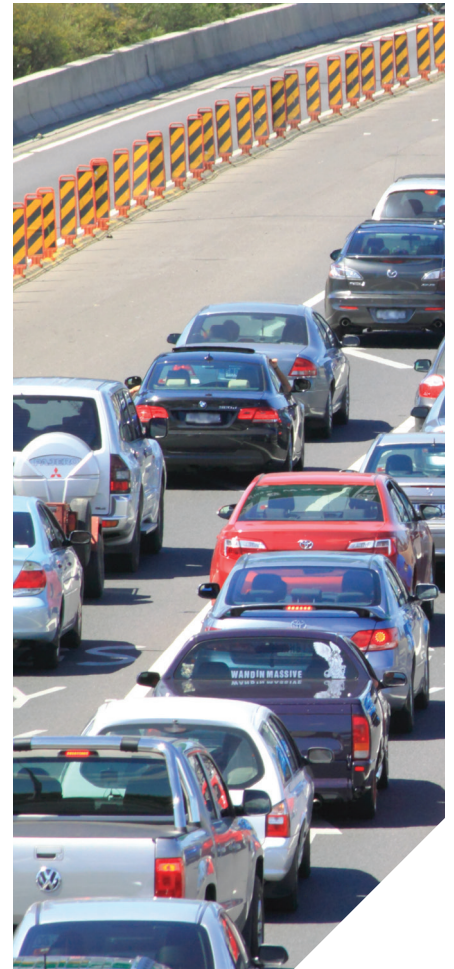


Northern Region Transport Strategy



Prepared by GTA now Stantec on behalf of the NCA 2020. Funded by the Northern Metropolitan Partnership.

The Northern Region Transport Strategy was overseen by the Northern Council's Transport Working Group comprising of representatives from the seven councils in Melbourne's North in collaboration with the Northern Metropolitan Partnership, Department of Transport, Melbourne Airport, La Trobe University and NORTH Link.



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NORTHERN REGION TRANSPORT STRATEGY BACKGROUND

The Northern Region requires a strategy to help align people and agree actions.

- The region consists of seven Local Government Areas (Banyule, Darebin, Moreland, Nillumbik, Hume, Whittlesea and Mitchell). It is a large and complex area, about the size of Greater London.
- The region is home to 20% of Melbourne's population (more than one million community members) and 12% of jobs today. Before COVID-19, there were about a bus load of people moving to the area every day¹.
- There are key growth areas in the region, as well as important existing and future centres of activities and industry.
- It is vital that the transport system can support growth, jobs, and the economy, safeguarding and improving livelihood and liveability, and supporting the climate emergency goals of Councils.

Governments and stakeholders are working to support growth and realise potential.

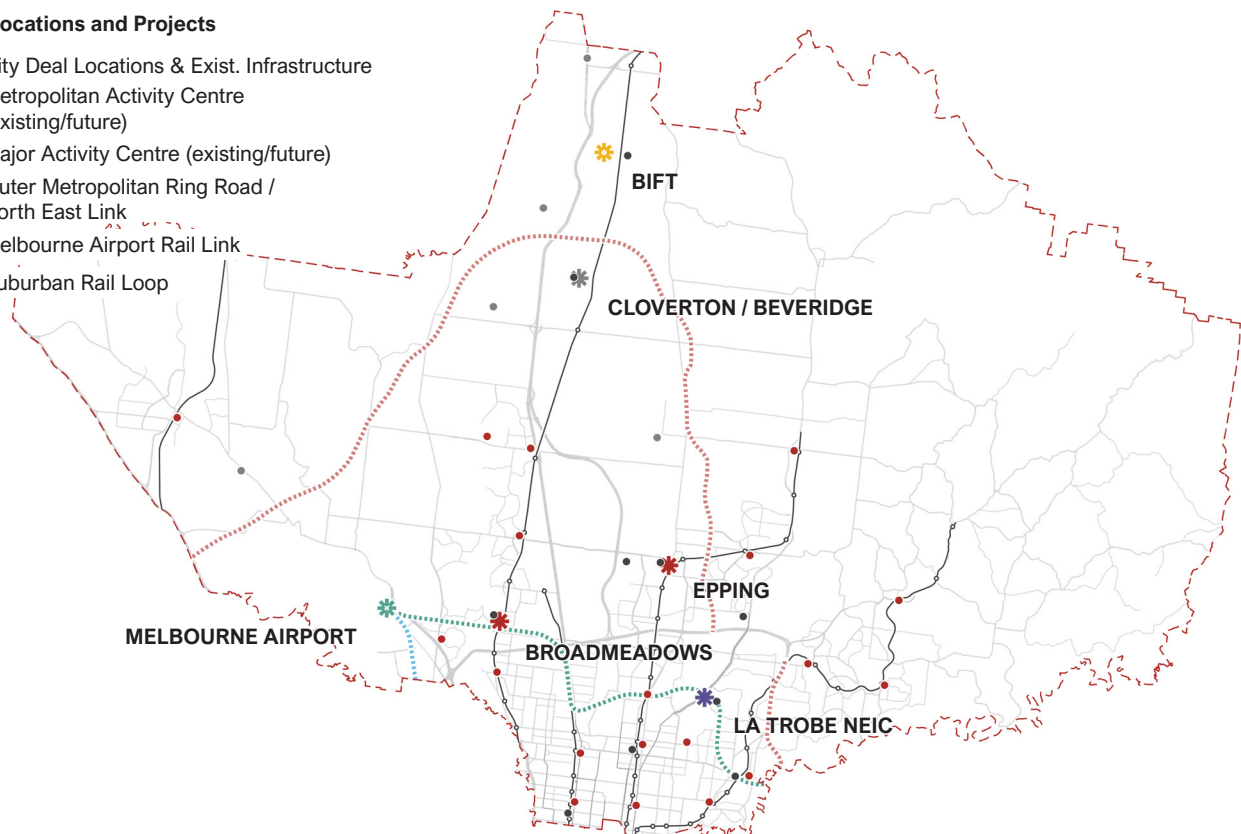
- The Councils have formulated policies, strategies and plans, working with stakeholders.
- The State Government is planning and delivering major investments in the region, including Melbourne Airport Rail Link and the city shaping Suburban Rail Loop.
- There are opportunities in the region such as those associated with the La Trobe National Employment and Innovation Cluster (La Trobe NEIC) and Beveridge Intermodal Freight Terminal (BIFT).
- The North and West Melbourne City Deal Plan outlines a set of priorities for the region, including an emphasis on precinct development, such as La Trobe NEIC, Broadmeadows, Epping and Beveridge².

The region now needs a strategy to bring together governments and key stakeholders to focus actions and coordinate efforts.

The Northern Councils Alliance has engaged GTA Consultants, working in collaboration with the Northern Metropolitan Partnership and funded through the Metropolitan Partnership Development Fund, to analyse the regions transport and land-use situation and identify priorities for Councils to better coordinate investment and work, as well as engage with State and Federal Governments.

