engineering sector.

EWB doesn't specialise in gender. However, we can see that company-wide policies affect people differently and result in different opportunities to thrive.

By undertaking gender analysis and taking action through quotas, developing policies, and through gender mainstreaming training, we can identify areas of need and differences between the average experience of men and women, and take steps to address it. EWB recognises that to truly address the issue of gender inequality we need to find strategies to question our own attitudes, thought processes, values, assumptions and prejudices. We need to be brave communicators and call out inequality when we see it in ourselves and others, and we need to be committed to taking action.

LGBTQIA+ inclusion

After learning that an EWB chapter member, who identifies as LGBTQIA+, had an experience that didn't live up to EWB's values, EWB has been working to increase awareness, proactivity and inclusivity of the LGBTQIA+ engineering community. This has also been informed by data that reveals the trend of a 19% decrease (compared to 2019) in the number of employees who were open at work about their sexual orientation[1]. Employees who bring their authentic selves to work are known to be more productive, engaged and creative. Companies with robust diversity and inclusive cultures are also shown to be more innovative and responsive to clients' needs. With this trend away from being open at work sitting uncomfortably against the growth in workplace protection for and celebration of LGBTQIA+ people, this year EWB supported the formation of InterEngineer – an industry group supporting LGBTQIA+ engineers and allies with leadership, mentorship and advocacy for greater inclusion practices.

1. 2020 Australian Workplace Equality Index's (AWEI) annual employee survey.

SDGs

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Sustainability report

During the 2020–21 year, pro bono consultants 180 Degrees Consulting completed a baseline assessment of EWB's carbon dioxide equivalent emissions ("carbon emissions") for the Australian operations using 2018–19 as a baseline year since COVID-19 reduced activities in 2019–20 and 2020–21. Our carbon emissions in 2018–19 were 407 tonnes compared to just 222 tonnes in 2019–20 and 18 tonnes in 2020–21. Further work will be done to capture the emissions of our offices in Cambodia, Timor-Leste and Vanuatu, and of our volunteers.

> As we head into a new normal, EWB Australia is committed to reduce our emissions against the 2019 baseline and reach net zero emissions by 2030.

2018–2019 **2019–2020** **2020–2021**

As we head into a new normal, EWB Australia is committed to reduce our emissions against the 2019 baseline and reach net zero emissions by 2030.

This is an ambitious target, but one we believe we can work towards by implementing various strategies to reduce and offset emissions for air travel, commuting, catering, office efficiency, electricity, waste and water. By moving offices in Melbourne, we have been able to reduce our carbon footprint since we have reduced the size of space utilised and our new office uses solar power.

Over the coming years, we will focus on measuring and reducing emissions related to our direct operations and continue to track our full scope of emissions to understand our wider impact.

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Chapter action

Navigating member engagement through pandemic restrictions, activating events through a new partnership, and building a new volunteering platform have been some of the key challenges and highlights impacting our 21 Chapters across Australia – our grassroots network of emerging and established engineers united in their vision and passion to create meaningful impact.

6 EWB Region Chapters

15

EWB University Chapters

Over 190 volunteers delivered the EWB Youth Outreach Program

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BIG DESIGN

With in-person activities in NSW largely ruled-out for most of the year, EWB Chapter members from UTS, USYD, Macquarie University, UWS and UNSW re-designed and adapted the Design Corner event into a week-long design challenge titled “Big Design EWB”. The initiative aims to increase knowledge of the importance of deeply understanding community needs in design. The online delivery also enabled more academics and industry professionals to be involved.

Over 50 student teams participated, dedicating a week of their July holidays to design and pitch solutions to improve health and access to medical supplies in remote communities – a topic highly relevant to a pandemic-impacted world. Utilising Zoom for the official opening and for a Design Thinking Workshop run by University Innovation Fellows, participants were supported through the week via a Facebook group, enabling access to the organising committee and a week-long stream of tips and tricks. Final pitches, presented over Zoom, included a panel of judges from academia, industry and community development professions, including UTS Rapido, Engineers Australia, the Australian Water Association and the Department of Defence.

A survey of participants after the event found that 63% had an increased awareness of the importance of deeply understanding community needs in design. Other top takeaways included a greater appreciation for humanitarian engineering and the importance of collaboration and teamwork in engineering. Asked what they loved about the event, participants responded with key themes of friendship, fun and a challenge; the opportunity to meet new people; the challenge itself; and the enthusiasm from the organising committee.

A PORTAL FOR VOLUNTEER COMMUNICATIONS AND IMPACT

Our EWB Chapter volunteers are fierce advocates for the power of human-centred engineering and dedicate many hours of their own precious time to spread this message through a wide variety of outreach activities. We know their impact is huge, and through the implementation of our new EWB volunteer management and social impact tracking platform, Volaby, we hope to be able to more accurately report on the reach and impact of EWB Chapter-led initiatives.

The launch of the EWB Volaby platform marks an important milestone in our journey to better resource the EWB Chapter network. Through this platform, EWB volunteers from the Chapter network and across other EWB volunteer programs will enjoy a much simpler on-boarding experience. Once set up on the platform, personalised volunteer dashboards will enable our volunteers to read the latest EWB update bulletins; explore opportunities for professional development and additional volunteer placements; schedule themselves to attend local EWB activities; and see a real-time snapshot of their personal volunteer impact.

Migrating our Chapter volunteers onto the Volaby platform has been a significant undertaking and we thank our key Chapter representatives for their feedback and support throughout the process.

> In 2021, EWB welcomed new Chapters at RMIT and Griffith University.

ENGINEERS AUSTRALIA PARTNERSHIP WITH STUDENT CHAPTERS

EWB Australia has partnered with Engineers Australia to pilot a new approach to engaging engineering students at university. The partnership aims to connect undergraduates with professional engineers through Australia's professional engineering body, and to build the capacity of our future leaders in sustainable technology development.

The initiative was launched with the University of Western Australia (UWA) Chapter who hosted an event involving key state leaders at the frontline of creating policy and industry change, including from Western Power, Australian Institute of Energy, Innovate Australia, Hydrogen Society of Australia, Energy Policy WA, alongside leading UWA academics in environmental engineering. Topics explored included the increasing prevalence of household-level solar, the potential of hybrid innovation (such as zero-emission hydrogen-powered electric cars), and balancing the need for long-term existing reliable technology with ongoing advances in newer, smaller-scale technology for governments to implement sustainably into the future.

