BUILDING COMMUNITIES, CONNECTING PEOPLE: NORTHERN HORIZONS 2020
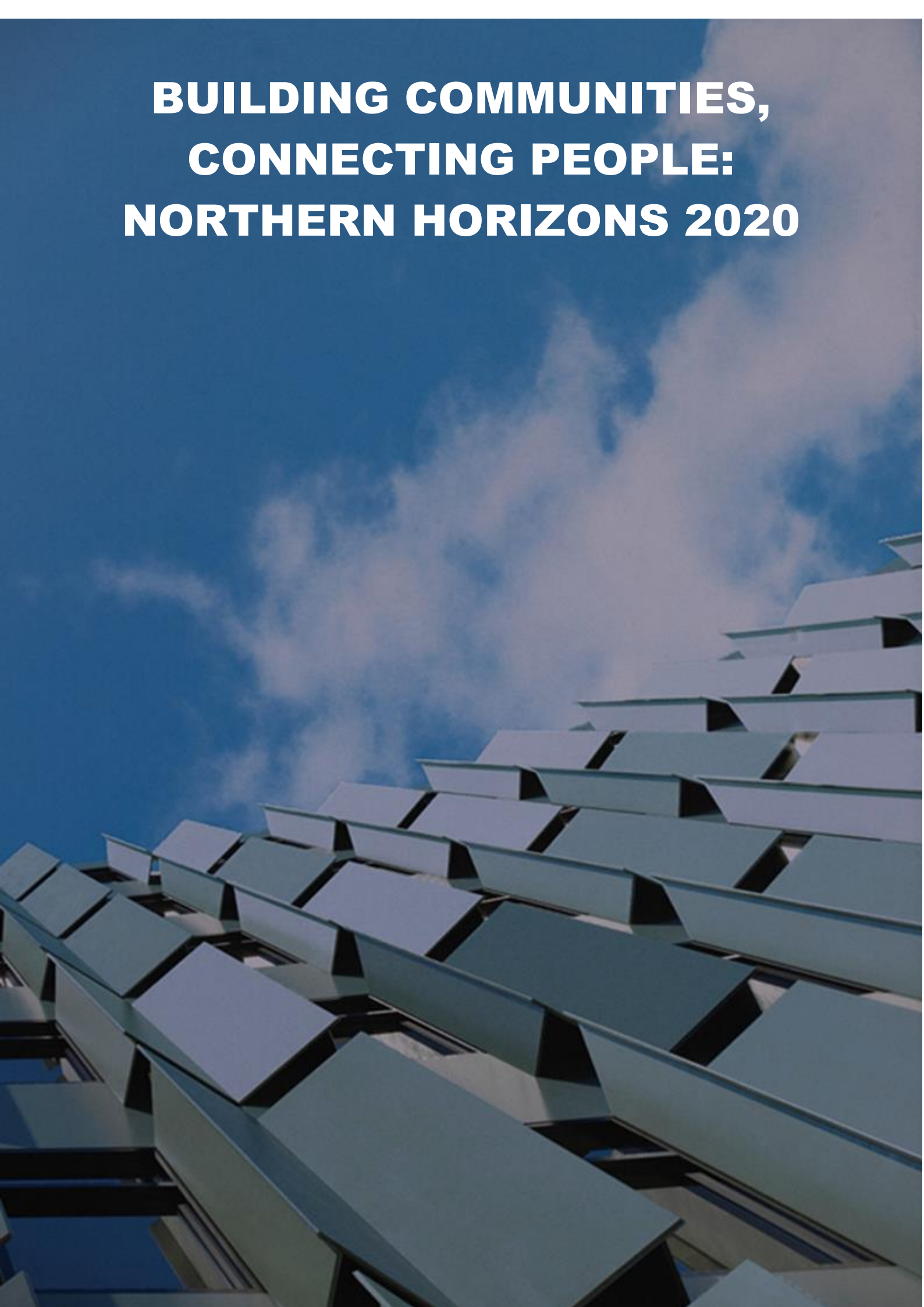
BUILDING COMMUNITIES, CONNECTING PEOPLE:

NORTHERN HORIZONS 2020

**A report for the Northern Metropolitan Partnership
Project managed by NORTH Link**

February 2020

Contents

1. Melbourne's north today

Melbourne is one of the fastest growing cities of its size in the developed world. One in five Melbournians live in the city's northern region, or around one million people. From 2006 to 2016, the region added almost 200,000 people, which represented a faster growth rate than for the city as a whole.

By 2036, the regional population is projected to be close to 1.5 million (DELWP 2019), similar to Adelaide and half a million more than in the region at present. These are big numbers in terms of both absolute size and growth rate.

The size of Melbourne's north and its rate of population growth rate imply a large and rapidly growing requirement for new/upgraded infrastructure and services, from the fast-growing fringe areas to the densifying inner suburbs.

This must:

■ produce the greatest benefits for regional residents, workers, students and visitors

■ ensure equity across the region and wider metropolitan area

■ bring a strategic focus on the nature of the region and its people, growth patterns and relationships with the wider city and beyond

■ bring an understanding of the region's strengths and weaknesses, and of ways to build on the strengths and mitigate weaknesses.

This report identifies a 'deficit' in regional capital spending of around $1 billion since 2014-2015 on a population growth basis compared to the remainder of Melbourne, much of which relates to public capital. Federal and state governments should work to ensure the removal of this 'deficit', to assist the region and its residents to flourish.

Adequate state and federal government support will also assist the region to make its transition from a traditional manufacturing base to one characterised by advanced manufacturing, the knowledge economy and services.

A history of underfunding – capital spending context

Understanding how Melbourne's north has fared in terms of capital spending in recent years, when its population growth rate has been high, provides important context for this report. Total capital spending on major projects for the region over the past five years was $2.4 billion, largely made up of publicly funded projects.

Compared to the rest of Melbourne (but excluding the City of Melbourne), there was a substantial northern regional 'deficit' in capital spending over 2014-2015 to 2018-2019 (Figure 1).

This regional 'deficit' was:

■ approximately $500 million on per capita basis

■ approximately $1.08 billion on a population growth basis.

It is estimated that the consequential loss in Gross Regional Product over the five years was similar in scale to the investment spending deficit. But the real loss is greater, since the GRP benefit of closing this gap would be expected to continue well beyond 2019, showing significant regional net benefits. This regional deficit needs to be removed if the region is to continue to carry a large share of Melbourne's population growth.

Socio-economic and environmental indicators tell us about other forms of disadvantage in the north, as follows:

- canopy cover – canopy cover in Melbourne's north is 12.1 per cent, lower than all Melbourne regions other than the west

- obesity – five of the seven northern region LGAs are rated among the worst 12 LGAs out of 32 in Melbourne

- Year 9 literacy – four of the seven Melbourne's north LGAs rate among the 10 worst in Melbourne

- local job availability – four of the seven Melbourne's north LGAs rate among the nine worst in Melbourne.

