OCT
2025

City Futures

Trends, Claims, and Complications

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Australian Government
Australian Research Council

Published by

FUTURES Hub and Emerging Technologies Research Lab
Monash University Caulfield Campus
900 Dandenong Road
Caulfield East VIC 3145

Acknowledgement of Country

We acknowledge the Bunurong and Wurundjeri Woi Wurrung people of the Kulin Nation as the traditional owners of the lands on which this report was created, and pay our respects to their Elders past and present. We also pay our respects to traditional owners of the present and future human settlements across Australia impacted by this research.

Acknowledgements and funding

We would like to thank Emerging Technologies Lab colleagues for their advice and existing exemplary work in producing similar reports: Dr Fareed Kaviani, Dr Kari Dalghren, Dr Emma Quilty, Professor Yolande Strengers. Extended thanks to the FUTURES Hub team research fellow Dr Melisa Duque, PhD candidates Zane Pinyon, Yuzhe Zhu for their weekly team meetings reflections. Bianca Vallentine and Hatoun Ibrahim for their contributions with the report design and layout. This project is funded by ARC Laureate Fellowship FL230100131.

Suggested citation

Lundberg, R., & Pink, S. (2025). City Futures: Trends, Claims, and Complications. FUTURES Hub and Emerging Technologies Research Lab.

Abstract

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Research design, selection and review of reports, analysis and findings, researcher observations, writing

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In this report we identify and demonstrate: a set of 5 trends which describe the forces that are shaping city futures; and 14 claims that describe how cities are likely to respond to those trends. Together these trends and claims constitute dominant visions for future Australian cities, and are derived from a review of 64 industry reports, policy, planning, and strategy documents. Alongside these trends and claims we have also identified a set of *complications*, drawn from existing social science research that highlight how everyday life experiences, actions and processes might disrupt these trends and claims. The insights delivered in this report forms part of a wider programme of research led by Monash University's FUTURES Hub which will build on and investigate these *complications* to deliver new knowledge about future everyday life in cities, and its role in Australia's digital and net zero transition, including plausible visions of future Australian cities.

Keywords

Australian cities, city futures, everyday life, dominant visions, human values

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In this report we identify and demonstrate: a set of 5 trends which describe the forces that are shaping city futures; and 14 claims that describe how cities are likely to respond to those trends. Together these trends and claims constitute dominant visions for future Australian cities. Alongside these trends and claims we have also identified a set of complications, drawn from existing social science research that highlight how everyday life experiences, actions and processes might disrupt their assumptions.

The insights delivered in this report forms part of a wider programme of research led by Monash University's FUTURES Hub. Our research will build on and investigate these complications to deliver new knowledge about future everyday life in cities, and its role in Australia's digital and net zero transition. We expect this research to contribute to the creation of realistic, plausible visions of future cities.

In this Executive Summary we present the key trends and assumptions concerning the future of Australian cities represented in the reports reviewed. We balance these with informed commentary to illustrate the complications that future human values and practices are likely to bring to these assumptions.

Complicating the trends shaping the future of Australian cities

Trend 1:
Population Growth

Reports assume:

The population of Australia's cities will continue to grow, with that growth often framed as an economic opportunity.

Complication:

Assumptions that growth is inevitable overlook possible futures where technological breakdown, extreme weather, or public health events may disrupt population growth in cities. We recommend close attention to the factors that are likely to disrupt the growth and distribution of future populations, and to alternative economic systems that may support cities in de-growth and circular economy scenarios.

Trend 2:
Net Zero Futures

Reports assume:

Cities will be committed to net zero futures, which will be enabled by technical solutions.

Complication:

Research has demonstrated that people have strong visions for and can contribute effectively to net zero processes through individual, collective, and community actions, and small scale, everyday and ground-up innovations. We recommend attention to the relationship between institutional and technology-driven net zero transitions and the everyday and community innovations and values that will support transition.

Trend 3:
Resilience

Reports assume:

Future cities will be *resilient* to sudden shocks such as cyber attacks and extreme weather events, as well as longer term shifts like climate change and sea level rise.

Complication:

Evidence demonstrates that people and community-led actions can contribute to powerful, positive and hopeful modes of resilience. We recommend attention to the role of such community resilience-building actions, the values and priorities that underpin this, and their alignment with institutional initiatives.

Trend 4:
Efficiency and Liveability

Reports assume:

Efficient urban systems and processes will contribute to liveable future Australian cities.

Complication:

Everyday human values and practices tend to complicate the relationship between efficiency and liveability, for example, caring for others may often be prioritised over efficiency and convenience. We recommend attention to grassroots liveability agendas, and to the values that shape everyday life actions.

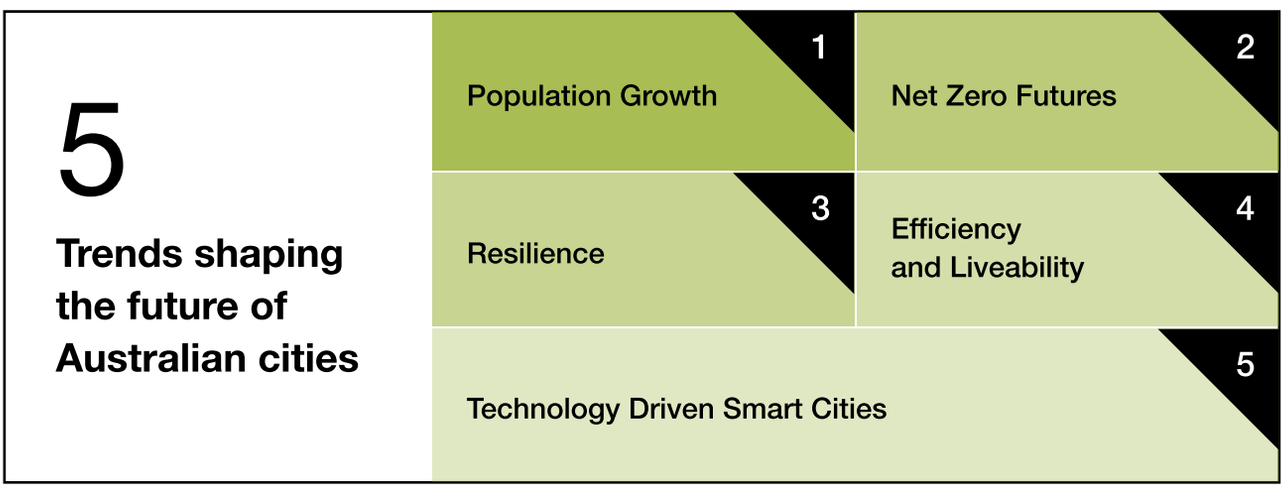
Trend 5:
Technology Driven Smart Cities

Reports assume:

The urban environment will be smart allowing accurate, anticipatory management of buildings, infrastructure, and services, reduced environmental impacts, and improved quality of life for people.

Complication:

The assumed benefits of smart systems are likely to be complicated by the human tendency to appropriate and resist systems driven by automated and artificial intelligence (AI) technologies, as well as the potential for breakdown and failure. We recommend attention to how future people will engage technology on their own terms, and their agency to improve their wellbeing consistent with their priorities and values.



Complicating claims about Australian city futures

Digital technology

Claim 1:
Artificial Intelligence

Claim:

AI will use quantitative data to make anticipatory decisions that support the optimisation, operation, and planning of cities.

Complication:

Qualitative human values, ethics, and priorities will be important factors in people's future everyday decision-making, alongside the human preference to be included in decision-making processes.

Claim 2:
Data

Claim:

Digital data and data-driven systems will be a fundamental building block of the urban environment, with human, technological, environmental and other natural processes all knowable through digital data.

Complication:

There are significant limits to what can be known about human life, values and priorities through digital data, and to the willingness of people to share their data. This will subsequently limit the capability of predictive data analytics to understand future human behaviour.

Claim 3:
Digital Twins

Claim:

All urban systems, processes, and built environments will be supported by digital twins.

Complication:

While infrastructural and institutional elements of futures will likely be well supported and maintained by digital twin technologies, greater consideration will need to be given to how these data-driven systems interface with people in everyday life circumstances and to the benefits they might accrue for people.

Claim 4:
Virtual Reality

Claim:

Cities will expand into new VR environments including the metaverse, augmenting where and how people interact with city institutions, businesses and infrastructures.

Complication:

While VR is likely to play an increasing role in future city life existing reports emphasise economic and governance outcomes, but do not account for either the social relations which underpin them or their environmental impact: research suggests social relations are equally important in VR as in real life; and the environmental impact of growing VR will have consequences for net zero transitions.

The built environment

Claim 5:
Polycentric Cities

Claim:

Cities will be polycentric, improving access to goods and services, amenities, and employment opportunities.

Complication:

Existing proposals for future polycentric cities tend to prioritise local access to goods, services, and employment. Research suggests that people's priorities and preferences can be complex, meaning that different factors will be priorities for different people and communities - including location, housing, employment, leisure, and care.

Claim 6:
Green Infrastructure

Claim:

Green infrastructure will contribute to the health of cities, and the wellbeing of residents, cooling cities, and creating an urban environment that is conducive to low carbon lifestyles.

Complication:

Green infrastructure is likely to bring future benefits to cities and people. However existing reports often overlook how proposed low carbon lifestyles will interface with and support the priorities, values and lifestyles of future city dwellers.

Claim 7:
Vibrant, Local, Mixed-use Communities

Claim:

People will live and work locally in vibrant mixed-use communities where they can readily access their everyday needs.

Complication:

Existing research suggests that the dynamics of how people will live in and experience localities and communities are complex and varied. This includes a series of factors that the reports do not account for, including: the possibility of tension, violence, and conflict; the reality that communities are not always local, but are also virtual, interest-based, or related to other common non-locality-based connections.