Key Locations and Projects

- City Deal Locations & Exist. Infrastructure
- ✱ Metropolitan Activity Centre (existing/future)
- Major Activity Centre (existing/future)
- Outer Metropolitan Ring Road / North East Link
- Melbourne Airport Rail Link
- Suburban Rail Loop

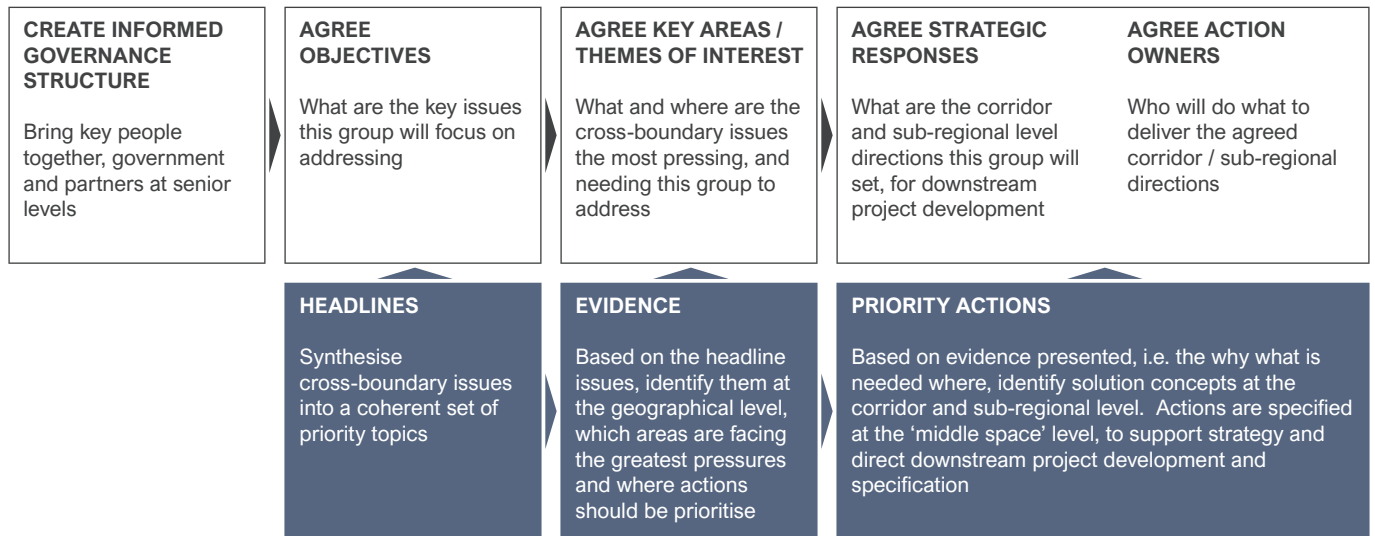


NORTHERN REGION TRANSPORT STRATEGY APPROACH

This strategy has been developed using a consensus-based approach, focusing on what can be delivered tactically and realistically within the short-term, supported by evidence and analysis.

- It has followed a step-by-step process with governments and stakeholders* agreeing on objectives, issues, strategic responses and actions.
- The steps have been supported by workshops and public consultation that highlighted both headlines from policies and strategies, and evidence on challenges and opportunities, leading to concept solutions.
- The principles underpinning this strategy are similar to those for leadership: achieving alignment on direction, a shared belief in a goal and identifying the role of the team in achieving the goal.
- This approach, in term of managerial and analytical approaches, has been successfully deployed at Transport for London as well as in the Western Metropolitan Region of Melbourne.

MANAGERIAL / STUDY PROCESS TO GUIDE PEOPLE THROUGH TO AGREEING PRIORITY ACTIONS



The strategy takes existing strategic and high-level plans as the starting point and translates these long-term goals into short-term practical solutions, which then guide the downstream development of projects



Some of the challenges facing the region were discussed through one-on-one interviews with Councils and confirmed through public consultation ³.



PUBLIC TRANSPORT IS UNRELIABLE OR UNAVAILABLE

- Unpredictable services, not running to schedule
- Limited to daytime hours - doesn't suit shift workers
- Infrequent services or no coverage (Wallan, Beveridge)

"I'm representing some La Trobe University students that couldn't make it tonight... the transport quality dips after Reservoir with bus wait times too long"



POOR CONNECTIONS FROM EAST TO WEST

- Unsafe or disconnected cycling infrastructure
- Absence of east-west public transport connections
- Limited realistic alternatives to driving

"We tried to establish a Hume BUG [Bicycle User Group] but it was challenging as all paths are north to south and it is challenging to ride and cross train lines"



POOR CONNECTIONS IN GROWTH AREAS

- Poor connections to public transport and jobs
- Public transport lags behind urban development
- Difficult to access broader areas without a car
- Many drive to station or to work



CONGESTION ON ROADS

- Increasing density in inner suburbs
- Growth in outer suburbs congesting road corridors
- Freight sharing key corridors
- Disconnect between homes and jobs



INADEQUATE CYCLING INFRASTRUCTURE

- Lack of safe and connected cycling infrastructure
- Concern that provision is based on demand, rather than policy aspirations
- Impacts other users (i.e. people with wheelchairs, people with prams, limited mobility)



SAFETY CONCERNS ON PUBLIC TRANSPORT

- Services are overcrowded in inner suburbs
- Concerns for safety of women and young people on public transport, especially at night

The key headline issues were agreed upfront, which then channeled focus for developing targeted evidence that would underpin solutions.

Governments and key stakeholders agreed to support / improve:

- Access to jobs and activity through connectivity – including access to Melbourne CBD but also sub-regional centres, especially along an east-west alignment
- Growth and capacity for travel needs – with a need to support land-use plans but also not wanting to place additional pressures where the network is already congested
- Neighbourhood and places – how to create a network of strategic places that best support people's livelihoods and areas' liveability, while considering the implications from traffic movements
- Freight and associated job impacts – how to support existing industries and future developments as BIFT, while recognising that freight traffic needs to be managed
- Safety and security – how transport networks could improve so that people can safely use public transport, helping people to access a range of economic and social opportunities.

The agreed evidence and resultant priority actions are explained through the next set of figures. They are to:

1. Support growth while managing impacts
2. Create a network of strategic places
3. Enable travel choice to jobs and activity

NORTHERN REGION TRANSPORT STRATEGY

MACRO CONTEXT – ECONOMIC DEVELOPMENT AND HEALTH

There is a strong relationship between transport, employment and economic output.

Transport = bring people and services together, getting stuff out there to buyers
 Employers need access to labour and markets, employees need access to jobs. Transport provides that access
 The better the transport, the better the access, the lower the 'cost barrier' and the bigger the pool for both employers and employees.
 Bigger pool = more employees to choose from, more market to sell

to; more employment opportunities to choose from
 Lower the 'cost barrier' = more likely to come together. So, more opportunities to collaborate and create, more incidental conversation and more 'overhearing'.
 Bigger pool for everyone + more choices + more coming together to create = more economic output (more revenue for the State)
 Also, quicker, easier, more reliable transport benefits users...

Transport drives employment and economic development, through connecting employers to workers and places where they can sell their goods and services, and connecting people to jobs.

Improvements to transport networks provide better access and lower costs for both employers (e.g. more efficient freight networks) and employees (e.g. improved public transport for those without cars).

This improves opportunities for both, with employers having more employees and suppliers to choose from and more people to sell to, and people having more jobs to choose from. It also enables more opportunity to collaborate, create and innovate, thereby increasing economic output. This results in increased efficiency and profits for employers, which will attract more jobs into the region.

There will be a large increase in jobs in the region, with new industrial precincts in the outer areas and major activity centres throughout. Connecting people to jobs and employers to labour and markets is required to unlock these employment and industrial opportunities.




Improving access to health services provides better health outcomes and economic benefits in communities.

