



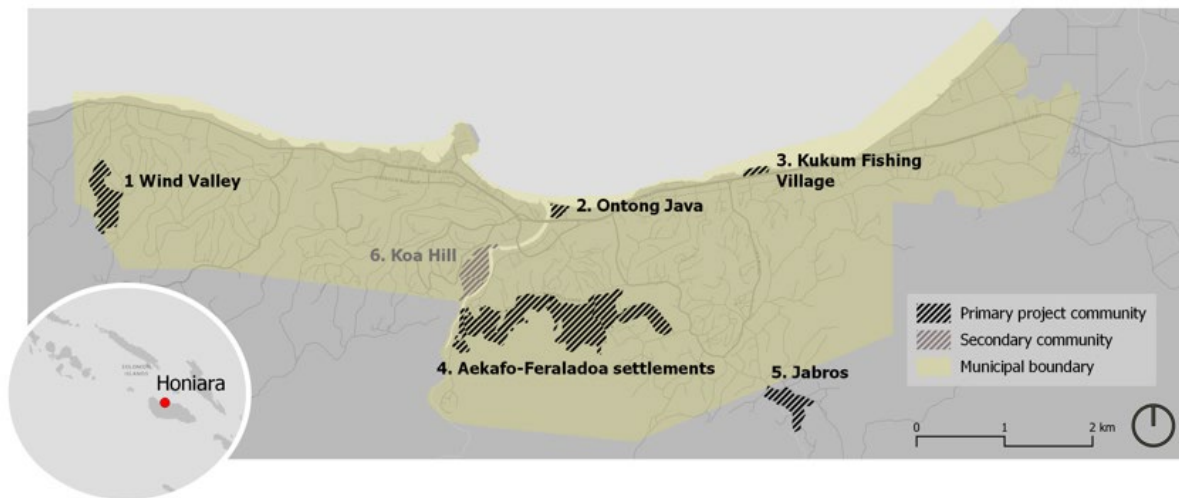
Climate Resilient Honiara (CRH)

Context: Urbanisation and global environmental change are two of the most significant challenges facing cities and societies in the Global South. Climate change will aggravate the significant risks already posed by natural hazards, impacting towns and cities that are also rapidly urbanising. These challenges are particularly acute in developing countries in the Asia Pacific region. For Pacific countries in particular, geographical isolation places further stress on the resilience of communities in Small Island States (SIDS) with rapid urbanisation in the South Pacific overwhelming local Governments' response, leading to the growth of informal settlements without access to basic services and a marginalised urban population who are the most vulnerable to current and future climate impacts.

Background: Prof. Darryn McEvoy has been working in Honiara, the capital city of the Solomon Islands, for the past decade, establishing strong working relationships with a variety of local and regional organisations. A key output from this period of applied and participatory research was the development of the Honiara Urban Resilience and Climate Action Plan (HURCAP). Endorsed by National and City Governments in 2016, it formed the basis of a successful large-scale proposal to the UNFCCC Adaptation Fund. Starting in 2019, and due for completion in 2024, the Climate Resilient Honiara project is administered by UN-Habitat, with a multidisciplinary research team led by Prof. McEvoy providing scientific support (RMIT Schools involved: Engineering; Science; Global, Urban and Social Sciences; Architecture and Urban Design; and Property, Construction Management, and Project Management). The project is supported locally by the Ministry of Lands, Housing, and Survey; the Ministry of Environment, Climate Change, and Disaster Management; and Honiara City Council.

The CRH project: CRH is a programme of applied research projects to enhance urban climate resilience at the community, ward, and city levels, and since its inception the project team has deliberately adopted a 'bottom-up' and inclusive approach. The programme of participatory action research was designed to generate a scientific evidence base (phase 1) that would then inform the implementation of climate actions based on locally identified priority needs (phase 2).

Case studies: The project works in five informal settlements in the Greater Honiara area. These include two communities on the coastline (Ontong Java and Kukum Fishing Village), one in inland hilly terrain (Aekafo Feraladoa, consisting of 7 Informal Settlement Zones), one just inside the city boundaries in the west (Wind Valley), and one just outside in Guadalcanal Province (Jabros). A sixth community, Koa Hill, was added to the case study portfolio as part of another funded project administered by UN-Habitat (see later).