Figure 1: Northern region share of capital spending – 2014-15 to 2018-19 ($ million)
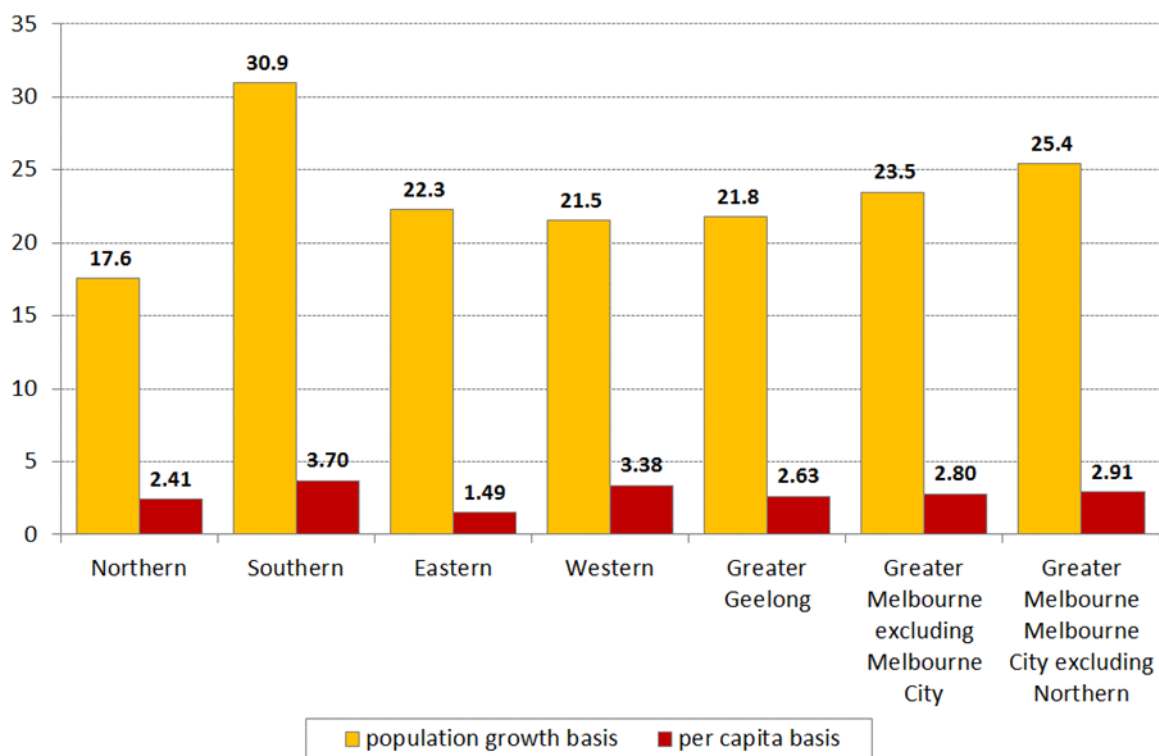
Source: NIEIR database.

2. Key strategic directions for 2020

The main strategic directions for Melbourne's north in this report are:

A. **Developing the La Trobe NEIC and other leading regional clusters:** strengthening the region's major activity clusters, both spatial (e.g. the La Trobe National Employment and Innovation Cluster, Metropolitan Activity Centres such as Broadmeadows, Epping, etc.) and sector based (e.g. food, health), to increase local job generation and raise productivity levels

B. **Connected north:** improving inter- and intra-regional connectivity, which will support job/productivity growth and improve the accessibility of such jobs for regional residents and others, as well as supporting regional social inclusion more broadly

C. **Well-educated and skilled north:** improving regional educational and skill levels, to better support participation of the region's current and future residents, workers and students in a growing and changing world

D. **Fairer north:** increasing fairness and equity, in terms of both how the region and its various municipalities share in access to infrastructure and services and how this flows through to benefit the region's population, workforce and others

E. **Healthier north:** ensuring a healthy and engaged population, recognising (for example) that rapid growth in low density settings militates against public and active transport and encourages obesity

F. **Greener north:** developing a greener north, encompassing important local/regional matters like extending canopy cover, increasing access to nature and growing the use of public and active travel, together with the globally significant and increasingly urgent need to respond to climate change

G. **Innovative north:** increasing innovation, targeting industry clusters that are strong and have potential for significant growth and jobs, and encouraging stronger university-industry links.

These themes support a traditional regional focus on jobs, skills development and improved intra- and inter-regional connectivity. They also broaden this focus, in line with council priorities, the policy intent of *Plan Melbourne 2017-2050* (Victorian Government 2017) and the priorities of the Northern Metropolitan Partnership (Victorian Government 2019a) and other regional stakeholders, to recognise the importance of wider issues such as health, the environment, equity and engagement for a flourishing region.

3. Initiatives of value to the north[1]

The report identifies a suite of projects and initiatives that will assist in transforming Melbourne's north in line with its population growth, in the following timeframes:

■ Short-term – 2020-2024

■ Medium term – 2025-2032

■ Long-term – 2033 and beyond.

---

[1] Chapter 5 of the Evidence Report provides further details on this section.

Table 1

Key projects and initiatives required

Transport	Non-transport
Short term – 2020 to 2024	**Short term – 2020-2024**
■ Suburban Rail Loop/Medium Capacity Transit (fast buses linking La Trobe NEIC to rest of Melbourne including airport) *(Connected)*	■ Make the La Trobe NEIC a Victorian Government Priority Precinct (including government contribution to La Trobe University City of the Future redevelopment, La Trobe Research and Innovation Precinct, Heidelberg Structure Plan) *(Innovative)*
■ Bring forward Suburban Rail Loop construction in north to connect precincts and overcome equity deficiencies of south east and west receiving infrastructure first *(Connected) (Innovative)*	■ Continued development of Metropolitan Activity Centres at Epping, Broadmeadows and Cloverton and Major Activity Centres at Greensborough, Brunswick, Coburg, Preston, Sunbury, Craigieburn, Reservoir, Eltham and Heidelberg – includes adequate bus and tram links *(Innovative)*
■ Beveridge Intermodal Freight Terminal (business case and environmental studies) *(Connected) (Innovative)*	■ Expansion of Melbourne Market to deliver food manufacturing and innovation precinct *(Innovative)*
■ Complete Northern Regional Trails projects (including Cultural Trails) (see evidence report 4.6.4) *(Connected) (Greener) (Healthy)*	■ Improved internet connections in north and mobile network coverage in outer north to address blackspots (Mitchell, Nillumbik, Whittlesea) *(Connected) (Innovative)*
■ Outer Metropolitan Ring Road and E6 (business case and environmental studies) *(Connected)*	■ Major new public hospital in outer north – commitment and planning (see evidence report 5.6.3) *(Healthy)*
■ Melbourne Metro 2 planning commitment and timeframe *(Connected)*	■ Planning for TAFE campus(es) for outer north *(Skilled)*
■ Bus network – local and trunk (see evidence report 5.2.1, 5.2.2): timetables align with train timetable, increased trunk and local services *(Connected)*	■ Construction of committed community hospitals (Craigieburn, Whittlesea, Sunbury, Eltham) and integrated primary care hubs (see evidence report 5.6.1) *(Healthy)*
■ Tram network enhancements: extend and upgrade 86 (stages 2 & 3), extend 59 to airport, extend 11 to Reservoir Station (see evidence report 5.2.3) *(Connected)*	■ Northern Hospital R&D/biotech, health precinct (support for Northern Centre for Health and Education Research redevelopment) *(Healthy) (Innovative)*
■ Car parking at train stations (see evidence report 5.2.5) *(Connected)*	■ Seymour Revitalisation project *(Innovative) (Fairer)*
■ Grade separations (see evidence report 5.2.8) *(Connected)*	■ Redevelopment of Bendigo Kangan Institute site at Broadmeadows *(Skilled) (Innovative)*
■ Decarbonise transport (electric car charging stations, trial electric buses and trucks) *(Connected) (Greener) (Healthy)*	■ Melbourne Innovation Centre site redevelopment at Alphington – commitment of funds to redevelopment *(Innovative)*
■ Infrastructure enhancement opportunities resulting from North East Link *(Connected)*	■ Urban forest and open space – restart 20 Million Trees program funding *(Greener)*
■ More regular V-Line services to Seymour *(Connected) (Fairer)*	
■ Key interchanges (Watson St-Hume Fwy, Camerons Lane-Hume Fwy, Gunns Gully Road-Hume Fwy, English St-Hume Fwy) (see evidence report 5.2.12) *(Connected)*	
■ Outer north arterial roads (eg Bulla Bypass) (see evidence report 5.2.12) *(Connected)*	

- Train station upgrades (Broadmeadows, Coburg, Moreland, Greensborough, Ruthven, outer Nillumbik stations) (see evidence report 5.2.7) *(Connected)*

- North East Link access (La Trobe University) *(Connected) (Innovative) (Skilled)*

Medium term – 2025-2032

- Beveridge Intermodal Freight Terminal construction *(Connected) (Innovative)*

- OMR/E6 construction (including airport access to and provision for rail) *(Connected)*

- Melbourne Metro 2 construction *(Connected)*

- Wollert rail extension (bus rapid transit as short-term solution) *(Connected) (Fairer)*