Claim 8:
Medium Density Cities

Claim:

Medium density cities will balance population growth and amenity, improve access to goods and services, contribute to housing affordability, and promote low-carbon lifestyles.

Complication:

While future Australian cities are likely to be denser, the transition to medium-density cities will benefit from greater consideration of the diverse priorities that inform people's housing choices, and emerging digital technologies - including drones and delivery robots - that offer new opportunities to address accessibility, as well as new risks for local communities and net zero transitions.

Claim 9:
Circularity

Claim:

Urban systems and processes will be circular, with digital tools used to optimise resource allocation, and track flows of materials and resources.

Complication:

There already exist successful grassroots circular movements that excel at managing the uneven and unpredictable inputs and outputs that characterise urban systems. Accounting for and respecting the social and economic dynamics of these systems will benefit technology and data-driven circularity initiatives.

Claim 10:
Adaptable Cities

Claim:

The built environment will be adaptable, allowing cities to make the most of the space that is available to them by repurposing buildings as commercial and community needs shift.

Complication:

There are many existing examples of successful community repurposing of buildings and spaces. We recommend learning from existing cases and developing new and ethical modes of engagement with the dynamics of community adaptation and repurposing to underpin institutional and commercial initiatives.

Mobility and transport

Claim 11:
Active Transport

Claim:

Active transport modes will be well supported by infrastructure and complementary technologies, contributing to the health and wellbeing of people, and a net zero carbon emissions future.

Complication:

Inclusive infrastructure can increase the possibility of access to active transport, but people's participation in active transport is shaped by everyday life priorities and values, alongside infrastructural changes.

Claim 12:
Personalisation

Claim:

Mobility services will be personalised, on-demand, and multi-modal, making it easy for people to move around the city, and giving them choice about how to do so.

Complication:

Alongside efficiency, mobilities are also framed by priorities and values, related to sociality, caring, exercise, or other activities undertaken while mobile. Additionally research shows that mobility experiences are commonly impacted by the actions of other travellers.

Claim 13:
Electric and Autonomous Vehicles

Claim:

Vehicles will be electric, autonomous, and shared, reducing carbon emissions at the 'tailpipe', and improving the allocative efficiency of the transport network.

Complication:

The future ubiquity of autonomous or shared vehicles in Australian society remains unclear and uncertain. Questions of trust, control, and safety relating to both autonomous and rideshare vehicles and electric vehicle charging sites remain unresolved.

Claim 14:
Public Transport

Claim:

Frequent and reliable public transport will be the backbone around which the urban form of the city will be organised.

Complication:

While improved public transport may support Australians in transporting and caring for others, and offer the freedom and ability to manage complex everyday travel requirements, these priorities have a longstanding deeply held association with private car ownership that may complicate transitions.

Part 1: Background and Report Overview

1

Background

In this report we examine how key organisational and institutional stakeholders envisage Australia's growing future cities as they contemplate and plan for near and intermediate futures of 2030 and 2050. Our focus accounts for the dual transitions where local, state, and federal government, private and not for profit sectors are engaging with the possibilities of emerging digital, automated, intelligent and robotic technologies on the one hand, as on the other their commitments to net zero transitions move from policy statements to practical implementation. We bring together current thinking from across sectors, taking seriously their interdependencies and intersections, based on our analysis of 64 city futures reports from across industry, consultancy, government and advocacy sectors published between 2017 and 2025.

Local, state, and federal governments are tasked with navigating the digital and net zero transitions. In doing so they have often been supported by advice from private sector consultants, not for profit interest and advocacy groups, and the technology sector, which each have particular agendas and assumptions regarding the future of cities. This includes ideas about the design of future sustainable cities and the role of technologies in shaping city futures. These agendas and visions for Australia's future present a consideration of and commitment to technologically enhanced, sustainable, resilient, efficient, productive and livable cities. However they also face a complex unknown: how will the innovative, creative and disruptive influences of future Australian life complicate the best visions and plans for future cities?

This report brings to the fore both the trends and claims that underpin visions of and plans for Australia's future cities and the complicating force of the possible everyday life priorities, values and actions that may support, divert or reshape these plans and the commitments to digital and net zero transitions they represent.

In presenting these complications we invite stakeholders and research partners in Australia's city futures into a new dialogue with FUTURES Hub, to consider how everyday people will live in, experience and ultimately participate in shaping the Australian cities of 2030 and 2050. Over the four years to 2029, we will create and share an unprecedented new layer of knowledge about future city life, to ask how it will complicate the visions of city futures documented in this report and what the implications might be for the assumptions, systems and processes that underpin current ambitions for technological and sustainable urban transitions. transitions impact everyday life; and how will people creatively improvise to reshape transitions. In answering these questions we aim to deliver realistic and plausible visions to support planning for ethical and inclusive digital and net zero transitions.

Summary of findings

Our review identified 5 key trends which describe the forces that are believed to be shaping city futures in Australia, and 14 claims that describe how cities are likely to respond to those trends.

The trends and claims that emerged from these industry reports represented predominantly hopeful city futures, imagining low-emissions cities that were healthier to live in and more efficiently run. This vision of city futures was most often made possible because of emerging digital technologies and spatial strategies that report authors assumed would allow cities to be run more efficiently, despite population growth, more frequent extreme weather events, and digital vulnerabilities.

We found that the reports reviewed tended to focus on technical, economic and environmental questions of future shifts to higher-density, technologically enabled cities, without accounting for how people are likely to participate in shaping future city life and technological and net zero transitions. In our analysis of these trends and claims we draw on academic literature to comment on the possibilities implied by people-led change, that are less well developed in industry reports, and thus do not typically form part of the conversation on city futures.

The premise of our work is that for Australia's digital and net zero transitions to be possible, ethical and inclusive, they will need to be aligned with people's everyday lives, values and practices. At the moment there is a knowledge gap in this respect. In response to this our research brings together two questions: how will the technologies and policies that guide transitions impact everyday life; and how will people creatively improvise to reshape transitions. In answering these questions we aim to deliver realistic and plausible visions to support planning for ethical and inclusive digital and net zero transitions.

Why city futures?

Nearly two thirds of Australians call cities home

is the projected increase in Australia's population from 2017 to 2046

Nearly two thirds of Australians call cities home (AHURI 2022), and those cities are growing. According to Infrastructure Australia (2018, 2) "between 2017 and 2046, Australia's population is projected to increase by 11.8 million people" with 75% of that growth concentrated in Sydney, Melbourne, Brisbane and Perth. Melbourne's population alone is projected to exceed 8-10 million people by the middle of the century, out of a forecast total population for the State of Victoria of between 10-11 million. That means Melbourne will make up between 70-90% of the total population of Victoria (Victoria State Government, n.d.) which is consistent with current rates of urbanisation - at the 2021 census 4 out of 5 people in Victoria lived in Melbourne (Australian Bureau of Statistics 2022). This level of urbanisation is typical of Australia where two thirds of people live in cities (AHURI 2022).

As they grow, Australia's cities concentrate opportunities, bringing together people to work, live, and play, creating spaces that are well regarded the world over for their social, cultural, and amenity value, as well as being regional powerhouses of finance, primary industries, and manufacturing. However, cities also concentrate and create challenges - how to balance population growth with amenity, how to achieve net zero carbon emissions with a growing population while maintaining a standard of living that people have come to expect, how to navigate a world that is increasingly digital and privatised. In this report we turn to face these and other challenges by exploring how they are addressed in industry discourse about the future of cities.

Melbourne's 'missing middle'. Source: YIMBY N.D.

Part 2: Methodology

The aim of this review was to analyse how city futures are imagined by key stakeholders and actors across consultants, local, state, and federal government, the not for profit and community sector, peak bodies and advocacy groups, and the technology sector and urban development industry.

Sourcing ‘reports’

City futures reports analysed

86%

of reports were published between 2020 and 2025

A qualitative content analysis of 64 reports drawn from the above sectors was undertaken. In this review we use ‘report’ to refer to a broad category of published and publicly available documents that in common include technical or professional information about the future of the city in an Australian context, or information that is relevant to an Australian context. A summary of the types of documents included in this review is presented in table 1. Reports were sourced in three main ways:

- The Analysis and Policy Observatory, an Australian based online open-access repository of public policy resources and documents.
- An internet search using search terms ‘future’, ‘futures’, ‘cities’, ‘Australia’, ‘net zero’, ‘climate’, ‘digital technology’, and relevant iterations of these terms.
- Directly from the websites of key consulting firms, non-government organisations, industry stakeholders, and government agencies.

These reports were collected using digital referencing software Zotero. They were then reviewed and included in this review according to the following selection criteria:

- Produced by well-known and credible organisations, with a focus on those that play a leading role in shaping city futures in Australia
- Contributed to decision making processes or aspire to contribute to these processes
- Contained evidence based information about the future of cities in Australia, or that was relevant to an Australian context
- Not more than 10 years old.

The reports included documents published between 2017 to 2025, with the majority (86%) of reports published between 2020 and 2025. This selective sample reflects the dominant ideas about the future of cities and the dominant ideas that are shaping the future of cities, which are the focus of our commentary in this review.

To understand if the reports had been cited elsewhere, or if they cross-referenced one another, the reference list was uploaded to citation mapping platforms Research Rabbit and LitMaps. Citation mapping showed no relationship or cross-referencing between any of these reports. It also showed no references to these reports in existing academic literature. Citation mapping draws on academic databases and therefore does not account for the impact of these reports outside of the academic contexts.

Coding and analysis

This qualitative review analysed what the information contained in industry reports said:

- about the future of cities?
- about future Australian life?
- about how people will live in future Australian cities?

To do this the reports were first imported to qualitative analysis software NVivo. This software was used to identify passages of text that commented on the future of cities. These passages were coded inductively i.e. descriptive words and phrases were developed based on the content of the reports. These descriptive words and phrases were grouped and consolidated into thematic codes before being transferred to a digital whiteboard where they were manually grouped and consolidated further, and relationships between these groups explored in order to identify repeated ideas about the future of cities in Australia.