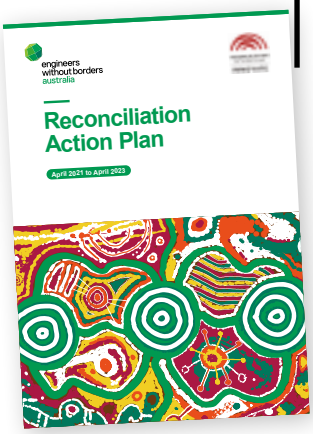
Image: Kym Spann from Engineers Australia (centre), Amy and Gavin from Progressive Energy Strategies (2nd and 3rd from top right) with students from the Makers Lab and University of Western Australia EWB Chapter Local Partnerships teams

Feedback from attendees demonstrated the value of these forums, and EWB will continue to work with Engineers Australia to develop these opportunities with other EWB Chapters.

Innovating for Reconciliation

Over the past few years, EWB Australia has been developing deeper connections with Aboriginal and Torres Strait Islander communities and organisations and the Country they call home.

As EWB Australia, we have a responsibility to deliver results in our own backyard. Australia's scorecard on the Sustainable Development Goals looks solid until the scorecard is applied to only Aboriginal and Torres Strait Islander peoples. Then, Australia scores as one of the least developed in the world. Our new Reconciliation Action Plan (RAP), launched this year, recognises this and builds on our work to date, bringing consciousness to reconciliation in all actions and across every part of EWB.



Reconciliation Action Plan

EWB's Innovate RAP was developed by a working group comprising EWB staff, Board members and First Nations engineers. It was approved by Reconciliation Australia in April 2021 and it coincided with the first year of EWB's new ten year strategy to 2030, which is purposely aligned with the timeframe of the Sustainable Development Goals. In that strategy, we have outlined our commitment to doubling down on our impact in Australia by 2030. Within the Innovate RAP we have identified a range of actions that EWB Australia will implement that can steward effective relationships, foster respect, identify opportunities and ensure strong governance. Working towards actions and deliverables within these four areas will allow us to develop strong foundations from which to continue to build and strengthen our commitment to reconciliation.

First Nations artwork

EWB collaborated with creative agency Saltwater People and artist Ty Waigana to develop a piece to visually support and represent our work with First Nations people, which was incorporated into the design of EWB's Innovate RAP document. Ty is a professional illustrator and animator, a proud Noongar and Saibaigal (Torres Strait) man and lives and works on Whadjuk Country.
Ty has worked on many projects, as well as being the NAIDOC poster artist for 2020. The artwork features three circles that connect with the outline border to form EWB Australia. The reds, oranges and yellows are included to reflect Country, and to contrast with the EWB green. The different formations and textures in the artwork represent different geographical features from water sources and high ridges, to low lying landscapes and meeting places. These elements support the key themes of community, connection and Country.
Ty created a beautiful, buoyant artwork to promote energy, movement, diversity and future potential for positive change.

Image: Artist, Ty Waigana. Ty is a professional illustrator and animator, a proud Noongar and Saibaigal (Torres Strait) man and lives and works on Whadjuk Country.

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Stopping the spread of COVID-19 in Cambodia

Cambodia was spared the brunt of the pandemic last year, only recording its first case of community transmission in early December 2020.

Favourable demographics initially helped Cambodia avoid significant outbreaks: 75% of Cambodians live outside of urban centres, and almost two-thirds of them are under the age of 30. Unfortunately, this changed in March 2021 when a surge of cases linked to quarantine breaches saw case numbers rise steadily from April, reaching a peak in July 2021 with 1,130 new cases and 36 deaths.

EWB RESPONDS TO PANDEMIC SANITATION

To help address the worsening pandemic, EWB formed a partnership with the Cambodian Ministry of Rural Development, identifying that a large number of COVID-19 treatment centres lacked adequate hand washing facilities for their patients, doctors and nurses. This reflects the wider limitations of sanitation infrastructure in Cambodia; 12% of Cambodians do not have access to basic hand washing facilities with soap and water on the premises, a figure that rises to 40% in rural areas.

Recognising the potential for inequitable sanitation to exacerbate the spread of COVID-19, EWB designed and implemented an innovative hand washing station that helps prevent the spread of communicable disease. Rather than employing standard hand-operated taps near the basin, the hand washing station is foot-operated. This design allows users to wash their hands without the risk of potentially transmitting the virus indirectly to another person through touchpoints.

EWB facilitated the installation of the hand washing stations into 48 COVID-19 treatment centres in Phnom Penh and eight provinces badly hit by the pandemic. The vast majority of patients and medical staff surveyed (96%) used the hand washing station three times per day and reported a clear preference (99%) for the foot-operated system over existing hand washing stations. This will signifantly help regional and urban medical centres treat COVID-19 patients and reduce community transmission in Cambodia.

BEYOND THE PANDEMIC

Though the COVID-19 pandemic was the initial impetus for the project, the hand washing stations will continue to be used by patients and doctors to help prevent the spread of other communicable diseases, like cholera and typhoid, providing long-term, sustainable benefit to the Cambodian communities with which we work. Medical staff and patients using the stations also expressed an interest in installing the stations in their businesses, homes and schools.

EWB's work in Cambodia is supported by the Australian Government through the Australian NGO Cooperation Program (ANCP).

> In recognition of their community service and contribution to COVID-19 prevention, the EWB team received a Certificate of Appreciation from the Cambodian Ministry of Rural Development. The award applauded their work in "sanitation promotion, community outreach education and for providing materials to prevent COVID-19."

150 hand washing stations installed across 48 rural and urban quarantine facilities

455 medical professionals working in COVID-19 treatment centres

13,073

patients accessing safe and hygienic washing practices

SDGs

Engineering on western and northern Country

SDGs

UPGRADES TO AUSTRALIA'S MOST REMOTE COMMUNITY SCHOOL

Rawa Community School (RCS) is an independent school in the Pilbara region of Western Australia and is one of Australia's most remote. Its two campuses are located in Kunawarritji and Punmu, lying between the Great Sandy and Gibson deserts, and some 600km by road inland from the community's major service centre of Port Hedland. The school was established in 1983 with shipping containers and classrooms made from spinifex, to enable Martu children to be educated on their traditional homelands.

The 74 students, across primary and secondary, all benefit from a unique two-way multilingual and inclusive cultural approach to education. This approach has a clear emphasis on the maintenance, support and respect of the student's first language and culture. Punmu and Kunawarritji community see their school as a strong force for cultural maintenance and revival. In Kunawarritji community the population has increased dramatically over the past 24 months with families returning for employment opportunities and for their children to attend school.