- Wallan rail electrification *(Connected) (Fairer)*

- Upfield-Somerton rail link *(Connected) (Fairer)*

- High speed rail to Shepparton *(Connected)*

Longer-term – 2033 onwards

- Potential for high speed rail link to Sydney through OMR corridor *(Connected) (Innovative)*

- Food and beverage kitchen incubators for start-ups *(Skilled) (Innovative)*

- Support for Brunswick Design District and 420 Victoria St site *(Skilled) (Innovative)*

- Establishment of an Orange Door Family Violence Hubs *(Healthy) (Fairer)*

- Improved high speed broadband (see evidence report 5.3.1) *(Connected) (Innovative)*

- Arts and cultural facilities audit (see evidence report 5.4.1) *(Innovative)*

- Childcare and kindergarten facilities (see evidence report 5.5.1) *(Skilled) (Fairer)*

- Primary schools (see evidence report 5.5.2) *(Skilled) (Fairer)*

- Secondary schools (see evidence report 5.5.3) *(Skilled) (Fairer)*

- Aged care facilities (see evidence report 5.6.5) *(Skilled) (Fairer)*

- More hospital beds in existing facilities (see evidence report 5.6.2) *(Healthy)*

- Increased mental health support, especially in outer north (see evidence report 5.6.4) *(Healthy)*

- Affordable housing (see evidence report 5.11.1) *(Fairer)*

- Renewable energy (support for transition of region's businesses and residents to renewable energy solutions) (see evidence report 5.7.1) *(Greener) (Innovative)*

- Waste management and minimisation – strategy and infrastructure build (see evidence report 5.7.4) *(Greener) (Innovative)*

- Storm water recycling infrastructure (see evidence report 5.7.3) *(Greener)*

- Sporting facilities (see evidence report 5.9.1) *(Greener) (Fairer)*

- Community centres (see evidence report 5.9.2) *(Healthy) (Fairer)*

- Increase commercial and industrial space – jobs where people live (see evidence report 5.10.2) *(Innovative) (Fairer)*

- Indigenous health and wellbeing (see evidence report 5.12.1) *(Healthy) (Fairer)*

	Medium term – 2025-2032
	■ Construction of new hospital in outer north *(Healthy)*
	■ Construction of new TAFE campus(es) in outer north *(Skilled) (Fairer)*
	■ Support La Trobe's University City of the Future through ongoing development of innovation and employment initiatives *(Innovative)*
	Smaller programs – short term 2020-2024
	■ Northern Health Hospital in the Home project (see evidence report 5.6.6) *(Healthy)*
	■ Advanced Manufacturing Assistive Technology Centre (see evidence report 5.8.2) *(Innovative)*
	■ North and West Melbourne Data Analytics Hub (see evidence report 5.8.3) *(Innovative)*
	■ Infrastructure Skills Roundtable (see evidence report 5.8.4) *(Innovative) (Skilled)*
	■ Funding to develop Melbourne's north visitor economy (see evidence report 4.6.4) *(Innovative)*

Table 2

Key initiatives by cluster

Metropolitan Activity Centres (MACs) have been designated in Plan Melbourne Refresh as the highest-level activity centres, bringing together key industries supported by infrastructure.

La Trobe NEIC (includes Heidelberg, Heidelberg West Business Park, Northland Urban Renewal Precinct)	■ Make the La Trobe NEIC a Victorian Government Priority Precinct ■ Suburban Rail Loop/Medium Capacity Transit (fast buses linking La Trobe NEIC to rest of Melbourne including airport) ■ Station upgrades affecting precinct (eg Greensborough) ■ *Improved high speed broadband for business* ■ *Support for health care hubs (hospital, aged care and/or primary health hubs focused on early intervention)* ■ *Industry support for university or TAFE facilities (existing or new)*
Epping	■ Expansion of Melbourne Market to deliver food manufacturing and innovation precinct ■ Connection to Suburban Rail Loop (direct or spur line) ■ Wollert extension via Epping ■ Melbourne Metro 2 planning and construction ■ Northern Hospital R&D/biotech, health precinct (support for Northern Health's Hospital in the Home Project and expansion of Northern Centre for Health and Education Research) ■ *Improved high speed broadband for business* ■ *Support for health care hubs (hospital, aged care and/or primary health hubs focused on early intervention)* ■ *Industry support for university or TAFE facilities (existing or new)*
Broadmeadows	■ Broadmeadows Station redevelopment ■ Redevelopment of Bendigo Kangan Institute, Broadmeadows campus ■ Connection to Suburban Rail Loop (short term MRT bus connection) ■ *Improved high speed broadband for business* ■ *Support for health care hubs (hospital, aged care and/or primary health hubs focused on early intervention)* ■ *Industry support for university or TAFE facilities (existing or new)*
Cloverton	■ Beveridge Intermodal Freight Terminal ■ Wallan rail electrification ■ New hospital in the outer north ■ New TAFE campus ■ Diamond interchanges (Watson St, Camerons Lane, Gunns Gully Road)

	■ OMR/E6 business case and construction timetable
	■ Train stations
	■ *Improved high speed broadband for business*
	■ *Support for health care hubs (hospital, aged care and/or primary health hubs focused on early intervention)*
	■ *Industry support for university or TAFE facilities (existing or new)*
Other activity centres and beyond (Coburg, Preston, Craigieburn, Sunbury, Greensborough, Brunswick, Eltham, Reservoir and other centres)	■ Renewable energy upgrades (including network improvements to facilitate upgrade to renewable energy)
	■ Northern Regional Trails project
	■ Support for Coburg and Preston redevelopments
	■ English St-Hume Fwy interchange
	■ Melbourne Innovation Centre site redevelopment at Alphington – commitment of funds to redevelopment
	■ Arts and cultural facilities audit
	■ Support for Brunswick Design District and 420 Victoria St site
	■ Childcare, kindergarten, schools, aged care
	■ North and West Melbourne Data Analytics Hub
	■ Infrastructure Skills Roundtable
	■ Funding to develop Melbourne's north visitor economy
	■ Sporting facilities and community centres
	■ Urban forest and open space
	■ Hospitals, integrated primary care hubs, mental health support
	■ Advanced Manufacturing Assistive Technology Centre
	■ *Improved high speed broadband for business*
	■ *Support for health care hubs (hospital, aged care and/or primary health hubs focused on early intervention)*
	■ *Industry support for university or TAFE facilities (existing or new)*

4. Competitive strengths and weaknesses for Melbourne's north

Competitive strengths

The competitive strengths of Melbourne's north are:

■ La Trobe National Employment and Innovation Cluster (NEIC), which is one of only seven NEICs in Melbourne

■ two world-class universities: La Trobe and RMIT

■ emerging clusters such as the Broadmeadows, Epping and Cloverton Metropolitan Activity Centres

■ Melbourne Airport

- the established practice of working as a region

- the region's freight and logistics networks

- key industries – food manufacturing, engineered manufacturing, freight and logistics, health and community services, education

- industrial land availability and affordability

- cultural diversity

- undulating topography with river and creek corridors and tourism potential

- location in Melbourne, with access in all directions, to/from the rest of Melbourne, Victoria and interstate.

Competitive weaknesses for Melbourne's north

The competitive weaknesses of Melbourne's north are:

- a shortage of major clusters

- poor connectivity to other parts of Melbourne, especially by circumferential public transport

- a history of underfunding of infrastructure

- the historically low socio-economic status of much (but not all) of the region (there are few elite private schools, feeding into issues around attracting professionals such as doctors)

- a growing mismatch between resident skills and local job opportunities, resulting in outbound commuting (stronger clusters or activity centres could address the lack of business and professional services jobs)

- gaps in regional supply chains, including at the research and innovation end, that lead to loss of regional value adding opportunities

- the visitor economy has much potential but is underdeveloped

- in many parts of the region, particularly inner areas, there is a shortage of open space and canopy cover.

It is important for regional stakeholders to remind others that the region is changing rapidly in terms of its opportunities, its level of amenity and its capacity to provide local employment across a developing and diverse set of industries.

Lack of major clusters > 4 kilometres from CBD

Urban clusters are crucial for economic development and productivity growth in the knowledge economy, and clusters need economic density for productivity. *Plan Melbourne 2017-2050* (Victorian Government 2017) recognises this significance and is strongly grounded in terms of cluster development, particularly through its National Employment and Innovation Clusters (NEICs).