Case study settlements

Phase 1 (2019 – 2022): The RMIT team made multiple field visits to Honiara to conduct site visits and assess local needs prior to international travel restrictions caused by the global pandemic. Fortunately, due to strong working relationships that had been built up with local partner organisations in the years prior, project activities were able to continue during this period (with the RMIT team providing remote scientific support).



First RMIT field visit for the CRH project, February 2019

Project activities and outputs at the **community level** during this initial phase included:

- Community profiles;
- GIS mapping of housing and community assets;
- Climate action plans (based on past and current experiences and future climate change scenarios);
- Identification and validation of potential engineering solutions to increase community resilience;

- Climate resilient community development plans (including engineering designs);
- Workshops to raise community awareness of climate risks, and to gather information on local priority adaptation needs.



Site visit: RMIT engineers assessing riverbank erosion (Ontong Java settlement).



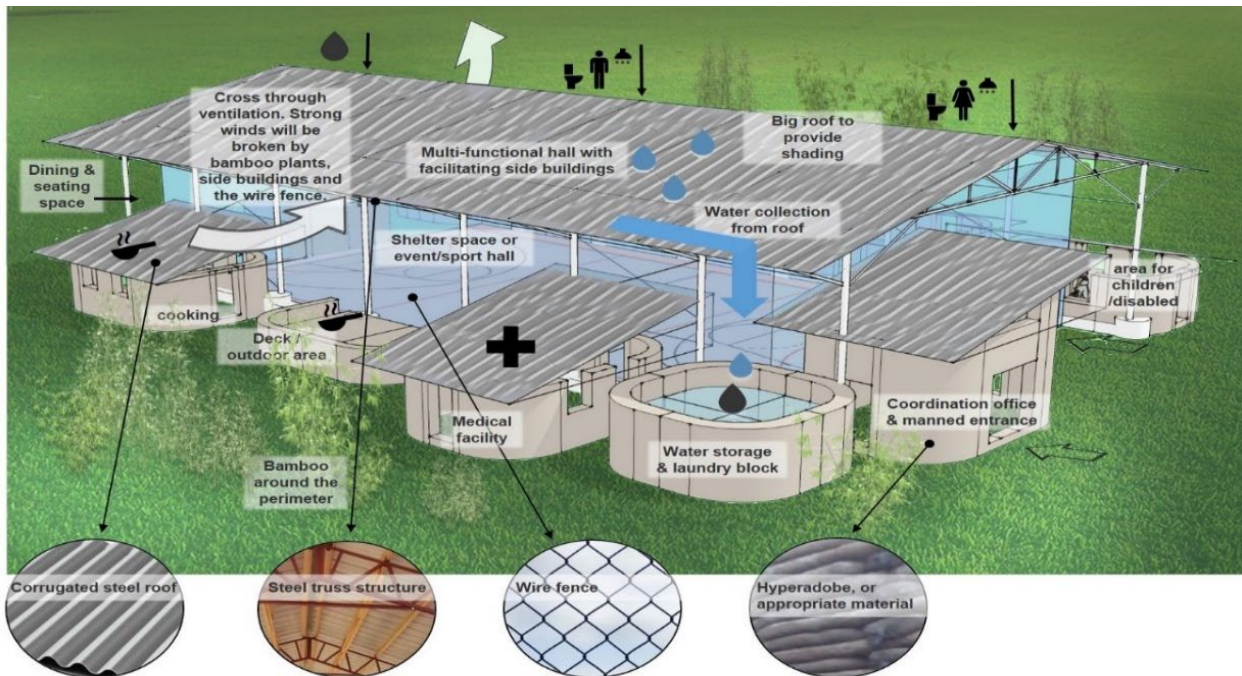
Loss of land and assets in Ontong Java due to erosion, 2010 vs. 2020 (Source: Google Earth).