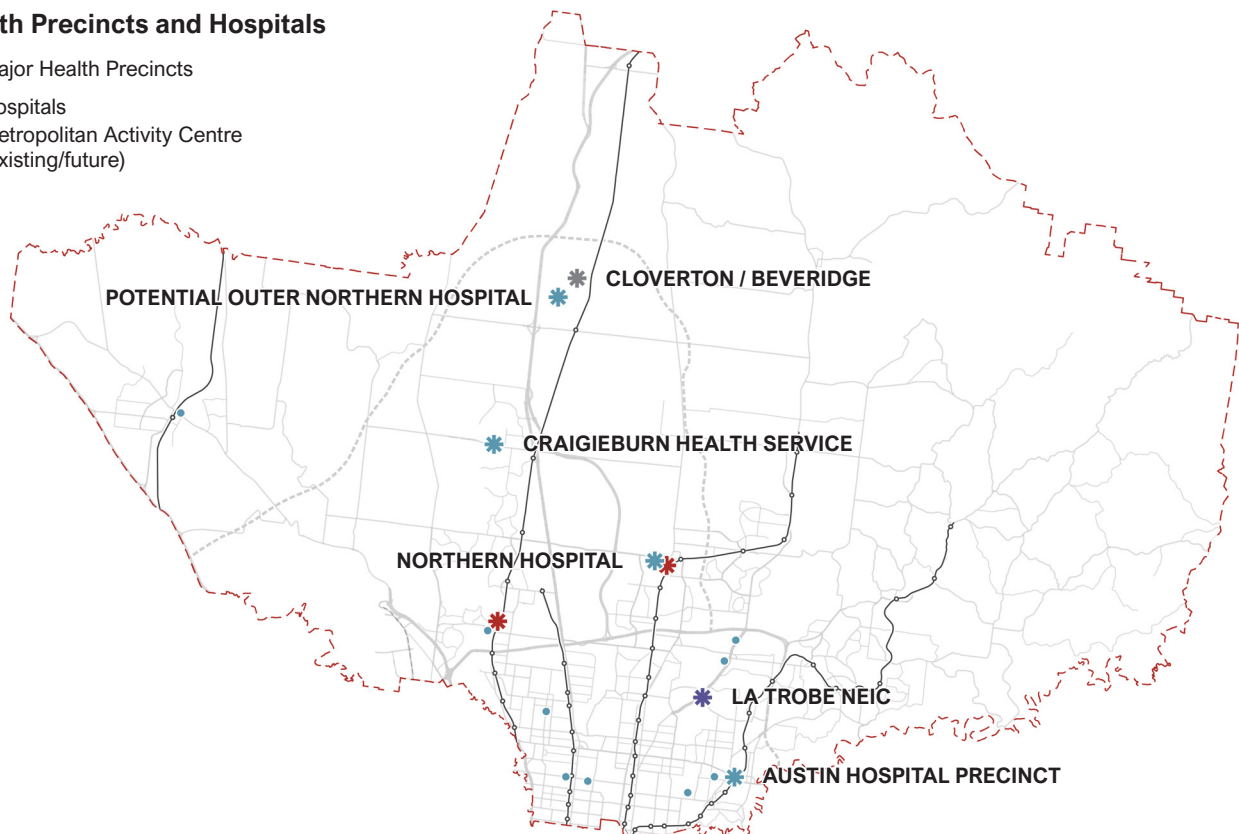
It improves access for patients and visitors, allowing for larger catchments of health facilities to service communities. It also provides opportunities for health services to specialise, rather than needing each site to serve all needs. This provides both transport (travel time) and health benefits to users. Improving access to health precincts also drives economic output, as key employers.

The North West City Deal identified an opportunity for a new Outer Northern Hospital. Other planned projects include a new Health & Wellbeing Hub at La Trobe University and the Northern Hospital expansion. Improving access to existing and planned health / hospital precincts are an opportunity to improve access to both health services and jobs.

Better transport = easier access for patients (and visitors) + bigger catchment of health facilities to service communities (including more opportunities to site specialisation, rather than one site needs to serve all needs) = user benefits (travel and better / more specialist attention) + provider efficiencies

Health Precincts and Hospitals

-  Major Health Precincts
-  Hospitals
-  Metropolitan Activity Centre (existing/future)



NORTHERN REGION TRANSPORT STRATEGY

MACRO CONTEXT – SAFETY AND SECURITY

Safety and security are important to the effectiveness of transport networks and the wellbeing of the community.

It is important that everyone can access the transport network safely and that perceived safety or security does not act as a barrier to use.

People make transport decisions on when to travel, how to travel, where to travel, and whether they travel at all. These travel decisions are based on a range of factors such as travel time, fares, weather and security. When people believe that using different parts of the transport network are unsafe, it discourages them from using it and limits their mobility.

The impact of safety and personal security on mobility varies by individual. Employees from different age groups, industries and skill levels may value security differently (e.g. how much they are willing to pay for an Uber to get home safely). There are also real and perceived threats experienced due to characteristics such as sex, gender, age, race, disability, socio-economics and being 'different'.

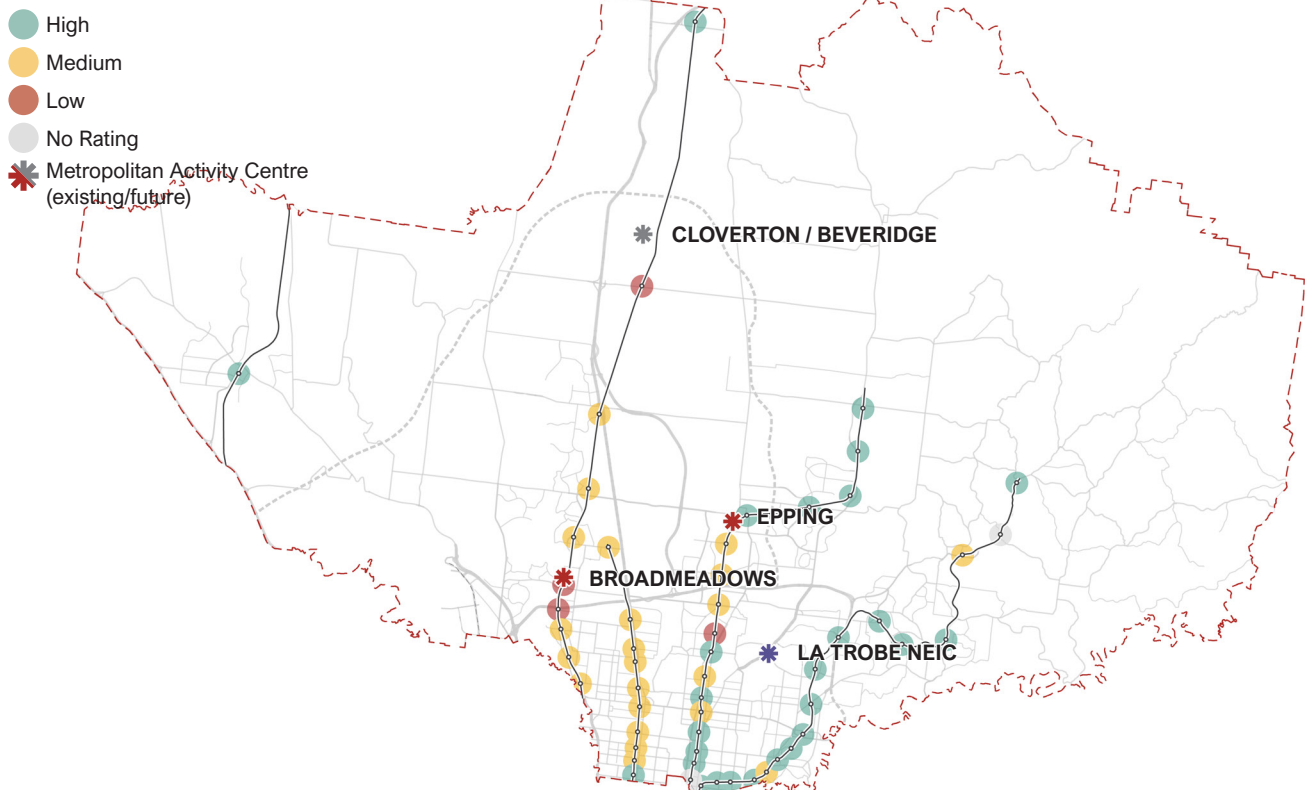
This reduced mobility restricts access to opportunities (including employment, work, education, social and health) and goods and services which reduces economic output. Therefore, it is important to improve security for all users of all modes, including for women and young people on public transport, car safety and safety of vulnerable road users such as pedestrians and cyclists which were identified through consultation.

Safety and security can be investigated further by using or building upon existing data sources to identify challenges, opportunities and priorities in the region. For example:

- The Free To Be project crowdsourced the safety-related experiences of young women in Melbourne in 2016. It includes locations of “sad” and “happy” spots, and comments about these experiences. Locations listed as “sad spots” include Sydney Road, some train stations and underpasses.
- The RACV On Track survey collated 24,500 responses on Victoria’s train stations and services in 2019. People were asked to rate their train stations on factors including the perception of convenience, safety, comfort and access. Broadmeadows and Jacana Station were in the top 10 stations (metro and regional) perceived to be unsafe. Broadmeadows was ranked 2nd, with 49% of respondents stating that they don’t feel safe at certain times of the day and Jacana ranked 5th with 34% of respondents making the same statement.

