

Unitec/MIT Research Symposium 2021 Rangahau Horonuku Hou New Research Landscapes
Monday, 06 December 2021 to Tuesday, 07 December 2021

Day Two – Breakout (Parallel) Session Four
Climate Change Workshop

Climate Change and the multidisciplinary studio

Xinxin Wang, Lucia Camargos Melchiors and Matthew Bradbury

School of Architecture
Unitec Institute of Technology |
Te Whare Wānanga o Wairaka



Problem

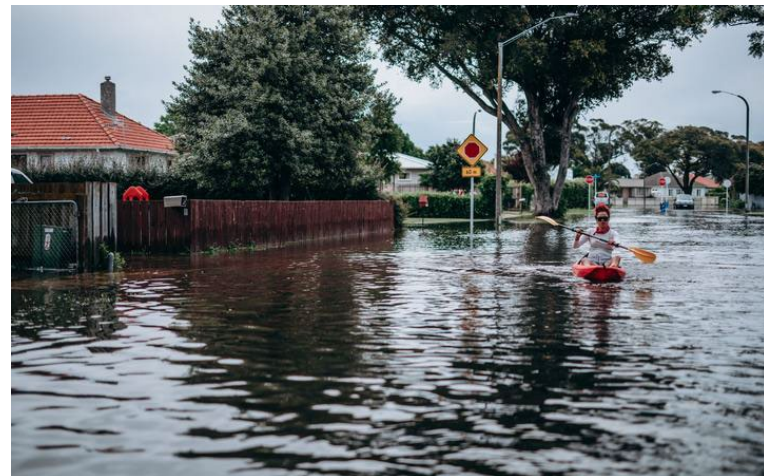
- The environmental effects of climate change have posed many challenges to urban development. Particularly **flooding**, has threatened the provision of affordable **housing** in Aotearoa New Zealand.
- The consequences of this problem can be **catastrophic**, and have already experience by people throughout Aotearoa. With the increasing rainfall and housing densification, the problem is likely to escalate and **affect more people's lives**.
- **How to ensuring the safety of citizens from the effect of climate change in the provision of more affordable housing in future Aotearoa?**



