Micromobility and freight

Exploring opportunities in WA, for Department of Transport and Major Infrastructure WA

Dr Courtney Babb, Prof Carey Curtis, Dr Stephen Kovacs, Dr S Zaung Nau, Dr Hui Xie – Curtin University

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What does Business as Usual look like for last kilometre in Australian cities?

- Rapid increase in complexity of last kilometre delivery post-COVID and
- Centralised distribution hub and spoke models
- Van based delivery systems dominate the urban freight task
- Range of impacts:
  - Congestion
  - Kerbside competition
  - Road safety
  - Impacts on land use
  - Emissions

About the project

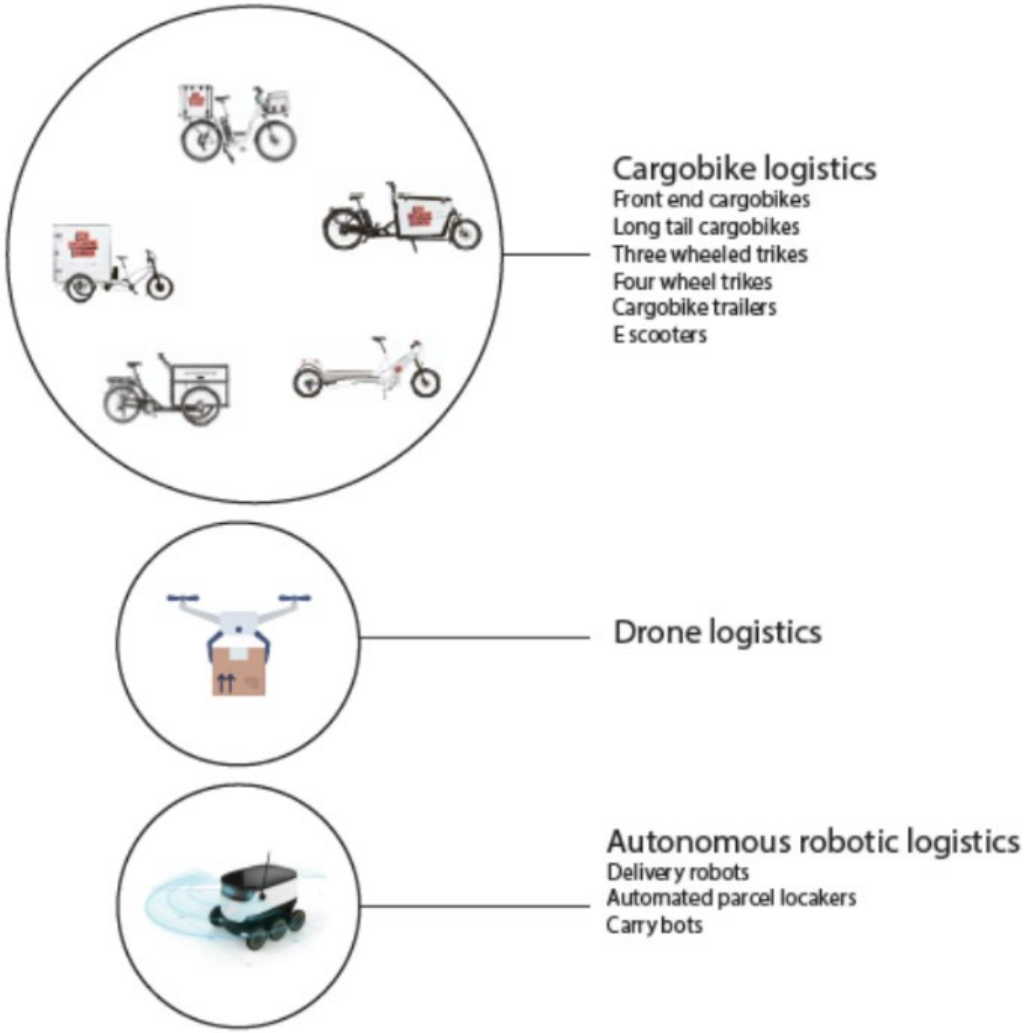
1. Identify the factors influencing last mile freight and micromobility and establish their determinant level;
2. Identify the factors and refine determinants relating to global case studies of micromobility last mile schemes.
3. Develop three to four scenarios of micromobility last mile solutions for the Perth CBD and other relevant locations in the Perth Metropolitan Area.
4. Establish stakeholder views on scenarios and considerations for the application of micromobility last mile solutions for the Perth CBD and other relevant locations in the Perth Metropolitan Area.