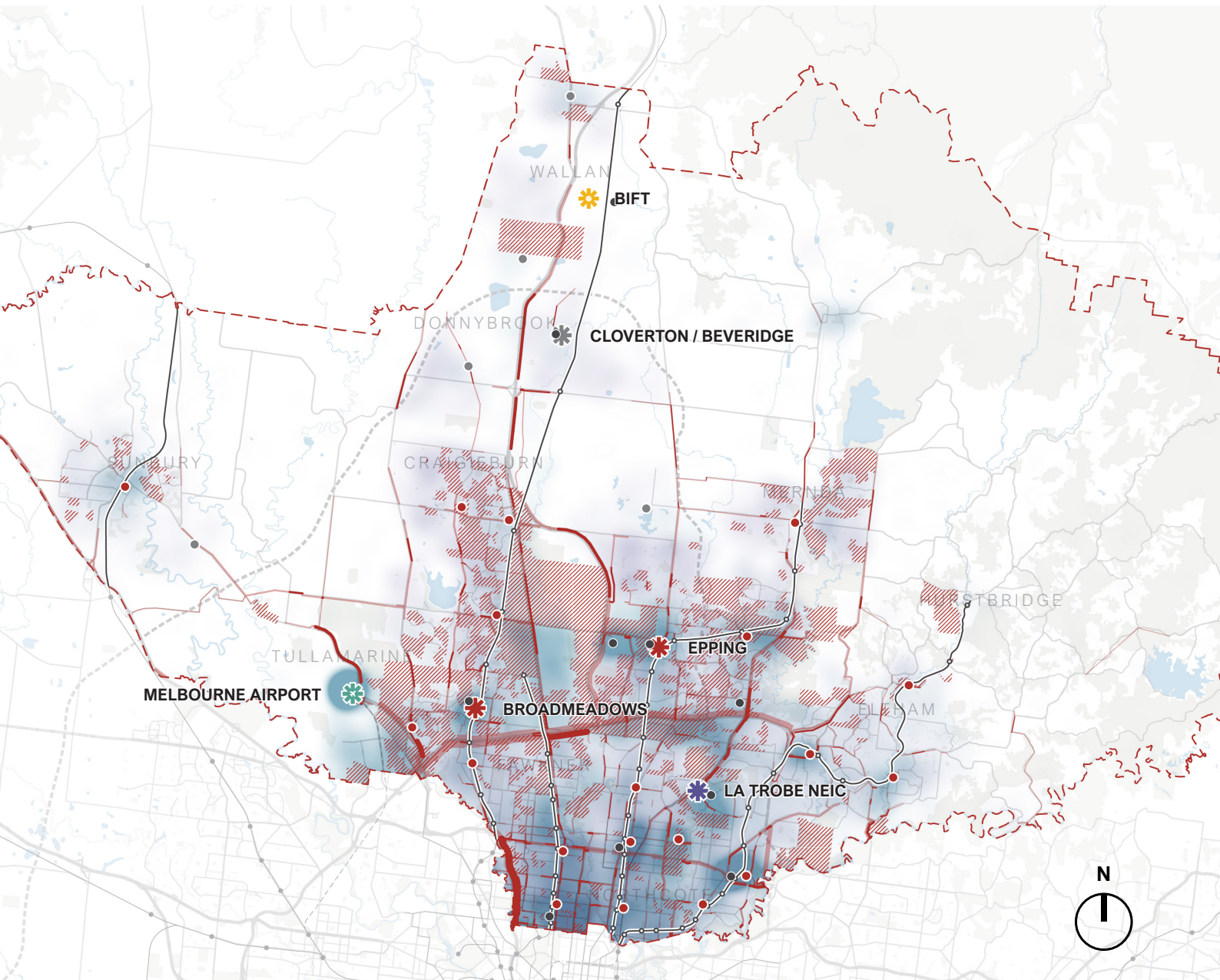
Based on these studies, we know that the transport response should be to provide frequent services that have staff on the network, or positive reassurance throughout a trip.

RACV On Track Station Rating 2019



EVIDENCE PACKAGE 1

CONGESTION LIMITS ACCESS BETWEEN PEOPLE AND JOBS



Legend

- High employment density (2031)
- High population density (2031)
- ▨ Above trend car mode share
- ✱ Key Destinations
- City Deal Transformative Projects and Key Existing Infrastructure
- ✱ Metropolitan Activity Centre (existing/future)
- Major Activity Centre (existing/future)
- Congested road corridors (2031)

Challenges

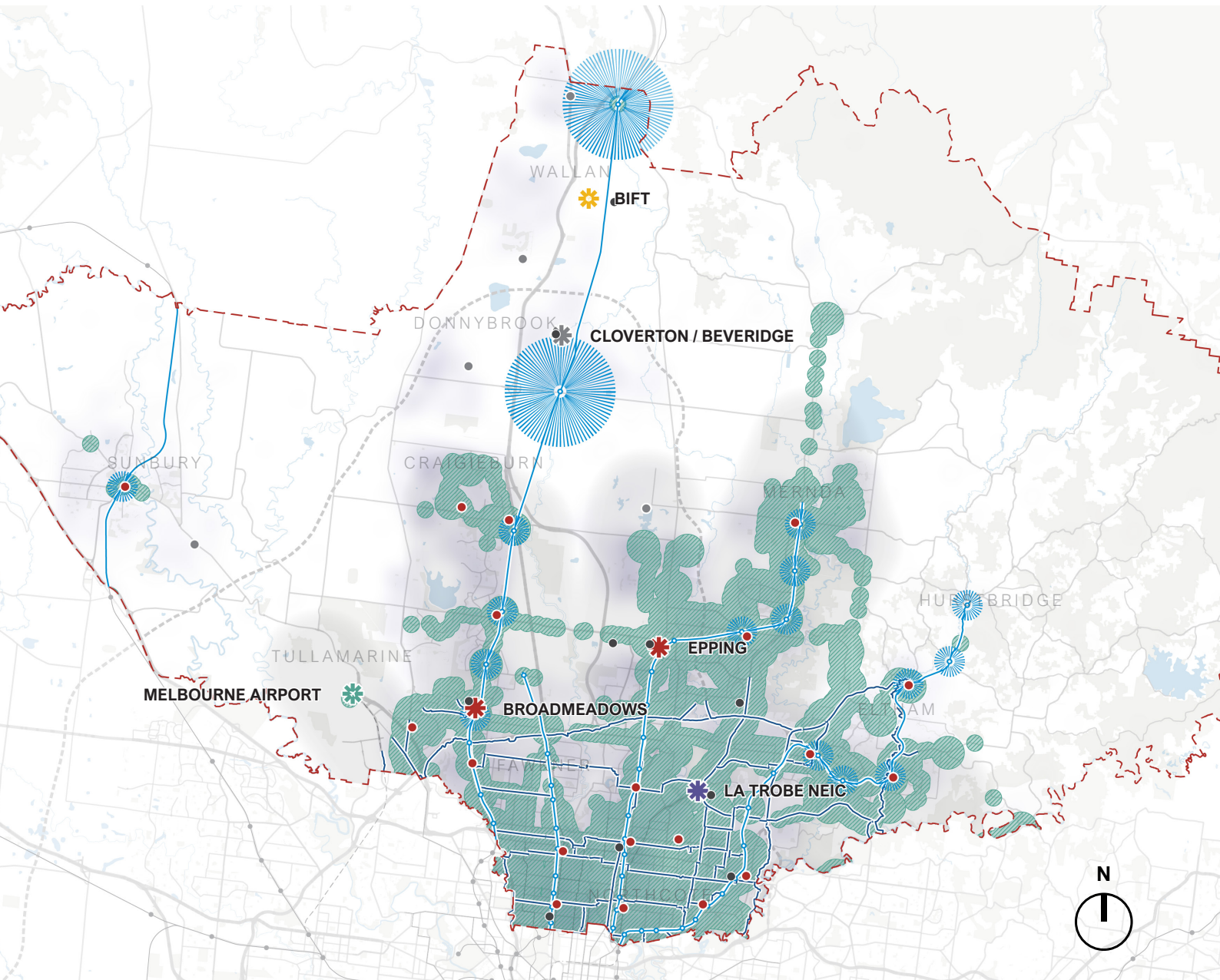
- Population growth and need to access jobs (including to clusters in Broadmeadows, Epping and La Trobe NEIC and the CBD) put pressure on the transport network, particularly north-south in outer areas, while inner areas continue to experience congestion
- High car mode share in parts of the region, with developments that generate traffic unnecessarily despite their high density and access to alternative modes of transport
- Conflicts between users and modes, particularly in high-demand and space-constrained urban centres in the inner-north