Figure 1 shows that the north and west of Melbourne currently support only one significant activity cluster, around Heidelberg. To support growth and to better share its benefits, there is a pressing need for development of stronger northern (and western) clusters.[2]

---

[2]   Note on the definition of a cluster: Recognising that designation of a cluster is ultimately arbitrary, Melbourne transport planning expert Chris Loader (Charting Transport, from which this map is sourced) used the following criteria: the cluster contained at least 40 employees per hectare in 2011 or 2016, was more than 4 kilometres from the city's main CBD, and at least 6,000 employees worked there on census day in 2016.

Figure 1: Dense employment clusters more than 4km from CBD by size and journey to work mode split, Melbourne, 2016
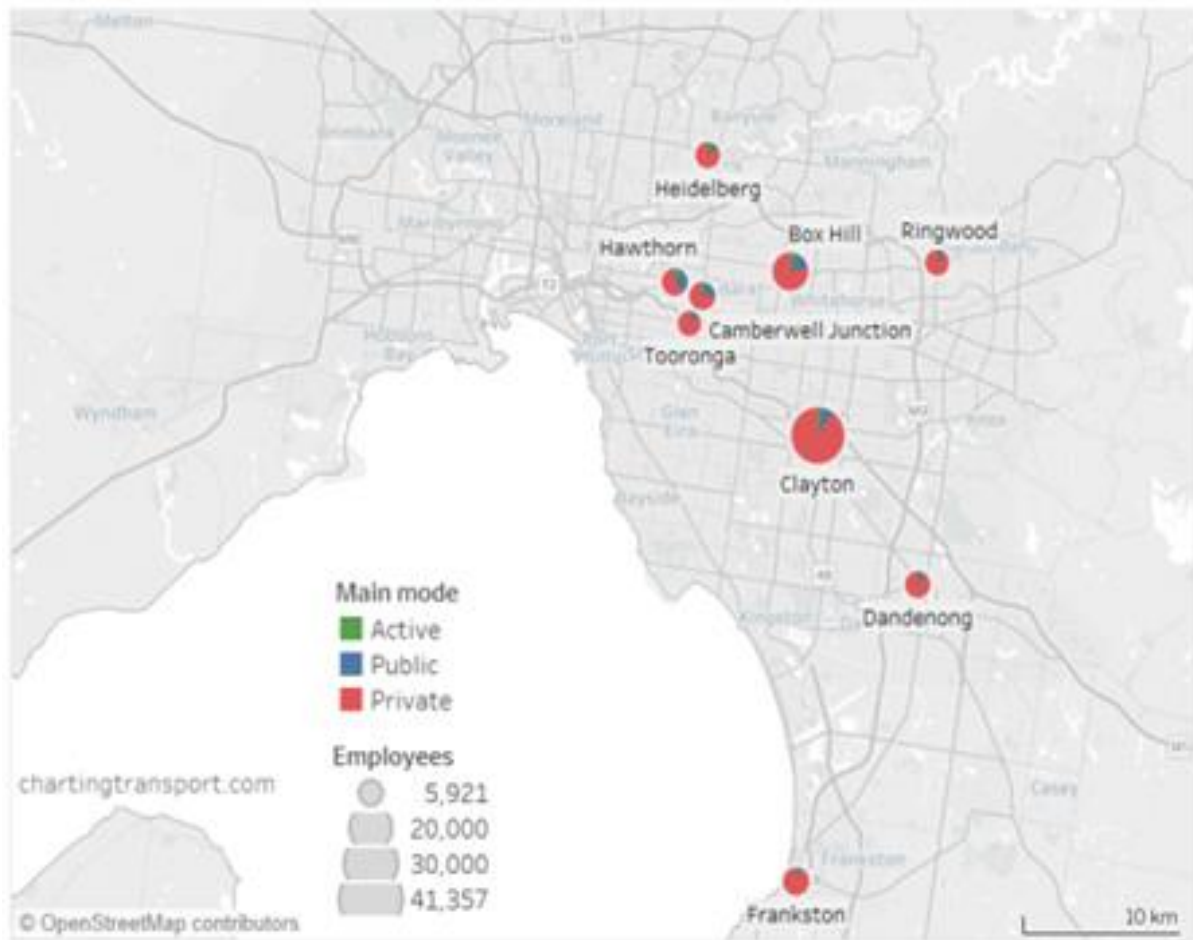
Source: Chris Loader – Charting Transport.

Poor La Trobe NEIC accessibility

Figure 2 shows that La Trobe has the poorest public transport accessibility of the six original *Plan Melbourne* NEICs (Stanley and Brain 2016). The 70th percentile public transport trip to La Trobe NEIC is almost two hours in the morning peak, including access-egress time and wait/transfer times! As a result, of all the NEICs, La Trobe relies least on public transport. High transport costs (including parking costs) hinder its development as an NEIC and this is a critical developmental barrier that needs to be removed.

Figure 2: Cumulative travel time curves for NEIC morning peak trips by PT (proportion of trips)
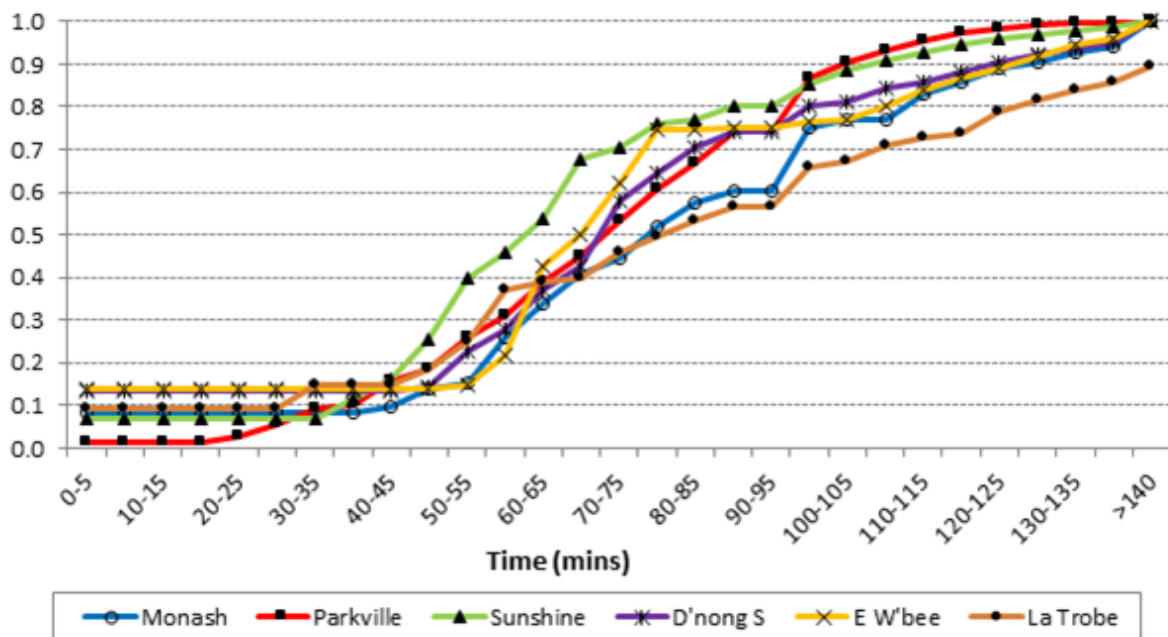
Source: Stanley and Brain (2016).

5. Regional developmental themes[3]

Seven strategic development themes have been identified (Figure 3). Key initiatives are discussed under the most relevant theme, while recognising that the best initiatives are usually relevant to multiple themes.

Before outlining key directions and initiatives related to each theme, it is important to explain the priority given to cluster development as a core part of the report's strategic approach. Research undertaken by NIEIR for the development of *Plan Melbourne* showed that, over the 1992-2012 period, high-technology/knowledge-based activities[4] accounted for over 60 per cent of value-added growth in Melbourne (and an even higher share in Sydney). These activities are the key to future urban economic growth and to national economic performance. They are increasingly locating in central/inner areas, to capture agglomeration economies (from economic density). However, this leads to a widening of existing productivity differentials and decreasing relative availability of job opportunities between the inner and outer suburbs.