Phase 1: Develop Knowledge base: Literature review; Case studies; Interviews

Phase 2: Applicability to Perth: Scenarios; Stakeholder Workshop

Research scope

Vehicle types operating in last-mile logistics vary in size, carrying capacity, energy consumption and physical design. The types of vehicles and the mix of vehicle fleets exhibited in case studies is an important indicator of the types of schemes that are emerging in the micromobility logistics sector.
Market dynamics capture the variety of business models potentially supporting micromobility logistics, reflected in business-to-business and business-to-customer models. Markets served by micromobility logistics also operate at different scales, from boutique, local businesses to major global retailers.
Operational aspects include supply chain pathways and nodes. These are the routes of delivery drivers and consolidation centres where parcels are temporarily pooled and stored, to support opportunities to improve supply chain efficiencies.
Technologies and data are increasingly utilised by logistics operators, government and third parties to improve operational efficiency, aid regulation and support growth of micromobility logistics.
Urban context provides both constraints and possibilities for micromobility logistics. Factors such as urban density, land use mix, street pattern, traffic volumes and topography are potentially influential on the types of micromobility schemes emerging.
Regulation of the street environment for micromobility encompasses rules concerning kerb space access, road rules, and vehicle licensing. **Governance** of micromobility schemes includes the key proponents (usually private companies) and partnerships between key stakeholders (often a mix of business, industry and government). **Policy** regarding transportation and other related sectors, including employment (delivery riders), land use, and emissions reductions, can play a significant role in driving or shaping micromobility logistics in certain cases.



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Research approach

Review of academic literature, industry news, policy and guidance.

Interviews with 20 industry, government and academics stakeholders and experts

Stakeholder scenario workshop – scenario backcasting approach with 17 stakeholders from WA – logistics industry; State and Local Government; WALGA; West Cycle

Case studies, representative of the range of micromobility elements. Major (interviews and desktop review) and minor (desktop review) cases.

- Europe – UK, Paris, Gothenburg and others
- North America – New York, San Francisco Seattle and others
- Australia – Wing Drone Delivery, Australia Post, Goulbourne Stret Microhub, Sydney.
- Asia – Singapore,

Micromobility logistics – general findings

Micromobility logistics offers many benefits for logistics and other businesses, governments and the public.

Key drivers of micromobility logistics will play a continuing and increasing role in the adoption of innovative last-kilometre delivery solutions.

Many barriers to micromobility logistics include business viability and inertia and built environments (eg land for microhubs and safe mobility)

The Micromobility Logistics sector is diverse and each mode, city and scheme responds to a range of contextual factors – vehicle capacity, urban density and built form, institutional context and social licence.

Micromobility logistics

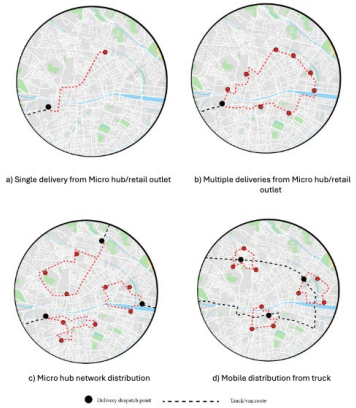
Microhubs are essential infrastructure for enabling efficient last-mile delivery operations

