# JOSEPHINE ROPER

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Summary:
- I am a transport researcher with strong programming skills and a major interest in urban environments and walkability.
- I have a civil engineering background with 6 years of experience on high value construction projects in a multinational company.
- I am passionate about creating policy-relevant research that can influence future urban environments.
- I bring a broad perspective, energy and pragmatism to the teams I work in.

## EDUCATION

**PhD**   University of New South Wales, Built Environment                                    2020-2024
Thesis: "Measuring the potential for walking for transport: development of approaches based on theories of accessibility and mapped perception data" *(submission: 30/4/2024)*
Supervision: [Christopher Pettit](Christopher Pettit) (primary), [Matthew Ng](Matthew Ng)

- Research elements include:
  o   Development of an accessibility index applicable to any mode, using a gravity approach with diminishing returns to opportunities and destination selection based on travel surveys
  o   Comparison of access between different modes in cities across Australia and internationally
  o   Hedonic price modelling using property prices in Sydney for relationship inference with accessibility measures
  o   Qualitative study of residents' perceptions of perceived walkability using an online participatory mapping questionnaire to capture knowledge in a rapid and scalable way
- Tools: Python open-source GIS ecosystem, R, QGIS. Committed to releasing work [open source](open source).

**ME**   University of New South Wales, Transport Engineering                                    2018-2019
Average: 85 (High Distinction)                                                                              (part time)
Core study in traffic management and control, transport planning practice, logistics, transport modelling. Electives in programming, industrial ecology, and engineering ethics

**MPE-BSc**  University of Sydney, Civil Engineering                                    2008-2013
(articulated Bachelor of Science and Master of Professional Engineering program)
Science majors: Pure Mathematics and Computational Science
Engineering major: Structural engineering
Thesis: "Prediction of extreme wind speeds in Australia using historical thunderstorm data and Weibull distributions"

## OTHER RESEARCH EXPERIENCE

**Research Fellowship, Greater Cities Commission, NSW Government**                                    2023
6 months part-time, producing discussion paper: "Accessibility to great local places: Understanding the promise of proximity-based planning for the Six Cities Region" (under

embargo). The paper provides guidance on feasible approaches to measurement and monitoring that will support the implementation of '15 minute city' concepts in the Greater Sydney region.

### Research Assistant, City Futures Research Centre, UNSW — 2020-current

- AHDAP (Australian Housing Data Analytics Platform) project
  - Working on the Colouring Australia knowledge exchange platform – a collaboration with the international Colouring Cities Research Programme
- Value Australia project – a collaboration with the Valuer General and one of Australia's major banks to develop automatic property valuation models
  - My PhD was partially funded by this project, and I have benefited from attending meetings with senior government and industry partners
- iMove project
  - Consulting project creating an open data platform for Willoughby City Council to share transport, accessibility, parking and traffic data with their constituents
- Too hot to play: quantifying the impacts of urban climate change on playground activity
  - Ethics application and project start-up assistance

### Research Assistant, University of Sydney Medical School — 2013-2014

- Analysing health data using R and designing maps and graphs for a consulting project for a government health organization
- Assisting other researchers with running statistical tests

## TEACHING EXPERIENCE

### University of New South Wales — 2020-2022
**Teaching Assistant**, Built Environment and Electrical Engineering

- *GSOE9510 Ethics and Leadership in Engineering*
- *BENV2938 Transport Planning*
- Guest lecturer for *BENV2938 Transport Planning* and *BENV7504 Digital Cities*
- Rated 5.56/6 in student feedback surveys

## ENGINEERING INDUSTRY EXPERIENCE

### Lendlease Engineering — 2014-2020
Prior to my PhD I worked for the civil construction arm of Lendlease, one of the largest Tier 1 contractors in Australia.

- **Project Engineer – National Delivery** — 2018-2020
  My role within this senior team was to lead the standardisation of project cost forecasting and planning tools across Australia. This involved:
  - Liaising with stakeholders from across the business
  - Creation of new project control tools (primarily spreadsheets involving a high level of VBA programming)
  - Travelling to interstate projects to train over 100 engineers in the use of these tools

- **Estimator** 2017-2018
  Responsible for procurement and cost estimating on tenders and variations up to $100 million value, and on much larger projects as part of a team of estimators
- **Graduate Engineer** 2014-2016
  Engineering team for 23km Pacific Highway Upgrade - Oxley Highway to Kundabung:
  o Rotating through site engineering roles - earthworks, bridge construction, piling
  o Managing quality assurance, cost forecasting and driving safety, productivity and program day to day on site

## COMMITTEE ROLES AND ADVOCACY

- **WalkSydney** Committee member 2023-current
  Sydney's peak advocacy body for walking, we prepare submissions, meet with politicians from State and local government and are sought by the media for comment on Sydney walking issues. My position is also responsible for website and technology management.