While the central areas of our cities will remain paramount for high-tech/knowledge-based economic activities, the inner/middle suburbs stand out as the best opportunity for accelerated development of a small number of high-tech/knowledge-based clusters, based around (for example) leading universities, medical research institutes (sometimes known as 'eds and meds') and/or advanced manufacturing.

---

[3] See Chapter 4 of the Evidence Report for further details and Appendix C of that report for some further considerations regarding clusters.

[4] High-tech/knowledge-based industries are those that create, design or utilise complex technologies embodied in capital equipment (such as advanced electronics, computing, robotics or pharmaceuticals) and/or utilise high level skills, with high-tech knowledge-based service industries employing a high proportion of professional skills (e.g. financial services, engineering, architecture, software development, tertiary education, health services).

These areas are located sufficiently close to the central area to deliver strong productivity levels. They can be connected to outer suburbs by high quality transport links to enable better sharing of the high-end employment opportunities they create and associated service sector job opportunities. Circumferential movement to/from these clusters is important to ensuring their vitality, because their catchments will be much wider than can be adequately served by only major radial links. Strong transport links to the centre are also needed. Good connectivity to outer suburbs is important for sharing the productivity benefits from clusters.

Associated skills development is also critical, to ensure that there are good opportunities for regional residents to participate in the growth of the knowledge economy. Flow-on effects to regional population-serving jobs are then expected.

Figure 3: Northern Horizons Strategy Update 2019: Main themes

Source: Authors.

Plan Melbourne's primary response was to establish a small number of NEICs. Their purpose is to increase productivity levels in a selected number of locations, with good access to the wider city and particularly to the fast-growing outer suburbs. This was recognised as being an effective way to both lift urban productivity levels across the city and ensure that the benefits are equitably shared among the city's residents, including those in outer growth suburbs.

In terms of regional economic/jobs development, this approach should be followed through to Melbourne's north, building on the land use strategy set down in *Plan Melbourne 2017-2050* (Victorian Government 2017) and recognising the region's strengths and opportunities for cluster development. Relevant regional clusters in this regard are both spatial (including the critical La Trobe

NEIC, seen as the highest priority as a spatial cluster, Melbourne Airport, several other activity centres and the State Significant Northern Industrial Precinct), together with industry level clusters (e.g. food and beverages, health). Connectivity is then a critical input for effective cluster development.

This proposed approach to regional development is cognisant of how structural economic changes are affecting urban opportunities. It seeks to work with such changes in a proactive way, to maximise potential regional economic/job benefits and their sharing among regional residents, but without detriment to the wider city and state economies.

Jobs (productivity), skills and connectivity are central elements of the economic outcomes being pursued through this Strategy Update, which also recognises that there are other valued regional outcomes that need to be pursued, such as urban greening and improved health, as shown in Figure 3. Local government's influence over local land use is then one important enabling device in terms of implementation, working with other stakeholders.

A: Developing the La Trobe NEIC and other leading regional clusters

La Trobe NEIC

La Trobe University, the region's largest single employer and a pivotal part of the La Trobe NEIC, has established its vision for its University City of the Future, which provides a great opportunity to drive stronger and more diversified growth, both in the cluster and more widely. The University City of the Future seeks to create a healthy, liveable and sustainable city, with 12,000 residents and an increase in student numbers from 28,000 to around 40,000.

This La Trobe University development will provide a new hub for Melbourne's north and its NEIC, with accommodation, retail space and health services. Improved transport connections will be critical to realisation. The vision fulfilled will mean capital investment of $5 billion, a very significant economic generator.

La Trobe University is ranked in the top 1.2 per cent of universities worldwide (QS World Rankings 2019)[5], with nationally significant research in agricultural production, sustainable food solutions, health and wellbeing, and cyber and digital technology. The first two of these areas are important elements in the region's competitive strength in food and beverages. Health and wellbeing forms a key part of the wider regional strength in these matters, while the cyber and digital technology strength is an important regional opportunity.

To help express the University's vision, there is a need to support some major projects (e.g. sporting facilities, art/culture hub, development of the Research and Innovation Precinct, including R&D development linked to the University's/region's competitive strengths) and to improve connectivity, particularly between the University and Heidelberg segments of the NEIC and beyond. Improvements to trunk public transport are vital.

The health cluster at Heidelberg includes the significantly important Austin Health, comprising the Austin Hospital, Heidelberg Repatriation Hospital, Royal Talbot Rehabilitation Centre and the Olivia Newton-John Cancer Wellness & Research Centre. Austin Health represents specialisation and innovation in health centre around cancer, infectious diseases, obesity, sleep medicine, intensive care medicine, neurology, endocrinology, mental health and rehabilitation. The cluster is the largest Victorian trainer of specialist physicians and surgeons and provides statewide services covering a range of specialities, including the Victorian Spinal Cord Service and the Acquired Brain Injury Unit. Austin LifeSciences partners with La Trobe University, The University of Melbourne, the Mercy Hospital for Women and other research institutes, bringing together 1,000 researchers.

---

5   https://www.topuniversities.com/university-rankings/world-university-rankings/2019.

The Mercy Hospital for Women, located at Heidelberg, is a renowned public hospital providing services that include maternity, neonatology and paediatrics, perioperative, gynaecology and other women's health services.

The proposed Heidelberg Structure Plan process provides an opportunity for conversations around enhancements needed to underpin this key health cluster e.g. accommodation developments.

There are opportunities for regional businesses in specialist medical manufactures and ICT systems development. Health is an ideal sector for creating high value projects, co-developed between universities, existing and new firms entering the region and venture capital. The health sector will remain a strong employer in Melbourne's north, contributing strongly to the development of the region's skills base.

Within this cluster and beyond, educational opportunities include teaching about quality systems and standards, which are complex in the health sector, and ongoing training of the health sector's non-clinical workforce across a range of service occupations. More broadly, the region's medical and health resource base is high quality and provides a great opportunity for further regional development. Identification of the highest priority initiatives to maximise this potential should be a regional priority.

There should also be stronger attempts to link La Trobe NEIC education and research opportunities to the Austin Health precinct and boutique manufacturing and employment opportunities at Northland Urban Renewal Precinct and Heidelberg West Business Park.

La Trobe NEIC currently suffers the poorest transport connections of all the *Plan Melbourne* NEICs. This should be rectified by early delivery of a Medium Capacity Transit (MCT) solution on the northern segment of the proposed Suburban Rail Loop alignment (Airport, Broadmeadows, La Trobe, Doncaster, Box Hill, etc.), as proposed by Rail Futures Institute (RFI 2019). The MCT solution should include more stops than are proposed for the Suburban Rail Loop, to promote intra-, and well as inter-regional accessibility.

Building the Suburban Rail Loop in the south east first, as currently planned, coupled with lack of action to significantly improve the circumferential connectivity of the La Trobe NEIC, will have a serious negative impact on the relative standing of the northern cluster in general, and La Trobe University in particular, compared to Monash and Deakin Universities, with adverse flow-on consequences for Melbourne's north and its people.

Early delivery of an MCT solution in Melbourne's north is the top transport priority of this report. It should be complemented by early delivery of new/upgraded trunk public transport services from La Trobe NEIC to Kew/Hawthorn, Whittlesea and Eltham (via Macleod), to expand labour and student catchments, and improved trunk shuttles (Reservoir Station-La Trobe; La Trobe-Heidelberg), to bring them more into line with the shuttle services provided for The University of Melbourne and Monash University.

Medium term, development of the North East Link provides another opportunity to improve fast trunk bus services supporting the La Trobe NEIC, serving Watsonia, Greensborough and Ringwood to Dandenong. Service planning would need to be integrated with that for the MCT. Within the NEIC, improved public transport (bus) linkage between the University and Northland and improved active travel opportunities will also help to strengthen the integrity of the cluster.

Priorities for other major regional spatial clusters

Epping Metropolitan Activity Centre (MAC) will benefit from the development of a food and beverage innovation hub on land adjacent to Melbourne Market and the preparation and implementation of a strategic plan for the whole Epping precinct.