Opportunities

- State investments in Metro Tunnel and new rail projects will bring additional capacity that supports mass transit based movements, as well as support new communities served by rail lines
- Opportunity to build momentum for changed travel patterns, align planning with eventual delivery and preemptively manage impacts of North East Link and Suburban Rail Loop
- Movement and Place offers a framework for prioritising the different modes of transport (movement) and balancing that against the role of streets as 'places' worth visiting. It considers freight and other traffic movements, as well as prioritisation between motorised and active modes

PRIORITY ACTIONS PACKAGE 1

SUPPORT GROWTH WHILE MANAGING IMPACTS



Build on State investment and work together to improve access to railway stations

Connect people to jobs while alleviating growing vehicle congestion on key corridors, freight networks and inner areas. Initiatives may improve safety, enhance connections from walking and cycling networks and unlock stations as transport hubs (i.e. Eltham, Greensborough).

- Areas for station access improvements/ upgrades - larger spots are examples of committed State investment (improved shelter and access at Donnybrook and new facilities and bus bays at Wallan).

Reduce impacts of developments on the road network

Encourage transit and active travel oriented developments in areas of high public transport service provision (i.e. through parking controls and supporting density around stations), making the most of transport infrastructure and reducing additional road congestion pressures

- In areas of good public transport*, reduce traffic generated from new developments. Encourage sustainable transport options. Review resilience of road network in outer areas.

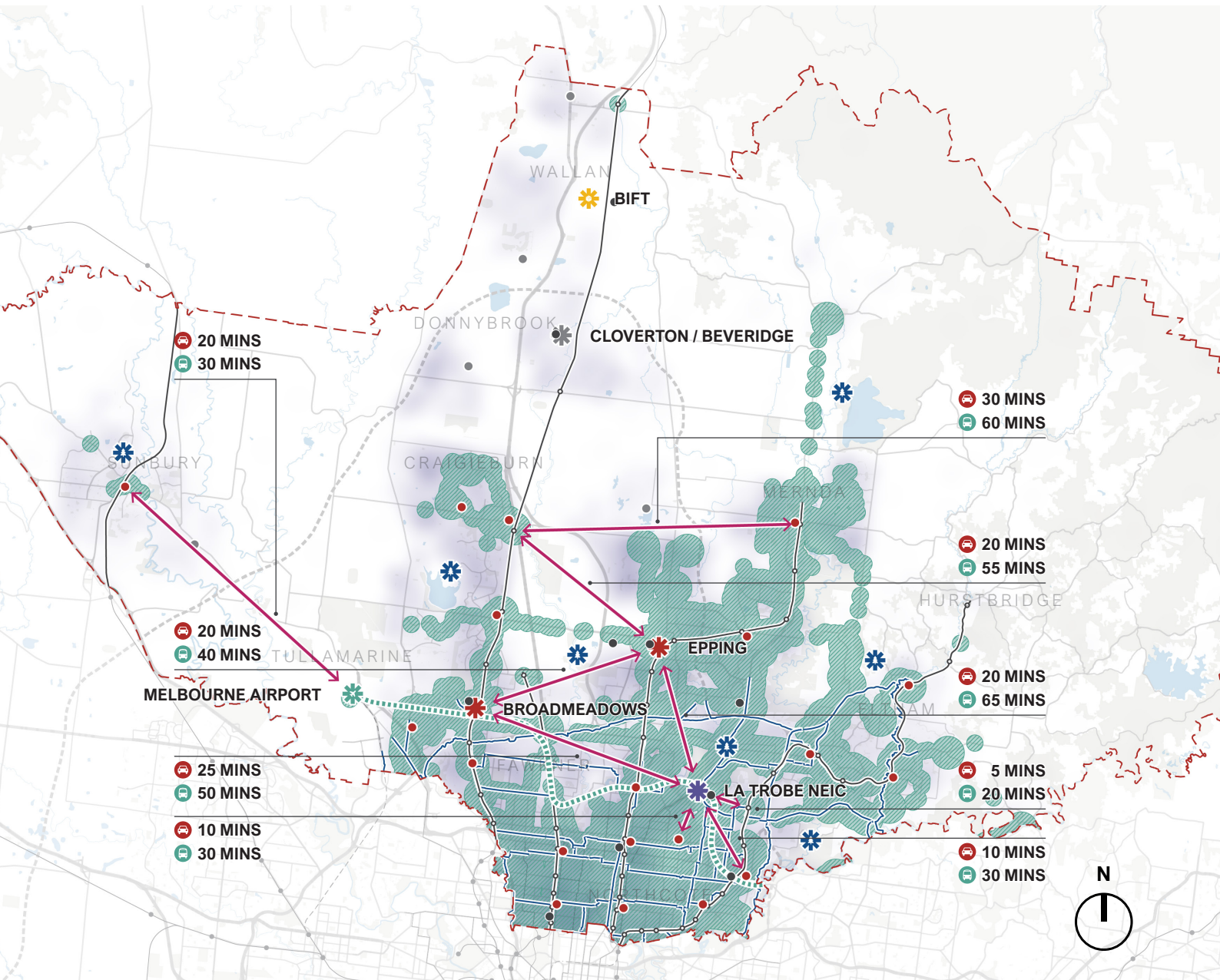
Apply Movement and Place

Work with the State to apply Movement and Place and conduct corridor studies to manage freight movements, identify areas for investment, reduce conflicts between users and support cycling and place in key centres as appropriate.

- Use Movement and Place to manage networks and road space allocation.

EVIDENCE PACKAGE 2

LACK OF CONNECTIVITY BETWEEN KEY PLACES



Legend

- Population growth (2016 - 2031)
- Higher public transport accessibility
- Key Destinations
- Regional Trails
- City Deal Transformative Projects and Key Existing Infrastructure
- Metropolitan Activity Centre (existing/future)
- Major Activity Centre (existing/future)
- Key movements and travel times
- Suburban Rail Loop (future, indicative)
- Strategic Cycling Corridors
- Typical travel time in the morning peak by mode (car/public transport)

