

TECH CENTRAL CAMPERDOWN-ULTIMO

Place-based Transport Strategy



NSW Common Planning Assumptions

Common Planning Assumptions are used across agencies to ensure alignment and understanding of the relevant data, policies and assumptions to underpin planning decisions and policy analysis for government strategies and investment decisions. This supports consistency in the advice provided to Government and the community.

The Common Planning Assumptions represent a consistent baseline or a starting point and are developed based on current and past trends and agreed policies and plans. They are not targets nor scenarios.

This strategy and supporting analysis are based on the agreed Common Planning Assumptions as at November 2018. Details of the Common Planning Assumptions used are set out in the Common Planning Assumptions Book version 4.2

Acknowledgement of Country

Transport for NSW acknowledges the Gadigal people of the Eora Nation, the traditional owners of the lands that include Tech Central and the living culture of the traditional custodians of this land.

Note on the timing of the Place-based Transport Strategy

This Place-based Transport Strategy was developed using the best available information at the time of writing. In 2021, the long term impacts of the COVID-19 pandemic on customer behaviours and investment have not been fully understood. Despite this uncertainty, the strategic intent and long term (20-year planning horizon) vision presented within this Strategy are deemed suitable for planning purposes.

Travel data, including traffic volumes and pedestrian counts are based on surveys from 2019 or earlier and do not reflect the altered activity due to COVID-19. Many of the photographs used in this report were taken during June and July 2020 when restrictions on trading activity and non-essential travel were in place; as such, they do not necessarily reflect a 'typical' level of street activity or activation.

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Chapter 1: Introduction and Approach

Tech Central (Camperdown-Ultimo Collaboration Area)

Tech Central, formerly known as Camperdown-Ultimo Collaboration Area, is home to a diverse set of world class research, education, health and creative institutions, as well as residential, retail and recreational destinations. With the backing of tech company Atlassian, world class universities and a leading hospital precinct, the NSW Government is committed to making Tech Central the biggest technology hub of its kind in Australia.

Tech Central is already a vibrant place with the potential to continue to attract international talent to the institutions and industries located here. To enable this vision, this Transport Strategy has been developed using the Movement and Place approach – a cross-disciplinary, “place-based” approach to the planning, design, delivery, and operation of transport networks. The recommended priorities for investigation and actions could allow Tech Central to continue to thrive and grow as a place of innovation, employment and recreation for people who walk, dwell, learn, work and play whether they travel by foot, bike, bus, train, car or truck.

With a once in a generation investment in Sydney Metro and motorways, the renewal of Central Station and redevelopment of North Eveleigh, this is the moment to plan for a transformation of the way people use the roads and travel between destinations in this place. This Transport Strategy outlines a 20-year vision for transport in Tech Central. It covers an area of approximately 6 square kilometres on the south-western edge of the Sydney CBD, encompassing the suburbs of Darlington and Eveleigh, the majority of Ultimo, Camperdown and Haymarket and parts of Glebe, Newtown, Redfern, Forest Lodge and Surry Hills.

Figure 1 shows the steps taken to develop the Transport Strategy, and next steps.

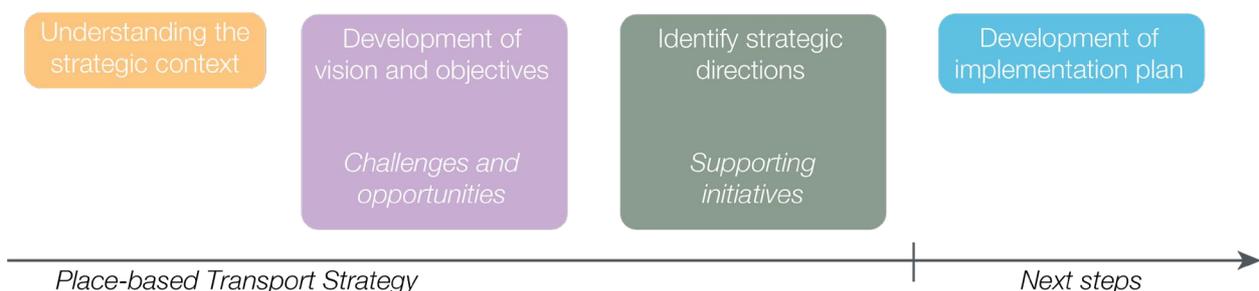


Figure 1 Developing the Transport Strategy, and next steps

Our Approach

The Transport Strategy's approach relates to the place (Tech Central/Camperdown-Ultimo Collaboration Area) and the people that use it, represented by a group of key stakeholders known as the Camperdown Ultimo Alliance. The approach has underpinned each step of the strategy development, from context gathering, to transport analytics to the development of the integrated transport solutions. The approach has ensured close alignment with other strategies that impact on Tech Central from the NSW Government, such as *Future Transport 2056* and the *Camperdown-Ultimo Place Strategy*, as well as planning work currently underway for key precincts within Tech Central.

The strategy represents the vision for the next 20 years, but new priorities outlined will require further, more detailed investigation and consultation prior to investment decision and government approval. Continued collaboration will be required, with Transport for NSW working alongside other parties that have a role in planning or implementation. In Tech Central, these parties include the City of Sydney and Inner West Council; other NSW Government departments and agencies; tertiary education institutions; major hospitals, community groups and key long-term tenants.

A shared vision with the Camperdown-Ultimo Place Strategy

In 2018, the Greater Sydney Commission worked with key stakeholders to release the *Collaboration Area – Camperdown-Ultimo Place Strategy* (the *Place Strategy*), which set out the vision for Camperdown-Ultimo Collaboration Area. The *Place Strategy* is defined around three key nodes and axes within the Collaboration Area, as shown in Figure 2. The vision for the *Camperdown-Ultimo Collaboration Area* is:

“In 2036, Camperdown–Ultimo Collaboration Area is Australia’s innovation and technology capital. Industry, business, health, education and skills institutions work together, and talent, creativity, research and partnerships thrive. Low carbon living, green spaces, places for people and easy connections support resilience, amenity, vitality and growth.”

The priorities and actions identified in the *Camperdown-Ultimo Place Strategy* recognise the complexities of place, with a strong focus on building and sustaining communities through physical, social, economic and intellectual connections.

A collaborative approach

Following the collaborative NSW Movement and Place approach, this Transport Strategy has been undertaken in collaboration with Transport for NSW and key stakeholders in the Camperdown Ultimo Alliance and across the NSW Government. The Alliance was established to drive the outcomes of the Place Strategy. It comprises representatives of key institutions and governing agencies with an interest in Tech Central. These are City of Sydney, Inner West Council, Health Infrastructure NSW, Sydney Local Health District, TAFE NSW, University of Sydney and University of Technology Sydney.

Local knowledge and endorsement ensure that the Transport Strategy addresses the priorities set out in the *Camperdown-Ultimo Place Strategy* and that there is a clear path to follow for implementation and further development of strategic interventions.

Other State Government agencies, including the Department of Planning, Industry and Environment (DPIE), Greater Sydney Commission, NSW Treasury and NSW Schools Infrastructure collaborated to define the transport vision.



Figure 2 Structure of Tech Central

A ‘Place-based’ approach for Tech Central

In *Future Transport 2056*, TfNSW adopted the Movement and Place Framework for planning and managing the road network. Subsequent to this, the NSW Government has been refining its approach to Movement and Place, leading to the release of the *NSW Practitioner’s Guide to Movement and Place* developed by the NSW Government Architect and TfNSW in early 2020. *The Practitioner’s Guide to Movement and Place* seeks to change some established working practices and standards to produce more consistent, higher quality place outcomes.

‘Place-based’ planning is an emerging approach across NSW Government that involves taking a collaborative, spatial, long term approach to develop contextual responses that better meet the needs of local people and their environment in a defined geographic location. It aims to support and build thriving communities and is ideally characterised by partnering and shared design, shared stewardship, and shared accountability for outcomes and impacts. A ‘Place-based’ approach is embedded within this Transport Strategy, in which the interplay of contextual elements like land use, urban form and population demographics play a key role.

About Tech Central

Identified by the Greater Sydney Commission as a key innovation precinct, the area is home to major health, research and education institutions, technology and creative industries. The density of these industries, coupled with Tech Central’s proximity to neighbouring centres and trade gateways including the Sydney CBD, the Randwick Health and Education Precinct, Sydney (Kingsford Smith) Airport, and Port Botany have shaped, and will continue to shape its keystone role in the economy of Greater Sydney.

In 2016, there were 53,000 people living and 89,000 people working in or near Tech Central¹. The population is highly diverse, with extremes of social-economic advantage, including established social-housing developments at Waterloo and Glebe.

There are up to 123,000 students studying at universities in Tech Central. In a typical year, the student population also includes a significant portion of international students with diverse cultural and language backgrounds.

The vast majority of jobs in Tech Central are in health and education industries, driven by nearby universities, hospitals and research institutes as shown in Figure 3.

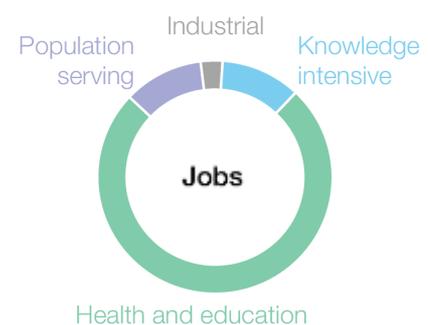


Figure 3 Types of jobs in Tech Central (Australian Census 2016)

¹ NSW Travel Zone Projections (TZP16) v1.51

Destinations like Royal Prince Alfred Hospital draw patients from a wider regional area. The hospital also has a higher proportion of visitors with differing physical abilities and mobility requirements.

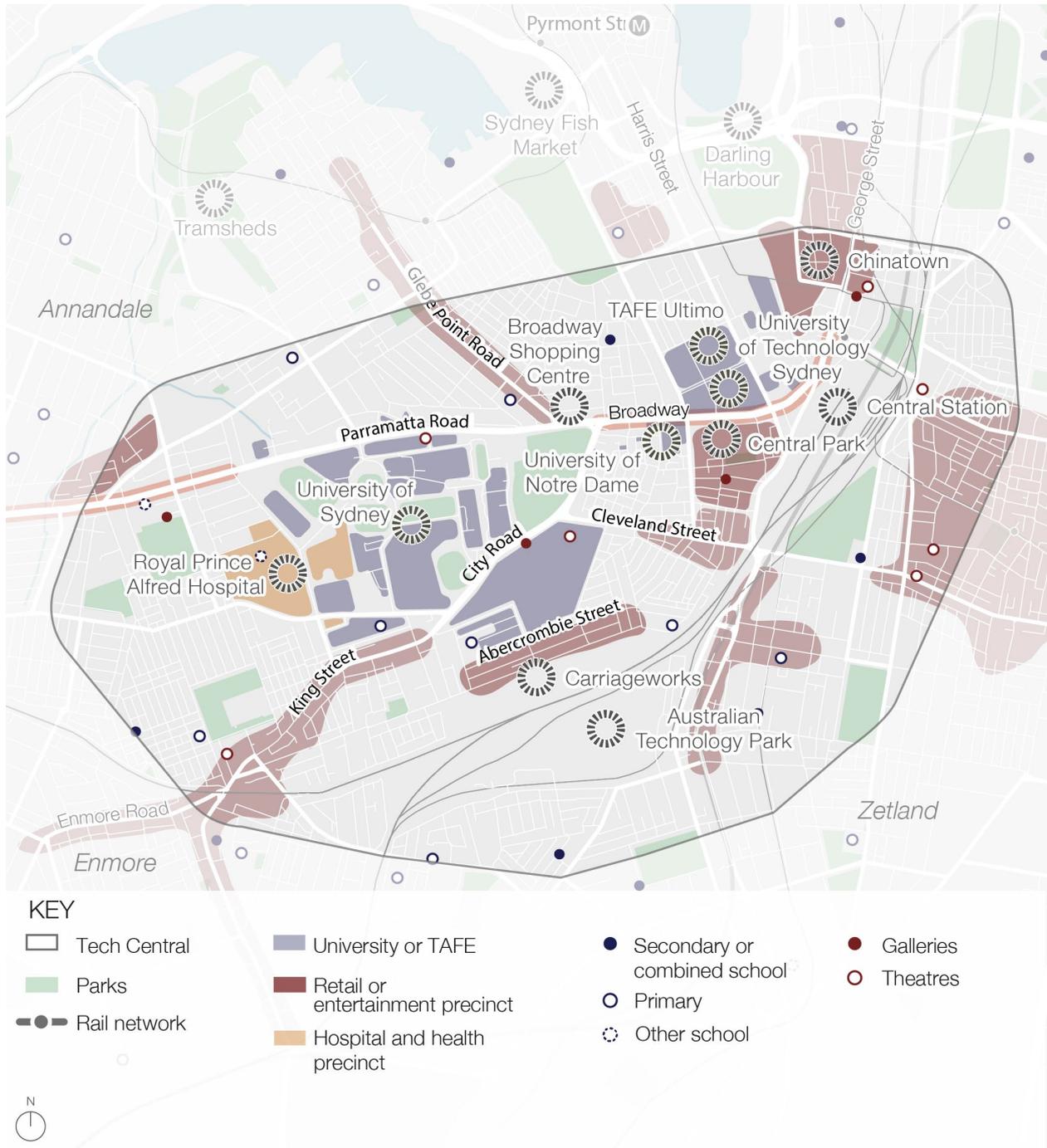


Figure 4 Key destinations within Tech Central

The future of Tech Central

Future visitors

Education and research are key industries in Tech Central, as well as being home to a significant number of social and cultural entertainment venues.

Education – Tertiary institutions already have a significant presence in Tech Central, with plans for future expansion. A selection of student growth forecasts is shown in Figure 5.

Health – The number of people accessing medical facilities in Tech Central is expected to increase, including hospital outpatients and visitors as well as hospital staff. The forecast growth in trips to RPA on a typical weekday is shown in Figure 6. Many of these patients and visitors will require transport options that meet specialised mobility needs, as well as place-based amenity including wayfinding, parks and cafes for respite.