These ideas were sorted into trends and claims. Trends are patterns that repeated consistently across all or most of the reports that were reviewed, and that described how cities would change over time. Claims are statements about the future of cities that appeared frequently, but did not necessarily appear in all reports.

These trends and claims were summarised and were evidenced and illustrated using direct quotations from the reports. The trends and claims were then reviewed and responded to from the perspective of existing research evidence.

Type of Document	**Number**
Consultancy reports	25
Government reports	7
Planning documents	3
Policy documents	1
NGO reports	24
Strategy documents	4
Total	**64**

Table 1: The type and quantity of documents included in this review. Source: the authors.

Part 3: Trends shaping visions of city future

5 trends appeared consistently throughout the reports reviewed. These trends describe the forces that are shaping the future of cities in Australia.

Trend 1:
Cities will continue to grow

- In the future major Australian cities will be bigger, home to more people and consuming more land and resources than they do today. This is generally seen as an opportunity because size and growth are related to a city's competitive advantage. There are few countervailing narratives to this assumption.
- Ongoing population growth can have a negative impact on the sustainability and liveability of cities if it is not well managed. To address this local authorities will adopt spatial and technological solutions designed to optimise the operation, planning, and management of cities for example digital twins, or medium density housing.

"Cities are home to over 50% of the world's population, a figure likely to rise to almost 70% by 2050. Supporting this trend requires urban development that is 'smart', efficient, sustainable and resilient." (ARUP and Resilient Cities Network 2023)

Complications

- Assumptions that growth is inevitable do not account for possible future population decline, for example in a future where disruptive extreme weather and public health events or technological breakdowns are possible (see Osborne 2019). For example a population decline was reported in Melbourne in 2020-2021 as a result of the COVID-19 pandemic (Remeikis 2023).
- Assumptions that growth is inevitable mean that priority is given to enabling that growth using spatial and digital solutions. It is important to consider how people will live in growing cities, and engage with the urban services, systems and spaces that are developed to accommodate that growth because people often engage with these systems in unexpected ways - this can be a challenge, but also a source of creative solutions to everyday urban challenges in future cities.

Trend 2:
A commitment to net zero futures

- The United Nations commitment to net zero carbon emissions by 2050 is an overarching goal that informs how city futures are imagined in Australia. Cities are recognised as key contributors of carbon emissions and it is assumed that future cities will be shaped by a commitment to this goal.
- As complex systems, moving towards net zero emissions at the scale of the city is a multi-stakeholder process. This means that in order to achieve net zero carbon emissions cities will develop pathways for multi-stakeholder decision making.

- Net zero transitions will be supported by emerging digital technologies like AI, the spatial form of the city (and density in particular), new low-emissions transport modes, and natural processes that can be operationalised as green infrastructure.

"Australian cities are the principal generators of Australia's carbon emissions and, without significant change, the growth of these cities will only increase this trend further" (Infrastructure Australia 2018)

Complications

- Achieving net zero carbon emissions is frequently presented as a technical challenge that can be achieved by using innovative new digital technologies and established urban planning and design paradigms - for example density. Existing research suggests that to achieve net zero transitions in cities further attention should be paid to the role of people and the small-scale "niche" innovations which contribute to transition

Trend 3:
Future cities will be resilient

- Cities will be resilient, able to anticipate and respond to sudden shocks such as cyber attacks and extreme weather events (both of which are expected to become more common in the future), while anticipating longer-term challenges like sea-level rise. In resilient cities economic, social, and environmental systems and processes will continue to function despite such shocks.
- Emerging digital technologies will be used to support resilience. However, cities are cautious about relying on digital technology to support urban resilience as those technologies are also recognised as a vulnerability that can reduce the resilience of cities whether through cyber-attack or unexpected failure. As cities become more digital this vulnerability will increase. Greater emphasis is placed on the built environment and natural processes e.g. green infrastructure.

"Urban resilience is the capacity of a city's systems, businesses, institutions, communities and individuals to survive, adapt and thrive, no matter what chronic stresses and acute shocks they experience." (ARUP 2024a)

Complications

- The visions of future city resilience portrayed in the reports reviewed understands resilience as a top-down, technical and policy-driven strategy. However this is not the only way resilience comes about, and it is important to account for and enable how people and community-led actions will participate in securing resilience in future cities. Existing research demonstrates that communities and activist groups can develop powerful, positive and hopeful modes of resilience, for instance: developing independent "rewilded" community internet systems with non-proprietary software and hardware (Farrell 2024); or resisting corporate encroachment on local values by building parallel people-led initiatives (Pink and Lewis 2014).

Trend 4:

Liveability is a central design principle

- Liveability will continue to be a priority for local authorities, informing how cities are designed and built. In this context a liveable city is one that is a good place to live, which is related to the wellbeing of the people who live there. This will be achieved by creating cities where the built environment, transport and mobility, and digital technologies come together to allow people to balance work and leisure, support social and community connections, and promote an active lifestyle.
- Liveable cities will also be efficient cities. Digital technology will be used to optimise how people experience urban systems and processes, the built environment will be designed to reduce the distance people need to travel to access goods and services, and mobility will be frictionless and on demand.

> *"Livability can be broadly defined as the combination of factors that contribute to people's quality of life and wellbeing. Liveable cities offer a high quality of life and are socially inclusive, affordable, accessible, healthy and safe"* (Commonwealth of Australia 2024)

Complications

- The association between liveability with efficiency reflects a technical orientation towards the city, which is concerned with how to manage the pressures that result from growth and development. However this assumption does not account for how people shape their own lives in cities, which may complicate the relationship between livability and efficiency: for example existing research demonstrates that people who live in cities tend to prioritise caring for others, safety, and diverse activities. Accounting for how culturally and generationally diverse people experience the livability of possible future cities will also complicate proposed pathways to livability through technological advances and the spatial reconfiguration of cities.

Trend 5:

Cities, precincts, and buildings will be smart and get smarter

- Smart digital technologies will be used to automate urban built environment processes such as energy supply, waste management, and when different activities occur. This will allow accurate, anticipatory management of buildings, infrastructure, and services. It is believed that this will support a more seamless experience for people living in cities, and reduce the environmental impact of cities.
- Smart city technologies and zones will be key in enabling other elements of future city visions, including livability, sustainability and resilience.

"Smart Cities technologies, such as Artificial Intelligence, Digital Twins, Sensors and micro energy smart grids, help contribute to sustainable development and resilience of a community. These technologies enable greater capability to monitor, track and analyse activities and their impacts on waste, pollution and greenhouse gas emissions" (Standards Australia 2024)

Complications

- Research suggests we should be cautious of the assumption that people aspire to technology-driven seamless experiences and services delivered by automated and AI technologies. In their everyday lives people frequently re-design and subvert experiences and services shaped by automated technologies including: self-tracking and personal fitness devices (Fors et al. 2019).
- While most of the reports discuss the benefits of technology to people, people are rarely imagined as taking part in the design, development, or implementation of digital solutions. Research suggests that people are interested in using the new knowledge they can acquire from automated technologies in order to make their own decisions regarding how to act in their city environments for example using environmental data to decide how to dress (Pink et al. 2022).
- Smart cities rely on the datafication of the urban environment so that the outcomes of any interventions can be measured and monitored. This does not account for how people will engage with the practical, environmental and political dimensions of the relationship between digital and net zero transitions, or alternative ideas about how these transitions can be achieved (Geoghegan and Cugurullo 2025).

Shared streets of Bradfield City centre. Source: CBRE 2024.

Part 4: Dominant claims about city futures

This review identified 14 claims about city futures. These future claims focus on particular features of the urban environment, how those features will change, and the implications of that change on the city over time. These changes correlate with the trends described earlier in this report and have been grouped into three themes; digital technology, the built environment, and mobility and transport.

Digital technology

Claim 1:

Artificial intelligence will make operational and strategic decisions

- AI will be used to monitor and anticipate human behaviour, urban systems and processes, and the natural and built environment in order to predict the interventions that are required to keep the city running smoothly.
- By using real-time data, AI will be able to grasp the complexity of the urban environment which will allow it to think through the implications of operational and strategic decisions. This will open up as-yet-unanticipated solutions to urban problems.
- AI's ability to manage complexity allows it to balance the optimisation of urban systems and processes, with the personal needs of individual people. This will create a personalised urban landscape, which is experienced differently by different people.
- AI's ability to quickly and decisively make decisions, coupled with an urban environment that is digitally enabled by the internet of things, will allow AI to make and act on operational decisions, solving everyday problems before they can become more persistent issues. Over time we will see a shift from near real-time (automated) to anticipatory decision making.

"While chat assistants are currently among the most common solutions powered by AI, cities will evolve to have digital platforms as 'city brains', where all urban activity is orchestrated and operated, providing a holistic view of the city, allowing for events correlation, fast and assertive 'root cause' analysis, predictive analysis (through machine learning) and incident management, and providing operational insights through visualisation." (Deloitte 2021)

Complications

- The use of predictive data analytics to monitor and anticipate human behaviour is already widely used across many sectors, including in those relevant to future cities, for example, in recommendation systems like digital maps. However digital data about human behaviour cannot account for the qualitative values, ethics and priorities which inform human activity. We therefore recommend treating the potential of AI systems to deliver accurate predictive data analytics for future cities with caution.

- Data-driven personalisation can be extremely effective and even lifesaving in some situations (e.g. health diagnostics). However, in an urban context data driven personalisation can also play a role in diminishing autonomy (Iveson and Maalsen 2019) as well as shared and collective experiences which can contribute to the social, cultural, and emotional wellbeing of the people who live in cities.
- Existing research suggests that people often prefer to make their own decisions based on accessible digital data, rather than to have personalised services and decisions made on their behalf. This suggests that assumptions that AI decision making will ensure operational efficiency by connecting the personal to the city level might become complicated by lack of everyday life interest in or engagement with systems for personalisation.