In 2018 the Rawa Community School leadership team recognised the need for a coordinated approach to managing a growing concern around the decline of infrastructure at both the Punmu and Kunawarritji school campuses. As a first step, the leadership team approved an Infrastructure Redevelopment Program (IRP) and approached METIO, an Australian construction and project management consultancy, to undertake a needs assessment and program of works. METIO then prepared an infrastructure program for all identified works, and approached EWB to provide the engineering support required by the team of diverse stakeholders, including pro bono architects EIW, a Perth-based architecture practice specialising in the education sector.

EWB's Engineering On Country (EOC) program supports Aboriginal and Torres Strait Islander communities to meet their aspirations through engineering and appropriate enabling infrastructure. In light of COVID-19, the EOC program switched from boots on the ground to desktop-based work. During this time, the EWB EOC team was able to assess and approve the request for engineering advice and design support for the school's infrastructure upgrades. EWB has been working with its corporate partners to deliver pro bono engineering advice and design on both campuses. At Punmu, there are two discrete projects focused on the renovation of a sports court shade structure and the main building. Works include a structural assessment, as well as engineering designs for the external structure and internal fit-out. At the Kunawarritji campus, pro bono engineering will focus on the sports court and support facilities including structural design for a shade structure, concrete slab design for the basketball court and design drawings for toilets and storage facilities.

"EWB's partnership with Rawa Community School will provide them with the engineering design services they need to ensure that these projects go ahead. The partnership will lead to the construction of essential infrastructure for a very remote school. This will ensure that their students have safe and fit-for-purpose facilities and buildings. It is wonderful to be able to support an important project like this for Rawa Community School and their communities," said Kim Axworthy, EWB's Engineering On Country Manager.

RCS's learning model, developed closely with elders and members of the local communities, integrates WA curriculum with cultural identity and knowledge. The school is dedicated to teaching in the context of two languages and two cultures – Manyjilyjarra and English/Western. Maintenance, support and respect of the child's first language and culture is a priority.

Images: Site visit to Rawa Community School in March 2021

Using kinship, land and language at the heart of the curriculum has increased community empowerment and improved attendance and engagement across all ages. The strategic and critical redevelopment of the school's facilities will deliver the school's vision of having physical infrastructure positively contributing to the provision of top-quality education.

"We are very excited that this is progressing. The school and community is extremely grateful for the support that EWB is offering. These projects are critical to the health, safety and engagement of our students and will directly impact educational outcomes. The community and students are extremely excited, particularly for the upgrading of the sports facilities, which will be very well utilised!"

– Joanna Griffith, Rawa Community School Principal

Image: Rawa Community School Principal, Joanna Griffith

PRO BONO PROJECT WINS WATER AWARD

In November 2020 the Lama Lama Port Stewart Water Supply project was recognised at the Australian Water Association Queensland Water Awards, winning the Infrastructure Project Innovation Award (Regional). The award recognises the outstanding achievements of individuals and organisations making a positive change and helping drive a sustainable water future. This project was seen as an innovative and collaborative initiative helping build a cyclone-proof, safe, clean and reliable drinking water supply for the Lama Lama people of Far North Queensland. Arup provided pro bono support to the Centre of Appropriate Technology and Yintjingga Aboriginal Corporation to build the system, which was facilitated by Engineers Without Borders Australia through our Engineering On Country pro bono program. Our work with the Lama Lama community and partners is ongoing as we continue to improve water distribution and treatment system management.

CLEAN WATER FOR REMOTE COMMUNITIES

Atlas Copco Australia together with Epiroc Australia through its Water for All program is supporting EWB in the implementation of a Water Sanitation and Hygiene (WASH) project in the Kimberley region of Western Australia. In consultation with community stakeholders, a strong need was identified for permanent ranger WASH facilities on the site, as well as female ranger accommodation. This project will provide community members access to sanitation and hygiene facilities which will enable them to further their sustainable land management practices, provide local training and employment opportunities, enable local Aboriginal enterprise development and enable the community to meet their aspirations of living on Country and caring for Country.

5

pro-bono projects

5

formal partnerships with Aboriginal and Torres Strait Islander organisations

14

organisations participating in projects (8 Aboriginal community organisations)

Developing emergency guidelines for Vanuatu

Image: Demonstration of an integrated toilet slab and seat riser, for emergency pre-positioning, with Ministry of Health team, Lonnoc, Santo

An emergency response to support and safeguard water and sanitation demands a different set of considerations, and requires a different set of responses. This was felt in Vanuatu as the dual emergency of cyclone and pandemic bore down on the archipelago, highlighting a number of specific barriers that make emergency response within Vanuatu all the more challenging.

100%

of Vanuatu's population benefitting

EWB partnered with Arup who provided pro bono support for the development of emergency sanitation and hygiene guidelines, led by Vanuatu's Ministry of Health (MoH). This work was the next chapter in the development of the national hygiene and sanitation guidelines and standards that EWB has already developed with MoH.

The Arup team remotely supported the project from their Melbourne base, assessing existing guidelines and responses – drawing heavily on the situational and traditional knowledge of several entities – as well as drafting the guidelines and developing designs for sanitation units that can be deployed in an emergency. EWB's Vanuatu-based team facilitated extensive stakeholder engagement and liaison with the Vanuatu Government. They also provided insights into sanitation design for challenging environments, piloting some of the technologies where required.

Sian Harrick of Arup (and project manager for this initiative) notes that the approach taken was to work at the humanitarian/development nexus. The primary objective of the emergency sanitation response is to protect people from the most immediate threats to public health. Yet the project also provided an opportunity to harness the renewed focus on water, sanitation and hygiene (WASH) and direct resources as a result of the emergency.

"There was an opportunity to increase the baseline level of sanitation – in places where the existing sanitation was below standard prior to the emergency – to an appropriate standard that will remain after an emergency. This ensures an improvement in the overall public health outcomes of communities. These, however, must be balanced against future cost and maintenance burdens to the community. If done appropriately, this will improve environmental and health outcomes beyond the emergency response period. It may also increase resilience for responding to future emergencies and reduce the impact of future natural hazards," says Sian.

Perennial challenges around the right type of technical skills and training to respond to emergencies within Vanuatu's population remain. A key outcome of this project was to ensure that the infrastructure solutions developed, and the sanitation and hygiene practices recommended can be built and implemented by Vanuatu's local communities, with limited outside support. Easily sourced local building materials and locally available labour or pre-positioning of key components prior to any emergencies are critical to meeting this objective. As for any project, community engagement was crucial to ensure that solutions were culturally appropriate, and responsive to the various environments that are a feature of Vanuatu's unique landscape.