- **Parramatta Council Active Transport Advisory Committee** 2018-2019

## PUBLICATIONS

Roper, Josephine, Matthew Ng, and Christopher Pettit. 2023. 'Incorporating diminishing returns to opportunities in access - development of an open-source walkability index based on multi-activity accessibility'. *Journal of Transport and Land Use* 16(1): 361–387. https://doi.org/10.5198/jtlu.2023.2308

Roper, Josephine, Polly Hudson, Henry Petersen, Chris Pettit, Thomas Russell, and Matthew Ng. 2022. 'Colouring Australia: a participatory open data platform'. *ISPRS Annals of the Photogrammetry, Remote Sensing and Spatial Information Sciences* X-4/W3-2022 (October): 229–35. https://doi.org/10.5194/isprs-annals-X-4-W3-2022-229-2022.

Ng, Matthew Kok Ming, Josephine Roper, Chyi Lin Lee, and Christopher Pettit. 2022. 'The Reflection of Income Segregation and Accessibility Cleavages in Sydney's House Prices'. *ISPRS International Journal of Geo-Information* 11 (7): 413. https://doi.org/10.3390/ijgi11070413.

Roper, Josephine, Christopher Pettit, and Matthew Ng. 2021. 'Understanding the Economic Value of Walkable Cities'. In *Urban Informatics and Future Cities*, edited by S. C. M. Geertman, Christopher Pettit, Robert Goodspeed, and Aija Staffans, 277–99. The Urban Book Series. Cham: Springer International Publishing. https://doi.org/10.1007/978-3-030-76059-5_15.

Jorm, Christine, Chris Roberts, Renee Lim, Josephine Roper, Clare Skinner, Jeremy Robertson, Stacey Gentilcore, and Adam Osomanski. 2016. 'A Large-Scale Mass Casualty Simulation to Develop the Non-Technical Skills Medical Students Require for Collaborative Teamwork'. *BMC Medical Education* 16 (1): 83. https://doi.org/10.1186/s12909-016-0588-2.

*In Press*
Roper, Josephine, Matthew Ng, Jonathan Huck, Christopher Pettit, 'A participatory mapping approach to capturing perceived walkability'. Under review at: *Transportation Research Part A: Policy and Practice.*

*RGS-IBG, 31ˢᵗ August 2023, London (online).* Presentation, "A PPGIS approach to capturing citizen's views on perceived walkability", Roper, Josephine, Matthew Ng, and Chris Pettit.

*Universities Transport Study Group, 10ᵗʰ July 2023, Cardiff University.* Presentation, "Validating walkability indices – a pilot approach," Roper, Josephine, Matthew Ng, and Chris Pettit.

*7ᵗʰ Smart Data Smart Cities and 17ᵗʰ 3D GeoInfo Joint International Conference, 18ᵗʰ October 2022, UNSW.* Workshop, "Colouring Australia: a new open-data platform for Australian cities", Matthew Ng, Polly Hudson, Josephine Roper.

*7ᵗʰ Smart Data Smart Cities and 17ᵗʰ 3D GeoInfo Joint International Conference, 18ᵗʰ October 2022, UNSW.* Poster, "Using the Colouring Australia platform to collect data on perceived walkability", **Awarded runner-up PhD poster prize.**

*International Geographers Union (UGI-IGU) Congress, 20ᵗʰ July 2022, Paris-Sorbonne.* Presentation, "Walkability: person-scale measurement," Roper, Josephine, Chris Pettit, and Matthew Ng,

*Universities Transport Study Group, 5ᵗʰ July 2022, Edinburgh-Napier University.* Presentation, "Walking accessibility: a new method and comparison of two capital cities," Roper, Josephine, Matthew Ng, and Chris Pettit

*17ᵗʰ International Conference on Computational Urban Planning and Urban Management, 9ᵗʰ June 2021, Aalto University (online).* Presentation, "The real estate value of walkability", Roper, Josephine, Chris Pettit, and Matthew Ng,

**Radio**, ABC Sydney - Mornings program segment, 8ᵗʰ December 2022, "How can we make Sydney more walkable?", https://www.abc.net.au/sydney/programs/mornings/walkability/101748922

## LANGUAGES

**English**: Native Language
**French**: approx. CEFR B1