Project activities and outputs at the **ward level** included:

- Climate risk communication: training workshops with women and youth to shoot and edit short community education films using mobile phones.
- Urban organic farming best practice: training workshop for young women.
- Design, and safe location, of evacuation centres.
- Nature-based solutions (NbS) for climate adaptation, disaster risk reduction, and community wellbeing (including RMIT student conceptual design studios, training workshops in Honiara with graduates of Solomon Islands National University (SINU), and a co-production workshop with community members for a linear park along the Mataniko River).
- ‘Planning for climate change’: capacity building workshops with Ward Councillors.
- Security of land tenure and responsible land administration in peri-urban areas.



Communication workshop with members of Honiara Youth Council



Conceptual design of an evacuation centre



NbS design studio with SINU graduates

Complementary Honiara projects: In-country activities over a period of time, and the building of relationships with local organisations, has provided the operational platform for a number of other successful research proposals; including disaster resilient housing (funder: AHP Disaster Ready Programme); women, urban gardens, and local food security (funder: SPC Pacific Community); and nature-based solutions for enhanced climate resilience and wellbeing of Koa Hill informal settlement (funder: Swedish International Development Cooperation Agency - SIDA).

Inclusive and Disaster Resilient Shelter Guide: Urban Informal Settlements, Honiara, Solomon Islands (Habitat for Humanity)

This Shelter Guide was developed as part of a regional suite of guides covering Fiji, Vanuatu, and Solomon Islands. Whilst this Guide for Solomon Islands complements the others, it also adds critical insights by focusing on the particular needs of those living in urban informal settlements and the realities of residents who often act as first responders. The main sections of the Guide are structured to the three key stages of the Disaster Risk Management cycle: Preparedness, Response, and (longer-term) Recovery.



At risk housing: Kukum Fishing Village settlement (L); house on stilts in Wind Valley with dotted lines showing where strengthening is possible (R).



Shelter needs workshop with women, youth, and people with disabilities (PWD)

Inclusive and Disaster Resilient Shelter Guide

Urban Informal Settlements, Honiara, Solomon Islands



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Prof Darryn McEvoy
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Shelter guide front cover

Unlocking the potential of urban gardens as a mechanism for sustainable, climate resilient, livelihoods (SPC)

This project had five major aims:

1. To better understand urban communities' reliance on different types of gardens (home / sup sup, and bush) and to map their locations and related factors such as travel distance, access, land tenure, etc.
2. To identify the different crops being grown and / or harvested and determine whether these are for subsistence or cash crops.
3. To identify perceived climate and non-climate threats that are impacting, or likely to impact, local food security (and by extension, the specific vulnerabilities of women to climate change and other urban stressors).
4. To provide local training on urban farming best practice for women from case study local communities, based on local needs identified in the workshops.
5. To carry out an integrated assessment of geospatial data and findings from the workshops to develop policy recommendations for the Ministry of Lands, Housing, and Survey and Honiara City Council for protecting productive urban open spaces and enhancing local food security.



Bush garden: Jabros (drone imagery)



Local activities with women to showcase urban gardening best practice

Planning, co-production and Implementation of nature-based solutions in an informal settlement (Koa Hill, Honiara)

The project, led locally by PacSol consultancy in partnership with Kastom Gaden Association and SINU had four main components:

1. Community and stakeholder workshops to raise awareness of the benefits of NbS, as well as identifying climate-related issues in the community;
2. Design and implementation of at least three NbS pilots validated by the community;
3. Dissemination of the NbS actions and their benefits; and
4. NbS training and co-production workshop.

Community feedback and field analysis identified three types of interventions: riverbank flood defence, landslide prevention, and an urban garden to improve local food security. In the end, a total of four actions for piloting nature-based solutions in Koa Hill were implemented at sites chosen by the community:

Additional settlement upgrading activities were also undertaken as part of the project. These included the construction of new steps to the river punts, known locally as ‘floaters’ (transportation across the river being the main access route for the community), new jetties, a raised footpath for the rainy season, bridges, a plant nursery of vetiver and lemon grass, a play area for young children, and a volleyball court for teens (including new sporting equipment). It is intended that building community resources on the flood plain will discourage new house building in such a high-risk area.