Kumeū flooding



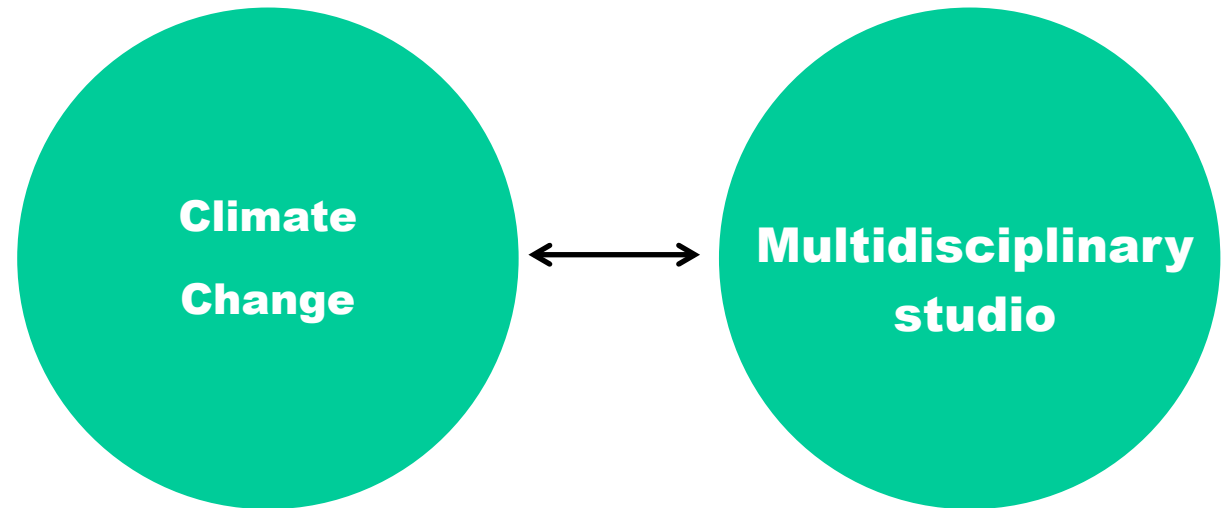
Christchurch flooding



Napier flooding

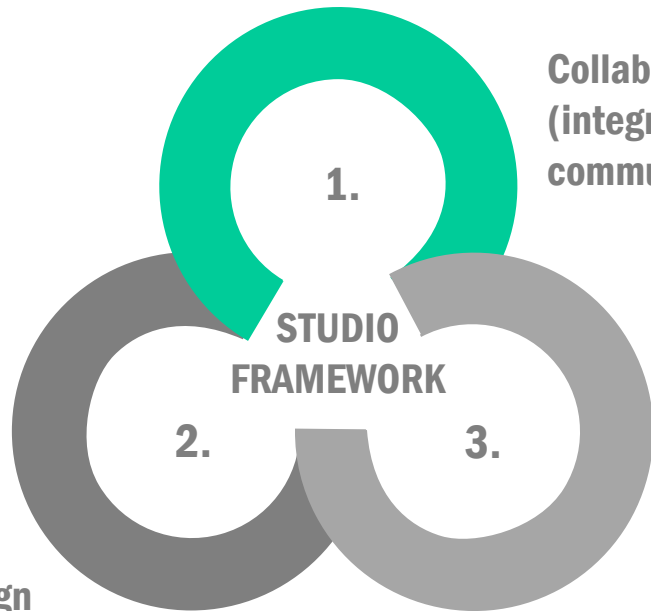
Response

- We argue that **a multidisciplinary approach** is the way to address this pressing issue: landscape architects and architects need to work together to explore new urban model that resilient to the changing climate.
- To investigate this proposition, **a joint Landscape/Architecture studio** was established at School of Architecture, Unitec.



Studio model

Architecture + Landscape architecture



Research by design
and a design process
influenced by
ecological analysis

Collaboration and interdisciplinarity
(integrating disciplines, students and
community)

Acknowledgment of the mana whenua
(Maori iwi) - respect for indigenous
values (Te Aranga Māori Design
Principles)



Year	Project	Topic	Stakeholders	Location
2016	Wellsford	Urbanism	Wellsford community; Guest speakers; Industry critics	Upper Rodney, Auckland
2017	Hihiaua peninsula	Climate change adaptation	the Momentum North group; Hihiaua community; Whangarei District Council; Maori lecturer; Maori critics	Whangarei
2018	Mt Roskill	Urbanism	Mt Roskill community; Guest lecturer; Industry critics; Maori critics	Mt Roskill-Mt Albert, Auckland
2019	Onehunga Port	Climate change adaptation	Panuku Development Auckland; Onehunga Township; Maori lecturer; Maori critics	Onehunga, Auckland
2020	Onehunga Port	Climate change adaptation	Panuku Development Auckland; Onehunga Township; Local Maori representatives; Maori guest lecturer; Maori critics	Onehunga, Auckland
2021	Maybury Street	Climate change and housing	Kāinga Ora - Homes and Communities; Guest lecturers from NIWA, and Auckland Council Healthy Water; Maori guest lecturer	Maybury Street, Glen Innes, Auckland

Design outcomes

Over 6 years of exploration, the multi-disciplinary approach helped students

- Understand the relationship between the effects of climate change and urban development
- Identify appropriate climate adaptation strategies and correlating housing typologies.
- Explore the correlation between housing density and the provision of green space.
- Embed Te Aranga Maori Design Principles throughout design process.



Understand the relationship between the effects of climate change and urban development



