# Green Infrastructure Lab

STUDENT RESEARCH

Investigating the Interface between Green Infrastructure Planning and Flood Resilience

SYNOPSIS

This research explores the role of GI in enhancing urban flood resilience, focusing on Sydney's Cooks and Georges River Catchments. As climate change and rapid urbanisation increase flood risks, cities worldwide are revising policies to incorporate GI into flood management strategies. However, these efforts often lack a holistic approach and transdisciplinary cooperation among urban planners, ecologists, and hydrologists. By reviewing literature and engaging policymakers and stakeholders through the Delphi method, this study identifies barriers to implementing GI solutions and proposes governance changes to bridge planning gaps. The goal is to foster collaboration for more flood-resilient urban environments.

Cooks River Catchment

Georges River Catchment
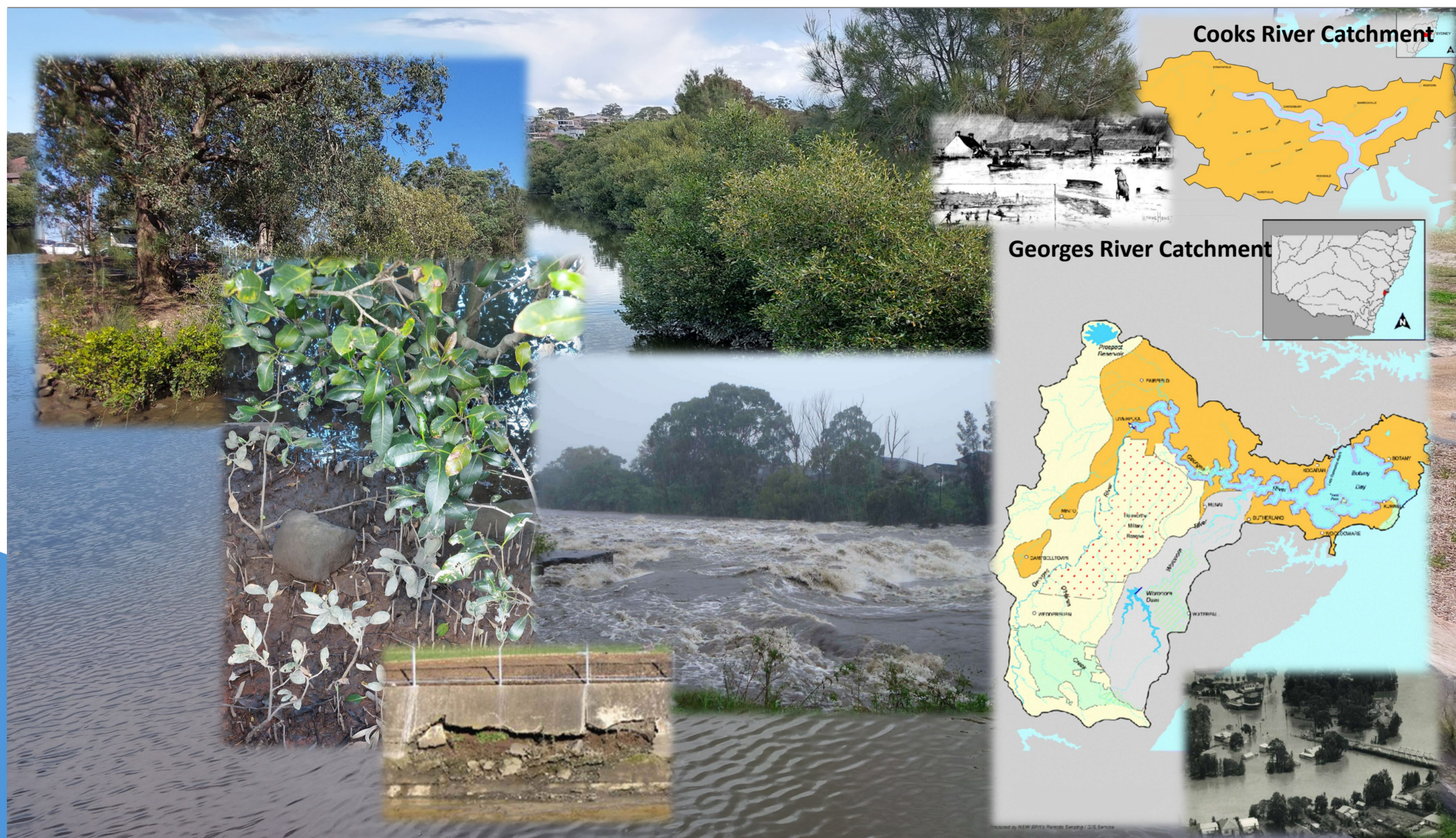
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OBJECTIVES

O1. Explore decision-making in flood mitigation through GI within current governance frameworks, using thematic analysis.
O2. Gather insights from policymakers to identify and reduce barriers to GI solutions for floods, aiming for validated policy enhancements and simplified holistic planning.