Claim 2:

Data will be a fundamental building block of the urban environment

- Data will be essential to the day to day functioning of cities, as well as to their long-term planning; underpinning decisions made by automated systems, and allowing people in leadership positions to make informed and insightful decisions about the future of cities.
- Almost everything will be knowable through digital data. This includes the built environment, and urban and natural systems and processes, as well as human behaviours. This will be made possible by the internet of things which will create and share data and the physical environment, and cloud computing which supports anytime anywhere access to those data. The interoperability of systems will also be critical.
- Alongside data created about people and their behaviours, the sharing of personal data with civic authorities will be commonplace. This will be predicated on robust privacy and security measures, as well as the demonstrated success of data driven projects.

"Data is now the bread and butter of everything we do."
KPMG 2022c)

Complications

- While the infrastructures for data creation are widely discussed, the infrastructures for data storage and management are less well explored. This is critical because of the environmental impacts that are associated with data storage (Monserrate 2022), as well as privacy and security concerns that are informed by the geography of data storage (Gonzalez Monserrate 2023).
- Claims about datafication assume that everything can be known through digital data. However it is increasingly recognised that digital data about human behaviour cannot account for the qualitative values, ethics and priorities which inform human activity (Khaokaew et al. 2025).

- It is assumed that robust privacy and security measures will ensure that digital data can effectively be shared. However, existing research demonstrates that trust in institutions who would collect, store and use data cannot simply be generated by establishing these measures (Pink and Quilty 2025).
- Claims about data and datafication assume that data will be created and stored 'just in case' it is needed. The ethical and environmental implications of this 'just in case' approach require greater consideration.

Claim 3:

Physical assets, systems, and processes will be supported by digital twins

- The physical assets, systems, and processes that make up a city will be supported by an accurate digital representation called a digital twin. These twins will connect to their physical twins in real time, allowing authorities to monitor and intervene in their operation.
- Digital twins will operate at different intersecting spatial scales, allowing city managers to optimise precincts, buildings, assets, systems, and entire cities. This optimisation is possible because digital twins allow authorities to 'see' how their assets are interacting with natural and human systems that would otherwise not be visible.
- Digital twins will be central to the design and development of the built environment, allowing authorities to create detailed digital prototypes that allow designs to be optimised in a digital environment before they are built in the physical environment. This supports more efficient use of material resources, contributing to lower carbon emissions

"Today, city planners and asset developers use digital twins and virtual worlds to simulate everything from the development of new transit systems through to the design of tiny individual components" (KPMG 2022c).

Complications

- Digital monitoring and predictive maintenance will be able to be undertaken by digital twin, automated and robotic technologies. However existing research suggests that human decision-making, monitoring and judgement will still be required (Jayaraman et al. 2024).
- Digital twins can be used to predict or simulate possible future scenarios based on those aspects of technological, environmental and human systems that can be datafied. However, because data-driven prediction cannot account for how the everyday life values and priorities of future humans will shape their relations with and use of the future physical city, their predictive capacity is limited.
- The use of digital twins in prototyping invites unprecedented opportunities for involving everyday people as participants in testing, co-designing and evaluating the plausibility of future city design and planning, and in doing so to improve livability and efficiency of future cities.

Claim 4:

Virtual reality will change where and how people interact with cities

- People's interactions with the city will be augmented by virtual reality (VR) technologies and platforms. This will include VR or augmented reality (AR) overlays that are projected onto the built environment.
- VR environments will be used across a wide range of everyday city activities, including: entertainment, advertising, to request city services, and for shopping, buying and selling.
- 'Metaverse' (online virtual environments) will deliver digital versions of cities in which people might, for instance, explore a digital replica of the urban landscape, meet friends, buy and sell goods, and access council services. This will allow people to interact with, experience, and 'live' in cities regardless of their real-world location. It will also allow cities to grow beyond the constraints of their physical environment, which will open up opportunities for speculation in digital services and property.

"Perhaps one of the most noticeable changes in the customer relationship in 2030 is that much of it now happens in virtual reality. Web 3.0 and the metaverse have created spaces where many citizens now interact with government and healthcare professionals, as well as private companies and communities. More and more often, virtual worlds are becoming the channel of choice for both citizen-customers and governments." (KPMG 2022c)

Complications

- The social life of future virtual worlds is unaccounted for in the reports reviewed. However social science research has demonstrated that virtual and metaverse worlds are already complex social worlds or "places", rendering benefits to people living with disabilities, delivering educational programmes and conferences (Boellstorff 2024) as well as being sites of danger, gender-based violence and crime (McGlynn and Rigotti 2025).
- Existing understandings of virtual worlds as sites for economic growth tend to reflect a "fallacy that size equals significance [which] reflects how metaverse hype construes 'society' as 'market.'" Whereas, in depth anthropological study of metaverse worlds show that "as in the physical world, many vital domains of [metaverse] culture will be relatively small" (Boellstorff 2024, 53).
- Discussions of the relation of VR, AR and Metaverse to Australian cities do not acknowledge the complex relationship between the growth of virtual city worlds and climate change, representing a knowledge gap relating to how everyday life and national commitments to net zero transitions will be played out in metaverse cities or the consequences of this.

The built environment

Claim 5:

Cities will be polycentric, improving access to jobs, housing, and goods and services

- Established city centres (central business districts) will continue to play an important role as drivers of economic growth. Building on this, a network of centres distributed throughout the metropolitan area will be developed. This will allow goods and services, entertainment and amenity, and employment opportunities to be distributed more evenly, allowing more people to work, and access goods and services closer to home.
- The basic unit of development in this new 'polycentric city' will be the precinct. Concentrating on development at this scale will allow coherent urban design that supports place-based identities. It will also allow different activities (for example, different business activities) to cluster in different locations across the city.
- Moving away from a hub-and-spoke model to a network of centers will create a city where it is easier to get around because demand for transport will be distributed across the network.
- New centers will be concentrated in areas that are well served by existing infrastructure, and will be supported by major city shaping infrastructure projects such as Suburban Rail Loop in Melbourne, and Sydney Metro in Sydney.

"We are witnessing a rising polycentric city trend, that sees multiple business districts spread across a wider city domain, allowing citizens the ability to work and play in closer proximity to home, supported by a wide range of place-based services" (KPMG 2024b).

Complications

- A future city of centres could offer a more even distribution of some services, work and education opportunities easier to access locally. However, while this may redistribute access to essential goods and services, people's residential sites, housing preferences and cost ranges and professional choices do not necessarily all coincide in the same localities. Existing research into precinct-level sustainable development has demonstrated that attention to the dynamics of "people, politics and place" (Sharp et al. 2022) supports the alignment of existing grassroots net zero initiatives and future imaginaries about precinct users and dwellers, diverse stakeholder organisations, and the natural and built environment. Attention to these future people and their priorities and values is also important as they will play a substantial role in shaping precinct futures, and their net zero and digital transitions.

Claim 6:

Green infrastructure will contribute to the health of cities and the wellbeing of residents

- In a warming world green infrastructure will help to cool cities, creating an urban environment that is conducive to low carbon lifestyles - for example, walking and cycling - even on hot days. This infrastructure will be integrated into private buildings as well as publicly owned buildings and spaces.
- Green infrastructure such as green roofs and walls, tree lined cycle ways, and restored waterways, will create healthy environments by capturing and removing emissions from the air, and will support biodiversity that is crucial to the health of natural systems (e.g. soil) that have been disrupted by urbanisation.

"Cities tend to be planned and designed for people, with 'green' streets, new corridors and public spaces as centres of social life. A clean and green city has the potential to capture and store carbon dioxide" (Deloitte 2021).

Complications

- Claims about the impact of green infrastructure on walking and cycling emphasise nature as a pleasant, healthy, and safe environment. However many of the reports reviewed do not engage with the future infrastructural needs of diverse people who experience existing infrastructures. For example, social science research has demonstrated that everyday cyclists articulate their future green infrastructure needs in terms of sensory and physical accessibility for cyclists who are culturally diverse, neurodiverse and living with disabilities (de Silva and Pink 2025). Attention to these future human experiences and needs will support design for safe and inclusive net zero and digital transitions.

Claim 7:

Data will be a fundamental building block of the urban environment

- Different land-uses that have traditionally been segregated into functional zones will come together in vibrant, mixed-use communities where people can readily access their everyday needs within 15 to 20 minutes.
- A distinctive place-based identity is an important selling point within cities with distinctive identities allowing neighbourhoods and precincts to flourish alongside one another, rather than competing.

"One way cities could adapt is through mixed-use neighborhoods—that is, neighborhoods that are not dominated by a single type of real estate (especially offices) but instead incorporate a diverse mix of office, residential, and retail space" (McKinsey Global Institute 2023).

Complications

- While there are many examples of how people living in small cities create positive and sustainable community agendas (Pink and Seale 2017), localities also involve tensions, violence, population shifts and other conflicts. Moreover for some people communities and identities are not local. Attention to the dynamics of how people will live in and experience localities and communities will support a more nuanced alignment between digital and net zero transitions and the future of local and community living.
- Claims about living locally emphasise how people move around their local communities - for instance by walking and cycling. However, there is evidence that goods and services will also be made available through on-demand delivery services and robotic delivery technologies like drones (Phan 2024). Careful consideration of for whom, where and when such services might be desirable and plausible, and how they might work in relation to local businesses and other services will support such initiatives.