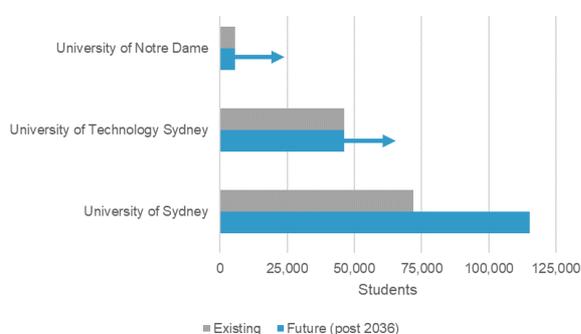


Figure 5 Existing students and projected enrolment for selected universities

Source: Projections provided to TfNSW by University of Sydney, prepared October 2019

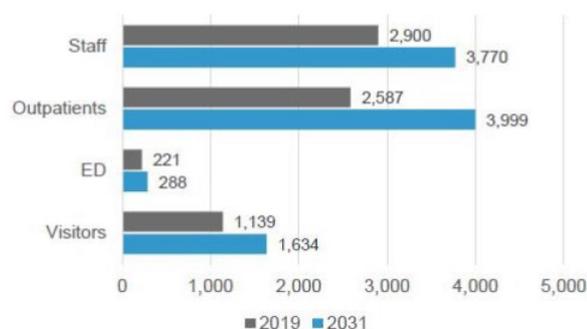


Figure 6 Projected number of person trips to Royal Prince Alfred Hospital (all modes)

Source: Camperdown Health Education and Research Precinct – Traffic and Transport Plan (Health Infrastructure, SCT Consulting)

Entertainment and retail visitors will continue to be an important customer group. Planning for future change, the City of Sydney has identified key precincts where night-time trading is desirable and should be supported. These include Glebe Point Road, King Street, Broadway, Redfern Street and southern parts of Regent Street. The Central Precinct Renewal and Redfern North Eveleigh will also include cafes, bars and small retail. Safe, reliable, 24-hour transport options will be critical to support these precincts as they develop and form part of a wider ‘Neon Grid’ for Greater Sydney.

Future residents

There is an expected 55% growth of residents, from the existing 53,000 to an estimated 82,000 in 2036². Growth is concentrated in Waterloo, Green Square, Glebe, and areas around Macdonaldtown.

² NSW Travel Zone Projections, TZP16 v151

This suggests the need to ensure north-south connectivity across the rail line corridor is achieved to maximise collaboration and passive movement of people to, from and within Tech Central.

New and enhanced transport connections will be needed to service new and existing community and social infrastructure around Waterloo and Redfern in particular. As the population grows and medium and high-density development occurs, access to high-quality open space will also be critical.

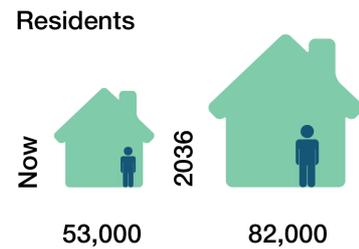
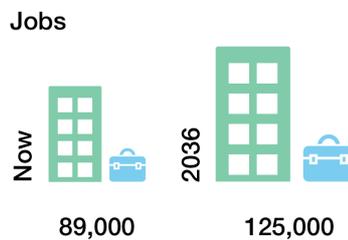


Figure 7 Population growth in Tech Central

Future workers

In 2016, there were 89,000 jobs in Tech Central; by 2036, this is expected to grow by almost half to 125,000 jobs³.

There will be an intensification of employment density across Tech Central – particularly at the University of Sydney and Australian Technology Park and emerging tech district of Central Station. South of Tech Central, Green Square will house up to 25,000 new jobs.



18,000 new jobs at the Australian Technology Park
25,000 new jobs in the Central Precinct

Figure 8 Jobs growth in Tech Central

Future precincts

Key developments include planned expansions of university and hospital precincts as well as major urban renewal projects that will influence people living and working in Tech Central. Those urban renewal projects are shown in Figure 9.

While some of these precincts and urban renewal projects are subject to further NSW Government consideration, they include:

- The **Camperdown precinct**, identified in the **Parramatta Road Corridor Urban Transformation Strategy**. This precinct is intended to support the nearby health and education uses by providing additional complementary employment land. There is an opportunity for a Biotech Hub at Bignell Lane, north of Parramatta Road.
- The **Royal Prince Alfred Hospital redevelopment** will deliver a new hospital building and refurbishment of existing spaces, including more adult inpatient beds and expanded emergency department, intensive care unit, medical imaging services, operating theatres, and maternity, birthing and neonatal services.

³ NSW Travel Zone Projections, TZP16 v151

- The **Central Precinct** combines urban renewal and redevelopment of Central Station, including new and improved public space and pedestrian connectivity
- Phased development of the **Australian Technology Park**, which could house 18,000 workers at completion.
- At **Waterloo State Significant Precinct (SSP)**, new planning controls allow for high-density development above and adjacent to the forthcoming Waterloo Metro Station.
- The **Redfern North Eveleigh Precinct**, located within the Redfern-Waterloo Authority Sites SSP, will be opened up to create homes for new residents, including affordable housing, spaces for the jobs of the future, opportunities for local business, and retail, socialising and cultural spaces.
- Across **Tech Central**, the NSW Government has committed to delivering a new, innovative business hub and public spaces.

At the edges of Tech Central, development and urban renewal at The Bays, Pyrmont Peninsula and Green Square will see increased demand on the transport network.



Figure 9 Interfacing precincts and developments

Chapter 2: Vision, Objectives and Indicators

Vision

The strategic vision for Tech Central builds upon previous visioning work for Greater Sydney, the precinct and related strategies. This vision, and its supporting objectives, serve to guide Tech Central's future transport interventions that will enhance accessibility and place outcomes. The vision, presented below, provides a vivid mental picture for the way that transport should contribute to the overall success of Tech Central.

Tech Central is integrated and connected within and beyond its edges. Local transport options within Tech Central offer customers a real choice of safe, high-amenity ways to travel. The transport network is managed and enhanced by adopting new and emerging technologies.

Health, education, research and innovation clusters within Tech Central thrive by being socially and physically connected by transport. Local businesses and institutions are supported by sustainable local freight and servicing.

People living in or visiting Tech Central have the opportunity to live, work, socialise, rest, learn and play nearby in great places and open spaces. Infrastructure is lasting and shapes the precinct for future generations.

Walking, cycling and public transport are the preferred mode for most trips to, from and within Tech Central. The transport network supports the NSW Government vision for a net-zero emissions economy by 2050.

Objectives

Table 1 presents the vision and objectives for Tech Central. Sitting under the *Metropolis of Three Cities* themes of Connectivity, Productivity, Liveability and Sustainability, together these articulate the vision for transport to and from, within and through Tech Central, and how we measure success.

These objectives and indicators don't just help us to develop priorities and actions within the strategy but will also form the basis for how success is measured for future projects within Tech Central. Priorities identified in this strategy to deliver the strategic directions in line with the vision and objectives are not commitments and are subject to further investigation and business case processes prior to a Government decision.

Table 1 Vision and Objectives for the Tech Central Place-based Transport Strategy

Theme	Vision statements	Objectives
Connectivity	<i>Tech Central is integrated and connected within and beyond its edges.</i>	C01 – The Camperdown, Eveleigh and Haymarket nodes of Tech Central are integrated through easy and direct transport connections.
		C02 – Tech Central is connected to other innovation, health and education precincts by high quality public transport.
		C03 – The transport network integrates with and capitalises on large infrastructure projects like WestConnex, Sydney Metro West, Sydney Metro City, Southwest, the CBD, South East Light Rail, and other transformative place-based trip generators.
		C04 – An increased number of workers, students and visitors can travel to Tech Central by walking, cycling and public transport within 30 minutes.
	<i>Local transport options within Tech Central offer customers a real choice of safe, high-amenity ways to travel.</i>	C05 - Spaces for walking are safe and comfortable to use.
		C06 - A separated cycle network provides safe and convenient access to all major origins and destinations.
		C07 - It is easy and convenient for people walking and cycling to cross major road and rail corridors.
		C08 - Residents, visitors and workers can access medical facilities at Royal Prince Alfred Hospital in a timely manner in both emergency and non-emergency situations.
		C09 - The transport network encourages flexibility and offers individuals mode choices, while enhancing place values.
		C10 - A high sense of personal security while travelling and accessing public transport, walking and cycling.
		C11 - There are no fatalities or serious injuries on the transport network.
		C12 - The transport network is accessible for all customers, regardless of age, ability, socioeconomic, physical or self-identified characteristics.
		C13 - Transport interchanges enhance public spaces and provide for quality multimodal trips that prioritise access by walking and cycling.
		C14 - End-of-trip facilities are highly visible and built into the urban fabric and streetscape.
	<i>The transport network is managed and enhanced by adopting new and emerging technologies.</i>	C15 - The transport network uses smart technologies to drive customer outcomes.
		C16 - Customers can easily access information before, during and after their trip.

Theme	Vision statements	Objectives
Productivity	<i>Health, education, research and innovation clusters within Tech Central thrive by being socially and physically connected by transport.</i>	<p>P01 - Emergency services located within Tech Central can be delivered to the community in a safe and timely manner.</p> <p>P02 - People who work and study at the businesses and anchor institutions of the precinct can access diverse opportunities to collaborate and study across institutional boundaries.</p> <p>P03 - Public spaces and streets are managed to support flexible uses by businesses and the community.</p>
	<i>Local businesses and institutions are supported by sustainable local freight and servicing.</i>	<p>P04 - Local freight logistics are facilitated by last-mile access and facilities at destinations within Tech Central.</p> <p>P05 - Local freight logistics are managed flexibly to retain essential services to businesses, residences and institutions throughout the day and night, while considering its impact on other street users.</p>
Liveability	<i>People living in or visiting Tech Central have the opportunity to live, work, socialise, rest, learn and play nearby in great places and open spaces.</i>	<p>L01 - The street design and the transport network support active frontages by providing access, as well encouraging people to actively use streets to travel and linger in a welcoming, engaging environment.</p> <p>L02 - The street design is safe, legible and adopts a Safe System approach.</p> <p>L03 - The transport network accommodates the travel task across the entire day and 7-day week to support daytime and night-time economies, including a 'Neon Grid' for Greater Sydney.</p> <p>L04 - High-quality and well-maintained green and blue spaces are accessible to everyone by walking, cycling or public transport.</p> <p>L05 - The built form of transport infrastructure enables people to experience the stories, heritage and identity of places they encounter, and supporting Aboriginal peoples' connection to Country.</p> <p>L06 - Urban heat island effect is reduced throughout Tech Central.</p> <p>L07 - Equitable access to places and spaces enables people to live a comfortable daily life and interact with a diverse community.</p> <p>L08 - People can access their daily needs within an easy walk.</p>
	<i>Infrastructure is lasting and shapes the precinct for future generations.</i>	<p>L09 - The transport network and public spaces adapt to customers' changing needs across the day, seasons and years to come.</p> <p>L10 - Multi-use places and networks are flexible and resilient to social, economic and climate-related disruptions, including capitalising on new technologies.</p>

Theme	Vision statements	Objectives
Sustainability	<i>Walking, cycling and public transport are the preferred mode for most trips to, from and within Tech Central.</i>	S01 - Mode shift towards public transport, walking and cycling away from private vehicles.
		S02 - Manage demand across the transport network through digital collaboration.
	<i>The transport network supports the NSW Government vision for a net-zero emissions economy by 2050.</i>	S03 - Freight servicing and public transport are provided using zero emissions technology.
		S04 - Private vehicle use is minimised for access to Tech Central.
		S05 - New transport infrastructure uses more sustainable products with reduced environmental impacts.

Measuring success

Implementing this Transport Strategy calls for ways to measure progress towards the Vision and Objectives. Clearly defined performance indicators ensure that there is accountability to the transport customers and collaborators in the Strategy. They should be applied throughout the detailed planning, delivery and review stages for programs and individual projects that may stem from this Strategy.

A range of measure are outlined in Table 2 with reference to the objectives. This list forms a starting point for planners and administrators to draw from as the Transport Strategy is delivered. When assessing the indicators, the minimum expectation is that any intervention should maintain or improve each of the relevant indications, with a benefit in one indicator not achieved at the detriment to another indicator.

More information on how to measure these indicators is included in the *NSW Practitioners Guide to Movement and Place* developed by Transport for NSW and the NSW Government Architect.

Table 2 Indicators

Indicator	Measure	Desired outcome	Objectives
Collaboration area integration	Proportion of Tech Central that is accessible from point to point within 30 minutes by walk and public transport (daytime)	Positive indicates an increase in proportion	C01, C04 L08
Collaboration area connectivity to other innovation areas	Travel time from each node to Randwick, Bays, Pyrmont, Westmead and the Aerotropolis	Positive indicates a reduction in travel time	C02, C04, C03

Indicator	Measure	Desired outcome	Objectives
Walking directness between nodes	Distance of most direct walking route between nodes when compared to direct point to point distance	Positive indicates a low deviation from direct point to point distance	C01, C04
30 minute city - population	Number of residents and visitors that can access each node within 30 minutes by walking, cycling and/or public transport	Positive indicates a greater population	C01, C02, C03, C04,
30 minute city - collaboration	Number of jobs accessible from each node within 30 minutes by walking, cycling and/or public transport	Positive indicates a greater number of jobs	C01, C02, C03, C04,
Mode share	Sustainable mode share - Surveyed mode share for walking, cycling and public transport	Positive indicates a higher sustainable mode share	C05, C06, C07, C08, C09, C10 L01, L02
Casualty crash rate (by degree, user, and road type)	Number/rate of fatal and serious injuries occurring on the transport network	Positive indicates reduced number of serious crashes or likelihood of serious crashes due to removal of cause	C11 L02
Safe speed limits	KM of roads with safe speed limits for pedestrians and cyclists (separately for 40, 30, 20, 10)	Positive indicated an increased length of road with safe speeds	C04, C05, C06, C07, C11, L02, S01
Permeability (walking, cycling)	Average pedestrian and cycle crossing spacing	Positive indicates greater crossing opportunities (time, space)	C01
Public space	Number of dwellings within 10 minutes of public space and high-quality green space	Positive indicates increase in number of dwellings within 10 minute catchment of public space	L04
Tree canopy	Proportion of tree canopy within Tech Central	Positive indicates greater tree canopy cover	L04, L06
Cycling attractiveness	Access to cycleways	Positive indicates greater access to cycleways	C01, C02, C04, C06, C09
Cycle network length	KM of bicycle network in place (separately by network type)	Positive indicates greater cycle network length	C01, C02, C04, C06, C09, S01

Indicator	Measure	Desired outcome	Objectives
Public transport frequency	Frequency of public transport stopping within area	Positive indicates higher frequency	C01, C02, C04, C08
Journey time reliability (public transport)	Deviation from average trip time by that mode on select links by time of day	Positive indicates a reduction in differential	C15 P01
Safe System Assessment	Safe System Assessment risk score	Positive indicates greater safety	C11
Equitable access	Equitable access for people with disabilities or reduced mobility (e.g. pram) in comparison to the able or unencumbered	Positive indicates reduced differential	C15, C16
Journey time reliability (freight)	Deviation from average trip time by that mode on select links by time of day	Positive indicates a reduction in differential	C15 P04
Access to loading opportunities	Business and freight operator access to managed loading opportunities	Positive indicates an increase in access to loading opportunities	C15, P04, P05
Flexible use of space	Business and public access to managed, flexible-use spaces	Positive indicates greater access	P03 L01
Environmental quality	Exposure to air and noise pollution	Positive indicates reduced per capita exposure	L06, L07, L09
Walking space	Compliance with Walking Space Guide level of service benchmark	Positive indicates a greater level of service	L01
Engagement in spaces	Community engagement in public spaces and public life	Positive indicates increased engagement	L01, L05, L07
Community safety and security	Crime Prevention Through Environmental Design assessment	Positive indicates greater perceived safety	L02
Carbon emissions	Transport-related emissions for travel to, from, within and through Tech Central	Positive indicates a reduction	S01, S03, S04, S05
Sustainable materials use	Proportion of materials for transport infrastructure sourced by reusing or recapture.	Positive indicates a greater proportion	S05

Chapter 3: Challenges and Opportunities

Competing demands for movement and place functions within Tech Central, alongside major changes to its future function and the surrounding transport network, present a set of unique challenges and opportunities for Tech Central. These are summarised below and explored further through the strategic directions in Chapter 5.