The underpinning rationale for the project was to generate a proof of concept and approach for similar urban poor communities in Solomon Islands, the wider Pacific region, and other countries in the Global South. In this case, community members of Koa Hill actively participated in the planning and actual implementation of NbS, contributing 50% of labour as well as traditional ecological knowledge and cultural management practices, and can be considered representative of a successful ‘community-led’ initiative to reduce disaster risk and improve local food security through the implementation of NbS.



On-site consultation meetings and awareness raising of NBS



Vetiver grass planting, bamboo replanting, and fencing installation on the riverbank



Vetiver nursery built next to urban garden for propagation of vetiver, bamboo, and lemongrass



Visiting RMIT team gifting sports equipment to community youth (L); designated public recreation areas with volleyball and futsal fields on flood prone area (R)



End of NbS project community meeting and celebration

Phase 2 (2023 – 2024)

The CRH project has now moved into its final implementation phase (though the team will also continue to finish off research components as well as putting significant efforts into awareness raising and capacity building with the case study communities and government partners). Implementation of local community actions will be undertaken in partnership with local organisations based in Honiara. The remaining deliverables are:

1. Climate comics (leads: Serene Ho, Mittul Vahanvati, and Gemma Sou)

In recognition of the fact that most people in the communities would not read technical reports written in English, it was decided to capture some key messages from the disaster resilient housing and urban gardens research and translate these into comics scripted in the local language, Pidgin. A competition was held with Honiara Youth Council and 4 local artists were selected and then supported by storyboards and creative expertise provided by RMIT to deliver 4 comics. These will be circulated to the local communities to acknowledge their time and experiences in contributing to the CRH project, and raising awareness of climate risks and adaptation options.

YOUNG ARTISTS COMPETITION 2022

Seeking Honiara's Artists

Do you have creative talent and want to help communities adapt to climate change? Enter this artist's competition to help create comic-style story books for climate change.



STAGE 1

- Apply to be part of the artist's competition workshop (email: harryjames662@gmail.com).
- Selected participants will attend a 2-hour workshop facilitated by the RMIT team. This will be held at Honiara City Council's Youth Hub on the 23rd August at 2pm.
- First hour: explanation of the project and the activities; second hour: individual participants will sketch a partial storyboard as directed by the RMIT team. Drawing materials will be provided and travel costs will be paid at the end of the workshop. All participants will receive a workshop certificate.

STAGE 2

- The winner(s) of the competition, as judged by the RMIT team, will be contracted from Sep - Dec to create the artwork for a climate change comic book. Maximum 4 winners, comprising a mix of male and female entrants.
- The comic books will be promoted in the Solomon Islands and internationally.

THE WINNER(S) WILL BE PAID A DAILY RATE FOR A 3-MONTH PERIOD TO CREATE THE ARTWORK FOR A CLIMATE CHANGE COMIC BOOK.



RMIT UNIVERSITY   **UN-HABITAT FOR A BETTER URBAN FUTURE**  **ADAPTATION FUND**

Project FB page: <https://www.facebook.com/Climate-Resilient-Honiara-590844857955469>

Competition poster and final comics

[Disaster resilient housing \(Junior\)](#)

[Disaster resilient housing \(Jackson\)](#)

[Urban gardens, climate change, and local food security \(Casper\)](#)