Claim 8:

Cities will balance population growth and amenity by getting denser

- Cities will manage population growth by growing upwards rather than outwards, with that density focused in areas that are already well-serviced by infrastructure and amenity. Most reports imagine a medium-density future, though some imagine high-rise futures as well.
- Higher density cities will support emissions reductions by facilitating low-carbon lifestyles and through the efficiency gains in both construction and operation that follow denser building.
- By growing upwards rather than outwards higher density cities will increase housing supply which will support housing affordability.

"More people living in established areas means Victorians would enjoy greater access to jobs, education, shops, services and existing transport infrastructure by both public transport and cars"
(Infrastructure Victoria 2023a)

Complications

- Claims about increasing density emphasise high density cities as high amenity environments where people have easy and abundant access to goods and services, and that are therefore desirable places to live. However, the diverse cultural values that inform the choices people make about where they live - including building typology and location - are likely to influence desirability of these places (Stone et al. 2022). Attention to these values will be vital for negotiating socially and culturally sustainable net zero transitions.
- The reports reviewed emphasise how high population density can support local retail and service provision and therefore easier access to goods and services. However the reports reviewed did not account for possible future impacts of using emerging on-demand delivery technologies like drones and robots, to address inaccessibility in low-density suburban communities, or the consequences this can have for local communities.

Claim 9:

Circularity will be a fundamental design principle for urban systems and processes

- Urban systems and processes including water, energy, food, and waste will be produced locally, with the impacts of these systems, and their waste outputs also managed locally.
- Practices that reduce the environmental impact of everyday life will be commonplace, for example through an emphasis on sharing, reusing, and repurposing resources, with disposal a last resort.
- Digital tools will be used to manage circular urban processes by optimising resource allocation, and tracking flows of materials and resources through these systems.

"Cities are adopting circular models based on a healthy circulation of resources, and principles of sharing, re-use and restoration, with an emphasis on limiting municipal waste volumes and on producing locally – for instance, urban farming" (Deloitte 2021).

Complications

- Bringing circular principles to the design of urban systems and processes like water and waste will support cities achieving net zero targets, alongside wider environmental benefits. Research shows that many communities are already engaging in circular economies, and that these grassroots circular movements are good at accounting for the uneven and unpredictable inputs and outputs that characterise urban systems. It would be beneficial to consider how these grassroots examples can be built on by local government to achieve impact at scale.

Claim 10:

The built environment will be adaptable, making the most of available space

- An adaptable built environment will allow cities to make the most of the space that is available to them. Buildings will be able to quickly and easily be repurposed from one function to another e.g. from commercial to residential. Streets will accommodate different activities at different times of day e.g. parking may only be available at certain times of day.
- Adaptability will be made possible by urban design and architecture that makes space easy to change, digital technologies that monitor how spaces are being used, and data analytics will be used to inform how the space is altered.

"The most ambitious vision is a universal, "neutral-use" building whose design, infrastructure, and technology could be easily modified to serve different uses. Imagine a medical building that could be easily converted into, say, a hotel or an apartment building if customers' preferences changed. More modestly, buildings could be designed to accommodate different degrees of collaborative and individual work or different arrangements of open and closed offices" (McKinsey Global Institute 2023).

Complications

- Claims about adaptable urban environments emphasise adaptability as a way to create cities, precincts, buildings, and streets that are responsive to the needs of local communities over both the medium and short term, while reducing the environmental impacts of change, and the disruption that comes with construction. However, a dynamic urban environment also has the potential to impact the sense of place and community belonging. Therefore it would be beneficial to consider how communities are involved in making change, including what changes are made and how those changes are enacted (Kapsali 2023). This should include consideration of the diverse needs and abilities of the people who might be involved in such processes.

Mobility and transport

Claim 11:

Active transport will be well supported, contributing to the health and wellbeing of people, and a net zero carbon emissions future

- With more goods and services available locally, active transport will enable people to access the essentials they need for everyday life. This will be supported by design interventions that make active transport easy and enjoyable like dedicated green cycling corridors, and policy interventions that make it safer like reducing the speed limit on local roads, as well as the number of cars.
- As climate change makes cities hotter and reduces air quality, active transport users will be protected by green corridors. Micro-mobility solutions like e-scooters and e-bikes will also make it easier to choose hybrid modes of active transport in hot weather. These interventions will also make active transport a viable longer-distance mobility solution.

> *"Investment in walking, cycling and micromobility programs will give people more choice in how they move. The benefits of more people choosing these options include improved air quality and urban amenity, reduced car use and traffic congestion, and a general improvement in the health of communities."* (Transport for NSW 2022)

Complications

- While the reports reviewed outline a beneficial focus on active transport, existing research demonstrates that the modes of transport people use are often informed by everyday priorities such as care for themselves and for others. For example people see active transport modes, such as walking, as involving social as well as health opportunities (Pink et al. 2023). At present there are many situations in which active transport is not viable due to the need to care for and transport others, or where safety is a concern (Pink and Quilty 2025). Attention to how future everyday life values and priorities will inform people's decisions about active transport choices will support the health and sustainability benefits of future active mobility design.

- The reports reviewed portray active mobilities predominantly as walking and cycling. However, existing research demonstrates that people with disabilities practice active transport using assistive technologies, including wheelchairs (Pink et al. 2023), specialised navigation assistance or companion species support (Lee 2022). Attention to these diverse modes of active mobility will support inclusive pathways to future active mobilities.

Claim 12:

Mobility will be personalised, on-demand, and multi-modal

- The transport network will consist of a range of different mobility services that complement one another. This will give people more choice about how to get where they want to go. Integration between these modes will make it easy to transition between modes as people are traveling.
- Mobility will be designed as a service that is available where and when it is needed, making travel more efficient, and reducing carbon emissions. This will be enabled by real-time data and algorithmic services that guide people through their journey. This model will include last-mile freight and postal deliveries, allowing people to bring things to them, as well as move themselves.

"Future transport algorithms will likely nudge customers through the network, balancing individual preferences with network and social requirements." (KPMG 2022a)

Complications

- In the reports reviewed the first and last mile are assumed to be transportation problems that can be solved by technological innovation. However, existing social science research demonstrates that people "use" the first and last miles of their journeys for a number of social, caring and exercise activities. These "uses" of the first and last mile complicate assumptions that the technological solutions proposed will be effective. We recommend accounting for new knowledge about how human priorities and values will shape their future use of the first and last mile in everyday life, including in future extreme weather and other changing circumstances.

Claim 13:

Vehicles will be electric, autonomous, and shared

- Private vehicles (including cars, scooters, and bicycles) as well as shared vehicles (including trains, rideshare, bus, and tram) will be electric. Larger freight vehicles intended for inter-city trips will be powered by renewable hydrogen.
- With the exception of scooters and bicycles most vehicles will be autonomous, as will local freight solutions.
- Electrification and other sustainable fuel solutions will reduce carbon emissions, while shared autonomous vehicles will allow greater allocative efficiency, reducing the number of vehicles on local roads, which will reduce the need for investment in new infrastructure. Reduced emissions and congestion will contribute to a more pleasant street environment for people.

While we aren't seeing many self-driving cars on the roads yet, most experts agree that this technology offers huge potential to improve safety, traffic flow and transport accessibility" (Transurban 2024).

Complications

- Existing research suggests that people are more likely to be interested in vehicles with autonomous features than in fully self-driving cars (Pink, Fors, and Glöss 2017). This suggests that it is highly unlikely that a high percentage of passenger trips in Australia will be in self-driving cars in the near future.

Claim 14:

Mobility will be personalised, on-demand, and multi-modal

- Public transport will be the backbone of the transport network providing the framework around which other mobility solutions (including the private car) and the urban form of the city will be organised. Rail will play a particularly important role, determining where development will occur.
- Providing high speed, low emissions connections between precincts, and between regional cities, high capacity public transport will connect seamlessly with local mobility solutions. These might also be public transport, for example buses, but are likely to be multimodal including newer solutions like shared autonomous vehicles, micro-mobility.
- Public transport will be operated in partnership with the private sector with oversight from the public sector to ensure that it remains affordable and accessible.

"SRL (the Suburban Rail Loop) will support the creation of 20-minute neighbourhoods by building transport infrastructure that reshapes the city and supports more local journeys by public transport and fewer trips by cars" (Suburban Rail Loop Authority 2021).

Complications

- Claims about the future of public transport emphasise how it will allow people to move swiftly and easily around cities. This reflects an emphasis on the optimisation of the urban experience for each individual person. However, research demonstrates that, alongside frequency and reliability, people's experiences of public transport are significantly impacted by their interactions with other passengers (Bissell 2010) as well as the opportunities and affordances that time spent travelling creates (Hjorth and Pink 2014). Consideration needs to be given to the collective experience of public transport, and to people's diverse values and priorities that shape that experience.
- Australia has a strong car culture, associated with a sense of freedom, the ability to care for others through transportation, and the ability to manage complex daily travel requirements.

A 'future ready street'. Source: WSP and Uber 2020.

Part 5: What does the future city look like?

5

Visualising claims about city futures

In this section we use generative AI platform SORA to visualise the claims that have been discussed in this report. To do this we overlay those claims onto three sites in Australia in which we have already undertaken collaborative research to deliver new understandings of future urban sites:

Argyle Square

A public park in the City of Melbourne that has been used to prototype a future smart public space. In this site we explore the claims that relate to digital technology.

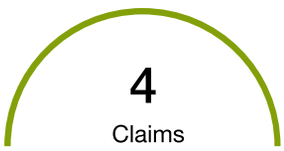
Murray Bridge

A rural city in South Australia that aspires to become a thriving, socially and economically sustainable satellite city over the next 40 years. In this site we explore the claims that relate to the built environment.

Monash University's Clayton Campus

The focal point for the development of a net zero carbon emissions precinct by 2050. In this site we explore the claims that relate to mobility and transport.

Alongside these images we include observations about the futures that those images evoke. We note the limitations of generative AI in being able to create images that reflect the complex reality of everyday life in cities. Hence, consistent with social science analysis of images (Bratchford 2018) our observations emphasise what is evoked by these images, rather than what is represented.