Challenges identified also present opportunities to make positive change and achieve the vision for Tech Central. These challenges and the opportunities they create are:

- The Camperdown node does not have direct access to rapid, regional mass transit.
- Unreliable travel times for on-road public transport.
- Transport corridors and campuses impede direct routes for walking and cycling.
- Major roads and corridors detract from the walking and cycling experience.
- Connections to open spaces are fragmented.
- A diverse population with different levels of need and opportunities.

In addition, there are further opportunities to:

- Supercharge innovation, productivity and collaboration.
- Leverage Tech Central's strategically important location in the Eastern Harbour CBD.
- Support and expand successful and vibrant places for people.
- Align with policy and strategy to move towards a sustainable future.
- Capitalise on committed investment in transport infrastructure.
- Make the area a testbed for innovation in transport infrastructure and services.

Challenges

The Camperdown node does not have direct access to rapid, regional mass transit

Tech Central is highly connected by mass-transit, with frequent heavy rail connections to Central, Redfern and Newtown Stations, as well as light rail from Central Station to the Sydney CBD and Eastern Suburbs. However, the Camperdown node of Tech Central does not have direct access to rapid, regional mass transit.

Some parts of the University of Sydney are reached by a short walk from Redfern Station but Macdonaldtown and Newtown Stations sit just outside of a 10 minute walking catchment to RPA Hospital and the proposed Camperdown Health Education and Research Precinct. The area reachable from Camperdown within 30 minutes by walking and public transport is significantly smaller than from elsewhere in Tech Central.

This challenge is accentuated by the high demand for regional travel to and from the area. In particular, the limited supply of affordable housing in and near Tech Central means that people with low and middle incomes who work or study in the area often choose to travel from elsewhere. This includes essential health workers, students and specialised researchers, many of whom are unlikely to be able to perform their roles from home.

Notable challenges include:

- Cross regional travel between the Inner West and South East suburbs is slower and less convenient by public transport (bus) than it is by car (or point to point or rideshare services).
- Rail stations are only present in the eastern and southern side of the study area and generally serve radial north-south local connectivity and regional connectivity throughout Greater Sydney.
- Rapid public transport with a dedicated right-of-way does not exist at the western end of Tech Central, meaning that people need to walk longer distances to stations, or travel on buses and then transfer.
- Local bus services often do not have priority along major bus corridors or at intersections, meaning these trips are often less reliable and less attractive compared to other modes. See next Challenge for further discussion.

Planned expansion of the Metro network has varying impacts and may open future opportunities to better serve the precinct. Waterloo Metro Station will further enhance the rapid mass transit available for the southern areas of Tech Central. The planned Sydney Metro West alignment passes north of Tech Central via Five Dock and The Bays, although these stations will not be within the walking catchment of Tech Central. The NSW Government has committed to building a new metro station at Pyrmont as part of the Sydney Metro West project.

In the future there is an opportunity to serve the Camperdown node with high-capacity public transport services which are fast, frequent and reliable, better connecting the area into the Greater Sydney public transport network and supporting Camperdown's role as a truly integrated part of Tech Central.

Unreliable travel times for on-road public transport

Despite extensive bus coverage throughout Tech Central, there is variable provision of on-street bus priority. On some corridors in Tech Central, the available road space is constrained, and space allocation tends to prioritise general traffic and freight over public transport.

Within Tech Central, the longest sections of bus lane are along Parramatta Road and Broadway. Despite acting as key bus corridors, Cleveland Street and Harris Street do not provide bus priority. There are also no bus priority intersections in Tech Central, reducing the competitiveness of bus travel compared to cars and rideshare services.

Much of the existing bus lane provision is narrow and shared with left turning traffic, resulting in buses being delayed behind turning vehicles or wide vehicles in the adjacent lane. King Street, which carries around 100 buses in the AM peak (both directions between 7-9am) does not have any dedicated bus priority and buses compete with turning traffic and queuing at intersections. In the evenings and on weekends, limited stops services along King Street are delayed by all-stop services due to lack of bus stop indentation and high traffic volumes in the adjacent lanes.

Enhancement of priority on key routes would provide the more competitive travel times and better reliability for on-road public transport compared to cars and rideshare services. Improved reliability would support areas of Tech Central that are not within walking distance of rapid, regional mass transit and elevate the attractiveness of on road public transport services to customers.

Reallocating existing road space to buses can be a challenge where the road corridors are not very wide, so implementing changes to realise the vision for movement in Tech Central will require careful consideration of the trade-offs between buses and other road users.

Transport corridors and campuses impede direct routes for walking and cycling

The transport network within Tech Central is defined by major road and rail corridors. While these facilitate the movement of large volumes of people in vehicles, these corridors can form barriers that impede people walking and cycling from taking the most direct route. This means that walking and cycling journeys in Tech Central are longer, less convenient and less desirable when compared to alternative travel modes.

For people walking from Waterloo to Sydney University Darlington campus, the barrier formed by the railway line and absence of crossing points results in an additional 700 metre detour compared to a direct route although this will be reduced by the opening of the Southern Concourse at Redfern Station. Southern sections of Surry Hills (east of the rail corridor) are geographically close to Haymarket and Ultimo (west of the rail corridor), but there are few walking connections through and across the Central Station Precinct that separates them. Future developments at Redfern North Eveleigh and Central Station provide opportunities to investigate new connections and help bring communities on each side of the rail corridor together.

Similarly, major road corridors such as Parramatta Road and Cleveland Street have limited crossing opportunities and priority for pedestrians. Traffic signals causes delays for pedestrians crossing major roadways, which creates slower and less enjoyable journeys that exposes people to prolonged periods in poor safety, air quality and noise quality environments. Limited crossing opportunities can also lead to an increase in uncontrolled crossings that creates a risk of serious injury to vulnerable road users. There is an opportunity to introduce additional crossings and change how the road network and traffic signals are operated, reducing the barrier effect and improving pedestrian connections in the area.

Large campus developments, such as the University of Sydney campus at Camperdown and the Royal Prince Alfred Hospital campuses on either side of Missenden Road, contribute to the area's vibrancy and character, but act as barriers to walking and cycling. While these blocks contain some internal walking networks, which are often well lit and signposted, their scale and permeability makes them less accessible or easily navigable to the general public. Proposed redevelopment of these large campuses creates an opportunity to enhance walking connections within them and invite the community in, creating a seamless experience with the surrounding areas.

Major roads and corridors detract from walking and cycling experience

Connectivity to, from and between key destinations in Tech Central is challenged by sections of poor walking and cycling links. A key challenge, as referred to above, is a lack of crossing opportunities at signalised intersections along major road corridors, so that people need to walk further or wait multiple cycles to cross.

Road space allocation that favours motorised vehicles and speed limits of 60km/h on major roads presents safety concerns for vulnerable users. Road safety issues can detract and discourage walking and cycling, and crash data for Tech Central (Figure 10) shows the clusters of crashes involving pedestrians in Tech Central between 2013 – 2019. The highest densities of crashes occurred near train stations, along Broadway and around Central Station, particularly Railway Square.

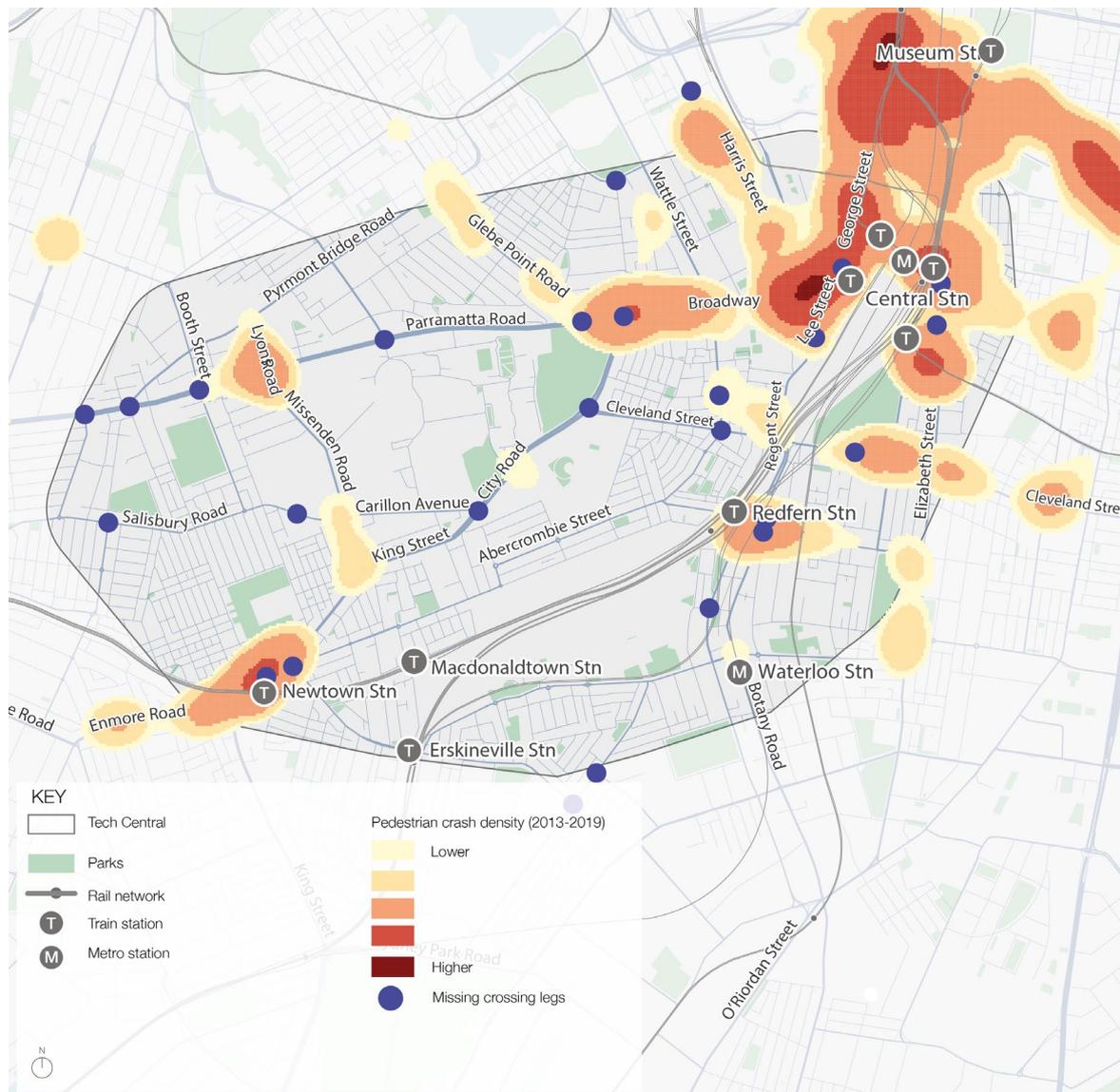


Figure 10 Pedestrian crossing facilities and crash hotspots

Similarly, adverse noise and air quality also detract from the walking and cycling experience along major roads and corridors in Tech Central. On major corridors such as Broadway, the composition of cars, freight and buses over multiple lanes results in a noisy and polluted experience for other users.

There is an opportunity to improve the experience for people walking and cycling by providing wider footpaths, separated bicycle paths and lower speed limits to reduce the level of noise and air pollution, reducing the chance of death and serious injury and increasing comfort.

Connections to open spaces are fragmented

People living, working and visiting Tech Central need access to public open spaces, particularly greenery and watercourses (green and blue spaces). These spaces not only help to make suburbs more liveable by providing opportunities for recreation, but canopy cover and urban greening also helps to reduce urban heat island effects. Open or public space also provides opportunities for reflection, quiet and a break from people and noise.

While there are major parks such as Victoria Park, Camperdown Memorial Rest Park, Camperdown Oval and Prince Alfred Park, there is an opportunity for pedestrian access to be improved through reduced delay crossing roads and better walking links. Much of the nearby green space is located on university campuses (University of Sydney and University of Technology Sydney) and there is an opportunity to encourage more public access in the future.

Some streets and roads in Tech Central have lower levels of shade, shelter, sense of safety and maintenance, particularly around key intersections such as Regent Street / Cleveland Street and Railway Square (Figure 11). There is an opportunity to recognise the value of streets as public space with canopy coverage and landscaping that can support healthy living.



Figure 11 At Camperdown Memorial Rest Park (L), pedestrian priority is mainly enacted through signage; at Regent Street/Cleveland Street, multi-stage pedestrian crossings are highly exposed to air pollution and noise

Source: Arup (June 2020)

A diverse population with different levels of need and opportunities

There is a diverse population that resides within Tech Central and many people use or rely on public transport and active transport for their travel. People travel to the city centre and to key job markets via public transport. There is a component of the population that is reliant on public transport, walking and cycling for all of their travel needs due to low car ownership; around 1 in 3 (33%) of households do not own a vehicle, compared to 12% in Greater Sydney⁴. While median incomes of residents in Tech Central is comparable to Greater Sydney, this does not account for disparities across the area, with extreme disadvantage in northern and south-eastern areas of Tech Central.

Improving public transport services across the day and week and providing access to safe walking and cycling infrastructure provides an opportunity to ensure that all residents in the area have access to a broad range of services, education and employment.

Opportunities

Supercharge innovation, productivity and collaboration

The concentration and potential for technology, research and creative industries within Tech Central means there is an opportunity to enhance productivity and collaboration through improved internal and external connectivity.

Many trips across Tech Central are within a range that could be taken on foot, by bicycle or other micromobility modes. Current travel patterns already indicate a high take-up of walking, cycling and public transport, and use of emerging micromobility and other modes is also on the rise. Further mode shift could be enacted by improving walking and cycling infrastructure and making the street environment more safe, comfortable and attractive.