Trials are critical for testing viability, gathering data, and building stakeholder confidence before full-scale deployment

Scaling micromobility and freight solutions requires strategic planning and investment

Governments have diverse roles including direct support, education and communication, regulation, and ongoing monitoring

Different actions should be prioritised based on adding value to the current system and maintaining social licence to operate



Logistics type	WA contexts sharing typical location characteristics
Cargo bike logistics	Perth City, Inner Perth City suburbs(eg Victoria Park, Highgate, Northbridge, Leederville, Subiaco) and centres, Fremantle, Joondalup; Specialised Centres
Drone	Outer suburbs – eg Baldivis, Mandurah, Yanchep, Byford; Specialised Centres; Remote areas.
Autonomous Robots	Inner city suburbs, Universities, Hospitals, Aged Care facilities.

Cargo bike logistics

Cargo bike logistics is rapidly expanding across cities worldwide

Australia has limited cargo bike adoption in logistics compared to other markets

Microhubs require careful consideration of site selection and contextual factors

Successful trials and emerging micromobility logistics industries depend on extensive infrastructure support

Footpaths and kerbside access are critical planning considerations for cargo bike operations

Cargo bike logistics

Select suggested actions:

- **Undertake an audit** of Perth city and inner regions to identify suitable surplus spaces for micro-hubs, documenting available sites and strategies to secure future access.
- Develop guidance for local government authorities and relevant stakeholders to develop **internal policies for managing cargo bike logistics or sharing trials**, including procurement processes and KPIs based on experience, reliability, safety, sustainability, and management capacity.
- Support the establishment of a **pilot micro-consolidation hub** in central Perth area, starting with a small-scale facility that can expand if successful. The Goulburn Street Hub provides a suitable model for implementation.
- Develop **clear communication about laws and rules regarding cargo bikes**, including safety requirements and parking design guidelines for larger vehicles.

Drone logistics

- Strong growth predicted in drone delivery markets worldwide over the next decade
- Wing's drone delivery model in Queensland and Melbourne offers valuable operational insights for Perth
- Key considerations include operations management and route planning optimisation
- Community acceptance/social licence to operate is an important element of successful drone logistics operations.
- Significant opportunities exist for high-value goods delivery and specialised logistics – in Metro Perth and Regional WA

Drone logistics

Select suggested actions:

- **Develop classification systems** for drone noise impacts to inform land use planning around drone hubs and establish appropriate separation distances from noise-sensitive areas.
- **Develop design guidelines** for drone hub infrastructure including rooftop facilities, charging stations, and integration with existing retail/logistics infrastructure.
- Develop proactive **community engagement strategies** addressing privacy, safety, and noise concerns before trial implementation.
- Establish transparent communication channels for **community feedback and complaint resolution** during drone delivery trial phases.

Autonomous Delivery Robots

Autonomous delivery robots are widely adopted at trial and small scales around the world

Key drivers include technological innovation, aging populations, changing consumer preferences, and increased autonomy

Deployment typically occurs in large single-owner sites such as universities and hospitals, or at fast food outlets and convenience stores in urban locations

Potential conflicts with pedestrians and other footpath users remain a key challenge

Robot logistics

Select suggested actions:

- Establish clear **legislative framework defining legal status of delivery robots** on footpaths, following models from South Korea and Estonia enabling jurisdictions/ San Francisco for restrictive jurisdiction.
- Develop **operational standards and thresholds** – eg maximum weights, speed and safety feature
- Establish **clear liability and responsibility frameworks** for robot operations, addressing gaps in current legislation.
- Create **approval processes for trial operations** including safety certification, operator licensing, and compliance monitoring.

Thank you

Report available soon

Project steering committee

- Sarah Court – Department of Transport and Major Infrastructure
- Russell Greig – Department of Transport and Major Infrastructure
- Georgia Scott – Westcycle
- Aron Holbrook – RAC
- Max Bushell – WALGA
- Negar Nili - WALGA