Digital technology

Argyle Square (pictured overleaf, top) is a public park in inner-city Melbourne where the local council has been piloting the widespread use of sensors and real-time data to monitor and manage the park. This site is also home to one of the city's first public digital twins. In this report we have identified 4 claims about the role that digital technology will play in futures cities:

Claim 1:

Artificial intelligence will make operational and strategic decisions

Claim 2:

Data will be a fundamental building block of the urban environment

Claim 3:

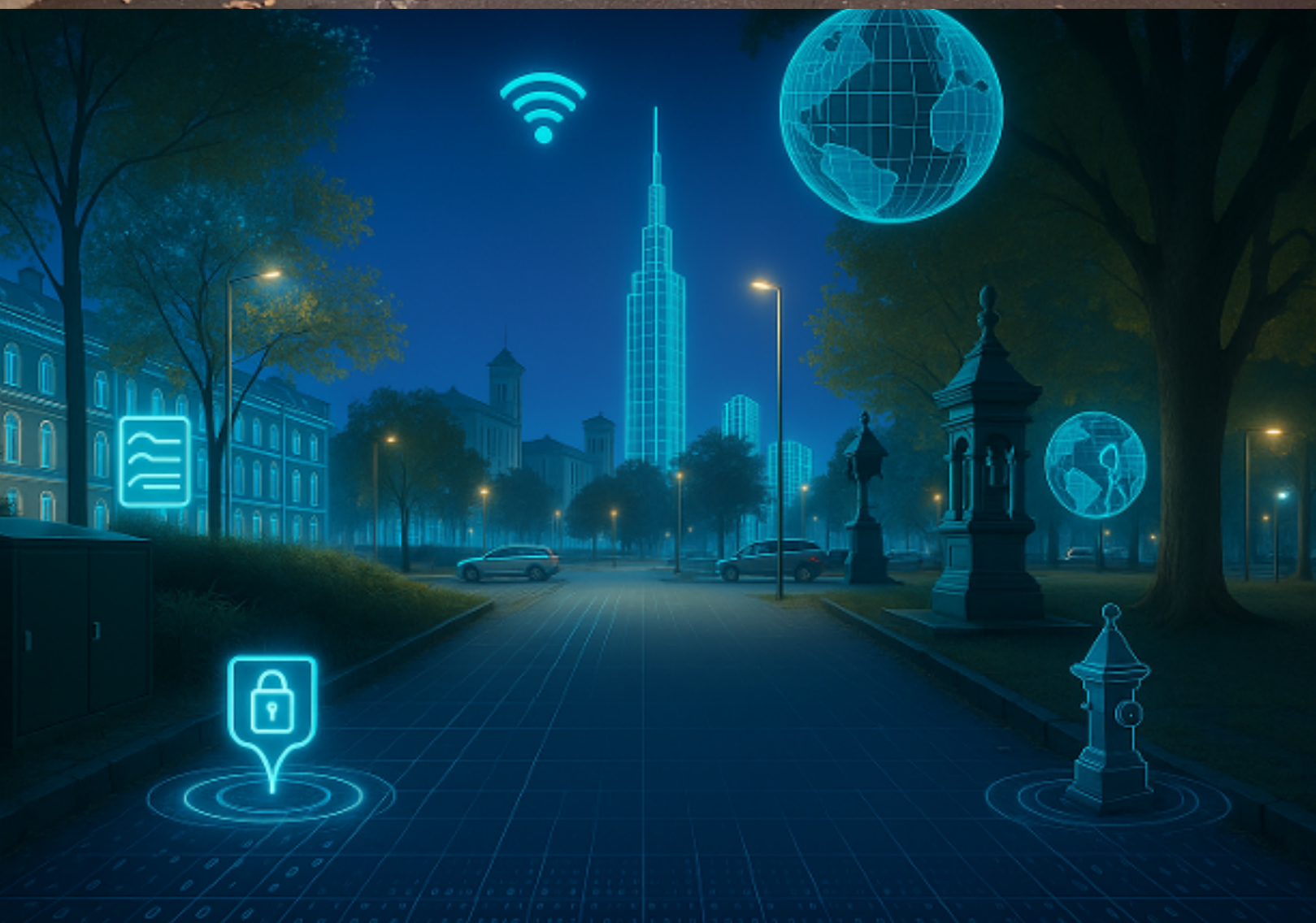
Physical assets, systems, and processes will be supported by digital twins

Claim 4:

Virtual reality will change how and where people interact with cities

Using generative AI platform SORA these claims were overlaid on an image of Argyle Square taken by a member of the research team during fieldwork. This image (overleaf, below) evokes digital technology as both an interface through which people can engage with the urban environment, and an overlay that allows the urban environment to be understood and changed. What is less clear is if or how people using this space as a public park will experience these technologies and if or how those technologies might inform human behaviour in that space.

Conversely our own collaborative community-focused research with City of Melbourne in Argyle Square envisaged city futures where human trust in city institutions was integral, local people would maintain control over their own data, be present in and engage with city space and data through digital and physical infrastructures (Pink et al. 2022).



The built environment

6
Claims

Murray Bridge is identified as a Satellite City in the Greater Adelaide Regional Plan and has aspirations to triple in population size to nearly 70,000 people over the next three decades. This growth centers on a greenfield development site to the south west of the existing city (pictured overleaf, top) during a drought in early 2025. In this report we have identified 6 claims about the future of the urban built environment:

Claim 1:

Cities will be polycentric, improving access to jobs, housing, and goods and services

Claim 2:

Green infrastructure will contribute to the health of cities, and wellbeing of residents

Claim 3:

People will live and work locally, in communities with distinct identities

Claim 4:

Cities will balance population growth and amenity by getting denser

Claim 5:

Circularity will be a fundamental design principle for urban systems and processes

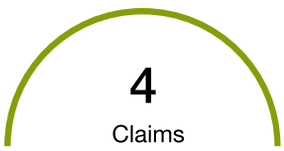
Claim 6:

The built environment will be adaptable, making the most of available space

Using generative AI platform SORA these claims were overlaid on an image of the development site taken by a member of the research team during preliminary fieldwork. This image (overleaf, below) shows a medium density urban environment powered by locally sourced renewable energy, where density and green infrastructure converge to create a liveable city, with streetscapes and public parks that are well used by people.

While the vision this image evokes is plausible - with familiar building typologies and energy generation technologies - preliminary engaged research reveals that this built environment does not reflect the human values and priorities that are informing growth in this context. Ongoing research and engagement will explore how the city might evolve in this context in ways that account for those values and priorities.

Mobility and transport



Monash University's Clayton Campus precinct (pictured overleaf, top) is committed to reaching net zero carbon emissions by 2030 while growing to become Metropolitan Melbourne's next major city centre. Low emissions mobility solutions that connect the precinct internally, and connect to the rest of Melbourne, are central to balancing these goals. In this report we have identified 4 claims about mobility and transport in future cities:

Claim 1:

Active transport will be well supported, contributing to the health and wellbeing of people, and a net zero carbon emissions future

Claim 2:

Mobility will be personalised, on-demand, and multi-modal

Claim 3:

Vehicles will be electric, autonomous, and shared

Claim 4:

Public transport will be the backbone of the urban transport network

Using generative AI platform SORA these claims were overlaid on an image of the Clayton Campus precinct taken by a member of the research team during fieldwork. This image (overleaf, below) shows a range of autonomous, micro-, and active mobility transport options, all of which are technologically plausible low carbon mobility solutions in near-future cities.

Preliminary research in the Clayton Campus precinct has demonstrated that for mobilities to support net zero agendas we must account for the everyday priorities and values that underpin people's engagements with diverse modes of mobility (Sharp et al. 2022).


POD

References

Reports included in this review

1. Aggarwala, Rohit T., and Joshua Sirefman. 2021. ‘Infrastructure Options for the Future of Cities’. McKinsey & Company. https://www.mckinsey.com/capabilities/operations/our-insights/infrastructure-options-for-the-future-of-cities#/.

2. ARUP. 2022. ‘The Future of Australian Logistics and Our Cities’. ARUP. https://www.arup.com/insights/the-future-of-australian-logistics-and-our-cities/.

3. ———. 2024a. ‘City Competitiveness Redefined: Which Cities Will Thrive in the Era of Climate Change?’ ARUP. https://www.arup.com/insights/city-competitiveness-redefined-which-cities-will-thrive-in-the-era-of-climate-change/.

4. ———. 2024b. ‘Regenerative Design: Towards Living in Harmony with Nature’. Arup Explores. ARUP. https://www.arup.com/insights/regenerative-design/.

5. ———. 2025. ‘Urban Planning and Design’. Issue 1. AI for Future Cities. ARUP.

6. ARUP, and Resilient Cities Network. 2023. ‘Digital Cities, Resilient Cities: Delivering Urban Resilience through Digital Solutions’. ARUP. https://www.arup.com/insights/digital-cities-resilient-cities-delivering-urban-resilience-through-digital-solutions/.

7. Australian Conservation Foundation, and Monash Climate Change Communication Research Hub. 2021. ‘Temperature Check: Greening Australia’s Warming Cities’. Report. Australian Conservation Foundation. Australia. https://apo.org.au/node/311336.

8. City of Greater Geelong. 2021. ‘Smart City Strategic Framework’. Geelong: City of Greater Geelong.

9. ClimateWorks Australia, Infrastructure Sustainability Council ofAustralia, and Australian Sustainable Built Environment Council. 2020. ‘Reshaping Infrastructure for a Net Zero Emissions Future’. ClimateWorks Australia. Australia. https://apo.org.au/node/277486.

10. Commission into the Future of Sydney CBD. 2022. ‘Recommendations and Actions: A Reimagined Sydney CBD’. Final report. Sydney, Australia: Committee for Sydney and ARUP.