This would facilitate opportunities for collaboration between institutions (such as university-to-university, or university-to-industry), provide students and workers with greater exposure to each other's knowledge-base and create opportunities for both informal networking in shared public spaces and formal collaboration. At the Australian Technology Park, a new collaborative workspace allows companies to come together and co-create the next big ideas. With current uncertainty about how traditional office spaces will operate in the future, 'on-demand' workspaces such as these may emerge as the new setting for industry collaboration.

In the Sydney Inner City SA3:



Half of all trips are walking and cycling



One third of trips are private vehicle and public transport

Figure 12 Existing travel patterns (Household Travel Survey 2018/19)

⁴ 2016 Australian Census for SA2s surrounding Tech Central: Leichhardt - Annandale, Petersham - Stanmore, Erskineville - Alexandria, Glebe - Forest Lodge, Newtown - Camperdown - Darlinghurst, Pyrmont - Ultimo, Redfern - Chippendale, Surry Hills, Waterloo - Beaconsfield. The Sydney CBD (Sydney - Haymarket - The Rocks) has been excluded,

Both universities and Royal Prince Alfred Hospital are established centres of education, research and innovation; these are located alongside medical research institutes, clusters of start-ups and smaller, more agile businesses throughout Chippendale, Camperdown, Darlington and Surry Hills, and a planned hub at the Tech Central Precinct (see Breakout 1). At the Australian Technology Park, developers Mirvac and partners have established a \$2.1 million innovation and technology incubator fund.

On a regional scale, improved mass transit connections to Tech Central could support collaboration with surrounding health and education precincts such as at Randwick and Westmead, emerging future centres such as the Aerotropolis, as well as attracting industry partners to collaborate with research institutions in Tech Central.

Breakout 1 Innovation districts

INNOVATION DISTRICTS



Source: *Innovation District Audit (Brookings Institute)*

Physical ‘places’ supported by a responsive transport system are critical for successful innovation districts. By “auditing” innovation districts and assets that comprise local innovation ecosystems, a number of key spatial and social considerations can be identified. Key actions that will impact on Tech Central include:

- Facilitate physical proximity between institutions and organisations to achieve the critical mass for innovation to occur.
- Support connectivity and partnerships across Tech Central to achieve innovation capacity - a district’s capacity to translate ideas into new products and services. Innovation represents a chief source of high-quality jobs. Regions that have a critical mass of the skilled workers and institutions needed to create and deploy new technologies are best positioned.
- Support access into and from the Area to ensure diversity and inclusion. Innovation relies on a diverse set of actors.
- Create quality places: connectivity, proximity, and vibrant, inclusive public spaces. The extent to which the physical landscape is strengthening networks and relationships and enticing people from a diversity of backgrounds to mix.
- Enact leadership and meaningful engagement with stakeholders.

Leverage Tech Central’s strategically important location in the Eastern Harbour CBD

Tech Central sits across the southern boundary of the Eastern Harbour CBD, along the Eastern Economic Corridor and at the centre of a proposed Innovation Corridor (see Breakout 2). This key location is close to Australia’s busiest and most connected international airport and surrounded by quality international hotels and accommodation.

Other key employment centres are less than 10 kilometres away, including Randwick Health and Education Precinct (4.5 kilometres), Sydney Airport (5 kilometres), St Leonards (7.5 kilometres) and Chatswood (10 kilometres). Westmead and the metropolitan centre of Parramatta are both less than 20 kilometres away to the west. The planned Bays Precinct is less than five kilometres to the north, with plans to accommodate tech industries as well as a high-density residential centre.

High quality mass transit connections to centres such as these would bring economic benefits to Tech Central by making it accessible (within 30 minutes) to a wider pool of potential workers, visitors and students – some of whom may study or work across multiple places. Regional co-location and connections also supports opportunities for businesses and institutions to collaborate and share learnings, attend conferences, give talks or mentor.

Breakout 2 The Innovation Corridor

INNOVATION CORRIDOR



Source: *Pyrmont Peninsula Place Strategy (Draft), TfNSW (2020)*

The NSW Government's promotion of the emerging Innovation Corridor will increase connectivity across thriving new technology industries in Redfern, Eveleigh and the Australian Technology Park in the south, through to Tech Central, the Pyrmont Peninsula, Bays West and western parts of the Sydney CBD around Barangaroo and Darling Harbour. It supports and leverages investment opportunities around Tech Central.

The Innovation Corridor houses diverse industries including Health and Meditech, Digital and Design, Fintech, Creative production, Financial and Professional Services, Tourism and Entertainment and Media and Adtech.

Tech Central's connectivity to and integration with other centres in the innovation corridor will strengthen both Tech Central and the Innovation Corridor as a whole, creating benefits for all of Greater Sydney and New South Wales.

Support and expand successful and vibrant places for people

Tech Central is home to a vast array of popular destinations for travel, culture and entertainment. Galleries, theatres, shops (both major shopping centres and boutique shopfronts), restaurants, bars and cafes are scattered throughout, with concentrations along existing high streets like King Street (Newtown) and Glebe Point Road (Glebe) and precincts such as Chinatown and Thai Town in Haymarket. Carriageworks and the Australian Technology Park at Eveleigh have emerged as landmark destinations for events and exhibitions. Community groups run popular events including the annual Mardi Gras Fair Day at Victoria Park and the Newtown Festival at Camperdown Memorial Rest Park, while universities attract a dynamic student population. Planned urban renewal precincts centred on Waterloo Metro Station need to provide liveable spaces for residents in one of Sydney's densest communities.

Improved transport links enable more people to access these places quickly and safely, particularly at night. Designing streets where people and traffic can interact safely encourages and supports people travelling on foot or by bicycle. At the same time, reconsidering the role of footpaths and plazas as public spaces that house other uses like outdoor dining, entertainment and retail (such as markets) suggests a rebalancing of space and priority for people on foot compared to people in cars.

Align with policy and strategy to move towards a sustainable future

This Transport Strategy presents an opportunity to capitalise on growing momentum for a more sustainable approach to development and growth. This is reflected globally, with drivers such as the United Nations Sustainable Development Goals, as well as locally, with commitments to achieve net-zero carbon emissions made by the NSW Government (for 2050), the City of Sydney (for 2040)⁵. Similarly, Inner West Council is targeting a 75% reduction in community emissions by 2036 and net-zero emissions by 2050⁶.

The transport sector alone can potentially reduce a city's carbon emissions by a fifth⁷, and there is an opportunity to realise this reduction in Tech Central where many trips are local and car ownership is relatively low. Nearby research hubs at the University of Technology Sydney and University of Sydney are already addressing sustainability challenges.

International trends, technology and policies that support lower emissions sketch a possible future for the precinct. These include electric vehicles (particularly when powered by renewable energy sources), hydrogen-cell fuelled buses, enactment of Low Emission Zones and street design guidance that places walking and cycling at the top of the transport hierarchy.

As travel patterns change in response to increased workplace flexibility, demand for travel in the peaks can be spread across the day. The reduced need to expand capacity allows more sustainable use of existing vehicles and infrastructure to serve our customer's whole lives.

In Tech Central, the density of attractive destinations and public transport interchanges, combined with the fine-grain street network (a legacy of the pre-motor vehicle development) supports end-to-end and first/last-mile travel by walking and cycling, which have minimal carbon impact.

Capitalise on committed investment in transport infrastructure

An unprecedented level of investment in transport infrastructure is taking place in and around Tech Central. This investment provides opportunities to change networks and services and change the operations of roads to enhance the quality and amenity of places – which will further support the achievement of the vision and objectives for the area. Breakout 3 summarises the need to capitalise on this investment and enforce new travel behaviours before undesirable patterns are entrenched.

⁵ 'Net zero by 2040: Ambitious new emissions target set' (City of Sydney, February 2020), accessed at <<https://news.cityofsydney.nsw.gov.au/articles/net-zero-by-2040-city-of-sydney-ambitious-new-carbon-emissions-target-set>>

⁶ Inner West Council Climate and Renewables Strategy (Inner West Council, December 2019)

⁷ National Greenhouse Gas Inventory: September 2019 (Department of Industry, Science, Energy and Resources, February 2020)

New motorway projects that reduce traffic on the surface road network will provide opportunities for lowering the speed of vehicles, increasing pedestrian crossings and re-allocating road space to provide higher quality public domain and landscaping, increased public transport priority and safer cycling (see Figure 13).

In Tech Central, some notable opportunities include:

- **WestConnex (all stages, construction)** – When complete in 2023, WestConnex will provide motorists with a continuous, 33km traffic-light free motorway network, with connections for future projects linking the north shore and northern beaches, Sydney Airport and the southern suburbs. Traffic and freight on Parramatta Road will be reduced, allowing for more opportunities to access Tech Central.
- **Western Harbour Tunnel (planning and design phase)** – The new underground motorway link could divert some north-south regional through traffic away from road links such as Wattle Street, Harris Street and Botany Road.
- **Waterloo Metro Station (construction)** – Delivered as part of the Sydney Metro City and Southwest line, the station will provide enhanced public transport accessibility to Waterloo, Redfern, Alexandria and South Eveleigh. With high quality bus services along Botany Road, it will allow for further development and expansion of the Global Economic Corridor between Sydney CBD and Green Square.
- **Redfern Station Upgrade and New Southern Concourse (construction)** – The station upgrade will provide enhanced public transport accessibility to Darlington, Redfern, and Eveleigh, including the South Eveleigh and Redfern North Eveleigh Precinct Renewal. There are opportunities to leverage on this new connectivity through improved bus service integration and better walking and cycling to connect to public transport services.
- **Sydney CBD Traffic Capacity Reductions** – Reduced capacity on the Sydney CBD road network has occurred through the completion of the L2 and L3 light rail lines, and the full pedestrianisation of George Street between Hunter Street and Hay Street in the Sydney CBD. The reduced traffic capacity and increase in public transport options have resulted in reduced demand for vehicle travel to Sydney CBD, which in turn provides opportunities for the re-allocation of road space from traffic to walking, cycling and public domain uses on major road corridors approaching the City Centre.

Breakout 3 Leveraging time-sensitive opportunities

TIME SENSITIVE OPPORTUNITIES



Induced demand is the well-studied behavioural response by motorists to increased roadway capacity. A short-term travel time reduction is gained by an increased capacity of a roadway.

However, the travel time reduction may encourage more motorists to use the roadway. The growth of motorists increases the journey time in the longer term; losing the benefit of the roadway upgrade.

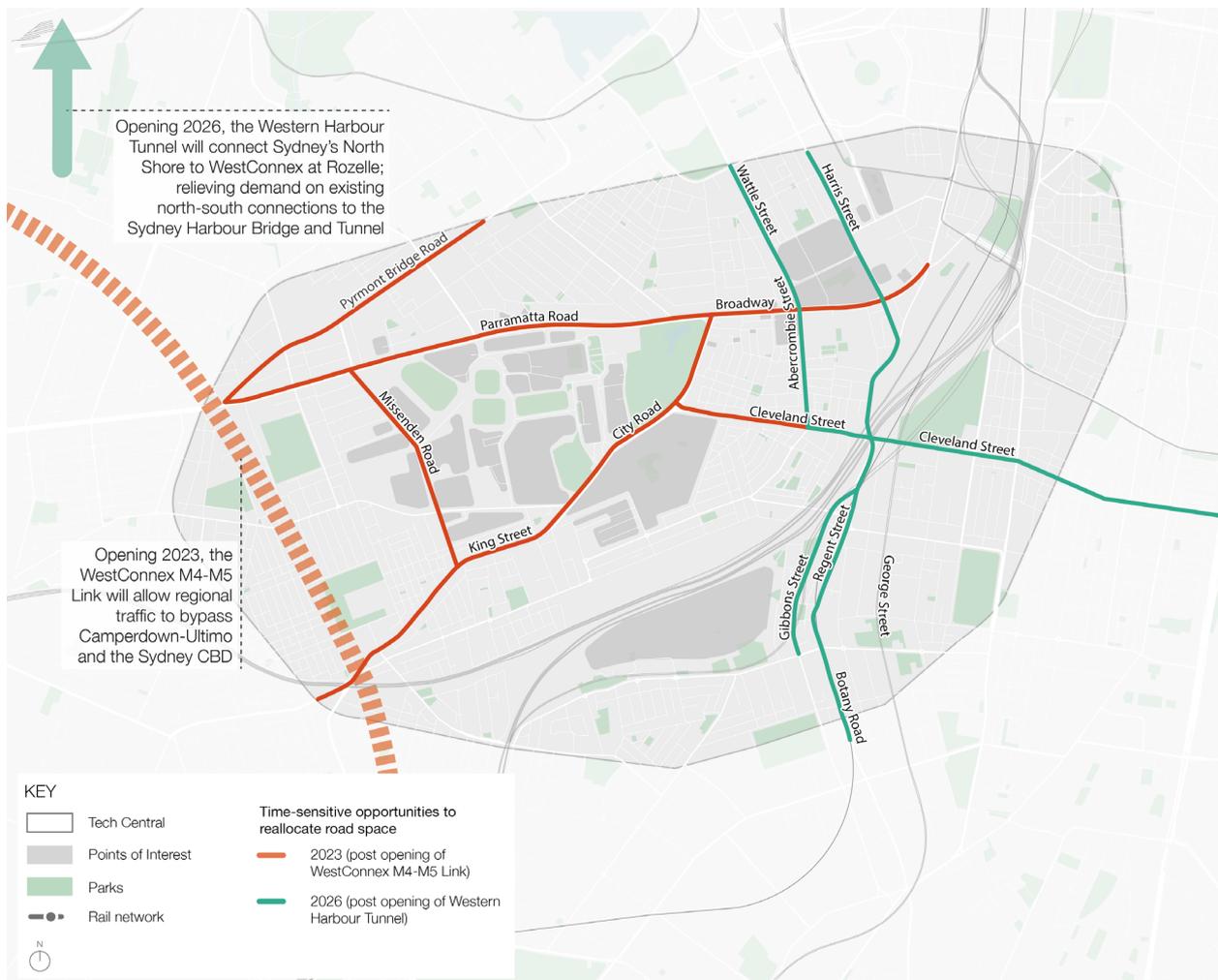


Figure 13 Investment in major transport infrastructure presents opportunities to reduce traffic speed and reallocate road space for walking and cycling

Make the area a testbed for innovation in transport infrastructure and services

The *Camperdown-Ultimo Place Strategy* identifies Tech Central as ideally situated to become a testbed and/or a living-lab for developing and trialling new technologies, policies and ways of working / collaborating between governments, institutions and the public. While the NSW Government will continue to consider the opportunities for delivering innovation within the precinct, ideas could include:

- **Street layout and space allocation** – including temporary and ‘pop-up’ footpaths, pocket parks, outdoor dining or meeting space, kerb-buildouts, footpath widenings, cycleways and street closures;
- **Space management and programming** – including temporary art, meeting and cultural events, community fairs and events;

- **Information and wayfinding technologies** – including dynamic parking supply and demand indicators, walking and cycling wayfinding, rideshare and point to point travel information, space interpretation and feedback points;
- **Clean vehicle technologies** – including electric motor vehicle charging, service the precinct green public transport fleet, electric bicycle or micromobility facilities; and
- **Transport service and freight provision** – including freight hubs, and digital platforms for Mobility as a Service.
- **Promotion of walking and cycling** – exploring ‘living lab’ opportunities to explore ways of encouraging people to switch towards sustainable modes of travel.