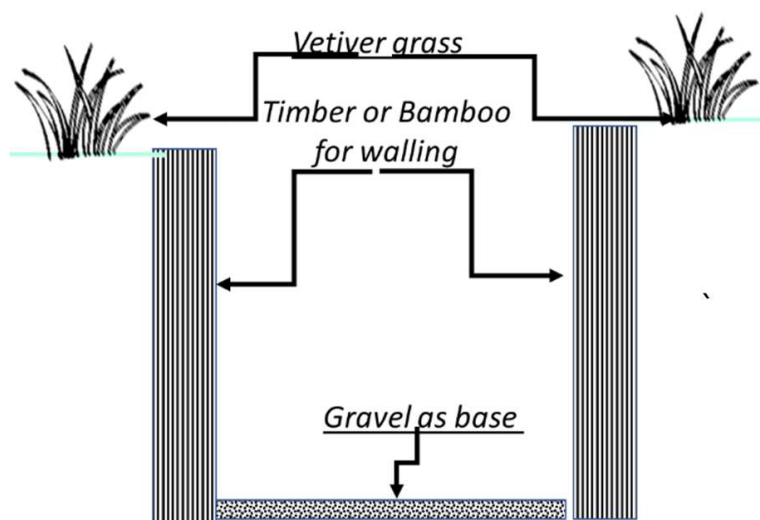
[Urban gardens, climate change, and local food security \(Rowena\)](#)

2. Development of local disaster plans for 5 informal settlements and ‘train the trainer’ workshops on disaster resilient housing (leads: Usha Iyer-Raniga and Mittul Vahanvati)

The primary focus of the next field visit to Honiara (October 2023) is local disaster planning. RMIT is partnering with World Vision to develop local disaster plans for the case study settlements and will also conduct ‘train the trainer’ workshops on disaster resilient housing with World Vision and staff and students from SINU.

3. Implementation of nature-based solutions to improve drainage in the informal settlements

RMIT will partner with PacSol and SINU to implement drainage upgrades in 4 settlements using nature-based solutions. Site assessments carried out by the local project partners have identified key problem areas and NbS designs have been developed ready for implementation. It is also intended that pavement bricks, recycled from plastic waste, will be used in the upgrading process. These will be sourced from a local start-up business involving girls and young women in Honiara. This addresses multiple environmental issues, as well as contributing to local sustainable livelihoods.



An example design to be used in Ontong Java and Wind Valley

4. Installation of water tanks in 5 settlements (lead: Nick Brown)

RMIT will provide scientific support to World Vision to implement small and medium-sized water tanks in all 5 settlements.

5. Gender, land tenure, and internal migration (lead: Serene Ho)

RMIT are partnering with a local organisation, Dignity Pasifika, to run workshops in 4 contrasting settlements inside and outside the city to better understand the interactions of women, land ownership, and internal migration.

6. Design support for the updating of Honiara’s Local Planning Scheme (leads: Ata Tara and Mittul Vahanvati)

RMIT are providing scientific support for the 5-year review of the Local Planning Scheme, as requested by the local consultant contracted by Honiara City Council and the Ministry of Lands, Housing, and Survey.

7. *Designs for the city's Urban Greening Master Plan (leads: Ata Tara and Mittul Vahanavati)*

A high-level Master Plan for Honiara was produced by SPREP earlier in 2023. RMIT has previously run a series of student studios to develop conceptual designs for urban greening based on a concept of different 'precincts' in the city. The best of these designs will be selected to provide greater detail for the Master Plan and a portfolio of these designs will be shared with Honiara City Council and the Ministry of Lands, Housing, and Survey for their use.

8. *Detailed site designs for flood and landslide mitigation (lead: Ata Tara)*

Student design studios at RMIT have produced landscape and site-specific designs to mitigate climate hazards. These will be compiled into a portfolio for Honiara City Council.

9. *Cross-border mechanisms to promote joint climate resilience actions (lead: Alexei Trundle, University of Melbourne)*

Climate impacts will not respect borders; therefore, it is important for Honiara City Council and Guadalcanal Province to have mechanisms for collaboration on climate action planning. A major focus of this project is to assess the needs of Guadalcanal Province and how to strengthen institutional capacity. An MoU between RMIT and the Provincial Executive Committee is currently being developed to formalise RMIT's support for the needs assessment.

10. *Updated vulnerability assessment (lead: Alexei Trundle, University of Melbourne)*

It is intended that the vulnerability assessment which formed part of HURCAP in 2016, will be updated using the most recent Census data (though this is still not publicly available yet).

11. *Training on climate adaptation pathways (lead: Alexei Trundle, University of Melbourne)*

The RMIT team will run workshops in Honiara with civil society groups, international NGOs, and government officials on climate action planning.