This initiative was the winner of the International Philanthropy Award at the Australian Philanthropy Awards 2021.

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Eliminating nappy waste across the Pacific Islands

Image: EWB's Vanuatu Country Manager Stephanie Hamel conducts a focus group with Ni-Vanuatu mothers

EWB has been working with Vanuatu's Ministry of Health and a local social enterprise to support the island nation's aim to become the first to ban disposable nappies. It is a problem right across the Pacific Islands, and EWB has also been reviewing how to address the challenge across the region.

With an estimated 20,000 babies and toddlers across Vanuatu's 65 islands, disposable nappies are the single largest contributing item to waste in Vanuatu's capital, Port Vila. Their disposal in rural and remote areas is handled in ways that are at times as potentially damaging to a community's health as open defecation. Disposable nappies are also reported to take up to 500 years to biodegrade, making them a significant, enduring waste challenge.

EWB's team in Vanuatu has been trialling solutions to two sides of the nappy waste problem – the development of the right kind of washable nappy, and the development of the right technology to wash them. In collaboration with the Pango Village-based social enterprise Mamma's Laef, EWB has been supporting the trial of various reusable nappy prototypes. In collaboration with The Washing Machine Project, EWB has been trialling a prototype of a Tumble Drum – a washing machine that will provide a safe, hygienic and water-efficient way to clean reusable nappies and manage the safe disposal of wastewater, operated without electricity, due to many areas not having consistent power supply.

Following the progress in Vanuatu, momentum is now building to address this challenge across the Pacific. EWB has been supporting PacWastePlus, a project run by the Secretariat of the Pacific Regional Environment Programme that incorporates 14 Pacific Island nations. The PacWastePlus initiative seeks to improve and enhance waste management activities and the capacity of Pacific Island governments, industries and communities to manage waste to reduce the impact on human health and the environment. A socio-economic and technical review is part of the assessment of suitable alternatives to disposable nappies and alternatives to traditional washing systems. Current perceptions, cultural and traditional practices, climatic variability, barriers, opportunities and the availability of locally sourced materials are just some of the considerations that are being assessed and analysed.

A key consideration for both projects is ensuring that the solutions do not have a disproportionate impact on working women. Across the Pacific region, women are the primary carers of children and babies, and are mostly tasked with household duties. Deep community consultation, and a stepped and evolved roll-out is needed to address this.

These projects in Vanuatu and across the Pacific have the potential to offer sustainable solutions to a critical issue, and support Pacific Island nations to move towards a more circular economy, addressing one of the most widespread wicked problems: waste.

SDGs

Water rehab for Mekong villages

Image: Speaking with Village Water Committee in one the villages, Ksach Leav Feb (2019). Chanrika (left) and Mariny (right) from the EWB Cambodia team assess water pressure

The Mekong River is the lifeblood of Southeast Asia. As one of the longest rivers in the world, it flows through six countries – including Cambodia, where it is home to thousands of people who live in villages not far from its banks.

Improved clean water supply for 3,853 people

These communities access the river's water directly – for bathing in and for drinking it's water. However, this water supply is low quality because of the high level of turbidity, the presence of animal and human faeces, traces of pesticides and other hazards. This results in a poor quality of life for these residents and negatively impacts their health and wellbeing in a number of ways. EWB has been working with the Cambodian Rural Development Team (CRDT) to support the rehabilitation of this water supply, so 839 families across five villages in Kratié Province have sufficient access to safer, cleaner water.

Within these five villages live nearly 4,000 people, and women comprise 50% of this population. Each day, women (as well as their children) bear the main responsibility to collect water from the river for their families. This puts them at significant risk of illness due to the poor water quality. Women and children also spend at least half an hour travelling each time they fetch water from the river. This has a particular impact on children as this means time away from their education.

In March 2019, a team of engineering professionals from Australian and New Zealand visited Kratié Province as part of EWB's Sustainable Development Intensive program. They worked alongside CRDT to review existing rural water supply systems. These systems had been installed three years prior and were designed to pump river water to water towers, which then supplied water to each village through gravity-fed PVC pipe networks. These systems aimed to supply clean, safe water for household consumption, and for irrigation, to grow their own food and support family livelihoods. Three community water groups were created in order to manage, maintain and repair the systems. But less than 10% of households were connected and using it.

The engineering team identified a number of technical issues with the existing system, including supply capacity and weak pressure, storage challenges, damage to pipework (both within the household and the distribution infrastructure), unreliable power supply, the pumping of untreated water and the high cost of installation.

With the research completed and the challenges identified, EWB and CRDT have commenced the next phase of this project, which is being supported remotely by two EWB Australian Volunteer Professionals. This phase is critical as it aims to strengthen the technical and professional skills of the local community involved in the day-to-day use and management of the system. As part of this next phase, CRDT staff, local authorities and water management committees are gaining skills in leadership, management, maintenance and operating the system, in order to provide appropriate solutions for their communities. In addition, a pilot project will also be implemented to rehabilitate one of the systems, to test, monitor and evaluate its effectiveness, as a pathway to rehabilitating the entire system.

This program is supported by the Australian Government through the Australian NGO Cooperation Program (ANCP).

SDGs

6

Jumbo jars ready for when the heavens open

EWB Australia has been working with RainWater Cambodia (RWC), the Cambodian Rural Development Team (CRDT) and local communities to address the scarcity of water in remote rural villages since 2015. RWC and CRDT were commissioned by EWB Australia to implement a second trial of rainwater harvesting to address this particular challenge, using jumbo jars.

Image: Tarps help the jumbo jars to dry, despite the rain

Half of Cambodia's rural population – more than six million people – lack access to clean water. It's a combination of two issues. One is climate change, which has brought about significant drought. The other is an unreliable supply of clean water due to unsafe water sources or systems, surface water contamination and often inaccessible spring and groundwater. But there is rain. And whilst climate change is responsible for reducing the volume of rainfall in Cambodia, it is still a water source of great value. And need.

A range of different systems to capture rainwater have been trialled and implemented across rural Cambodia – a reflection of the different solutions needed due to disparate environments. More than 2,500 domestic and 300 institutional systems have now been installed. In the villages, water is used for drinking and cooking, and year-round supply is needed. But for communities in Kratié Province, in the northwest of Cambodia, current needs are not being met by existing storage units. This is due to the small capacity of current storage systems, and the high cost to purchase larger ones. Kampong Rotest village is an island on the Mekong River in Kratié Province. There, 195 families live and make their livelihoods through farming, fishing and rearing animals. Despite being surrounded by water, clean water is scarce.