These opportunities can be delivered on a temporary, trial or pilot basis and can be ideated, developed and delivered as collaborative partnerships between key institutions within Tech Central, emerging innovative industries and start-ups, local governments, state government and the public.

Breakout 4 Trialling microfreight in Inner City areas

FREIGHT HUBS



In 2016, TfNSW and the City of Sydney developed a micro-distribution hub (the Courier Hub) by repurposing a disused wash bay in the Goulburn Street car park, Sydney. Today, a number of couriers making deliveries on foot or by bike into the city use the Courier Hub as a central distribution and collection point. While it is a small space, this open-access, multi-user facility delivers urban environmental benefits and time savings, by switching inner city deliveries from van couriers to bike couriers.

A study showed that bike couriers can meet their delivery targets with less distance travelled, up to 50% less time taken – mainly because bike couriers were able to find parking more easily and spent less time walking from their parking space to the delivery destination.



9.7 hours less driving time



50% fewer vehicle emissions

*Results from 2019 assessment

Chapter 4: Realising the Vision

The future of connectivity within and beyond Tech Central

Subject to further investigation, consultation and government approval, the priorities outlined in this chapter could achieve the vision for a future where Tech Central is a truly integrated innovation district where residents, visitors and workers can interact and linger in great places and public spaces, enabling planned and unplanned interactions between people in support of innovation and creativity.

Tech Central could be one of the most connected places in Greater Sydney, with easy and direct connections to other key strategic and metropolitan centres, health and education precincts and innovation districts by train, metro, rapid bus and safe, efficient cycleways, ensuring that connections and partnerships with complementary and supporting businesses and institutions throughout Greater Sydney.

A possible future extension of Sydney Metro West from the CBD through Tech Central could provide residents of the Western and Central cities access to the great jobs of the future, and educational opportunities at some of the best educational institutions in Australia.

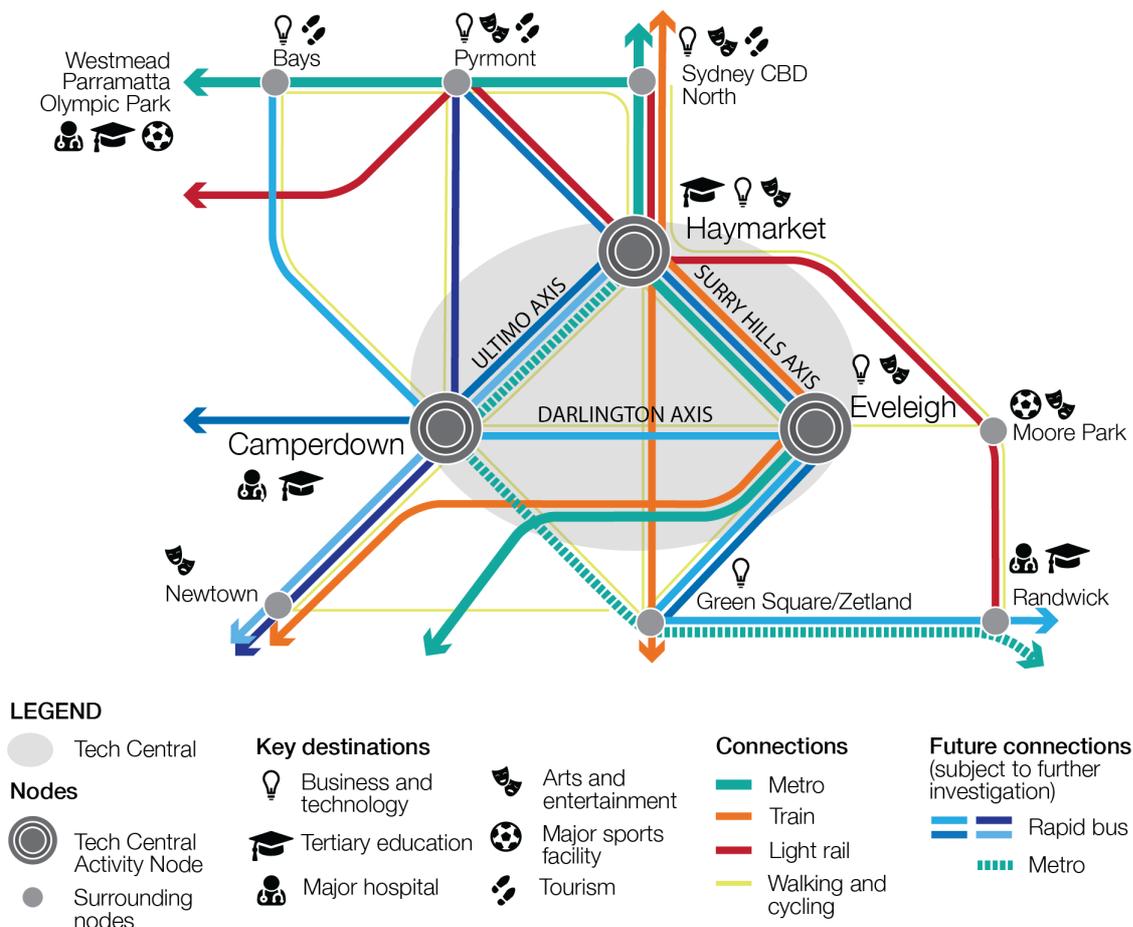


Figure 14 Connectivity framework for Tech Central and its surrounds

Rapid bus lines, with high quality stops supported by bus priority that makes them a more convenient option than driving, could connect directly between the Haymarket, Eveleigh and Camperdown nodes of Tech Central, as well as connecting to the north, south, east and west to truly integrate the area into the surrounding areas of the Eastern City.

People could travel anywhere within Tech Central in under 30 minutes by walking and public transport, cycling and new forms of micromobility, allowing businesses and institutions to partner and collaborate to ensure that the area functions as a single and unified whole.

Large campuses, like Royal Prince Alfred Hospital and the University of Sydney could be integrated with each other and their surrounds, with easy and direct paths allowing people to walk through and across each campus.

Roads and rail could no longer be a barrier, with regularly spaced road crossings that people don't have to wait long to cross. Rail corridor crossings between Central and Eveleigh could strengthen connection and integration between Sydney Metro Waterloo Station, Australian Technology Park, Redfern North Eveleigh and the University of Sydney, and between the University of Technology Sydney, Central Precinct Renewal and Surry Hills.

Vehicles traveling at safe speeds on all streets in the area could reduce deaths and serious injuries on the road Towards Zero and complement wider footpaths and increased space for walking to make public spaces comfortable and inviting for people of all ages and abilities.

Workers and visitors to Tech Central living within 5-10km could choose to ride a bike on a safe, direct and connected network of separated cycle infrastructure that allows them to get to their destination quicker than they could by driving or public transport. Convenient and secure end of trip facilities throughout the area help make cycling a stress free experience.

A once in a generation investment in new motorway links could allow streets to be transformed, with through traffic and freight attracted to an efficient motorway network. WestConnex and the Western Harbour Tunnel will offer free flowing tolled road links to the west, north and south, while high quality free alternatives remain available such as City West Link between Western Sydney and the CBD, Sydenham Road between Western Sydney and Sydney Airport, and Southern Cross Drive between the CBD and Sydney Airport. This could allow streets in Tech Central such as Parramatta Road, Broadway, City Road, King Street, Harris Street and Regent Street to be transformed to support walking, cycling, public transport, freight servicing and access by local residents and visitors.

Freight servicing to local businesses and institutions could be innovative, low impact, and take advantage of innovative new approaches, such as consolidated freight hubs and last mile micro freight.

Deep and ongoing partnership between universities, hospitals, businesses, state and local government could break down traditional barriers to change, making Tech Central a centre for innovation in the way transport is delivered and great places are created. Businesses, hospitals and universities would work with their employees to embed sustainable travel behaviours which complement public and private the investment in the area.

Strategic directions and initiatives

Initiatives were developed following a review of relevant strategic documents, a review of the existing and planned context for Movement and Place, analysis of existing transport data and a co-design process undertaken with stakeholders. These initiatives identified are collated and presented here under strategic directions to achieve the vision and objectives for Tech Central and Greater Sydney.

The four strategic directions of this Transport Strategy are:

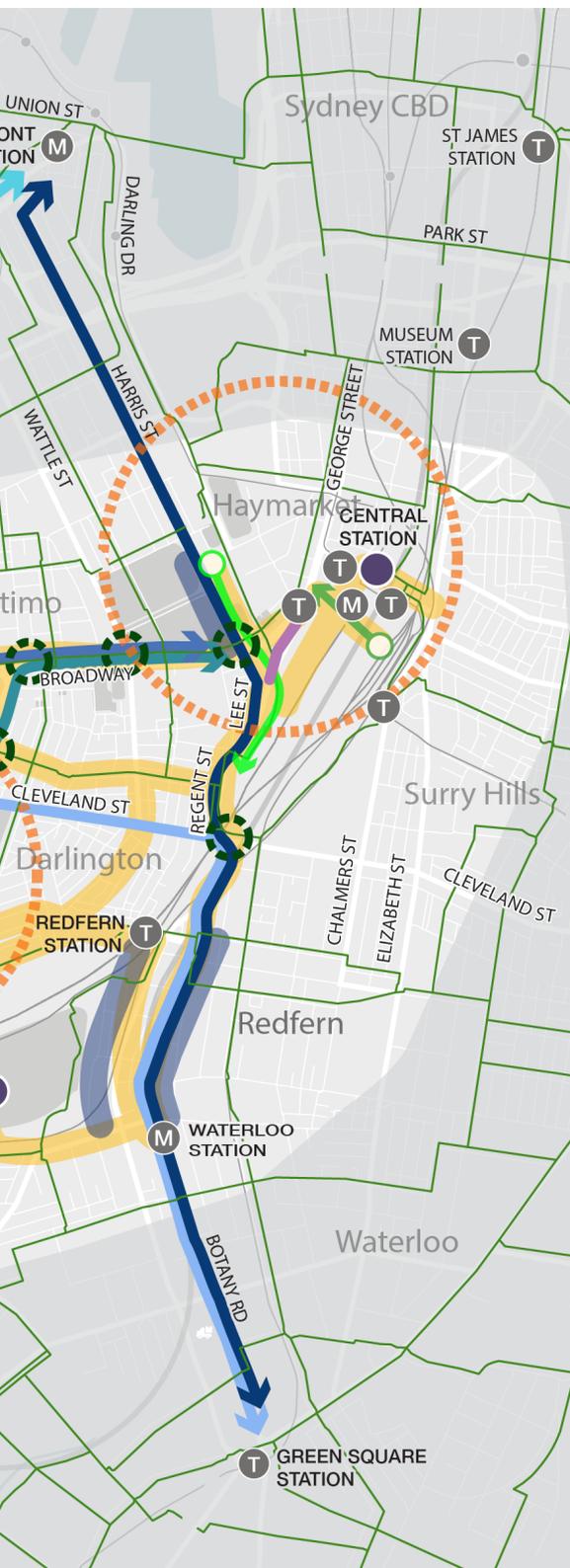
- **Creating walkable streets and places** - maximise opportunities for in-person collaboration, both formal and informal, between institutions within and immediately adjacent to Tech Central, and increase local amenity for residents, students, workers and visitors.
- **Enhancing access by cycling and public transport**, within and beyond Tech Central's boundaries - better connect Tech Central to surrounding centres and reinforce more sustainable transport choices.
- **Shaping and sustainable and resilient precinct** - facilitate new transport services which are environmentally sustainable, social and economically equitable and contribute towards economic and environmental resilience.
- **Foster Innovation** – this strategic direction seeks to explore new transport interventions and opportunities to trial new technologies, policies or approaches that support the three other strategic directions.

Each strategic direction sets out its relevance to this Transport Strategy and how it will impact on Tech Central. It details how the strategic direction supports the vision and objectives for this Transport Strategy that were developed in collaboration with stakeholders including the Camperdown Ultimo Alliance.

Chapter 6 looks at the proposed time frames and avenues for implementing the initiatives, with opportunities for collaboration. Figure 14 shows the proposed connectivity between activity nodes in Tech Central and its surrounds. Figure 15 shows the key transport initiatives, including priority areas for improvements to pedestrian amenity and safety, a connected metropolitan cycling network, the locations for possible future metro stations, the rapid bus network and locations for multimodal last-mile freight hubs.



Figure 15 Key initiatives across Tech Central



Walkable streets and places

- Safer speeds for local streets, High Pedestrian Activity Areas and areas of higher place significance
- Traffic calming to strengthen existing low traffic neighbourhoods
- Consistent and integrated wayfinding

Enhancing access by cycling and public transport

- A safe and connected local cycle network and low speed, low stress local streets
- Secure and convenient cycling end of trip facilities
- Consistent and integrated wayfinding
- High quality bus priority infrastructure and technology
- High amenity places along rapid bus routes and around rapid bus stops
- Fully accessible interchanges, stops and stations
- Increased public transport service frequency across the day, night and week to flatten peaks and support the 24 hour economy
- Reduced through traffic in key places
- Smart technology and dynamic prioritisation of demand
- Dynamic kerb technology to manage freight access and increase space for dining and dwelling

Shaping a sustainable and resilient precinct

- Safer speeds and traffic calming for local streets, High Pedestrian Activity Areas and areas of higher place significance
- Streets that are self-explaining environments
- Streets and intersections designed according to Safe Systems principles
- Safe and integrated interchanges
- Travel Demand Management Strategy and precinct Travel Plans
- A sustainable and consistent approach to parking
- Electric and zero emissions trains and buses
- Promote zero emissions freight vehicles
- Reduced hard surfaces, increased street planting and shade
- Micro-freight solutions such as electric cargo bikes
- Flexible kerbside management for parking and loading

Fostering innovation

- Test and learn through tactical urbanism
- Innovation in collaboration and delivery
- Trials and pilots of new forms of mobility
- Partnership with precinct researchers, industry and entrepreneurs
- Partnership with the private sector, including Mobility-as-a-Service opportunities
- Smart and flexible technology, such as e-ink bus stop displays

Strategic Direction 1: Creating walkable streets and places

Walking forms the first and last leg of almost all trips to, from, within and through Tech Central. For residents (including children), students, workers and visitors, walking connectivity impacts the ease of getting around, the accessibility of nearby opportunities and the chance for formal and informal collaboration that an innovation precinct requires.