It also requires better connectivity to public transport (some of the proposed trunk public transport improvements set out in Figure 4 below are relevant here), access to educational institutions and development as a health precinct. Investment into the health precinct around the Northern Hospital could include research and development opportunities (such as biotech), enhancements to the Northern Centre for Health and Education Research and private hospitals.[6] More commercial land is required to provide local employment opportunities and for cluster development in Epping.

For the Broadmeadows MAC, priorities include redevelopment of the rail station and public transport interchange (including integration with the circumferential medium capacity transit line). With enhanced public transport access, including trunk public transport improvements set out under 'Connected north', the cluster will be an excellent site for a major new public hospital, which would then support increased cluster mixed-use densification. The presence of a major NDIS office, Broadmeadows Hospital, allied health providers and Bendigo Kangan Institute Broadmeadows campus (a site in need of redevelopment) provide the opportunity to build an advanced manufacturing hub focussing on NDIS products, as per Broadmeadows Revitalisation Board recommendations.

Melbourne Airport will remain a specialised activity centre, supported by the CBD-Airport Rail Link, by the medium capacity transit solution to the suburban rail loop and by an improved trunk public transport service to and from Sunbury.

Greensborough, Heidelberg Preston, Reservoir and Coburg are also significant activity centres, whose development is important at a more local level. Local development needs include, for example, improved active travel opportunities that support local densification and mixed-use development, and high-quality public transport interchanges. Cloverton, in the outer north, is designated as a future Metropolitan Activity Centre and needs to be developed in a timely manner, without lags in infrastructure and service provision as its population catchment grows. It has been mooted as the location for the new outer north public hospital and a TAFE campus.

Place-based initiatives are important for all clusters and better active travel opportunities are needed to support cluster density.

B: Connected north

Road investment priorities include new/improved arterial roads in growth suburbs (e.g. Mickleham Road, Donnybrook Road, Somerton Road, Bulla Bypass) and keeping up with freight traffic demands in the Hume corridor and on other freight links (including reservation of corridors for the Outer Melbourne Ring Road and links to it). (It should be noted that there is potential for this link to enable a high speed link between Melbourne Airport, Beveridge, Seymour and Sydney if a national Melbourne-Sydney high speed rail project goes ahead.)

At the suburb level, road construction should be balanced against the management of travel demands, by the increased provision of local destinations and travel options, consistent with the *Plan Melbourne* focus on developing Melbourne as a series of 20-minute neighbourhoods. In terms of arterial and local road provision, a key issue is balancing the movement functions of roads versus their place functions, such that place functions are protected and enhanced when major road projects are implemented. Suburb designs (and retrofits) should include provision for access by active transport.

Public transport needs a major improvement, beginning with circumferential travel supporting the major clusters, as noted above, to complement improved radial services that have already been implemented or are planned. Important **radial rail** projects include Melbourne Metro 2, electrification north from Craigieburn, the extension of Upfield line services to Wallan and Wollert

---

6   See Appendix D to the Evidence Report for further details.

rail (with bus rapid transit solutions included as interim solutions), the Broadmeadows Station redevelopment and wi-fi on trains, both metro and regional. The current Melbourne Metro 1 project offers no prospect of increased services on the Mernda and Hurstbridge lines, which converge at Clifton Hill and use a single pair of tracks to the City Loop. Northern councils strongly support the Metro 2 proposal, involving construction of a second metro tunnel connecting Northcote and Newport. This improvement would be used by Mernda trains, leaving the existing tracks via Clifton Hill to the Hurstbridge line. It needs to provide sufficient capacity to allow the construction of a line to serve Wollert.

Trunk bus service timetables should be augmented to fully align with rail, which will typically mean a 10 to 20 per cent increase in current weekday service levels on SmartBus services and approximately 50 per cent increase in their weekend service levels, given current rail service levels. Many of those **rail** service levels, in turn, should also be increased, since (for example) headways on the Craigieburn and Mernda lines between 9.30 am and 3.00 pm only average around 20 minutes, which is modest in rapid growth corridors. As rail headways serving growth corridors are improved, service levels on intersecting trunk bus/tram services need to be increased to maintain integrated connectivity.[7]

New trunk public transport services are needed to keep up with rapid population growth. Beyond the heavy rail upgrades noted above, Figure 4 shows proposed circumferential and radial trunk public transport improvement corridors, which will probably be **trunk bus** (Bus Rapid Transit/SmartBus) initially. The proposed radial improvements shown are primarily to serve the fast-growing outer suburbs, including better linking them to rail and to activity clusters, while circumferential improvements serve inner through to outer areas, reflecting the weaknesses in current regional circumferential public transport service offerings.

Improvements in interchange design are desirable to ensure that interchanges become attractive meeting places. To maintain service speed, greater on-road priority is needed for both trunk bus and tram services.

---

[7]   See Appendix A of the Evidence Report for further details.

Figure 4: Northern Horizons Future High Capacity Services Network

Key

1 - 901SMARTBus Extension - Airport to Sunbury
2 - Aitken Blvd BRT - Broadmeadows to Donnybrook via Craigieburn
3 - Craigieburn Rd BRT - Doreen to Craigieburn
4 - Aurora BRT - Craigieburn to Lalor via Epping
5 - South Morang / Mernda BRT to Bundoora RMIT and LaTrobe University
6 - Coburg to LaTrobe University via Reservoir Station SMARTBus
7. Kew to LaTrobe University via Heidelberg SMARTBus
8. 904 SMARTBus Sandringham to Williamstown Via Brunswick
9. Mickleham BRT - Broadmeadows to Wallan via Craigieburn through to Epping via Donnybrook and Wollert
10. Bell St Upgrade to SMARTBus corridor (Bus Lanes and Priority)
11. Nillumbik route bus network
12. Eltham to LaTrobe University via MacLeod
13. 902 SMARTBus Extension to Melbourne Airport
14. Proposed Suburban Rail Loop Route

SMARTBus Routes

901 -
902 -
903 -

In the immediate future, detailed system design work should be a priority for the proposed trunk public transport (BRT/SmartBus) routes, to establish key parameters such as route locations, right-of-way solutions, stop spacings and service standards (headways, operating spans).

In addition to the proposed top priority circumferential MCT solution in the north, Aitken Boulevard would be a good starting place for improved radial trunk transit (corridor 2 in Figure 4), given its extensive and rapidly growing catchment, the considerable opportunity for exclusive right-of-way along the corridor and the chance to support development of activity clusters along the route. Corridor extension is needed north of Mt Ridley Road.

Local bus service span and frequency should be increased to support delivery of 20-minute neighbourhoods and align fully with rail at interchanges. This requires at least 55 weekday services each direction per stop per day. Figure 5 shows the scale of the shortfall on current bus and tram services, which is around 50 per cent across most of the north, including complete lack of local service in areas such as north east of Hurstbridge.

The improved trunk and local bus services proposed in this report would cost, in present value terms, around $4 billion across Melbourne as a whole (assuming a relatively low initial cost for the proposed MCT solution in the north). This is minor compared to current metro-wide capital commitments for rail of around $30-40 billion, depending on what share of the level crossing removal cost is attributed to rail. Subsequent development of a Suburban Rail Loop around the city will add a further estimated $50 billion, while the annual operating payments for metropolitan train services require a further $1.1 billion.

Given that trains currently carry only twice the number of passengers carried by bus, the suggestion that an additional approximate $4 billion be spent on bus, in capitalised terms, which includes an allowance for some infrastructure works to improve operating speeds (e.g. bus lanes, B-lights), is very modest relative to the commitments being made in rail. Tram could make an equally strong argument for additional funding relative to train, given the relative passenger loads carried and small capital program in hand for trams (hundreds of millions of dollars rather than tens of billions).

The **Regional Bicycle Network and Trails Strategy** has strong community support. Catering to both regular and recreational uses, these paths and trails are potentially major regional competitive assets and effective ways of improving accessibility and recreation/touring, with beneficial flow-on benefits for health and wellbeing. Some of these trails could become **cultural trails**, for example regional trails encompassing Heide, Montsalvat, Heidelberg School locations, La Trobe Sculpture Park and Bundoora Homestead.