Two households in the village were engaged to trial giant clay jars that can hold 25 cubic metres of water. This system was preferred as its modular design allows for different sizing and customisation. The ability to produce good quality clay jars is also widespread in Cambodia. The trial worked with two very different homes – one with three family members, and the other housing four families with 19 people. This ensured that the ability for these jars to collect and supply enough water for differing household sizes and needs could be tested.

The project was not without challenges. Welcome rainfall over the week of construction made digging underground soil and plastering the clay soil walls of each jar difficult. The transportation of materials was also time-consuming. Although many materials were locally sourced, including bamboo, and gravel and sand from the Mekong River, the province location – on an island on the Mekong – meant that boats and hand trucks were required to deliver the additional materials needed to the site.

"This is the first time that my family and community have had clean water to use, and reduce the infection of intestinal disease, diarrhea and vomiting. We deeply thank the donors for providing the jumbo jar."

– family in Kampong Rotest village

Now installed, EWB's team in Cambodia will continue to monitor and analyse storage efficiency of the systems, including the quantity of rainwater available and household consumption requirements.

This program is supported by the Australian Government through the Australian NGO Cooperation Program (ANCP) and through the generous support of the Price Family Foundation.

195
families benefiting from clean water

SDGs

6

Hard ground sanitation research for Cambodia

Image: A pit latrine was one of the possible solutions researched (image: an offset pit latrine is construction by local partner staff and masons in Timor-Leste on an EWB and Plan project, 2018)

Preventable diarrhoeal disease remains the second biggest killer of children under the age of five in the world. In rural Cambodia, a large proportion of the population practise open defecation that has a detrimental effect on the environment and community health.

7

technology solutions explored

100

Approximately 100 data points assessed

EWB has been working on Sanitation in Challenging Environments in Cambodia since 2014, taking a sector-wide approach to improve knowledge and action on sanitation for communities affected by their challenging environment. The project, *Sanitation in Challenging Environments in Cambodia: Appropriate Sanitation Solutions Hard Rock Areas in Rural Cambodia*, co-delivered by EWB Australia and Engineering For Change (E4C), has carried out much needed research in this space.

Communities living in hard rock or hard clay and soil areas face unique challenges. This type of terrain prevents the use of conventional pit latrines because it is extremely difficult to dig into. This is compounded by the fact that fractures in rock and hard soil provide an environment for the faster flow of liquid. It means effluent does not slowly leach into the soil, but instead can travel many metres in a minute. This creates a higher risk of contaminating local water sources. Lacking alternative hard rock technologies, Cambodian communities are exposed to diarrhoeal diseases. These diseases, even when not deadly, can cause chronic lifelong developmental challenges. This in turn can play a role in causing isolation and limiting access to education.

The research identified a series of different technologies that may be appropriate for hard rock environments and the factors that will allow them to scale. However, the successful uptake and scaling of technically viable solutions can be affected by a number of drivers. These include behaviour change from open defecation, and conducting faecal sludge management through community engagement, financial subsidies from public and private partnerships, making use of existing capacity and supply chains, household considerations such as affordability and privacy that make improved sanitation an aspirational product, and monitoring and evaluation to ensure solutions are sustainable and to improve the uptake process.

E4C has a great track record in advocating for the role of engineering in sustainable development and working alongside them is a great opportunity to enhance EWB's work. They bring together researchers from around the world to power a knowledge sharing hub with global reach, and provide a critical platform for the dissemination of appropriate technologies and knowledge. Co-publishing research through E4C's platform is just one of the benefits of this new relationship. In the long term, working with E4C presents exciting opportunities to champion the consideration of Sustainable Development Goals within the global agenda.

To support Cambodia in meeting its 2025 target of 100% improved sanitation coverage, EWB will now conduct trials and further develop technologies that will enable access to sanitation in all hard rock and ground areas.

EWB's work in Cambodia is supported by the Australian Government through the Australian NGO Cooperation Program (ANCP).

SDGs

6

Spring water successes in Timor-Leste

A collaborative research project is exploring how water infrastructure challenges in Timor-Leste can manage additional challenges, such as those exacerbated by climate change. The research will assess what can be learned from recent successful initiatives in spring water management and how they might be more broadly implemented.

Timor-Leste's Strategic Development Plan for 2030 aims for all citizens to have access to clean water and improved sanitation. If this is to be achieved, current efforts need to be accelerated, deepened and scaled, with a particular focus on rural areas, where some 70% of Timor-Leste's 1.3 million residents call home. A recent study conducted by Plan International Timor-Leste looked at the supply of water across 146 communities. The study identified that a number of perennial challenges, such as the contamination of water supply, persist. Whilst a number of factors for effective community management of spring water sources have been identified, little research has delved into the success factors for effective catchment management, or the role communities and local governments are playing (and can play).

Protecting spring water is critical to ensure the safe – and sustainable – supply of water in many rural communities of Timor-Leste. The country's mountainous terrain makes accessing water through borehole wells impractical. As a result, a significant number of rural households rely on gravity-fed and community-managed water systems which pipe water from nearby springs to community tap stands.

These are a great solution but maintaining water quality and quantity is challenging. The wet season sees intense rain which can overwhelm and contaminate the system, while the dry season is long enough that water needs to be rationed carefully in many communities to ensure the springs don't dry up. The catastrophic flooding in Timor-Leste's capital Dili in April 2021, which destroyed about 30% of the gravity-flow schemes servicing the city, highlights the profound importance of this research work.

The collaboration includes Plan International Timor-Leste that has extensive WASH experience and existing baseline data; Permatil, a local Timorese non-government organisation (NGO) with expertise in community-led catchment management solutions for spring source rehabilitation; and RMIT in Melbourne who are providing important research design support. EWB Australia's team in Timor-Leste is supporting the work through technical assessments and community engagement.

Image: In October 2020, a Permayouth training camp creates hands-on learning for water catchment management for 200 men and 100 women who came from municipalities across Timor-Leste

This research will be included in a book focused on spring water protection. Importantly, this work will generate additional insights for the development community and engineering sectors (informing EWB's own work in Timor-Leste and other countries) and opens the path for future research collaborations and funding opportunities.

EWB Australia's work in Timor-Leste receives support from the Australian Government through the Australian NGO Cooperation Program (ANCP).

SDGs

6

Timor-Leste flood response and recovery

Image: Site visit for the DWSRRP

In April 2021 and in the midst of a COVID-19 lockdown, heavy rain caused widespread flood damage throughout Timor-Leste. Over 11,000 people were displaced from their homes, and 45% of Dili's population (70,000 people) were without ongoing and reliable access to clean water. EWB swiftly responded to this emergency, and is also now working to repair damaged infrastructure for longer-term resilience.