Challenges

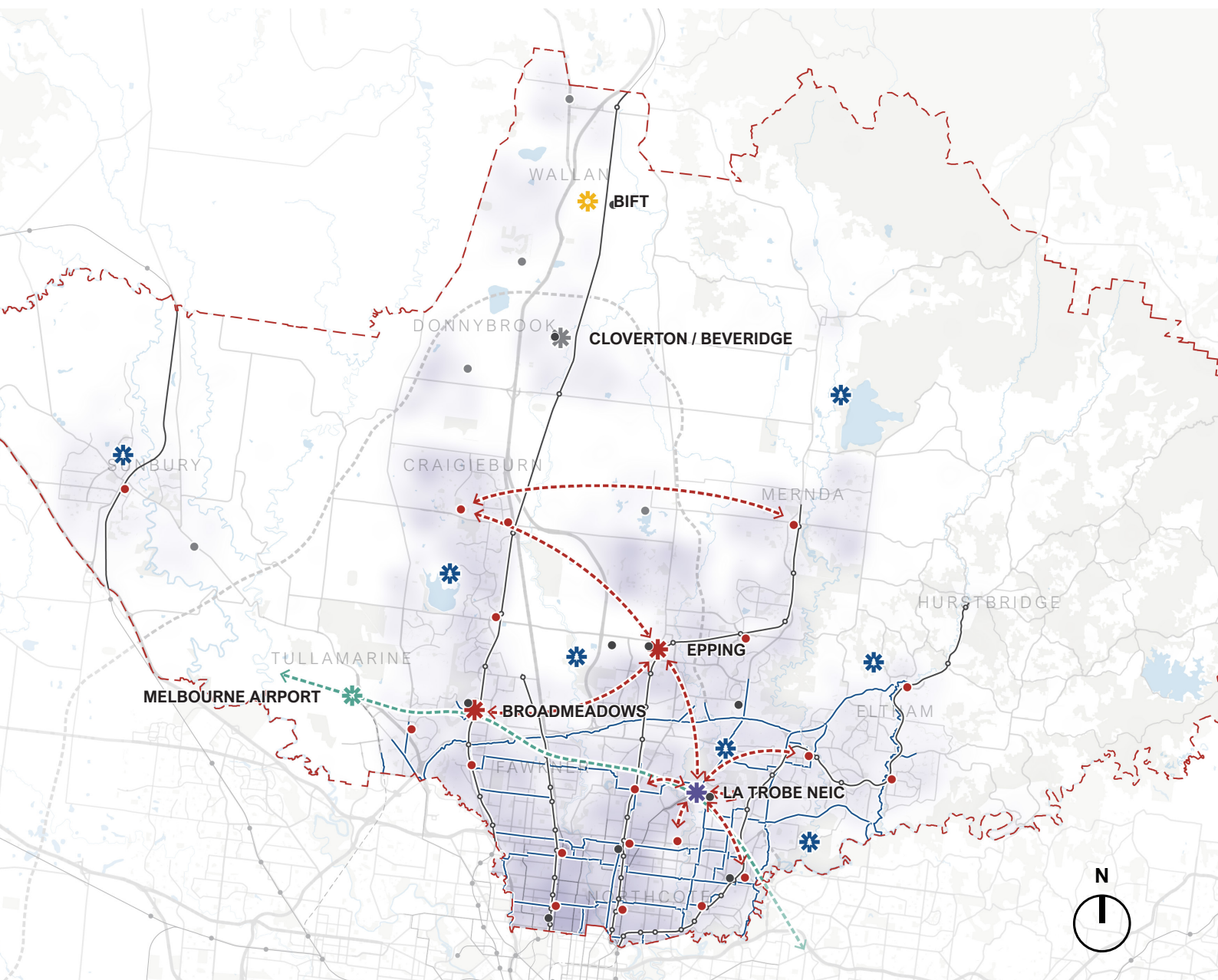
- A lack of east-west connectivity between neighbouring municipalities and centres, especially by public transport. Elevated demand for some east-west road links
- Challenges in bringing people in rural and suburban areas to centres and transport hubs
- Uncompetitive public transport travel times compared to car, including poor linkages between services. Public transport can typically take 3 to 5 times longer and up to 10 times longer in some cases between key centres. Travel times have been shown to illustrate the difference in times between key locations.

Opportunities

- Momentum for public transport demand and land-use change can be built in advance of Suburban Rail Loop
- Hubs and activity centres provide a focal point for jobs, services and investment (i.e. City Deal, activity centre/NEIC, health precincts and local living grants)
- The Northern Regional Trails Strategy and Strategic Cycling Corridors offer the basis for a connected cycling network and can build upon long-term active travel behaviour accentuated by COVID-19

PRIORITY ACTIONS PACKAGE 2

CREATE A NETWORK OF STRATEGIC PLACES



Create a network of places

Link Metropolitan Activity Centres, City Deal Hubs and the La Trobe NEIC to communities and other hubs for services, jobs and transport hubs. Initiatives are focused on connect major centres that sit on separate train lines.

- Examples of connections that are not connected with a rail line with faster direct public transport services. Reorganisation of bus services to La Trobe University ⁴

Improve east-west public transport connectivity

Enhance connections to jobs and services at the airport, hospitals and between key centres. Link north-south public transport spines to create transport hubs at key centres (i.e. Broadmeadows, Heidelberg, La Trobe), building momentum for Suburban Rail Loop.

- Key east-west public transport connection, building momentum for Suburban Rail Loop

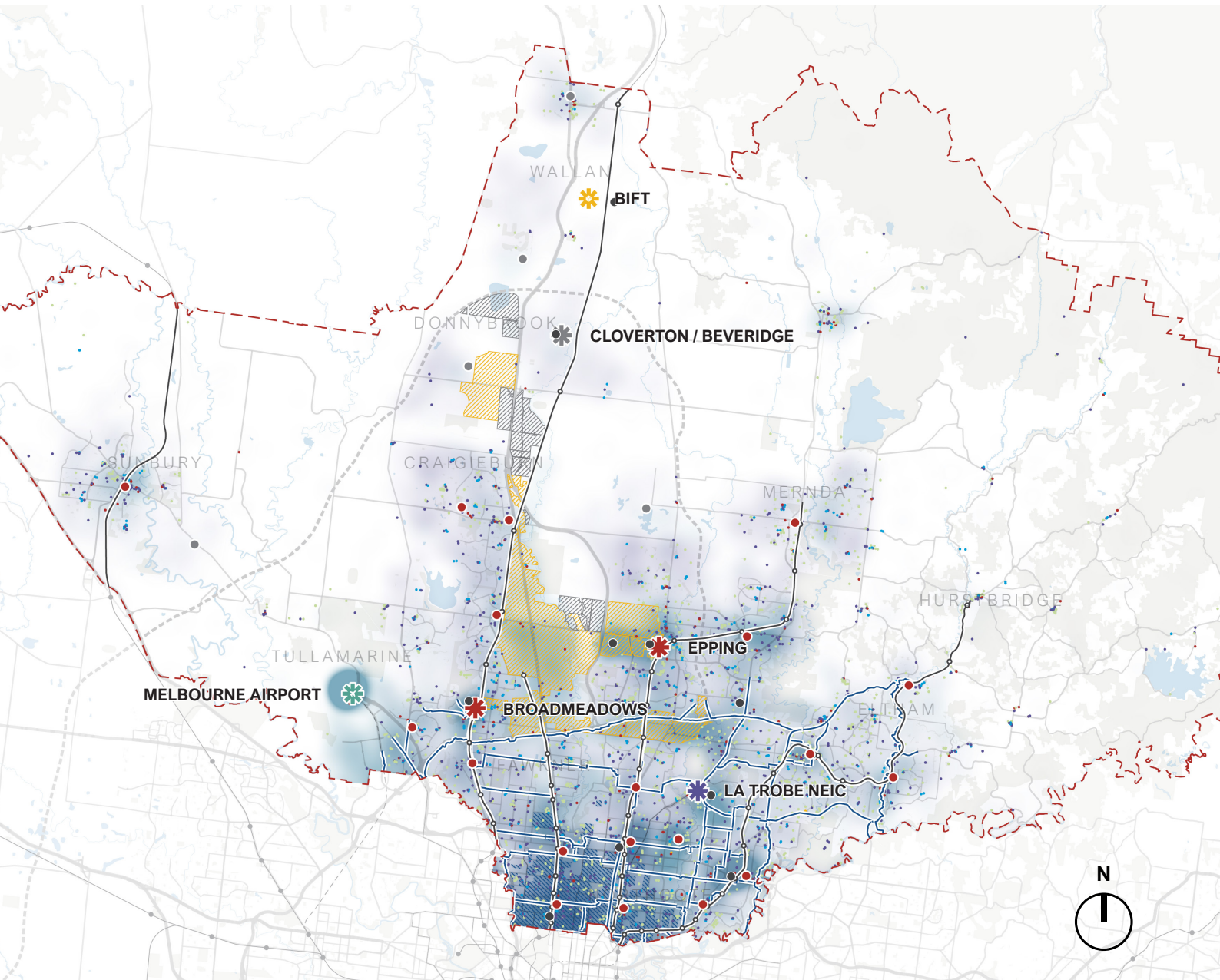
Create a network of cycling connections

Deliver the Northern Regional Trails Strategy, with a focus on the previously-identified 'priority trails' and Strategic Cycling Corridors. Upgrade existing routes, particularly those that link to, or between, key places and centres.