Investments that increase the mode share of public and active transport in the north will also support goal achievement in areas such as health, social inclusion and greenhouse gas emission reduction. They should comprise a fundamental component in the roll out of *Plan Melbourne's* innovative 20-minute neighbourhoods.

Freight terminals give the region a significant regional competitive strength that needs to be promoted. Somerton and Beveridge are two key components where progress needs to be accelerated.

The demand for extra **car parking** at stations should be focussed largely on the outer north, with a mind to the need to also encourage active transport.

Figure 5: Melbourne's route bus and tram services: services on a typical weekday (each direction)

Source: PTV GTFS feed.
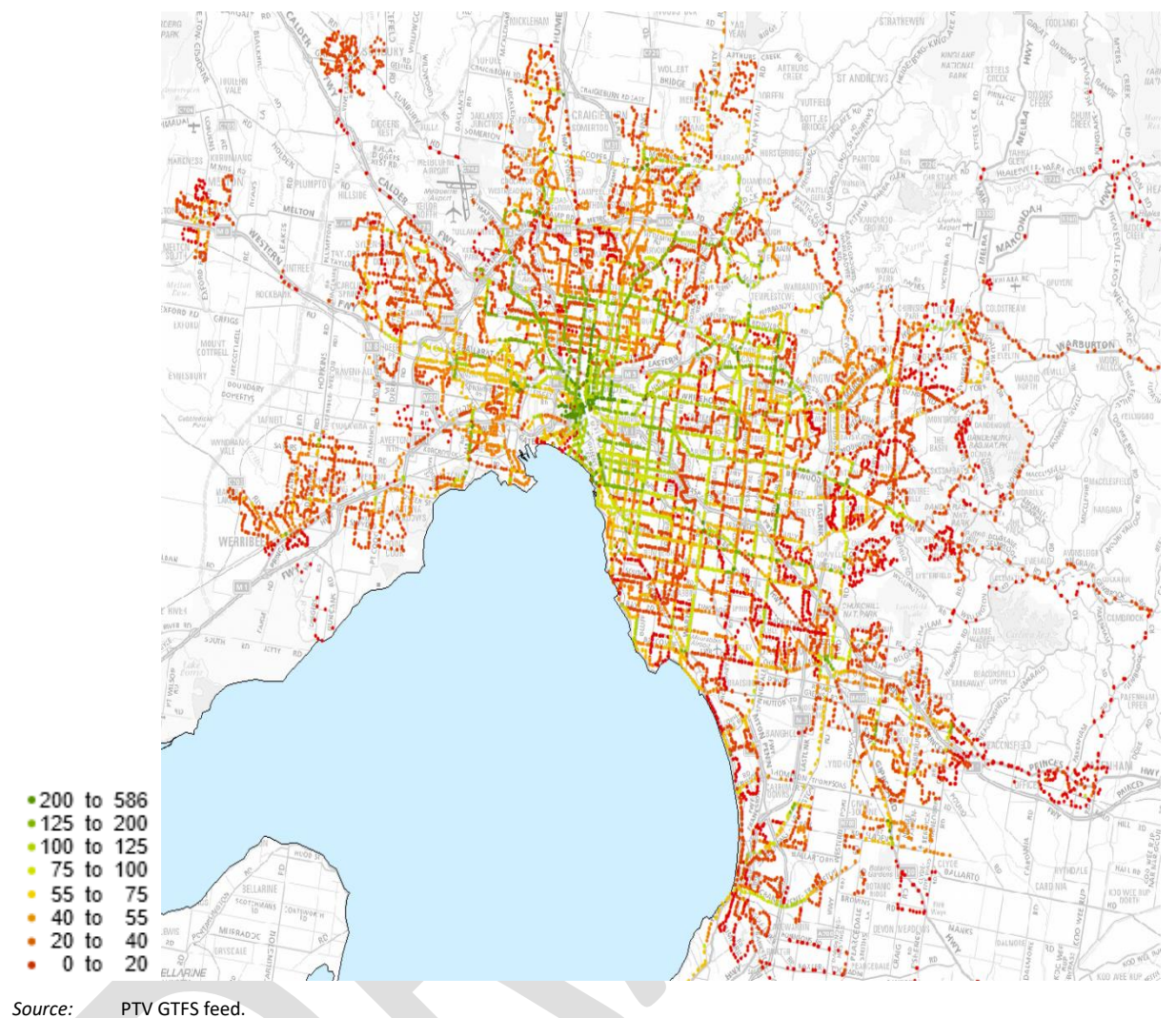
Specific projects

- Suburban Rail Loop/Medium Capacity Transit (fast buses linking La Trobe NEIC to rest of Melbourne)
- Commitment to bring forward Suburban Rail Loop construction in north to overcome equity deficiencies
- Beveridge Intermodal Freight Terminal (business case and environmental studies)
- Complete Northern Regional Trails Projects (including Cultural Trails)
- Outer Metropolitan Ring Road and E6 (business case and environmental studies)
- Melbourne Metro 2 commitment and timeframe
- Bus network – local and trunk
- Tram network enhancements
- Car parking at train stations
- Grade separations
- Decarbonise transport (electric car charging stations)
- Infrastructure enhancement opportunities resulting from North East Link
- More regular V-Line services to Seymour
- Key interchanges (Hume Fwy and Watson St, Camerons Lane, Gunns Gully Road, English St)
- Outer north arterial roads
- Train station upgrades
- North East Link access (La Trobe University)
- Beveridge Intermodal Freight Terminal construction
- OMR/E6 business case and construction
- Melbourne Metro 2 construction

- Wollert rail extension (bus rapid transit as short-term solution)
- Wallan rail electrification
- Upfield-Somerton rail link
- Construction of Suburban Rail Loop in north
- High speed rail to Shepparton
- Potential for high speed rail link to Sydney through OMR corridor

C: Innovative north

Innovation systems are critically important for regional growth, with regional networking an important way to foster innovation. Melbourne's north has strength in working as a region, which provides an opportunity across business, education and government. For example, senior members of La Trobe and the RMIT Universities are focussed on integrating closely with local industry and industry strengths, creating better connections throughout the region.

In Melbourne's north, industry clusters that are strong and have potential for significant growth should be target areas for innovation. These include:

- the food sector including the strengths in bioscience and food science at La Trobe and RMIT University, linked to local industry and developments at and surrounding Melbourne Market. Melbourne's North Food Group has recently been asked to develop thinking around design in food (applying high quality design standards throughout the manufacturing cycle, right through to packaging) to create regional competitive advantage

- the manufacturing sector, which has been a strong contributor to growth and manufacturing skills remain. Advanced manufacturing will continue to develop and may be linked to such sectors as food, transport and opportunities in assistive technologies, linked to the health sector and the NDIS. The latter brings together regional strengths in health, manufacturing and education and should be a priority area for innovation

- health is already a very important regional focus with potential to grow significantly, not only at the service delivery end but also important for regional innovation at the specialisation end, where R&D is important. La Trobe University has identified health and wellbeing as a major focus area of its Research and Innovation Precinct. Enhancements to the Northern Centre for Health and Education Research is a concrete priority.

These industry sectors are examples of where the region's innovation systems should be focussed. An important way of encouraging innovation practices is to ensure the region's organisations work together and that the larger organisations have internal structures that facilitate better connections and innovation practice. Networks between education and training providers and industry need to be active and responsive, and systems to create this interaction need to be established. The Melbourne's North Food Group is one such example. Placement of undergraduates with industry should be encouraged as part of this process.

More broadly, to support regional innovation, priorities should include the following.

- Completion of NBN access and mobile phone coverage at high quality (improved digital connectivity, which is a vital platform for business, education, etc.), with a focus on removing mobile blackspots in the outer north, together with establishing strong foundations for the next generation of telecommunications infrastructure and services.

- Investment in and policy incentives for university and industry collaboration, particularly among the region's industry clusters. La Trobe's Research and Innovation Precinct – with its emphasis on co-location and collaboration between industry and researchers to solve real-world problems – will provide a vehicle that can help to drive this agenda for the region.