People of all ages and abilities, working, living, studying in, or visiting Tech Central would benefit from increased permeability and the ability to better engage with streets, businesses, galleries, parks, watercourses and other land uses on foot. Walkable streets are a strong indicator of high place value. Travelling by walking or cycling also fosters social equity in access, lowers the environmental impacts of travel and improves overall health and wellbeing.

Growth patterns and historic prioritisation of vehicle traffic on roads within Sydney mean that major road corridors within Tech Central carry large volumes of traffic. One of the consequences is that walking infrastructure at some locations in Tech Central serves its customers poorly. Crossing major roads can involve long wait times at signalised intersections and connections across the railway line are infrequent and widely spaced.

With historic levels of investment in new motorway links such as WestConnex and Western Harbour Tunnel that will take many longer distance road trips off the surface road network, there is a once in a generation opportunity to make more of the existing road space available for other road users and improve the overall street amenity. Improvements such as wider footpaths, a transition to lower-impact last-mile freight delivery, more space for street trees and seating to provide additional rest opportunities would improve the experience of walking within one of the most walked places in Greater Sydney.

Supporting the vision and objectives

This strategic direction supports the vision and objectives for this Transport Strategy. The initiatives identified under this strategic direction contribute to achieving the vision and objectives for Tech Central and Greater Sydney by:

- **Moving more people more efficiently:** as Tech Central and the adjacent Sydney CBD develops, there is a need to move people more efficiently through the transport network. Walking enables people to move around in a space-efficient manner and address the need for efficient first and last leg trips to and from public transport.
- **Improving safety:** Protecting and prioritising our most vulnerable road users, including people walking, makes streets safer places and reduces the risk of fatal and serious injuries, in line with the NSW Government target of zero fatalities and serious injuries on NSW roads by 2056 (see Breakout 5).
- **Improving local amenity and supporting businesses and innovation:** Reducing dependence on travel by private vehicle through shifting trips to walking improves the local amenity of places and supports the innovation economy through encouraging

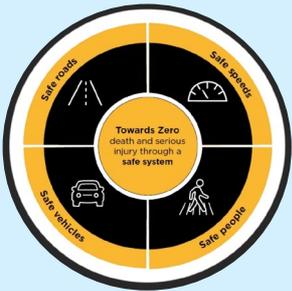
spontaneous interaction and knowledge transfer. Furthermore, high amenity places can attract greater footfall for businesses in the area.

- **Shared use of space:** The shared use of spaces (spatially or temporally) provides greater opportunities for people to gather or for programmed or informal events and gatherings to take place. Examples of this include markets and performance spaces.
- **Supporting social equity:** Spaces for walking play an important role in creating public space, including networks of laneways, plazas and streets where people gather. Providing for publicly accessible modes with a low barrier to entry means that all people living, working or visiting Tech Central can travel where they need to, regardless of age, ability or socioeconomic advantage.

The *Walking Space Guide - Towards Pedestrian Comfort and Safety* (TfNSW, 2020) is aimed at making sure that streets provide sufficient space for people to walk comfortably side by side and overtake one another without crowding.

Breakout 5 A Safe System approach to designing roads and streets

SAFE SYSTEM



The Safe System approach involves different elements of the system working together to help eliminate death and serious injury. As part of the NSW Road Safety Plan 2021, NSW has committed to deliver on a target of zero trauma on the transport system by 2056, the central principle of the Safe System approach. This sets NSW Government the challenge of ensuring safety is at the forefront of all decisions that impact upon the design, operation and maintenance of the built environment.

The assessment considers how the transport arrangement at the location would perform against the Safe System risk elements; the exposure to that crash risk, the likelihood of it occurring and the severity of the crash should it occur.

Source: *Towards Zero* (NSW Government)

Planning principles for walking

The following principles should guide planning for walking for all actions implemented out of this strategy:

- Adopt a Safe Systems approach in all intersection and roadway designs.
- Reallocate road space away from general traffic to expand footpaths on key streets in Tech Central, using the *Walking Space Guide* to identify the space required.
- Reduce speed limits through Tech Central to reduce road noise, improve safety and support surrounding land uses, complemented by traffic calming and street design measures that reinforce lower traffic speeds.
- Introduce pedestrian priority areas or restricted vehicle access zones.
- Increase the priority and safety of pedestrians at signalised intersections by considering changes such as:

- Shorter cycle times (including possible changes in priority by time of day).
- Prioritising pedestrian crossing phases and pedestrian protection.
- Pedestrian countdown timers.
- Provision of pedestrian crossings on all legs of signalised intersections.
- Removal of slip lanes at signalised crossings.
- Provide additional signalised and unsignalised pedestrian crossings along key desire lines.
- Provide street trees and other shade along routes within Tech Central.
- Adopt electric buses and freight vehicles to reduce road noise.
- Provide convenient public thoroughfares through large private blocks and along green corridors.
- Prioritise safe walking infrastructure around primary and secondary schools, hospitals and other sensitive land uses.
- Prioritise safe walking access to open space.

Priorities for investigation

Priorities supporting this strategic direction have been identified that respond to Strategic Direction 1 – Creating walkable streets and places. In addition to the work TfNSW is undertaking on Parramatta Road public transport improvements, priorities for investigation and further consideration are listed in this section. Figure 16 maps priorities that apply to specific locations.

1.1 - A better Parramatta Road and Broadway

Create a better pedestrian environment along and across Parramatta Road and Broadway, with wider footpaths, increased dwell space and improved priority for walking at traffic signals, recognising its key role in connecting the Camperdown and Haymarket nodes.

1.2 - Camperdown Park to Victoria Park Green Spine

Create a direct, friendly and green pedestrian corridor from Camperdown Park to Victoria Park through Royal Prince Alfred Precinct and the University of Sydney, including improved wayfinding and removal of barriers between the University of Sydney and Victoria Park, recognising its complementary role to Parramatta Road in connecting the Camperdown and Haymarket nodes.

1.3 - A Vehicle Calmed Heart for Royal Prince Alfred Precinct

Create a vehicle calmed heart for Royal Prince Alfred Precinct and improve the environment for pedestrians by restricting Missenden Road to bikes, buses and vehicles accessing the precinct only.

1.4 - Better connections from Royal Prince Alfred precinct and University of Sydney to Eveleigh, Redfern and Waterloo

Improve walking connections, including improved wayfinding, between Royal Prince Alfred precinct and the University of Sydney in the Camperdown node and North Eveleigh,

Australian Technology Park, Redfern Station and Waterloo Station in the Eveleigh nodes, including:

- a) Extending the Eastern Avenue pedestrian spine south of City Road to North Eveleigh with increased walking space and priority.
- b) Increase walking space and priority between the university and Redfern Station along Little Eveleigh, Lawson, Wilson and Abercrombie Street.
- c) Investigating a new rail corridor crossing between North Eveleigh and Australian Technology Park.
- d) Increase walking space and priority between Australian Technology Park and Waterloo Station along Garden Street and Henderson Road.

1.5 - Better connections from Royal Prince Alfred Precinct to Macdonaldtown, Newtown and Erskineville

Improve walking connections, including improved wayfinding, between Royal Prince Alfred Precinct and Newtown, Macdonaldtown and Erskineville Stations with increased walking space and priority along Missenden, King and Burren Streets, and a shared zone along Bucknell Street.

1.6 - Better connections from Haymarket to Eveleigh, Redfern and Waterloo

Improve walking connections, including improved wayfinding, between the Haymarket and Eveleigh nodes, including:

- a) Extending the Goods Line to the south under Railway Square.
- b) Increased walking space and priority along Regent Street, through Chippendale, along City Road, across Cleveland Street and towards Redfern Station.
- c) Reconfiguration of the one-way pairs through Redfern to create a people friendly public transport spine along Regent Street and a traffic bypass on Wyndham Street.

1.7 - A transformed Central Precinct

Better places and spaces for walking and lingering around Central Precinct, including:

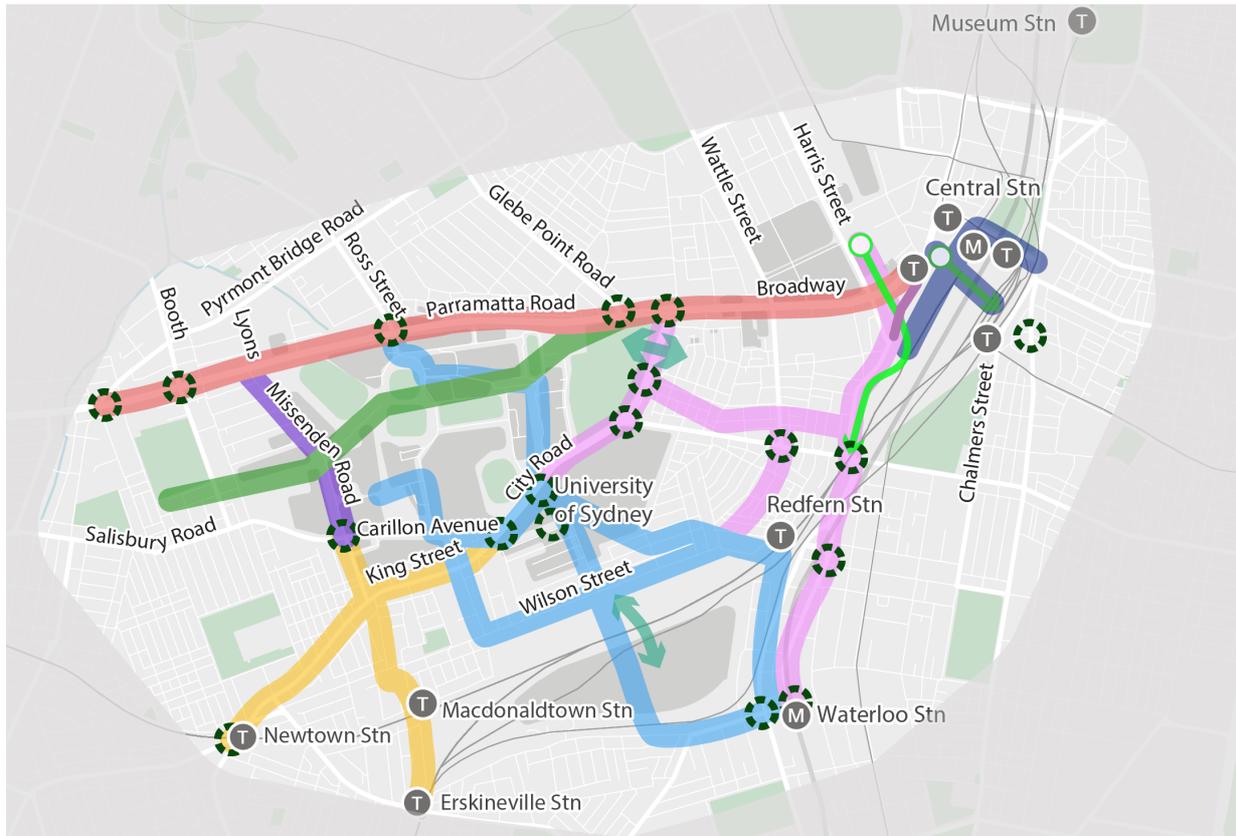
- a) Improving connections to Surry Hills by extending Central Walk to the west and creating new connections over the railway line between Central and Cleveland Street.
- b) Opening of road space on Lee Street to walking and cycling by removing through vehicle traffic while retaining place sensitive local servicing.
- c) Opening of road space on Eddy Avenue for walking and public transport by reducing through vehicle movements.

1.8 - Safer speeds for High Pedestrian Activity areas and areas of high place value

Create a safer environment for pedestrians through reduced speed limits in areas of higher place and High Pedestrian Activity areas such as Broadway, King Street (Newtown), Glebe Point Road, Regent Street (Redfern), Botany Road (Waterloo), throughout the City Centre and around Australian Technology Park.

1.9 - Strengthen low traffic neighbourhoods

Strengthen the existing low traffic neighbourhoods in Chippendale, Ultimo, Surry Hills, Redfern, Darlington, Camperdown and Newtown with lower speed limits and additional traffic calming to create a low stress environment for pedestrians where people driving vehicles feel like guests.



KEY

- Tech Central
- Parks
- Points of interest
- Rail network
- T Train station
- M Metro station
- Investigate opportunities to upgrade crossing facilities to support walking
- A better Parramatta Road and Broadway
- Camperdown Park to Victoria Park Green Spine
- Camperdown to Eveleigh connections
- Camperdown connections to the south
- Haymarket to Eveleigh connections
- A transformed Central Precinct
- Extend the Goods Line walking connection south, under Railway Sq
- Extend Central Walk to the west
- Close Lee Street to motorised traffic
- A vehicle calmed heart for Royal Prince Alfred precinct
- Opportunities for new crossings

Figure 16 Priorities for investigation to improve walking connectivity

Strategic Direction 2: Enhancing access by cycling and public transport within and beyond Tech Central's boundaries

To achieve the vision of a sustainable, equitable and liveable precinct, modes such as walking, cycling and public transport should be prioritised over private vehicles. Public transport is critical to move large numbers of people to and from Tech Central from other parts of Greater Sydney – including adjacent health and education precincts such as Randwick. It complements walking and cycling links between key destinations within Tech Central; for example, between the University of Sydney and University of Technology Sydney, a distance of around one kilometre. A well-designed public transport service is broadly accessible to all users regardless of age, income or ability.

While Tech Central accommodates major public transport nodes such as Central Station and Redfern Station, areas such as Camperdown are less well connected, while nearby suburbs like Annandale, Balmain, Waterloo and Green Square are poorly connected to some parts of Tech Central. This is the result of severance from the rail corridor and a transport network that emphasises travel to and from the Sydney CBD at the expense of cross-regional links.

The way that the network is operated can limit the attractiveness of public transport reflecting the strong preference and high demand for peak hour services into the Eastern Harbour CBD. This includes minimal servicing of Macdonaldtown Station, reduced services in off-peak periods and bus routes that are noticeably slower than driving. This can result in high private vehicle usage for non-work trips and trips outside of CBDs which does not support the use of sustainable modes to access to the night-time economy, supporting an emerging 'Neon Grid' for Greater Sydney and supporting employment. Public transport is most attractive when it is fast, frequent and reliable.

Since COVID-19 and the pivot to work from home, increased flexible working will allow a spreading of peak demand across the day, with a greater focus on all-day and all-night public transport frequency that connects our customer's whole lives, maximising use of existing vehicles and infrastructure.

The way that the road network is operated can also have an impact on the places major streets pass through. One-way pairs, such as Regent Street and Gibbons Street through Redfern, can have benefits to the operation of the road network by providing increased capacity and reducing conflicting movements at intersections. This, however, can lead to faster travel speeds that create an intimidating environment for walking and dwelling, while reducing the legibility of public transport services by forcing buses to use different streets in opposing directions of travel.