12. *Review and update of construction management diploma, SINU (lead: Usha Iyer-Raniga)*

Staff from RMIT's School of Property, Construction, and Project Management will be leading a review and update of SINU's construction management diploma. As part of the review process, recommendations will also be made as to how to bring the course into alignment with its Australian equivalent.

13. *Knowledge transfer platform (lead: Alexei Trundle, University of Melbourne)*

All the scientific evidence that has been generated over the duration of the CRH project will be collated into a climate action database that is hosted by a Solomon Islands government agency, making all project information freely available to inform local actions.

Real-world impact of applied research

Awareness raising

- The CRH project team has worked closely with local communities to raise awareness of climate risks, and to better understand local priority needs to enhance community resilience.
- Initiatives, such as the climate communication comics and production of short films in Pidgin, have actively sought to translate scientific evidence into more accessible formats for all members of local communities, and to disseminate key messages about climate risks, vulnerabilities, and adaptation actions.

Inclusive capacity building

- The project has run multiple training workshops (climate action planning, community profiling, communication, urban gardens, NbS, etc.) for women and youth groups, and involved people with disabilities and members of informal settlements in project workshops to ensure marginalised voices are accounted for in climate action planning.
- Technical training has taken place with city and national government officials (climate action planning, basic and advanced GIS etc.).
- Train the trainer workshops will be held with World Vision and SINU to teach construction best practice for disaster resilient housing. This information will then be shared with community members when these organisations are implementing actions in the settlements.
- Urban gardening best practice training held with women.
- The project actively encourages partnerships with Honiara-based organisations, complemented by scientific support, to strengthen local capacities. The emphasis on local capacity building increases local agency for developing resilience strategies in-country and reduces reliance on external 'experts'.
- Development of a short professional course on sustainable urban development (involving GUSS, PCPM and Engineering).

Partnerships

- A major focus of the CRH project has been to promote collaborative efforts that build on local (communities, civil society organisations, woman and youth groups, SINU, Honiara City Council etc.), national (Government ministries and international NGOs based in SI), regional (SPREP, SPC, Habitat for Humanity Fiji, etc.), and international (UN agencies, World Bank, ADB, etc.) working relationships.
- Providing scientific support for Honiara City council to apply for international funding opportunities e.g., a submission was made to UNDP for Honiara to be an ecological restoration 'pilot city' (awaiting decision).
- A 5-year MOU was signed with SINU at the beginning of the project, and staff and students have been involved with various aspects of workshops and implementation activities. The current emphasis is now on how RMIT can support improvements in teaching and learning, with plans for the Vice Chancellor to visit Melbourne to discuss a continued relationship beyond the life of the CRH project.
- PCPM will be conducting a review of SINU's construction management diploma.
- An MOU is under development with Guadalcanal Provincial Council to support institutional capacity building.
- An MOU with World Vision will also be signed to formalise the partnership for implementing actions in 5 informal settlements.

Applied research informing policy and practice

- The RMIT team has produced a variety of spatial risk assessments to support local decision making e.g., safe locations for evacuation centres, relocation of the National Referral Hospital etc.

- The team developed a GIS tool for community profiling, undertook training of youth to conduct household surveys, and produced a community profiling manual (allowing others to replicate the process).
- Planning and co-production of potential nature-based solutions in the city.
- Mapping of urban gardens.
- Publication of inclusive, disaster resilient shelter guide for informal settlements.
- Technical and design support for local planning e.g., Urban Greening Master Plan, Local Planning Scheme etc.
- During the pandemic, RMIT also worked with UN-Habitat to develop a Covid 'dashboard' for the Pacific.
- Sharing of scientific evidence base for urban climate resilience decision making through an open knowledge sharing platform.

Implementation of climate actions in communities

- Planning and implementation of water tanks in five informal settlements (in partnership with World Vision, 2023 – 24)
- Planning, co-production, and implementation of nature-based solutions to improve drainage in 4 informal settlements (in partnership with PacSol and SINU).