Having worked with communities in Timor-Leste for many years, with much of this work focused on water, sanitation and hygiene needs for vulnerable communities, EWB was well-placed to immediately respond to this emergency. All of EWB's Timor-Leste staff were personally impacted by the flooding, as was EWB's office in Dili, but in all cases the damage was thankfully relatively minor. Alongside mopping up their own homes, EWB staff and Feto Enginhera (Women in Engineering) were engaged in immediate response efforts. Working with UNICEF, United Nations Development Program, the INGO network for Australian Humanitarian Partnership, Civil Protection, the Ministry of Social Solidarity in Timor-Leste, the Department of Foreign Affairs and Trade (DFAT) and PARTISIPA – the Australian government's program of investment in community-driven development – EWB worked to urgently install water tanks in the 19 evacuation centres, as well as water filtration to affected households for when they are able to return home.

As part of the humanitarian response, EWB Australia was appointed as part of the team on the Dili Water System Emergency Repair Program (DWSERP), which aims to rehabilitate key sections of Dili's water system.

The DWSERP program is led by the Government of Timor-Leste and funded by the Australian Government. A partnership comprising Be'e Timor-Leste (BTL, Dili's newly established water authority), PARTISIPA (the Australian Government's program of investment in community-driven development), global infrastructure firm Cardno and EWB Australia has been formed to implement the program.

EWB, in association with Cardno, was able to rapidly mobilise a team of operational and technical infrastructure advisers at the urgent request of the Government of Timor-Leste. EWB's implementation role includes the provision of technical support, concept design, advice and delivery of multidisciplinary engineering.

Richard Warren AM has been appointed EWB's Project Director on the program, based in Dili. A Senior Project Engineer, Richard has extensive experience in disaster and emergency infrastructure management and provides the leadership for the in-country delivery and oversight of the work. "This program has offered a wonderful opportunity for EWB Australia to display its ability to engage in emergency infrastructure recovery projects," said Richard.

Members of Feto Enginhera - Timor-Leste's women in engineering group - are also involved in the program's implementation, working in key roles as site engineers. The DWSERP will work alongside Be'e Timor-Leste to support engineering assessments and redesigns, as well as training on water testing, treatment, and maintenance, to ensure water safety once the supply lines are back up and running.

EWB Australia's work in Timor-Leste receives support from the Australian Government through the Australian NGO Cooperation Program (ANCP).

SDGs

Partnering on oxygen technology for Ugandan children

EWB Australia and the FREO2 Foundation, with funding from the Planet Wheeler Foundation, are working together to further develop technology to reach thousands more children at risk of life-threatening pneumonia.

The Australian-based FREO2 Foundation has developed technology that addresses this need and is already saving the lives of children with pneumonia and newborns with breathing illnesses in Uganda. Pneumonia is the biggest killer of children across the globe, causing over 800,000 deaths per year. As a lung infection, it limits the supply of oxygen to the body's cells and prevents them from doing their job properly. Oxygen is a key treatment, but in many developing countries, unreliable access to electricity in order to run oxygen-concentrating equipment means that children aren't able to access this life-saving care. The FREO2 Foundation has found a way to generate, store and deliver oxygen, with or without electricity.

The FREO2 LPOS system is a proven-concept, developed alongside Ugandan engineering and medical practitioners, which uses a small machine that removes nitrogen from the surrounding air, leaving almost pure oxygen. It is then stored in a large bag. Oxygen is provided to the patients, while any excess oxygen is stored in a low-pressure oxygen storage system. When the electricity goes out, gravity-fed water automatically pushes the oxygen into the bag through pipes, and into the medical ward. The height the water is stored at is carefully calculated to ensure the right pressure for patients. This ingenious system has so far treated over 400 children. The system is currently in use and supporting remote health centres in Uganda that are at the periphery of the health system, where no other viable solution to provide oxygen to these children is available.

With this pilot success, the FREO2 Foundation engaged EWB Australia to assist in further developing and scaling this technology. EWB's work in developing and socialising appropriate technology with remote communities spans Cambodia, Timor-Leste, Vanuatu, Myanmar and remote First Nations communities in Australia, where a deeply inclusive, community-centred technology development approach is applied to achieve real, sustainable impact. The alliance will employ engineering design and development of further technologies with an aim to deliver equitable, sustainable and scalable technologies. With the pandemic impacting vulnerable communities in the region and around the globe, it is even more critical to find reliable oxygen supply for health centres in low-resource areas.

SDGs

Financial summary

With the COVID-19 pandemic in full swing, the 2020–2021 financial year continued to be a difficult year for organisations worldwide. Faced with programmatic and financial constraints due to the pandemic, EWB Australia took a proactive approach and underwent an organisational restructure, effective 1 July 2021.

The overall result at 30 June 2021 was a $123k surplus compared to a loss of $100k the prior year. Revenue fell by 31% from the previous year, mainly due to COVID-19-related travel bans which required the cancellation of many overseas study tours for university students and professionals, as well as reductions in Department of Foreign Affairs and Trade grants and donations. The organisation continued to receive benefits from the Australian Government's COVID-19 assistance.

Despite the pandemic, given our local teams on the ground, we were able to continue our important work in Cambodia, Timor-Leste and Vanuatu. Our expatriate staff were able to return to Timor-Leste and Vanuatu due to the nature of their work. We continued to service our university partnerships and the Challenge program by pivoting to online programs.

The restructure, no study tour expenses and other cost savings meant that we were able to reduce expenses by 35% compared to the prior year. The largest reduction was in employee-related expenses which decreased by 27% compared to the previous financial year. Initiatives, travel and insurance costs were also down significantly compared to the prior year with the programmatic restrictions. Following the office moves in Melbourne, Cambodia and Timor-Leste, occupancy costs fell by 53%. During the year, there was a strategic decision to invest in a new accounting and reporting system to enhance and improve our financial reporting capability and efficiency.

In June 2021, EWB Australia received a $4m grant for the Dili Water System Emergency Repair Program (DWSERP) from the Department of Foreign Affairs and Trade. Working with Cardno and their program PARTISIPA in Timor-Leste, this grant is to repair and stabilise the water supply system for approximately 70,000 people in Dili after devastating floods. Emergency disaster recovery work is required to immediately repair key water transmission lines. The DWSERP grant is short-term and will be expended during the financial year 2021–2022. Of this grant, $2m was received in June 2021, the majority of which is reflected in the balance sheet as deferred income, resulting in a year end current ratio of 1.53. The total debt-to-asset ratio is 64%, also higher than the previous year due to the DWSERP grant being received in June.

