Faculty of Engineering  
Summer Research Program 2019-2020

Project Title: Regional cities of the future: A “deep dive” towards a novel integrated approach to futureproofing small towns

Supervisor(s): Anna Lintern, Peter Bach  
Department: Civil Engineering  
Email: anna.lintern@monash.edu, peter.bach@monash.edu  
Website profile of project supervisor: https://www.monash.edu/engineering/annalintern  
https://www.monash.edu/engineering/peterbach

Objective
The student will be asked to collate quantitative and qualitative data on urban development and waterway management in a regional centre (Wangaratta), and will then be required to synthesise this information to determine:

- Historical development of this regional centre (both in terms of infrastructure and waterway management)
- Likely future development trajectories of this regional centre

Project Details
As metropolitan areas expand, regional centres are under increasing pressure to carefully plan for the physical and social needs of new populations while attending to pressures on the natural environment such as regional waterways. This requires a sound understanding of the synergistic relationships between urban development, environment and community infrastructure. This is an interdisciplinary project that seeks to develop an integrated data-driven approach to understanding interactions between waterways, community and urban infrastructure development in a regional township (Figure 1). We will examine how to harness unconventional data sources (e.g. historical, environmental, social records)

Prerequisites
Prerequisite units:
- CIV3285/CIV3264 (or equivalent water management/hydrology unit)
- CIV3204 (or equivalent statistics unit)

Desired skills:
- Coding in Matlab, or other language (or desire to learn how to code in Matlab, or other language)
- Ability to use ArcGIS or QGIS (or willingness to learn)

Figure 1. Conceptual Approach to performing a ‘deep dive’ integrated