Downloadable reports:

[Wind Valley Community Profile](#)

[Community profiling methodology](#)

[Enumerator training notes: community profiling](#)

[Community engineering actions](#)

[Local validation of community engineering actions](#)

[Kukum Fishing Village - climate resilient community development plan](#)

[Ontong Java - climate resilient community development plan](#)

[Aekafo-Feraladoa Planning Area - climate resilient community development plan](#)

[Wind Valley - climate resilient community development plan](#)

[Jabros - climate resilient community development plan](#)

[Nature-based solutions](#)

[Design and location of new evacuation centres](#)

[Locally Appropriate Peri-Urban Land Administration Options](#)

[Nature-based solutions for enhanced climate resilience of informal settlements](#)

[Inclusive and Disaster Resilient Shelter Guide: Urban Informal Settlements, Honiara, Solomon Islands](#)

[Women, urban gardens, and local food security](#)

Academic publications:

- Vahanvati M., J. Clemo, A. Trundle, T. Lehmann, and D. McEvoy (to be submitted) **Towards Disaster Resilient Informal Housing: Shelter Guidance Principles for the Pacific.**
- D. McEvoy, A. Tara, M. Vahanvati, S. Ho, K. Gordon, A. Trundle, C. Rachman and Y. Qomariyah (submitted) **Localised nature-based solutions for enhanced climate resilience and community wellbeing in urban informal settlements.** *Climate and Development.*
- Ho S., M. Dias Baptista, J. Clemo, L. Livia, and D. McEvoy (submitted) **Climate, Food Security, and Gender in Pacific Cities: Risk, Resilience, and Adaptation in Honiara during the COVID19 Pandemic** *Journal of International Development.*
- Vahanvati M., U. Iyer-Raniga, and D. McEvoy (2023) **Inclusive and resilient shelter guide: accounting for the needs of informal settlements in Solomon Islands** *International Journal of Disaster Resilience in the Built Environment.*
- Liu, J.; J. Tan, S. Zhang, C. Zhong, L. Lv, and A. Tara (2023) **Suitability Assessment of Small Dams' Location as Nature-Based Solutions to Reduce Flood Risk in Mataniko Catchment, Honiara, Solomon Islands.** *Sustainability 2023, 15, 3313.*
- Ho S., M. Dias Baptista, and D. McEvoy (2022) **Community profiling to support inclusive urban community-based climate adaptation: Experiences of a survey-based approach in urban informal settlements in Honiara, Solomon Islands.** *Climate and Development.*
- Mitchell D., B. Barth, S. Ho, M. S. Sait, and D. McEvoy (2021) **The Benefits of Fit-for-Purpose Land Administration for Urban Community Resilience in a Time of Climate Change and COVID-19 Pandemic.** *Land.*
- McEvoy D., B. Barth, A. Trundle & D. Mitchell (2020) **Reflecting on a journey from climate change vulnerability assessments to the implementation of climate resilience actions: Honiara, Solomon Islands.** *Urban Resilience Asia Pacific: challenges and opportunities for addressing disasters and climate change in the built environment.*
- Tara, A., M. Y. bin Ninsalam, N. Tarakemeh, and V. Muni (2020). **Designing with Nature-based Solutions to Mitigate Flooding in Mataniko River Catchment, Honiara.** *Journal of Digital Landscape Architecture, 1(5), 457–466.*
- McEvoy D., U. Iyer-Raniga, S. Ho, D. Mitchell, J. Jegatheesan, and N. Brown (2020) **Integrating teaching and learning with inter-disciplinary action research in support of climate resilient urban development.** *Sustainability.*
- McEvoy D., D. Mitchell, and A. Trundle (2019) **Land tenure and urban climate resilience in the South Pacific.** *Climate and Development.*
- Trundle A., B. Barth, and D. McEvoy (2019) **Leveraging endogenous climate resilience: urban adaptation in Pacific Small Island Developing States.** *Env. and Urbanisation.*
- McEvoy D. & D. Mitchell (2019) **Climate Resilient Land Governance in the Global South.** *Routledge Companion to Environmental Planning.*