11. Committee for Melbourne. 2017. ‘Melbourne 4.0’. Melbourne, Australia: Committee for Melbourne.

12. Committee for Melbourne, and JLL. 2023. ‘Benchmarking Melbourne 2023’. Melbourne, Australia: Committee for Melbourne. https://melbourne.org.au/news/launch-of-benchmarking-melbourne-2023-report/.

13. CRC for Water Sensitive Cities. 2018. ‘Water Utilities of the Future: Australia’s Experience in Starting the Transition’. Melbourne, Australia: CRC for Water Sensitive Cities.

14. Deloitte. 2021. ‘Urban Futures with a Purpose: 12 Trends Shaping the Future of Cities by 2030’. Deloitte. https://www.deloitte.com/global/en/Industries/government-public/perspectives/urban-future-with-a-purpose.html.

15. Department of Infrastructure, Transport, Regional Development, Communications and the Arts. 2024. ‘National Urban Policy: Consultation Draft’. Government of Australia. Australia. https://apo.org.au/node/326912.

16. Donati, Kelly, and Nick Rose. 2022. ‘Growing Edible Cities and Towns: A Survey of the Victorian Urban Agriculture Sector’. Melbourne, Australia: Sustain: The Australian Food Network. https://sustain.org.au/growing-edible-cities-and-towns/.

17. Edwards, Anna, and Andrew License. 2021. ‘The Australian Night Time Economy: Looking to the Future’. Report. Council of Capital City Lord Mayors. Australia. https://apo.org.au/node/316557.

18. Eiras Antunes, Miguel, Mahesh Kelkar, and Sushumna Agarwal. 2020. ‘Future-Proofing Cities in a Post-Pandemic World: Four Capabilities to Build Resiliency in Cities’. Deloitte. https://www.deloitte.com/global/en/Industries/government-public/perspectives/future-proofing-cities-four-capabilities-for-resilient-cities.html.

19. Frem, Joe, Vineet Rajadhyaksha, and Lola Woetzel. 2018. ‘Thriving amid Turbulence: Imagining the Cities of the Future’. McKinsey & Company. https://www.mckinsey.com/industries/public-sector/our-insights/thriving-amid-turbulence-imagining-the-cities-of-the-future#/.

20. Future Today Institute. 2024. ‘2024 Tech Trends Report: Built Environment’. 17th Edition. Future Today Institute.

21. Greater Sydney Commission. 2018. ‘Greater Sydney Region Plan: A Metropolis of Three Cities’. Sydney, Australia: NSW Government.

22. Infrastructure Australia. 2018. ‘Future Cities: Planning for Our Growing Population’. Canberra, Australia: Infrastructure Australia. https://www.infrastructureaustralia.gov.au/publications/future-cities-planning-our-growing-population.

23. Infrastructure Victoria. 2018. ‘Advice on Autonomous and Zero Emissions Vehicles’. Advice to government. Melbourne, Australia: Infrastructure Victoria. https://www.infrastructurevictoria.com.au/resources/advice-on-automated-and-zero-emissions-vehicles.

24. ———. 2023a. ‘Choosing Victoria’s Future: Five Urban Development Scenarios’. Report. Infrastructure Victoria. Victoria. https://apo.org.au/node/324735.

25. ———. 2023b. ‘Fast, Frequent, Fair: How Buses Can Better Connect Melbourne’. Report. Infrastructure Victoria. Victoria. https://apo.org.au/node/325248.

26. Inner West Air Quality Reference Group. 2020. ‘Air Pollution in Melbourne’s Inner West: Taking Direct Action to Reduce Our Community’s Exposure’. Melbourne, Australia: Inner West Air Quality Reference Group.

27. KPMG. 2022a. ‘Future of Public Transport’. KPMG.

28. ———. 2022b. ‘Local Government Transformation Insights: A Public Sector Post Show Report by KPMG’. KPMG. https://kpmg.com/au/en/home/insights/2022/09/modernising-local-government-digital-transformation.html.

29. ———. 2022c. ‘Voices on 2030: Digitalising Government’. KPMG. https://kpmg.com/au/en/home/insights/2022/09/digitising-government-voices-on-2030.html.

30. ———. 2024a. ‘Enterprising Cities: How They Are Shaping Future Growth’. Report. KPMG. Australia. https://apo.org.au/node/326968.

31. ———. 2024b. ‘Shaping Cities of Value’. KPMG. https://kpmg.com/au/en/home/insights/2024/06/shaping-cities-of-value.html.

32. Marcucci, Sara, Uma Kalkar, and Stefaan Verhulst. 2022. ‘AI Localism in Practice: Examining How Cities Govern AI’. Report. GovLab. https://apo.org.au/node/321138.

33. McKinsey Global Institute. 2023. ‘Empty Spaces and Hybrid Places: The Pandemic’s Lasting Impact on Real Estate’. McKinsey Global Institute. https://www.mckinsey.com/mgi/our-research/empty-spaces-and-hybrid-places#/.

34. Monash Commission. 2022. ‘The Liveable Metropolis: The Opportunity of Intermediary Cities to Deliver Resilience, Impact and Prosperity’. Monash Commission Report. Melbourne, Australia: Monash University.

35. O’Leary, John, Michael Flynn, and Sushumna Agarwal. 2022. ‘The Future of Global Infrastructure: A Survey of Infrastructure Trends’. Deloitte. https://www.deloitte.com/au/en/Industries/infrastructure/perspectives/the-future-infrastructure.html.

36. O’Neill, Phillip, and W. Kathy Tannous. 2021. ‘Future Directions: Ways Forward for the Economies of Blacktown, Cumberland, Parramatta and The Hills – the Central City District of Sydney’. Report. Western Sydney University. Greater Western Sydney. https://apo.org.au/node/312578.

37. Parasol, Max. 2022. ‘The Docklands DAO: Reimagining Precincts in a Digital CBD’. Melbourne, Australia: RMIT Blockchain Innovation Hub.

38. Port of Melbourne. 2020. ‘2050 Port Development Strategy’. Melbourne, Australia: Port of Melbourne.

39. Potts, Jason, Chris Berg, Annette Markham, Matthew Warren, Tania Lewis, Max Parasol, Alexia Maddox, Darcy Allen, Ahmad Salehi Shahraki, and Tulley Kearney. 2021. ‘The Future of the Digital CBD: Melbourne and Beyond’. Report. RMIT University. Melbourne. https://apo.org.au/node/316559.

40. PwC. 2020. ‘2020 Future Victoria: COVID-19 Impacting Liveability across Victoria’s Suburbs’. City Pulse. PwC.

41. ———. 2022. ‘How Digital Twins Can Make Smart Cities Better’. PwC.

42. PwC, and UTS. 2021. ‘Smart Cities: Why Australia’s Cities of Tomorrow Start Today’. PwC.

43. PwC, and World Economic Forum. 2017. ‘Fourth Industrial Revolution for the Earth: Harnessing the 4th Industrial Revolution for Sustainable Emerging Cities’. PwC. https://www.pwc.com/gx/en/services/sustainability/publications/sustainable-emerging-cities.html/.

44. Rail Futures Institute, and Town and Country Planning Association. 2024. ‘Growing Victoria’s Regions: Rail as the Catalyst for Regional Growth’. Rail Futures Institute. https://www.railfutures.org.au/2024/07/growing-victorias-regions/.

45. Regen Melbourne. 2021. ‘Towards a Regenerative Melbourne: Embracing Doughnut Economics to Create a New Compass for Melbourne’. Melbourne, Australia: Regen Melbourne. https://www.regen.melbourne/news/launching-melbournes-city-portrait-on-global-doughnut-day.

46. Regional Australia Institute. 2024. ‘Towards Net Zero: Empowering Regional Communities’. Regional Australia Institute.

47. Saggar, Shamit, Rebecca Rey, and Christopher Lin. 2022. ‘WA 2050: People, Place, Prosperity’. Perth, Western Australia: UWA Public Policy Institute.

48. Scitech, and Committee for Perth. 2024. ‘Perth 2050 Report’. Perth, Western Australia: Committee for Perth. https://www.scitech.org.au/perth-2050-report/.

49. Standards Australia. 2024. ‘Smart Cities: An Essential Enabler for Australia’s Future’. Position paper. Canberra, Australia: Standards Australia. https://www.standards.org.au/news/smart-cities-seamlessly-synchronising-sustainability-and-security.

50. Suburban Rail Loop Authority. 2021. ‘Suburban Rail Loop: Business and Investment Case’. Melbourne, Australia: Victoria State Government.

51. Sustainability, Ironbark. 2024. ‘Australian Local Government Climate Review 2024’. Report. Better Futures Australia. Australia. https://apo.org.au/node/328272.

52. Transport for NSW. 2022. ‘Future Transport Strategy’. Sydney, Australia: Transport for NSW.

53. Transurban. 2024. ‘Transurban Insights: Liveable and Productive Cities’. Insights. Melbourne, Australia: Transurban. https://www.transurban.com/news/new-research-report-on-liveable-and-productive-cities.

54. Uber. 2023a. ‘A Car-Light Future: Reimagining Australian Cities’. Uber.

55. ———. 2023b. ‘One Less Car: Shifting to a Sustainable Transport Future’. Uber.

56. Urban Design Forum Australia. 2023. ‘Victorian Planning Reform: Re-Framing Urban Design at the Heart of Liveability’. Positioning Paper. Melbourne, Australia: Urban Design Forum Australia. https://drive.google.com/file/d/1qEU6kwk4UHDMdbKqdoW_GAy0zTTvDl4C/view?mc_cid=6686eaec65&usp=embed_facebook.