Current Sea Level



1m Sea Level Rise



2m Sea Level Rise



3m Sea Level Rise



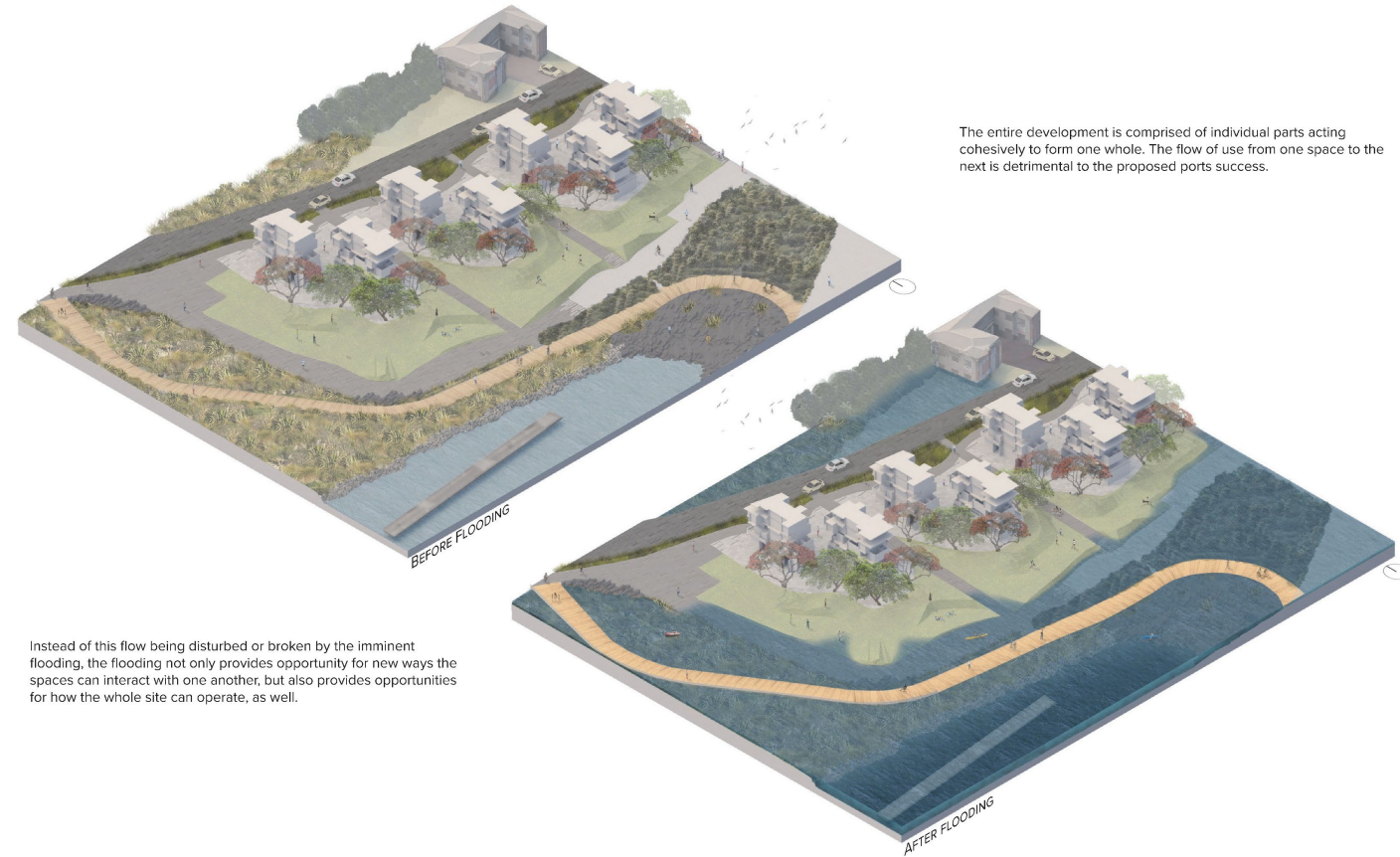
4m Sea Level Rise



5m Sea Level Rise

Image: student group Deepak Badhan, Peter Chen, Suyi Gan, Haiyue Li, Kelsey Stankovich, Yue Yu

Explore the correlation between housing density and the provision of green space.



Embed Te Aranga Principles throughout design process

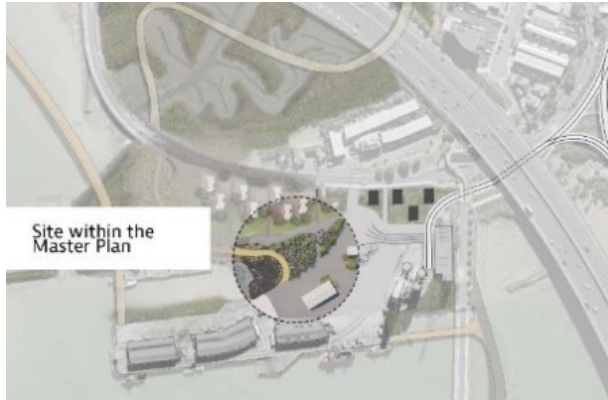


Image credit: Nickolas Fortier.

Mauri Tū guides designers to protect, maintain and enhance environmental health.
Taiao advocates to protect, restore and enhance the natural environment.

Conclusion

- Over the last six years, **the multidisciplinary studio** has been proven effective in designing **new urban models for climate change**, particularly flooding.
- This has resulted in **integrated climate adaptation solutions** that would not have happened through conventional design thinking.
- The multidisciplinary approaches demonstrated in this paper have several implications for **climate resilient urban form**, and highly relevant to professional practices for landscape architects, architects, urban designers, and policymakers.