- * Previously-identified 'priority trails' from the Northern Regional Trails Strategy (indicative, see 2016 strategy for routes)
- Strategic Cycling Corridors to delivered with a focus on inner areas with higher density

EVIDENCE PACKAGE 3

LACK OF CONNECTIVITY BETWEEN PEOPLE AND JOBS



Legend

- High employment density (2031)
- High population density (2031)
- ▨ State Significant Industrial areas (existing/future)
- ▨ Higher cycling uptake
- ★ Key Destinations
- City Deal Transformative Projects and Key Existing Infrastructure
- ★ Metropolitan Activity Centre (existing/future)
- Major Activity Centre (existing/future)
- Points of Activity
- Strategic Cycling Corridors

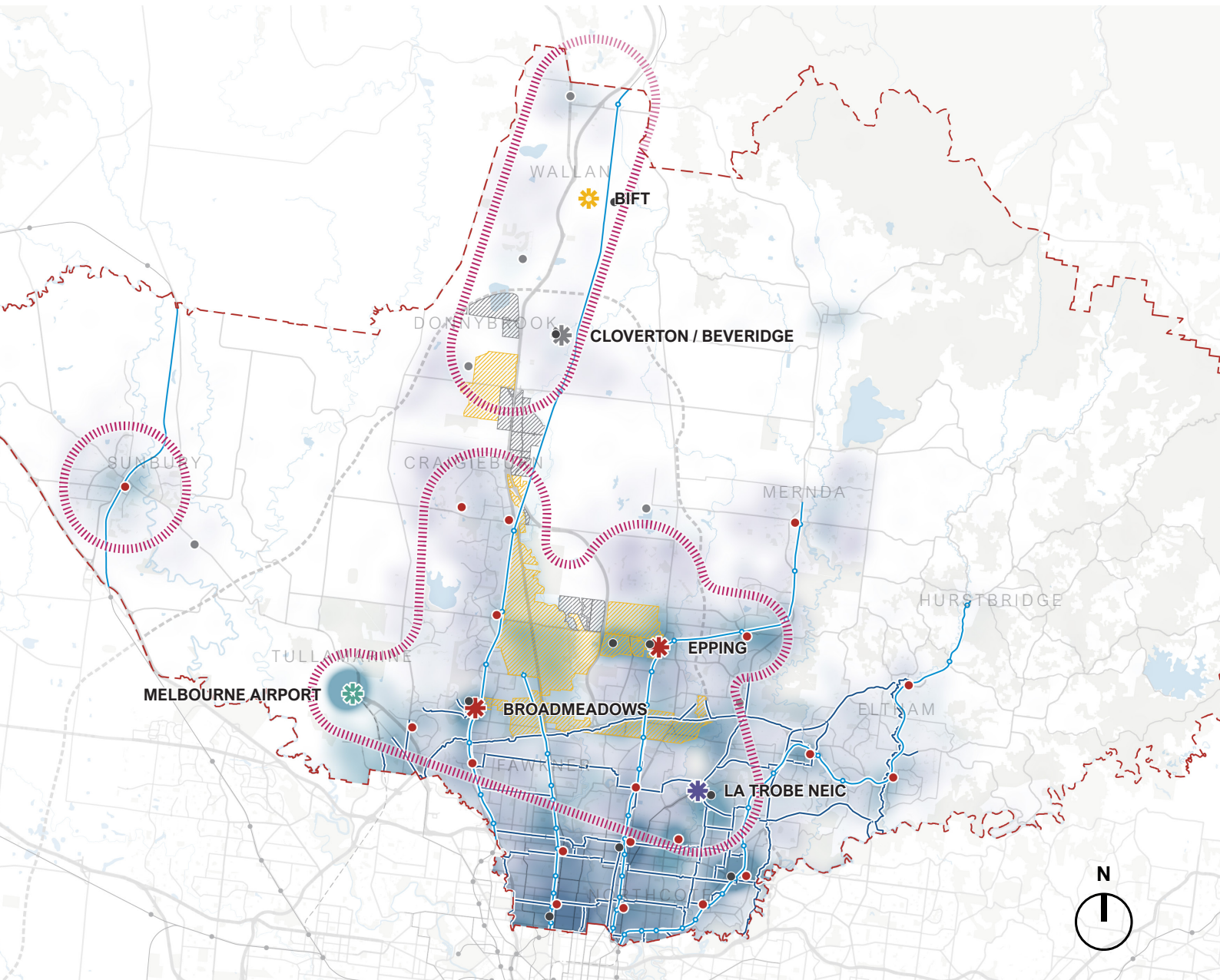
Challenges

- Key centres lack east-west connectivity
- Challenges in bringing people in rural and suburban areas to centres and transport hubs, particularly where infrastructure and services lag development
- Access to industrial areas which have low job density, particularly from lower-density residential areas and growth areas can be difficult using conventional public transport. This also applies to meeting needs for access to diverse points of activity.

Opportunities

- State government investment in Regional Rail station upgrades along the Seymour corridor
- Opportunity to use new technology and develop alternate worker transport models where existing transport networks are not meeting needs, to ensure access to future jobs and encourage job creation (i.e. BIFT)
- Strategic Cycling Corridors support cycling as a viable alternative, particularly for inner areas where there is a density of activity and network of places to support cycling
- New jobs in the area

PRIORITY ACTIONS PACKAGE 3 ENABLE TRAVEL CHOICE TO JOBS AND ACTIVITY



Explore solutions to connect low-public transport areas to jobs

Connecting areas of population which are poorly serviced by public transport to jobs and opportunities in key centres, such as the airport, existing industrial areas and future developments (such as BIFT) by exploring innovative means (such as on-demand, shuttles to stations, community transport options, carpooling, e-buses), minimum service levels for public transport (20 min bus frequency, information at stops, direct routes) and expanded bus networks.

- Three opportunities for innovative solutions and minimum service levels for public transport to connect people to destinations

Maximise opportunity from rail corridor and station upgrades

Build on committed state investment for improvements to station access, comfort and safety (such as Donnybrook and Wallan) to capitalise on opportunities to link people to jobs, such as complementary enhancements to walking and cycling connections and connecting feeder services.

- Build on committed station upgrades, such as on the Seymour line (Donnybrook and Wallan)

Build cycling as a viable travel choice in inner areas

Support cycling as a viable travel choice, focussing on areas where there is a concentration of jobs and population to connect a network of inner-city places and transport corridors aligned with State thinking. These will provide core routes for people to connect into.

- Strategic Cycling Corridors

NORTHERN REGION TRANSPORT STRATEGY

SUMMARY

The Northern Metropolitan Region is home to 20% of Melbourne's population and 12% of jobs. The region is growing and faces a number of challenges and opportunities.

The Northern Councils Alliance has brought together the Councils in the region (Banyule, Darebin, Moreland, Nillumbik, Whittlesea and Mitchell), the State Government and key stakeholders, to establish the Northern Region Transport Strategy.

The strategy has been formulated through a consensus-based process, focusing on the key issues for prioritised collaboration across organisations and geography. Its purpose has been to translate long-term and high-level objectives into short-term and deliverable actions, building a pathway to delivering benefits.

The priority actions contained within this plan have been developed based on:

- shared objectives to support growth, access to jobs and opportunities, neighbourhood and places, industries and freight as well as managing impacts of the transport network, while improving safety and security. Access to jobs and activity
- evidence from existing policies, strategies and plans, as well as through analysis of data on population, jobs, traffic, development and land-use.