EWB Australia also won a $250k Women in STEM and Entrepreneurship grant from the Department of Industry, Science, Energy and Resources in June, half of which is also in the balance sheet as deferred income. The income and expenses, similar to the DWSERP grant, will be reflected in the 2021–2022 financial year.

During the year, the Board approved establishing an innovation fund (the "Fund") as an internal funding mechanism to enable ideas with potential to be developed, tested and prepared for external funding. Objectives of the Fund are to enable innovative solutions that deliver some or all of the following:

- Increased impact through developing technology that benefits all.
- Increased impact through new and innovative education and outreach approaches.
- Increased impact and innovative volunteering opportunities for our network.
- New sustainable business models and/or a new social enterprise.

The Fund is dependent on the result of the previous financial year's surplus. The Fund will initially be seeded by a one-off contribution from retained earnings of $100k. It will then be topped up based on each year's operating results with 20% of the operating surplus being added to the Fund. Any additional contribution to the Fund will require Board approval. The amount to be contributed to the Fund in any financial year will be communicated by 31 December of each year, following completion of the audited accounts, and is reflected in the balance sheet in the Reserves.

With the easing of COVID-19 restrictions in the latter part of 2021–2022 financial year, we are planning to resume face-to-face programmatic activities, and look forward to resuming normality and growing our solid financial base.

Summary Financial Statements
for the Year Ending 30 June 2021
Engineers Without Borders Australia Ltd & Engineers Without Borders Foundation

A copy of the full financial statements for the year ending 30 June 2021 is available upon request by emailing info@ewb.org.au

The Summary Financial Statements have been prepared in accordance with the requirements set out in the ACFID Code of Conduct. For further information on the Code please refer to the ACFID Code of Conduct Guidance available at www.acfid.asn.au

Statement of Surplus and Deficit and Other Comprehensive Income
for the Year Ended 30 June 2021

	2021 $	2020 $
REVENUE		
Donations and gifts		
* Monetary	426,886	492,954
* Non-monetary (1)		
Bequests and Legacies		
Grants		
* Department of Foreign Affairs and Trade	1,210,448	1,348,820
* Other Australian	63,420	66,580
* Other overseas	-	-
Investment Income	6,568	23,964
Other Income		
* Membership	1,468	4,909
* Sponsorship/Partners	291,406	294,908
* Earned Income	500,246	1,642,713
* Government assistance for COVID 19	430,584	280,500
* Other Income	(4,977)	63,520
TOTAL REVENUE	**$ 2,926,050**	**$ 4,218,869**
EXPENDITURE		
International Aid and Development Programs Expenditure		
International programs		
* Funds to international programs	635,471	746,676
* Program support costs	686,311	679,162
Community education	293,841	1,549,705
Fundraising costs		
* Public	294,708	211,948
* Government, multilateral and private		
Accountability and Administration	696,630	991,802
Non-Monetary Expenditure (1)		
Total International Aid and Development Programs Expenditure	**$ 2,606,961**	**$ 4,179,293**
Domestic Programs Expenditure	195,718	140,489
TOTAL EXPENDITURE	$ 2,802,679	$ 4,319,782
EXCESS / (SHORTFALL) OF REVENUE OVER EXPENDITURE	**$ 123,371**	**$ (100,912)**

Notes:
1. Non-Monetary Income and Expenditure - International Programs
   The non-monetary value of the work carried out by our volunteers working directly on international aid and development programs has been valued at $162,034 (2020 $413,635)
   Volunteers' services have been valued in accordance with the Department of Foreign Affairs and Trade's Recognised Development Expenditure guidelines (January 2020) by applying an hourly rate from the relevant Department of Foreign Affairs and Trade Enterprise Agreement to the number of hours contributed, as recorded by each volunteer.
   We consider it is important to report a monetary value of these valuable frontline services to indicate the scale of the contribution of volunteers to users of the financial statements, albeit that the work is done on a voluntary basis.
   In-kind donations and volunteer support not directly relating to international aid and development programs are not included due to uncertainties relating to their reliable measurement.
2. During the financial year, the organisation had no transactions in the Political or Religious Adherence Promotion Programs category.
3. The classifications of Revenue and Expenditure adopted above have been re-grouped in presentation for the purposes of this report from those applied in the statutory financial statements. Total reported Revenue and Expenditure is consistent.

Summary Financial Statements
for the Year Ending 30 June 2021
Engineers Without Borders Australia Ltd & Engineers Without Borders Foundation

A copy of the full financial statements for the year ending 30 June 2021 is available upon request by emailing info@ewb.org.au

Statement of Financial Position as at 30 June 2021

	2021 $	2020 $
ASSETS		
Current Assets		
Cash and cash equivalents	4,344,679	1,843,846
Trade and other receivables	117,996	262,447
Other current assets	90,668	62,357
Total Current Assets	**4,553,343**	**2,168,650**
Non-Current Assets		
Property, plant and equipment		
Computer Equipment	29,526	15232
Motor Vehicles	31,489	
Right-of-use assets	103,390	147777
Trade and other receivables	7,343	7343
Financial assets	500	500
Total Non-Current Assets	**172,248**	**170,852**
TOTAL ASSETS	**4,725,591**	**2,339,502**
LIABILITIES		
Current Liabilities		
Lease liabilities	68,393	69,965
Trade and other payables	341,918	115,389
Employee benefits	154,690	123,941
Other liabilities	2,403,552	336,387
Total Current Liabilities	**2,968,553**	**645,682**
Non-Current Liabilities		
Lease liabilities	39,210	82,569
Employee benefits	7,595	24,389
Total Non-Current Liabilities	**46,805**	**106,958**
TOTAL LIABILITIES	**3,015,358**	**752,640**
NET ASSETS	**1,710,233**	**1,586,862**
EQUITY		
Reserves	124,674	**93408**
Retained earnings	1,585,559	1,493,454
TOTAL EQUITY	**1,710,233**	**1,586,862**

Statement of Changes in Equity for the Year Ended 30 June 2021

	Retained Earnings $	Total $
Balance at 30 June 2019	1,687,774	1,687,774
Excess/(shortfall) of revenue over expenses	(100,912)	(100,912)
Balance at 30 June 2020	1,586,862	1,586,862
Excess/(shortfall) of revenue over expenses	123,371	123,371
Balance at 30 June 2021	1,710,233	1,710,233

Summary Financial Statements
for the Year Ending 30 June 2021
Engineers Without Borders Australia Ltd & Engineers Without Borders Foundation

A copy of the full financial statements for the year ending 30 June 2021 is available upon request by emailing info@ewb.org.au

Directors' Declaration

The directors of Engineers Without Borders Australia Ltd as the directors of the company and as trustee of Engineers Without Borders Foundation declare that:

(a) The summarised financial statements are consistent with the statutory audited financial statements of Engineers Without Borders Australia Limited and Engineers Without Borders Foundation for the year ended 30 June 2021

(b) The Full Financial Statements of Engineers Without Borders Australia Limited and Engineers Without Borders Foundation
(i) comply with relevant Australian Accounting Standards as applicable and the Corporations Regulations 2001 and Trust Deed respectively; and
(ii) give a true and fair view of the financial position as at 30 June 2021 and of the financial performance for the year ended on that date.