Removal of one-way pairs through places like Redfern has the potential to support the safety and amenity of the place and legibility of the public transport network. By concentrating calmed two-way traffic and a rapid bus service on Regent Street and allowing general traffic to bypass the centre of Redfern, there is the potential to create a safe and welcoming place supported by an easy to use public transport network.

With many driving trips to Tech Central originating in areas less than five kilometres away, cycling has the potential to achieve a substantial mode share of those working, studying and visiting the area if people are provided with safe, direct and connected cycle infrastructure. Cycling can be faster door-to-door than car or public transport for trips up to five kilometres in urban areas. Emerging forms of micromobility, such as e-bikes, are also increasing the range and convenience of travel on cycling networks.

Meeting the vision of improving the travel experience and achieving a 30-minute city while undergoing considerable residential and employment growth will require changes in travel behaviour. Transport needs to be more efficient in the future, while using the same amount of road space. Private car trips will become slower and on-street parking may be reduced as road space is allocated to rapid bus lines and cycleways to support more people moving more reliably.

This strategic direction seeks to improve access to Tech Central by public transport and cycling and ensure that by 2036, more people choose to travel by sustainable modes, leveraging off confirmed and proposed investments in safe, connected cycling networks, major road and rail infrastructure and public transport services.

Supporting the vision and objectives

This strategic direction supports the vision and objectives for this Transport Strategy. The initiatives identified under this strategic direction contribute to achieving the vision and objectives for Tech Central and Greater Sydney by:

- **Supporting the vision of the 30-minute city:** Transport to, from and within Tech Central creates connections that means people can access their day to day needs within 30 minutes by public transport, walking or cycling. This is particularly important for key destinations further from high-quality mass transit like Royal Prince Alfred Hospital and parts of the University of Sydney.
- **Supporting existing and planned land use:** Providing fast, convenient access by public transport to key precincts like Australian Technology Park and Central Station are critical to realising their vision as vibrant and sustainable innovation precincts that attract global talent to Sydney and support the organic transfer of knowledge between professionals. Connecting institutions to health, education and research hubs outside of Tech Central, such as The Bays, Randwick and Westmead, creates more opportunity for collaboration, innovation and economic.
- **Encourage sustainable travel behaviours:** Providing high-quality public transport links that are comfortable, reliable, frequent and time-competitive with private vehicle will help reduce the environmental impacts and space requirements for travel to and from Tech Central, reinforcing its vision as a leader in low-carbon initiatives⁸. Journey to Work data indicates that in Tech Central, cycling is more common than in other parts of Greater Sydney. It can also be faster than car or public transport for

⁸ *Camperdown Ultimo Place Strategy*, (Greater Sydney Commission 2019)

short everyday trips, and, if supported by a safe, connected network, would cater for a growing range of short everyday trips by riders of all ages and abilities.

- **Supporting social equity:** Providing low-cost ways and easily accessible ways of travelling means that all people living, working or visiting Tech Central can access their daily travel needs (including medical and education needs) regardless of income or financial commitments.

Priorities for investigation

Priorities supporting this strategic direction have been identified that respond to Strategic Direction 2: Enhancing access by cycling and public transport within and beyond Tech Central's boundaries. Priorities for investigation and further consideration are listed in this section and Figure 17 maps priorities that enhance access by cycling and public transport.

2.1 - A Metro connected precinct

Investigate the inclusion of one or more stations on a future Sydney Metro West extension to the South East within Tech Central, such as at Haymarket to serve the University of Technology Sydney and Central Precinct Renewal and Camperdown to serve the University of Sydney and Royal Prince Alfred Precinct.

2.2 - A high quality public transport solution for Parramatta Road

Investigate a fast, frequent and reliable public transport solution on Parramatta Road between Burwood and the Harbour CBD, connecting the Camperdown and Haymarket nodes along the Ultimo axis.

2.3 - A fast, frequent, reliable and connected rapid bus network

Investigating implementation of a network of rapid bus lines that support travel to, from and within Tech Central including:

- a) A rapid bus line from Coogee to The Bays via UNSW, Green Square, Waterloo, Redfern, the University of Sydney and Royal Prince Alfred Precinct, connecting the Eveleigh and Camperdown nodes along the Darlington axis and providing key connections to the Bays and Randwick.
- b) A rapid bus line from La Perouse to Harbour CBD/Pymont via Mascot, Green Square, Waterloo, Redfern and along Harris Street in Pymont.
- c) A rapid bus line from Miranda to Harbour CBD/Pymont via Newtown, Royal Prince Alfred Hospital and Glebe.
- d) A rapid bus line from Canterbury to Harbour CBD along Enmore Road, King Street, City Road and Broadway.
- e) Complete a network of high quality bus priority infrastructure to support the rapid bus lines to be a faster option than driving, with interventions like bus lanes and priority at intersections above turning traffic.
- f) Use of smart technology to provide signal priority and regulate the headway of the frequent rapid bus services.
- g) Great, safe and high amenity places along rapid bus lines and around rapid bus stops, with bus infrastructure that integrates with and enhances the surrounding area.
- h) A layover strategy for new rapid bus lines that supports reliable service while recognising the competing demands for space in the CBD

2.4 - Safe, convenient and connected cycling and micromobility network

Investigate a safe, convenient and connected network of cycle and micromobility infrastructure within Tech Central and surrounding areas including:

- a) Implement a connected metropolitan cycling network to support access between the nodes of Tech Central and surrounding areas, with priority links between Central and Redfern, along Parramatta Road/Broadway and along Missenden Road (or a nearby alternative route.)
- b) Implement a safe and connected local cycle network that supports local trips and access to the metropolitan cycling for longer trips.
- c) Reduce speed limits and through traffic volumes on local streets to support a 'low stress' street environment for safe shared use and last mile access to the cycle network.
- d) Provide cycleways and bicycle crossing facilities as part of major transport projects, including road upgrades.
- e) Providing consistent, integrated wayfinding to and from key destinations on the cycleway network.

2.5 - Secure and convenient cycling end of trip facilities

Provide secure and convenient bicycle parking, end of trip facilities and cycling and micromobility hubs at all key employment sites, anchor institutions, public transport interchanges, town centres and other destinations.

2.6 - Supporting new and emerging forms of micromobility

Support the safe introduction of new and emerging forms of micromobility by collaborating with private operators of micromobility share schemes, investigating opportunities for Mobility as a Service platforms and incentives for multimodal integration, ensuring that all cycling and micromobility networks can safely accommodate a wide range of future micromobility devices, and ensuring that any bike parking, end of trip facilities and cycling and micromobility hubs can accommodate future forms of micromobility.

2.7 - A convenient public transport network accessible to all

Provide a frequent, convenient and connected public transport network and ensure that all vehicles, stops, stations, footpaths and other infrastructure are accessible to people of all ages and abilities including:

- a) Upgrade Macdonaldtown station to be fully accessible.
- b) Provide an all-day increase in service frequency at Newtown and Macdonaldtown stations across the week.
- c) Review and upgrade all bus stops to ensure they are fully accessible, are supported by clear wayfinding and are located to support convenient interchange.
- d) Review the existing bus network and make staged changes to routes and increases in frequency towards the future rapid bus services.
- e) Regularly review the frequency, routing and hours of operations for bus routes across Tech Central to improve network legibility and improve travel times.
- f) A layover strategy for buses that supports reliable service while recognising the competing demands for space in the CBD

2.8 - An efficient and equitable allocation of road space and capacity

Take advantage of the opportunities created by WestConnex and the Western Harbour Tunnel to review current road space allocation, road network priority and road network operations throughout Tech Central, including:

- a) Reduced through traffic in key places such as Newtown, Camperdown, Redfern and Ultimo.
- b) Increased priority on walking, cycling and public transport.
- c) Management of freight and servicing access by time of day.
- d) Protected emergency vehicle access to Royal Prince Alfred Precinct.
- e) Support for the night-time economy in key precincts such as Glebe, Newtown and Redfern.
- f) Utilisation of smart technology and dynamic prioritisation to respond to changes in demand over different time periods where spatial prioritisation isn't possible.
- g) Use of dynamic kerb technology to increase space available for outdoor dining and dwelling.
- h) The conversion of one-way pairs to two-way operations on roads that support rapid bus lines and to support lower traffic speeds and volumes in locations with high place function such as Regent Street/Botany Road in Redfern and Harris Street in Ultimo.



Figure 17 Priorities for investigation that enhance access by cycling and public transport

Strategic Direction 3: Shaping a sustainable and resilient precinct

The future success of Tech Central depends on its resilience – its ability to withstand social, economic and environment transitions, shocks and stresses, and the response of the transport network. Shaping a resilient precinct requires preparation and adaptation to uncertain demands. These can be short term – for example, mitigating the impacts of traffic disruptions or partial network closure, or long term, such as cumulative global warming, the heat island effect and the effects of increasing temperatures on the liveability, productivity and environmental health of our communities.

The global COVID-19 pandemic has brought a profound shift in the way that people live and work in cities, and Tech Central is no exception. Furthermore, there are likely to be lasting economic implications associated with lockdowns, increased public debt and economic recession impacting people's ability to work, access essential services and otherwise engage in society. Cities have been at the epicentre of the COVID-19 pandemic, but they also offer an opportunity to accelerate the transition to a resilient, equitable and low-carbon future. The pandemic has shone a spotlight on cities as the confluence of people, economy and assets; when they stop working, so does the global economy.

Whether talking about the impact of a pandemic, mitigating the impact of increased temperatures and the heat island effect or providing opportunities for spontaneous interaction and collaboration, space is a key ingredient. Space for people is one of the key inputs for a competitive innovation precinct, and can support a tree canopy for heat mitigation, enable social distancing and enable a vibrant public realm. In a constrained environment such as in Tech Central, space is at a premium, and so requires the prioritisation of space efficient modes like walking, cycling and public transport over space inefficient modes like single occupant vehicles to achieve resilience and thrive.

The contribution to net zero carbon in Tech Central needs to address opportunities for clean mobility, active transport and green construction availed over the life cycle of the project. This includes:

- High mode share for walking and cycling
 - Reducing the need to build new infrastructure through the efficient use of existing road space and transport network capacity
 - Design and material use – specification and design efficiencies
 - Planning for behavioural change and demand for new infrastructure (current and future needs)
 - Operational/management and incentivising use
 - End-of-life demolition and recycling factors.
-

In Tech Central, TfNSW has the opportunity to work with the City of Sydney and Inner West Council to deliver transport infrastructure that adopts a sustainable, whole-of-life approach. This includes a coordinated approach to parking provision in new developments, encouraging parking structures that can be adaptively reused in the future, rightsizing of planned infrastructure investments and considering the construction impacts and scalability of on-road public transport solutions.

Supporting the vision and objectives

This strategic direction supports the vision and objectives for this Transport Strategy. The initiatives identified under this strategic direction contribute to achieving the vision and objectives for Tech Central and Greater Sydney by:

- **Reducing transport-related emissions:** Moving towards a net-zero precinct to support the NSW Government's target of net-zero emissions by 2030, and the vision for Tech Central as a low-carbon precinct⁹. Each kilometre cycled avoids 250g of CO₂ emissions¹⁰. See Breakout 6.
- **Creating a resilient transport network:** Responding to known and unknown economic impacts by creating a network that can respond to shocks, has planned spare capacity and where routes can be flexibly managed. The flexible management of parking to control demand and encourage sustainable travel behaviours will also enhance the ability of Tech Central to respond to external changes.
- **Mitigating rising temperatures:** As global temperatures increase and urban heat island effects are compounded, ensuring that canopy cover, greening and the use of materials is necessary to provide a cooler, more liveable environment for residents, visitors and workers. See Breakout 7.
- **Leveraging investment in major transport infrastructure:** Committed projects like WestConnex, Western Harbour Tunnel and Sydney Metro City and Southwest provide an opportunity to rethink how streets operate within Tech Central. By shaping surface transport networks and policies that direct demand onto these facilities and promote more space-efficient modes like public transport, walking and cycling, more growth can be accommodated within the existing footprint of the transport network, with reduced environmental impact.
- **Maintaining connection to people and place:** Incorporating local Aboriginal and non-Aboriginal heritage and stories into the built form, including transport infrastructure helps create more liveable places and contributes to a stronger sense of community and connection for residents and visitors.

⁹ *Camperdown-Ultimo Place Strategy* (Greater Sydney Commission, 2019)

¹⁰ Coalition for Urban Transitions, 2020. *The Economic Case of Greening the Global Recovery through Cities*. Available at: https://urbantransitions.global/wp-content/uploads/2020/09/The_Economic_Case_for_Greening_the_Global_Recovery_through_Cities_web_FINAL.pdf . Accessed 17 September 2020

Breakout 6 Promoting use of electric vehicles

ELECTRIC VEHICLES



*Image source: NSW
Electric Vehicle
Strategy*

In the **NSW Electric Vehicle Strategy**, released in mid-2021, the NSW Government has identified five areas for action required to make New South Wales the easiest place to buy and use an EV in Australia. These five areas for action are:

- Helping drivers buy an electric vehicle
- Building a world-class electric vehicle charging network
- Making it easy to drive an electric vehicle
- Creating jobs and growing the economy
- Keeping road funding fair and sustainable

Breakout 7 Mitigating the impacts of urban heat

COOLER CITIES



*Image source: One
Central Park, Green
Façade, accessed at
[tensile.com.au/project/
one-central-park](https://tensile.com.au/project/one-central-park)*

Cities experience **Urban heat island effects that make urban areas hotter during the day, and slower to cool down at night**. The predominance of hard surfaces (including streets, car parks and dark roofs) and scarcity of green and blue spaces means that heat is stored during the day and radiated back into the surrounds. Hotter temperatures can have adverse effects on human health, as well as making it less attractive to walk, cycle, wait for public transport or spend time in outdoor spaces.

Elements of the built environment can help to mitigate urban heat island effects, including:

- Use of cool, permeable paving that stores less heat
- Use of green walls, roofs and canopies
- Surface water features that provide evaporative cooling
- Planting tree canopy
- Providing shading structures/shade canopies
- Minimising hard, dark surfaces like bitumen carparks and roads
- Minimising the use of dark materials for roofs, including transport infrastructure.

Priorities for investigation

This section shows the priorities for investigation and further consideration that respond to Strategic Direction 3 – Shaping a sustainable and resilient precinct.