METHODOLOGY

This research employs the Delphi method, case study analysis, and thematic analysis to gather insights from policymakers and stakeholders, identifying and addressing barriers to adopting green infrastructure for flood resilience.

ESTIMATED RESEARCH LENGTH

The estimated length of this research is approximately three years, having commenced in August 2021 and projected to conclude by September or October 2024.
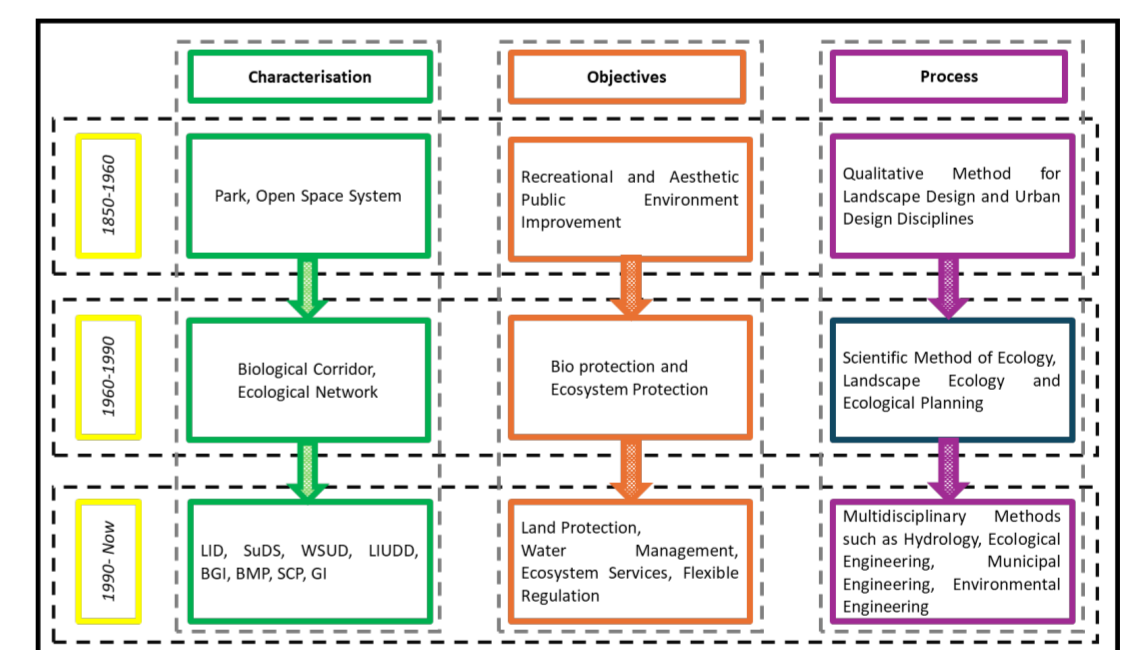
REFERENCES

- The Sydney Mail and New South Wales Advertiser, 1889
- Liverpool City Library, 1956 Flood
- Hegger et al., 2013
- Cunningham, 2017
- Sun et al., 2020
- Georgesriver Keeper, 2022 Flood
- Takin et al., 2023

BACKGROUND

This research explores integrating GI into flood risk management (FRM) to enhance urban flood resilience. It contrasts traditional, grey infrastructure- based approaches with adaptive, resilience-oriented strategies that blend resistance and flexibility, highlighting the former's limitations in the face of climate change. The study focuses on the importance of governance, analysing how policies, regulations, and institutional frameworks support GI in FRM across various countries, including Belgium, England, the Netherlands, France, Poland, Sweden and Australia. Advocating for green governance, it emphasises the need for nature-based solutions in FRM, aiming for sustainable and effective strategies to reduce flood risks and enhance community resilience.

EXPECTED RESEARCH CONTRIBUTION

This research aims to significantly contribute to both academic and practical understandings of integrating green infrastructure (GI) into urban flood risk management (FRM). It addresses a critical gap in current literature by providing a comparative analysis of governance frameworks that support GI in various countries, highlighting innovative strategies and potential for policy improvement. This study not only broadens the theoretical knowledge on flood resilience and GI but also offers actionable insights for policymakers and urban planners, advocating for more sustainable and effective urban development practices. By identifying barriers to GI adoption and proposing governance changes to overcome these, the research has the potential to influence future urban planning policies and practices, making cities more resilient to climate change-induced flooding.

Stages of Green Infrastructure Development

Green Infrastructure and Flood Resilience: Impact and Insights