Three packages of priority actions have been proposed, namely:

1. Support growth while managing impacts, by

- building on State investment and working together to improve access to railway stations and other transport hubs, focus on getting people to stations and alleviate pressures on the road network
- reducing impacts of developments on the road network, especially in areas of already high public transport accessibility
- applying Movement and Place and conducting corridor studies to manage impacts of freight movement and support cycling and 'place', restricting through-traffic in inner areas.

2. Create a network of strategic places, by

- better connecting Plan Melbourne's key Metropolitan Activity Centres and the La Trobe NEIC and City Deal Hubs to communities and services, with a region-wide review responding to the suggestions from Victorian Transport Action Group
- improving east-west public transport connectivity, building momentum for Suburban Rail Loop
- creating a network of regional trails as per the Northern Regional Trails Strategy.

3. Enable travel choice to jobs and activity, by

- exploring solutions to connect low-public transport areas to jobs e.g. on-demand transport, minimum service levels for public transport, in particular to support access to industrial sites and longer-term development of Beveridge Intermodal Freight Terminal
- maximising opportunity from station upgrades, including complementary works and feeder network integration to better serve existing and new communities
- supporting cycling in inner areas, delivering the Strategic Cycling Corridors.

NORTHERN REGION TRANSPORT STRATEGY

NEXT STEPS

The strategy takes existing strategic and high-level plans as the starting point and translates these long-term goals into short-term practical solutions, which then guide the downstream development of projects.

The next steps are to:

- At stations identified in NTRS for improved access, develop masterplans that create multi-modal connections. These access plans should be developed in a timely manner (in response to upgrade) rather than resource.
- Progress with a pilot sub-regional parking amendment to introduce maximum parking rates in areas of high public transport accessibility. Adopt Smart Planning pathway, similar to secondary dwelling code to streamline process and exploit synergies between partnership.
- Conduct area-based studies that test the resilience of the road network and review options to improve resilience in outer areas.
- Prepare a program business case to fund Movement and Place studies that produce standard outputs across the region and identify short terms measures for immediate delivery.
- Secure funding to undertake a rolling program of bus reviews to adjust the network, connect centres and raise the key services to 'Useful Network' frequencies and service standards (see VTAG report).
- Secure funding as above to create a key east-west public transport connection, building momentum for Suburban Rail Loop
- Secure funding to enable DOT to review bus services to La Trobe University, linking across the Yarra.
- Undertake multi-modal corridor reviews that in the short-term align 'movement' outcomes and travel demand management measures of connections, including at the airport, hospitals and other key centres.
- Continue to work together to deliver the Northern Regional Trails Strategy and prioritise resolving the missing links and the priority trails.
- Publish updated SCCs and have the Partnership work to deliver SCCs on-road and off-road, making sure they are safe, legible and direct.
- Prepare feasibility and business case for on-demand transport (and other emerging options) that look to serve the denser areas noting that there is a lack of credible first and last mile options; access to key destinations (there's an advantage for on-demand e.g. limited parking) and higher residential density where there may be challenges for traditional buses.⁴ The area provides three potential types of trials. The Existing townships of Sunbury, the larger NEIC and aeropolis, and the growth area of Beveridge / Cloverton.
- Jointly advocate for public transport minimum service levels and expanded bus networks. Adopt this in all strategy documents across the region as a common theme. Incorporate this requirement into rolling program of bus reviews.
- Investigate challenges and priorities to address safety and security in the Region.

NORTHERN REGION TRANSPORT STRATEGY

REFERENCES

1. Northern Metro Region - Five Year Plan for Jobs, Services and Infrastructure 2018-2022, Department of Environment, Land, Water and Planning, https://www.suburbandevelopment.vic.gov.au/_data/assets/pdf_file/0019/36028/4325-DELWP-Five-Year-Plan-2018-Alterations-Northern-Metro_Short_FA_Web.pdf, accessed October 2020
2. North and West Melbourne City Deal, <https://www.nwmcitydeal.org.au/>, accessed October 2020
3. Northern Metropolitan Partnership Signature Event Summary - Transport Workshop, V1, 14 September 2020, prepared by Capire on behalf of the Northern Metropolitan Partnership
4. Networking the North, June 2020, Victorian Transport Action Group

MAP REFERENCES

GTA has used a range of resources and data to produce the map outputs in this summary report, including:

- City Deal Locations - derivative of 'North & West City Deal Precinct Map' by North & West City Deal, which includes locations of transformative projects and key existing infrastructure
- RACV On Track Station Rating - derivative of the 2019 RACV On Track Survey Results by RACV, Custom styling applied, where Low = 3-4, Medium = 4-6 and High = 6-10
- Regional Trails - derivative of 'Priority Trails' by Nillumbik Shire Council, Banyule City Council, Whittlesea City Council, Hume City Council, Darebin City Council, Moreland City Council and Yarra City Council.
- Seymour Line Upgrades - derivative of 'Regional Rail Revival Projects Map' by Rail Projects Victoria
- Priority Connections - derivative of 'Networking the North for bus recommendations' by the Victorian Transport Action Group
- Metropolitan/Major Activity Centres - by the Department of Environment, Land, Water and Planning, used under CC BY 4.0. Custom styling applied.
- Local Government Area Boundaries - by the Department of Environment, Land, Water and Planning, used under CC BY 4.0. Custom styling applied.
- Points of Activity - derivative of Points of Interest (filtered to attractor locations) by the Department of Environment, Land, Water and Planning, used under CC BY 4.0. Custom styling applied.
- National Employment and Innovation Cluster - by the Department of Environment, Land, Water and Planning, used under CC BY 4.0. Custom styling applied.
- Hydrological data - by the Department of Environment, Land, Water and Planning, used under CC BY 4.0. Custom styling applied.
- Geological data - by the Department of Environment, Land, Water and Planning, used under CC BY 4.0. Custom styling applied.
- Road network information - by the Department of Transport (formerly VicRoads), used under CC BY 4.0. Custom styling applied.
- Public transport accessibility information - derivative of 'PTV GTFS Feed' by Public Transport Victoria, used under CC BY 4.0. High accessibility is defined as an 800m radius from public transport stops with frequencies better than 10 minutes or a 400m radius for a frequency of 11-20 minutes in the AM peak (8-9am) 13/12/2019.
- Cycling Mode Share - derivative of 'Census 2016 - Journey to Work' by Australian Bureau of Statistics
- Car Mode Share Trend - derivative of 'Census 2016 - Journey to Work' by Australian Bureau of Statistics. GTA analysis of car mode share vs. population density trendline for SA1s in Northern Region and Inner Melbourne. Areas greater than 10% above trendline are highlighted.
- Road congestion data - derivative of 'Victorian Integrated Transport Model' by the Department of Transport. Custom styling applied.
- Future population data - derivative of 'Victoria in the Future' by the Department of Environment, Land, Water and Planning, used under CC BY 4.0. Custom styling applied.
- Future demographic data - derivative of 'SALUP Model Appendix' in 'Melbourne Functional Economic Region Report' by SGS Economics & Planning.
- Suburban Rail Loop Alignment - derivative of 'Suburban Rail Loop Alignment Map' by the Department of Transport, used under CC BY 4.0.
- Airport Rail Link Alignment - derivative of 'Airport Rail Link Alignment Map' by the Department of Transport, used under CC BY 4.0.
- Outer Metropolitan Ring Road - derivative of 'OMR Geotechnical Appendix A - Locality Map' by the Department of Transport (formerly VicRoads), used under CC BY 4.0.
- BIFT location - by the Department of Environment, Land, Water and Planning, (Plan Melbourne) used under CC BY 4.0. Note: location to be determined. Custom styling applied.
- Strategic Cycling Corridors - provided by the Department of Transport, used with permission
- Travel times - based on Google Maps for a 'typical' morning peak hour. Sunbury to Melbourne Airport is based on Apple Maps using the same parameters.