3.1 - Safer streets for all

Improve safety for all road users, particularly vulnerable road users such as pedestrians and cyclists, by implementing a Safe Systems approach to road safety while transforming the streets identified in Strategic Direction 1 and Strategic Direction 2, including:

- a) Review of speed limits throughout Tech Central, particularly in High Pedestrian Activity Areas and on local streets.
- b) Design streets that are self-explaining environments, with infrastructure that supports the speed environment.
- c) Redesign streets and intersections according with Safe System principles so that crashes don't result in serious injury or death.
- d) Remove green-on-green conflicts at all signalised intersections.
- e) Ensure that the network is operated in a way that provides greater priority through reduced wait time for pedestrians, reducing the likelihood of risk taking by people waiting to cross the road.
- f) Implement traffic calming measures that prioritise pedestrian and cyclist access in low traffic neighbourhoods, areas of higher place value and High Pedestrian Activity areas.
- g) Create safe and integrated transport interchanges for future high priority modes (like rapid bus, light rail, metro and rail) that prioritise pedestrian access.

3.2 - Encourage sustainable travel patterns and reduced demand for travel

Work with businesses, institutions and councils to manage travel demand by developing a focused and data-led Travel Demand Management Strategy for Tech Central, supported by precinct wide Travel Plans for Haymarket, Camperdown and Eveleigh activity nodes. The Travel Plans will:

- a) Identify strategies that encourage the use of public and active transport and reduce the proportion of single-occupant car journeys.
- b) Include Transport Access Guides that provides information to employees, patients and visitors about the range of travel modes, access arrangements and supporting facilities.
- c) Establish mode share targets and outline robust actions to achieve the targets.
- d) Identify relevant workplace policies such as flexible working arrangements that enable office-based staff to travel outside peak periods, or which reduce the need for work related travel.
- e) Consider any relevant parking policies to manage travel demand.
- f) Detail end of trip facilities and incentives to encourage walking and cycling, as well as consideration of bike sharing schemes and e-bikes.
- g) Detail carpooling operations and monitoring of parking priority.
- h) Appoint a Travel Plan Coordinator to oversee the implementation of the Travel Plans or Workplace travel plans.

3.3 - Respond to the challenges of a changing climate

Deliver infrastructure and policy that supports sustainability and resilience in Tech Central including:

- a) Reduce the urban heat island effect with the selection of construction materials, reduced hard surfaces and increased street planting and shade to support walking and cycling trips.
- b) Prioritise shared vehicle use through infrastructure, policy and travel plans.
- c) Adopt electric buses and support the use of electric vehicles.
- d) Work with anchor institutions to develop a coordinated collaboration area approach to parking.
- e) Ensure that development controls on parking within Tech Central support sustainable travel behaviours.
- f) Consider the expansion of the parking space levy and area-wide demand and constraints on parking.
- g) Investigate opportunities to use recycled and/or low-carbon materials for transport infrastructure, including pavements, buildings, shelters and street furniture.
- h) Transition to renewable power sources for transport infrastructure, including train stations, light rail stops, bus stops and bike sheds.

3.4 - Celebrate Aboriginal culture and heritage

Collaborate with Aboriginal people and community groups within Tech Central to deliver urban design, transport infrastructure (vehicles and built form) that celebrate local Aboriginal heritage and culture.

3.5 - A vibrant local economy serviced by sustainable local freight

Deliver infrastructure and policy to support local freight access including:

- a) Investigate the location of consolidated, shared, multimodal freight hubs for shared use in Tech Central at key locations, particularly in:
 - Royal Prince Alfred Hospital/University of Sydney precinct
 - Broadway
 - Australian Technology Park
 - Central Precinct
 - Waterloo Precinct
- b) Investigate use of supporting flexible freight operations such as micro-freight (electric cargo bikes), especially for last mile access from multimodal freight hubs.
- c) Investigate smart management of loading zones close to businesses, including occupancy information, flexible time-of-day access restrictions and the use of dynamic kerb allocation.

Strategic Direction 4: Fostering innovation

Relevance for this Transport Strategy

Tech Central, through its central Sydney location, has access to some of Australia's top universities and other key educational institutions that produce the quality and type of talent and exchange of ideas drives an innovative and technology-focused approach to solving problems. This approach should extend to the way we plan, collaborate and deliver to achieve a connected, liveable, productive and sustainable transport network in the area.

Strategic Direction 4 - Fostering innovation highlights the ways in which creative and agile approaches could be harnessed to develop and trial new ways of travelling, new technologies for transport infrastructure (digital and physical) or new approaches to policy setting.

This strategic direction is intended to support the other three strategic directions that directly relate to the transport task within, to and from Tech Central. Innovative approaches and technologies that are successfully trialled within Tech Central could be applied in other parts of NSW or Australia.

For this Transport Strategy, innovation can mean:

- Adapting proven technologies or policies to a new context within Tech Central.
- Developing new technologies that help deliver the vision for transport in Tech Central, such as new construction materials, modes, power sources or digital platforms (see Breakout 8).
- Finding new ways of delivering infrastructure, policy and services through collaboration between TfNSW, local council, universities, technical specialists, developers, businesses, residents and community groups.

Breakout 8 Embracing digital

DIGITAL SOLUTIONS



Source: Visionect

The widespread availability of real-time operating data makes it possible to apply digital solutions to flexibly manage the network and customer experience. For example:

- TfNSW are rolling out 'e-ink' timetable information displays at bus stops that automatically update with expected arrival and departure times. Similar technology has been trialled on parking restriction signage for clearways and special events.
- The NSW Government is developing options to trial Mobility as a Service (MaaS), which are likely to commence in 2022. Under a MaaS platform, customers are able to use a digital platform to plan and pay for trips by public and shared transport, including subscription packages with discounts.
- Geofencing and digital wayfinding can assist during special events- for example, during large events at Western Sydney Stadium at Parramatta, rideshare bookings do not allow pickups from within a designated zone close to the stadium, to encourage crowds to disperse after events.

Pilot implementation is a valuable way for transport agencies or governments to quickly test new interventions. They enable change to happen quickly and can demonstrate the practical benefits that could be gained from more permanent infrastructure, as well as providing an opportunity to respond to feedback and adapt the final design based on experience.

Breakout 9 Piloting new ways of delivering transport

ON-DEMAND BUSES



Source: TfNSW (2020)

TfNSW launched the On Demand Public Transport program in November 2016 alongside its Future Transport Technology Roadmap.

Temporary pilots were used to test and learn new and creative transport services and delivery models and identify the technology required to underpin the models. The aim was to see whether these models could improve customer outcomes and achieve better value for money in the delivery of public transport services.

Since the metropolitan pilots commenced in October 2017, more than 610,000 passenger trips had been delivered to the end of January 2020, with monthly patronage across the remaining 5 pilots at that time being approximately 27,000 trips.

In Sydney, recent examples include rapid responses to the COVID-19 pandemic to cater for greater numbers of people walking and cycling in their local area. The City of Sydney and Transport for NSW has expanded the scope of 40 km/h speed zones (reduced from 50 km/h) on local streets, as well as 'pop-up' separated cycleways along Pyrmont Bridge Road, Bridge Road and Pitt Street.

Breakout 10 Pop-up infrastructure

POP-UP CYCLEWAYS



Source: Transport for NSW (2020)

In response to COVID-19 and demands for alternatives to crowded public transport services, Transport for NSW has begun delivering 'pop-up' transport infrastructure to give people more options to travel safely.

Delivered in the second half of 2020, the first stage of work focussed on cycling access to the Sydney CBD, with pop-up cycleways installed on six routes, including Bridge Road/Pyrmont Bridge Road in Glebe and Pyrmont. Typically, these are signposted and partially marked routes with semi-permanent barriers and flags between cycle and traffic lanes.

Since the first stage of work, further pop-up cycleways have been delivered at High Street, Randwick, Petersham to Newtown in the Inner West, and Wigram Street, Parramatta.

In Tech Central, a number of the transport initiatives identified in the previous sections are suitable for short term trials or testing.

Supporting the vision and objectives

This strategic direction supports the vision and objectives for this Transport Strategy. The initiatives identified under this strategic direction contribute to achieving the vision and objectives for Tech Central and Greater Sydney by:

- **Accelerating progress** towards NSW Government goals of net-zero carbon emissions and road safety by developing new, innovative solutions.
- **Supporting the local economy** by promoting Sydney as a global hub of technology and cutting-edge development, as well as a place to study or research.
- **Unlocking change** by showcasing and trialling new technologies or policy, providing the community and decision-makers with tangible examples of new ways of living and travelling.

Priorities for investigation

This section lists the priorities for investigation and further consideration that respond to Strategic Direction 4 – Fostering innovation.

4.1 - Test and learn through tactical urbanism.

Use a low cost tactical urbanism approach to test new interventions quickly through the use of trial changes and pop-up infrastructure, such as:

- a) Trial bus lanes on busy bus corridors, such as Botany Road, Enmore Road, King Street and City Road.
- b) Pop-up cycleway routes that can fill missing links in the safe and connected cycle network.
- c) Pop-up parklets and places to linger implemented through trial closures of side streets to major roads like King Street, Parramatta Road and Broadway.
- d) Programmed street closures for events and outdoor dining, pop-up footpath widening, temporary street furniture and landscaping – trees/planters, as implemented in Coogee and George Street between Bathurst Street and Haymarket.
- e) Trial changes to road network operations, such as changes to signal timings to support walking, cycling green waves and public transport priority.
- f) Trial low-traffic neighbourhoods through the use of tactical calming and street closures to discourage through traffic.

4.2 - Innovation in collaboration and delivery

Support local government in the implementation of initiatives to support the strategy through:

- a) Identifying opportunities to delegate powers, such as through the Streets as Shared Spaces program.
 - b) Identifying opportunities to fast-track approval of changes that require TfNSW approval, such as speed zone reductions and traffic calming.
-

4.3 - Partnering with institutions and the private sector

Collaborating with institutions and the private sector to:

- a) Encourage partnerships with precinct researchers, industry and entrepreneurs to develop and pilot sustainable transport initiatives in the collaboration area.
- b) Safely trial new forms of shared micromobility, such as e-bikes.
- c) Assess opportunities for the use of Mobility-as-a-Service (MaaS) platforms and associated incentives and multimodal integration.
- d) Expand the use of microfreight for last mile deliveries, leveraging multimodal freight hubs.

4.4 - A smart and flexible Tech Central

Use smart technology to support flexible use of the transport network and the use of Mobility-as-a-Service platforms, such as:

- a) E-ink bus stop and parking restrictions signs that can change over the day, week and year as the transport network changes.
 - b) Flexible use of the kerbside and trials of dynamic kerb management.
-

Chapter 5: Implementing the Transport Strategy

Priorities outlined in this strategy will require further, more detailed investigation and consultation prior to investment decision and government approval. Continued collaboration will be required, with Transport for NSW working alongside other parties that have a role in planning or implementation. In Tech Central, these parties include the City of Sydney and Inner West Council; other NSW Government departments and agencies; tertiary education institutions; major hospitals, community groups and key long-term tenants.

Ongoing and committed initiatives

Committed and ongoing initiatives in and around Tech Central include:

- WestConnex Stage 3 (under construction)
- Sydney Metro City and Southwest, including Central Walk (under construction)
- Sydney Metro West (pre-construction has commenced)
- Redfern Station Upgrade and New Southern Concourse (under construction)
- Central Precinct Renewal (in planning)
- Redfern North Eveleigh Precinct Renewal (in planning)
- Western Harbour Tunnel (in planning)

Other ongoing schemes include the Transport Accessibility Program (TAP) administered by Transport for NSW to make stations and ferry wharves accessible (alongside other amenity improvements).

Ongoing trials of electric vehicles in Sydney's bus fleet are underway, providing an avenue and lessons learned for Tech Central.

Opportunities for collaboration

Residents, workers and visitors to Tech Central will benefit if the transport network and places are enhanced through collaboration with nearby community groups and institutions to leverage:

- Research capabilities and act as a test bed for trialling new technologies, products and manufacturing or a 'living lab' to co-develop solutions with the community.
- Local knowledge, including Aboriginal heritage, to incorporate local histories and cultural identity into the public art, wayfinding and urban design that supports the transport network.

Opportunities for collaboration include:

- Build on existing wayfinding implemented by City of Sydney and continuing to work with councils, major institutions and key tenants to develop a recognisable brand for Tech Central and wayfinding design elements.
 - Work with industry to develop digital wayfinding solutions.
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- University partnerships to develop and design software and battery technology for electric vehicles.
- University and business partnerships to develop and deliver Mobility as a Service products.
- University partnerships, targeting architecture, industrial design and urban design schools, to create bespoke street designs for shared spaces and pedestrian-calmed environments that respond to different uses and times of day.
- University and industry partnership to explore solutions for street design that mitigates urban heat island impacts through material choice, plantings and microclimates.
- Work with community groups and university students of design to incorporate heritage elements into transport infrastructure projects.
- Work with community groups and university students to design tailored ‘pop up parklets’.
- Leverage opportunities to incorporate heritage elements in Redfern North Eveleigh Precinct Renewal and Central Precinct Renewal development and ‘themed’ pop up parks.
- Industry, university and council partnerships to consolidate freight within sub-precincts, and work with local councils to implement freight consolidation policies in planning controls for residential and commercial tenancies.

Next Steps

At present, most initiatives presented in this Transport Strategy are unfunded, are not designed / planned, nor costed. As such, the next step is to develop a detailed implementation plan that will identify a delivery pathway and sequencing for each of the initiatives identified in the strategy, subject to funding and funding requirements and opportunities, such as private sector investment and value capture. All new priorities would need business cases prior to investment decisions to progress. Outcomes of the implementation plan could include to:

- Work with Councils and other key stakeholders to identify mutually agreed immediate, easily implementable and affordable actions available, and funding to implement pilot programs or other trials over next 12 months.
- Develop a plan for the road network that takes advantage of traffic changes associated with the opening of WestConnex Stage 3 and Western Harbour Tunnel to calm traffic and reallocate road space to support walking, cycling and public transport.
- Take advantage of the opportunity provided by Sydney Metro West to consider a strategic investigation of the alignment for an extension to South East Sydney. Options for investigation could include locations such as Haymarket and Camperdown to link key destinations along the Innovation Corridor beyond the Eastern Harbour CBD to Pyrmont, Bays West and Westmead. Technical and economic feasibility assessments would need to be undertaken prior to an investment decision.

- Proceed with discrete packages of work where possible under existing avenues within TfNSW – e.g. Travel Plans/Travel Demand Management.
- Investigate next steps through the Business Case process for initiatives which require an investment decision.
- Investigate opportunities to collaborate or share work with current or planned Business Cases such as South East Sydney Transport Strategy and Parramatta Road Integrated Transport.
- Review the impact of new and updated policies such as Road User Space Allocation Policy (TfNSW) and NSW Speed Zoning Guidelines update.

Transport for NSW will continue to build upon the successful collaboration with state agencies, local government and stakeholders in developing and implementing the Strategy. Transport for NSW recognises that delivering place-based outcomes requires action across multiple agencies and local government and new ways of working across government.



**Tech Central Camperdown-Ultimo
Place-based Transport Strategy**

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