57. Victoria State Government. n.d.-a. ‘Fisherman’s Bend Framework: The next Chapter in Melbourne’s Growth Story’. Melbourne, Australia: Victoria State Government. https://www.fishermansbend.vic.gov.au/documents.

58. ———. n.d.-b. ‘Plan Melbourne 2017-2050: Summary’. Melbourne, Australia: Victoria State Government.

59. World Cities Culture Forum. 2025. ‘World Cities Culture Trends Report 2025’. World Cities Culture Forum. https://worldcitiesculturefforum.com/publication/world-cities-culture-trends-report-2025/.

60. World Economic Forum. 2022. ‘Shaping the Future of Small and Medium-Sized Cities: A Framework for Digital Transformation’. Report. World Economic Forum. Brazil, China, Japan, Singapore. https://apo.org.au/node/317822.

61. ———. 2023. ‘Digital Twin Cities: Key Insights and Recommendations’. Insight Report. World Economic Forum.

62. WSP. 2024. ‘New Mobility Next’. WSP. https://www.wsp.com/en-gb/insights/new-mobility-next.

63. WSP, and Uber. 2020. ‘Future Ready Kerbside’. WSP.

64. YIMBY Melbourne. n.d. ‘Melbourne’s Missing Middle: Building a Liveable, Affordable, and Sustainable City for All’. Melbourne, Australia: YIMBY Melbourne.

Academic references

1. AHURI. 2022. ‘Responding to the Population Dynamics Driving Australian Cities’. 23 March 2022. https://www.ahuri.edu.au/analysis/brief/responding-population-dynamics-driving-australian-cities.

2. Australian Bureau of Statistics. 2022. ‘Snapshot of Victoria’. 28 June 2022. https://www.abs.gov.au/articles/snapshot-vic-2021.

3. Bissell, David. 2010. ‘Passenger Mobilities: Affective Atmospheres and the Sociality of Public Transport’. *Environment and Planning D: Society and Space* 28 (2): 270–89. https://doi.org/10.1068/d3909.

4. Boellstorff, Tom. 2024. ‘Toward Anthropologies of the Metaverse’. *American Ethnologist* 51 (1): 47–56. https://doi.org/10.1111/amet.13228.

5. Bratchford, Gary. 2018. ‘Visualising the Invisible: A Guided Walk around the Pendleton Housing Estate, Salford, UK’. *Visual Studies* 33 (4): 395–97. https://doi.org/10.1080/1472586X.2019.1584053.

6. Farrell, Maria. 2024. ‘We Need To Rewild The Internet’, April. https://www.noemamag.com/we-need-to-rewild-the-internet.

7. Fors, Vaike, Sarah Pink, Martin Berg, and Tom O’Dell. 2019. *Imagining Personal Data: Experiences of Self-Tracking*. London: Bloomsbury.

8. Geoghegan, Shona, and Federico Cugurullo. 2025. ‘Beyond Dystopian Smart Cities? Unlocking a Progressive Utopian Future in Smart Urbanism’. *Urban Geography* 0 (0): 1–22. https://doi.org/10.1080/02723638.2025.2496508.

9. Gonzalez Monserrate, Steven. 2023. ‘Thermotemporalities, Thermomasculinities: Uptime, Downtime, and Server Heat in the Digital Anthropocene’. *New Media & Society* 25 (2): 324–44. https://doi.org/10.1177/14614448221149938.

10. Hjorth, Larissa, and Sarah Pink. 2014. ‘New Visualities and the Digital Wayfarer: Reconceptualizing Camera Phone Photography and Locative Media’: *Mobile Media & Communication*. https://doi.org/10.1177/2050157913505257.

11. Infrastructure Australia. 2018. ‘Future Cities: Planning for Our Growing Population’. Canberra, Australia: Infrastructure Australia. https://www.infrastructureaustralia.gov.au/publications/future-cities-planning-our-growing-population.

12. Iveson, Kurt, and Sophia Maalsen. 2019. ‘Social Control in the Networked City: Datafied Dividuals, Disciplined Individuals and Powers of Assembly’. *Environment and Planning D: Society and Space* 37 (2): 331–49. https://doi.org/10.1177/0263775818812084.

13. Jayaraman, Prem Prakash, Anthony McCosker, Abhik Banerjee, Mehdi Seyedmahmoudian, Yong-bin Kang, Alex Stojcevski, Gokul Thirunavukkarasu, Kafeel Ahmed, and Robert Lundberg. 2024. ‘Responsible AI for NetZero: An Australian and Indian Collaborative Approach towards Practice, Governance, and Ethics in Energy Futures’. Hawthorn, Victoria: Swinburne University of Technology. doi.org/10.25916/sut.26866951.

14. Kapsali, Matina. 2023. ‘Grassroots Temporary Urbanism as a Challenge to the City of Austerity? Lessons from a Self-Organised Park in Thessaloniki, Greece’. *The Geographical Journal* n/a (n/a). https://doi.org/10.1111/geoj.12519.

15. Khaokaew, Yonchanok, Flora D. Salim, Andreas Züfle, Hao Xue, Taylor Anderson, C. Raina MacIntyre, Matthew Scotch, and David J. Heslop. 2025. ‘Evaluating the Bias in LLMs for Surveying Opinion and Decision Making in Healthcare’. arXiv. https://doi.org/10.48550/arXiv.2504.08260.

16. Lee, Jeni, dir. 2022. *Flightpaths, Freeways and Railroads.* https://www.admscentre.org.au/flight-paths-freeways-and-railroads/.

17. McGlynn, Clare, and Carlotta Rigotti. 2025. ‘From Virtual Rape to Meta-Rape: Sexual Violence, Criminal Law and the Metaverse’. *Oxford Journal of Legal Studies*, April, gqaf009. https://doi.org/10.1093/ojls/gqaf009.

18. Monserrate, Steven Gonzalez. 2022. ‘The Cloud Is Material: On the Environmental Impacts of Computation and Data Storage’. *MIT Case Studies in Social and Ethical Responsibilities of Computing*, no. Winter 2022 (January). https://doi.org/10.21428/2c646de5.031d4553.

19. Osborne, Natalie. 2019. ‘For Still Possible Cities: A Politics of Failure for the Politically Depressed’. *Australian Geographer* 50 (2): 145–54. https://doi.org/10.1080/00049182.2018.1530717.

20. Phan, Thao. 2024. ‘Is Drone Delivery a Modern Miracle or a Band-Aid Fix for Poor Urban Planning? I Went to Australia’s “Drone Zones” to Find Out’. *The Conversation*, 27 June 2024. http://theconversation.com/is-drone-delivery-a-modern-miracle-or-a-band-aid-fix-for-poor-urban-planning-i-went-to-australias-drone-zones-to-find-out-232977.

21. Pink, Sarah, Vaike Fors, and Mareike Glöss. 2017. ‘Automated Futures and the Mobile Present: In-Car Video Ethnographies’. *Ethnography* 20 (1): 88–107. https://doi.org/10.1177/1466138117735621.

22. Pink, Sarah, Vaike Fors, Katalin Osz, Peter Lutz, and Rachel C. Smith. 2023. ‘Future Mobility Solutions?’ In *An Anthropology of Futures and Technologies*, edited by Debora Lanzeni, Karen Waltorp, Sarah Pink, and Rachel C. Smith, 138–54. Routledge. https://doi.org/10.4324/9781003084471-10.

23. Pink, Sarah, and Tania Lewis. 2014. ‘Making Resilience: Everyday Affect and Global Affiliation in Australian Slow Cities’. *Cultural Geographies* 21 (4): 695–710. https://doi.org/10.1177/1474474014520761.

24. Pink, Sarah, and John Postill. 2019. ‘Imagining Mundane Futures’. *Anthropology in Action* 26 (2): 31–41. https://doi.org/10.3167/aia.2019.260204.

25. Pink, Sarah, and Emma Quilty. 2025. *Can We Trust Technology?* Oxford: Routledge.

26. Pink, Sarah, and Kirsten Seale. 2017. ‘Imagining and Making Alternative Futures: Slow Cities as Sites of Anticipation and Trust’. In *Another Economy Is Possible: Culture and Economy in a Time of Crisis*, edited by Manuel Castells. Oxford, UNITED KINGDOM: Polity Press.

27. Pink, Sarah, Shanti Sumartojo, Melisa Duque, Ilya Fridman, Bianca Vallentine, and Robert Lundberg. 2022. ‘City Sensing Data Futures’. Technical report for the City of Melbourne. Melbourne: Emerging Technologies Research Lab.

28. Remeikis, Amy. 2023. ‘Melbourne Shrank While Queensland Grew: What the Pandemic Did to Australia’s Population’. *The Guardian*, 4 January 2023, sec. Australia news. https://www.theguardian.com/australia-news/2023/jan/05/melbourne-shrank-while-queensland-grew-what-the-pandemic-did-to-australias-population.

29. Sharp, Darren, Sarah Pink, Rob Raven, and Megan Farrelly. 2022. ‘People, Politics, and Place: An Interdisciplinary Agenda for the Governance of Urban Energy Transitions’. In *Routledge Handbook of Energy Transitions*. Routledge.

30. Silva, Nedha de, and Sarah Pink. 2025. ‘Cycling for Net Zero Transition: Diversity, Infrastructures and Care [under Review]’.

31. Stone, Wendy M., Piret Veeroja, Fatemeh Shahani, Sharon Parkinson, and Amity James. 2022. ‘Understanding Migrant-Inclusive Urban Transitions in Australia via a “Housing Aspirations” Lens’. In *Migration and Urban Transitions in Australia*, edited by Iris Levin, Christian A. Nygaard, Peter W. Newton, and Sandra M. Gifford, 149–71. Cham: Springer International Publishing. https://doi.org/10.1007/978-3-030-91331-1_7.

32. Victoria State Government. n.d. ‘Plan Melbourne 2017-2050: Summary’. Melbourne, Australia: Victoria State Government.

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