(c) in the directors' opinion there are reasonable grounds to believe that the entities will be able to pay their debts as and when they become due and payable.

On behalf of the Board, this declaration is in accordance with a resolution of the directors.

Director
Gavin Ross Blakey

Director
Mike McCreadie

Dated this 27th day of October 2021

BANKS GROUP

ON THE ACFID CODE COMPLIANT FINANCIAL STATEMENTS

TO:
THE MEMBERS OF ENGINEERS WITHOUT BORDERS AUSTRALIA LIMITED AND TRUSTEES OF ENGINEERS WITHOUT BORDERS FOUNDATION

The accompanying ACFID code compliant financial statements of Engineers Without Borders Australia Limited (the company) and Engineers Without Borders Foundation (the trust), comprising the Consolidated Statement of Financial Position as at 30 June 2021, the Consolidated Statement of Surplus and Deficit and Other Comprehensive Income, and the Consolidated Statement of Changes in Equity, and explanatory notes, are derived from the statutory audited consolidated financial statements of "Engineers Without Borders Australia" (comprising of Engineers Without Borders Australia Limited and Engineers Without Borders Foundation) for the year ended 30 June 2021. We expressed an unmodified auditor's opinion on the financial statements of both entities in our respective auditor's reports dated 25 October 2021.

The ACFID code compliant financial statements do not contain all the disclosures required by applicable Australian Accounting Standards and the *Australian Charities and Not-for-Profits Commission Act 2012*. Reading the summary financial statements, therefore, is not a substitute for reading the audited consolidated financial report of Engineers Without Borders Australia.

Responsibility for the ACFID code compliant financial statements.
The directors of Engineers Without Borders Australia are responsible for the preparation and presentation of the ACFID code compliant financial statements, and that the basis of preparation is appropriate for the purpose in which they have been prepared in accordance with the Australian Council For International Development (ACFID) Code of Conduct.

Auditor's Responsibility
Our responsibility is to express an opinion on the combined summary financial statements based on our procedures, which were conducted in accordance with Auditing Standard *ASA 810 Engagements to Report on Summary Financial Statements*.

Auditor's Opinion
In our opinion, the ACFID code compliant financial statements derived from the audited consolidated financial report of Engineers Without Borders Australia are consistent, in all material respects, with the audited financial statements from which it was derived. The ACFID code compliant financial statements should be read in conjunction with our audit report on the statutory consolidated financial statements.

Banks Group Assurance Pty Ltd

Banks Group Assurance Pty Ltd, Chartered Accountants
Authorised audit company number 294178 (ACN 115 749 598)

Jaco Vorster CA, Associate Partner
Registration number 507089

Melbourne, Australia
Dated this 27th day of October 2021

801 Glenferrie Road Hawthorn Vic (Locked Bag 50 Hawthorn Vic 3122) Australia **T** +61 3 9810 0700 **F** +61 3 9815 1899 www.banksgroup.com.au

Acknowledgments

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Achini Attanayake
Australian Volunteer Field Professional

Marlise Brenner
Human Resources Consultant

Luana Cristina
Engineering Communications Support

Lachlan Fraser
Marketing & Communications Support

Vikrant Gorasia
Australian Volunteer Field Professional

Elie Francis (Aurecon)
Training Program Support

Clare Harris
Communications & Fundraising Support

Chelsea Hayward
National School Outreach Coordinator

Erin Hughes
Torres Strait Regioneering Local Coordination

Stephanie May
Australian Volunteer Field Professional

Dennis Noble
Engineering Communications Support

Vinicius dos Santos Guim
Australian Volunteer Field Professional

Ben Thomas
Cyber Security Consultant

Di Wallis
Organisational Development Consultant

Kasey Williams
Australian Volunteer Field Professional

Burton Wu
ICT Strategic Support

RAP WORKING GROUP

Melanie Audrey	Kim Axworthy	Kelsie Clarke	George Goddard
Taylah Griffin	Ruby Heard	Shane Kennelly	Eleanor Loudon
Peter McArdle	James Rafferty	Leon Ross	Angie Rozali

Board Members

Gavin Blakey OAM	Dr Simon Bradwell	Kelsie Clarke	Shane Kennelly	Prof. Arun Kumar	Peter McArdle
Mike McCreadie	Margarita Moya	Alesha Printz	Sonya Rand	Lily Zhang	

We are living in a time of extreme
SOCIAL INEQUALITY AND
ENVIRONMENTAL DEGRADATION
and the way we continue to develop society, can make this better or worse.
Engineers and the engineering community can and should be taking an active role in
CREATING A FAIRER AND MORE EQUITABLE
FUTURE
FOR ALL.
ALL INDIVIDUALS, ALL SOCIETIES,
ALL FORMS OF LIFE, ALL ASPECTS OF THE ENVIRONMENT,
FOR ALL GENERATIONS.
We can and should be engineering with the social, environmental and economic needs
BALANCED AS FAIRLY AS POSSIBLE.
We have access to the tools, the thinking, the human capital to make this a reality and at
ENGINEERS WITHOUT BORDERS AUSTRALIA,
WE HAVE MADE IT OUR PURPOSE –
to harness the potential of
to create an equitable reality
for the planet and its people.
ENGINEERING
Our mission is to redefine the purpose and impact of engineering as a
CRITICAL ENABLER OF SUSTAINABLE DEVELOPMENT
THROUGH INFLUENCING AND EDUCATING ENGINEERS AND THE BROADER ENGINEERING SECTOR
AND BY DELIVERING ENGINEERING SOLUTIONS THAT REDUCE VULNERABILITY AND ARE
RESTORING BALANCE TO OUR NATURAL SYSTEMS.
IN DOING SO, WE PROVE
THAT THIS IS INDEED **POSSIBLE.**

Join us and together we can engineer a better world for everyone.

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