- Investing in the creative sectors and in tourism opportunities, for example the Brunswick Design District, pop-up spaces, the Regional Creative Industries Strategy and the Regional Tourism Strategy. Given the region's industrial heritage, the Victorian Government should consider establishing a Design Museum in Melbourne's north to promote development and uptake of 21st century design innovation and practice. Countries such as Japan, Germany and Denmark provide good exemplars. La Trobe's University City of the Future includes a thriving town centre and could support a range of cultural and creative infrastructure and attractions.

- Developing the region's cultural trails, which could connect important cultural assets and have tourism potential. More broadly, it is recommended that, given the prospects for increased tourism in Melbourne's north, the idea of establishing a Regional Tourist Board be investigated further.

- Reform to water sector governance provides an opportunity for more innovative processes, including better use of existing infrastructure and more efficient use of all water sources, more integrated and adaptive planning processes and need for community involvement in decision-making[8].

- The Melbourne Innovation Centre is the leading incubator network in Victoria, spawning approximately 1,000 start-up businesses. Its Alphington site is outmoded, however, and requires a significant upgrade.

Specific projects

- Continued development of Metropolitan Activity Centres, including adequate transport links
- Expansion of Melbourne Market to deliver food manufacturing and innovation precinct
- Investment in La Trobe University's City of the Future plans, including its Research and Innovation Precinct
- Improved internet connections and mobile network coverage
- Improved high speed broadband
- Arts and cultural facilities audit
- Melbourne Innovation Centre site redevelopment at Alphington
- Funding to develop Melbourne's north visitor economy

D: Greener north

Urban greening here refers to both addition of green cover or green space and to wider measures that improve the environment, particularly measures that help to reduce Australia's high carbon footprint, the urgency of which has been underlined by the disastrous 2019-2020 bushfires.

Access to nature is increasingly recognised as important for mental and physical health, personal wellbeing and social connectedness, as well as for biodiversity conservation and provision of ecosystem services, with flow-on benefits to productivity. There is already relatively good access to natural areas in the outer LGAs of the region (Figure 6). However, as regards canopy cover (trees of three metres or more), the north fares poorly (excluding Nillumbik and Banyule). Canopy cover in Melbourne's north is 12.10 per cent[9], which is lower than for all other regions except the west at 4.20 per cent (Resilient Melbourne and The Nature Conservancy 2019a). For the total metropolitan area, the figure is 15.40 per cent, about one-quarter higher than the Melbourne's north proportion. This relatively low rate of canopy cover is an impediment to physical and mental wellbeing in the north and a program to systematically increase canopy cover, including via the medium of a Northern Region Urban Forest Strategy, should form part of the Regional Infrastructure Plan. We note that La Trobe University's Bundoora campus comprises 30 per cent green space, and features a community

---

8   Infrastructure Victoria: Reforming water sector governance – October 2019.

9   The northern region here is as defined by the Resilient Melbourne Strategy, which is Metropolitan Melbourne.

eco-corridor boasting native parklands, waterways and a Wildlife Sanctuary. La Trobe's University City of the Future plans include an aspiration to support greater community enjoyment of its environmental and natural amenities.

It is important to pursue Resilient Melbourne targets for canopy cover in Melbourne's north of 22 per cent in 2030 and 27 per cent in 2050 (Resilient Melbourne and The Nature Conservancy 2019b). The river corridors, which double as a tourism opportunity, and new regional park projects such as the Upper Merri Creek (which is one of the new suburban parks committed by the Victorian Government) should be early priorities. Others include Wallan Regional Park and Quarry Hills Park. This requires a regional approach.

Population growth in the inner parts of the region is increasing pressure on availability of open space and natural areas. Increasing supply, as part of a greening strategy, is already a priority and will become more so as population and densities increase in these locations. More broadly, the Victorian Government and local councils have key roles to play in turning around the trend of significant biodiversity loss in Melbourne, regional Victoria and beyond. For example, there are currently places in Melbourne's north, including several waterways (e.g. Merri and Darebin Creeks), where conservation of rare fauna and flora could and should occur. Also, development of initiatives proposed in this report should not be done in such a way that leads to stranding of wildlife populations or destruction of habitat corridors. Development of Melbourne as an urban forest is important in this regard.

There is concern about climate change and its impact on heat and water security. Consideration should be given to water security for Melbourne's north in the overall context of the Port Phillip Catchment. And transition to a zero-carbon emitting transport system brings forth the need for understand of required infrastructure, for example electric vehicle charging.

Greenhouse gas emission abatement is a regional priority and will be supported by several initiatives set out in this report, such as spatial clustering, public/active transport improvement initiatives and a focus on 20-minute neighbourhoods. These will (for example) encourage shorter trip lengths and a shift from car-based travel, which is emissions intensive, to lower emission public/active transport in line with priorities expressed by Melbourne's north councils. The need for a faster roll out of strategic cycling routes in the inner and middle parts of the region is particularly important, while balancing the real and substantial transport needs of the outer suburbs.

Greenhouse gas abatement in energy production is largely the responsibility of the federal and state governments, where a rapid switch to a much higher level of reliance on renewables is central. La Trobe University is showing leadership here, with its target of net zero greenhouse gas emissions by 2029, building on the Victorian Government's target of net zero greenhouse gas emissions by 2050.

Given the operation of the Victorian Government's related renewable energy target (of 50 per cent by 2030), there is little point in a region developing its own renewable energy generation capacity, since the location of such capacity in one region is likely to mean less capacity elsewhere. However, local councils and regions can play vital complementary roles in greenhouse gas emission reduction by, for example, supporting energy efficiency improvements that focus on the major emissions sources within their areas, such as housing and transport.

This could include funding for broader council involvement through provision of advice on green energy choices and energy efficiency opportunities in the home (e.g. retrofits of existing homes), and pushing for tighter efficiency requirements for new homes with appropriate measures for governance, to more specific initiatives such as council purchasing policies that favour electric/hybrid electric vehicles for council vehicles and establishment of recharging facilities in public places for electric vehicles. The latter could be planned at a regional level. The region could also take a leading role in developing the case for a 2040 achievement date for net zero emissions.

As per the recommendations of the 2019 NORTH Link Energy Options Report, it is important to engage SME businesses in elevating their knowledge and practice around energy efficiency. Reducing the consumption and cost of power and funding a program to this end would be of great assistance.

The 2019-2020 bushfires experienced in regional Victoria and elsewhere draw attention to the need for holistic planning for fire management and control on the urban fringe. Many bushfires occur near urban areas that border with rural or forested land (Bryant 2008), often near new housing developments, and Melbourne's rural/urban interface area is said to be the most vulnerable for bushfire in the world (Buxton et al. 2011). The risks of, and consequences from, fires in such locations are increasing, as population numbers grow in these interface areas (Collins et al. 2015) and as climate change increases the consequences of fires (e.g. incidence, scale). Good telecommunications services and how these can be made more resilient are important safety net consideration in the event of bush fire. La Trobe University has broad and deep expertise in bushfire prevention and management. There is an opportunity for governments to draw upon the research capabilities of the universities in Melbourne's north to inform its planning and responses to bushfires and other environmental or natural disasters.

New outer urban development is often associated with poor infrastructure/service provision. This leaves some youth disadvantaged, with lower levels of social inclusion and opportunities in life, thus vulnerable to committing crime including malicious fire lighting (Pease 1998). For example, youth unemployment rates above 15 per cent are found in some of the outer fringe suburbs of Melbourne and in old industrial suburbs (e.g. Hume). Policy focus on delivery of 20-minute neighbourhoods should assist in reducing these concerns, as one part of a broader focus on promoting greater inclusion of youth (relevant also for pursuing the education/skills and equity directions of this strategy).

Waste minimisation and management, including recycling, is also a major current statewide issue requiring culture change, market development and significant investment in facilities. Landfill levies generate significant revenue streams for the Victorian Government that should be used more extensively for purposes such as these. This could support (for example) waste minimising behaviours and development of significant infrastructure projects in recycling and even (residual) waste to energy.

**Figure 6: Access to natural areas (exc. Mitchell Shire)**
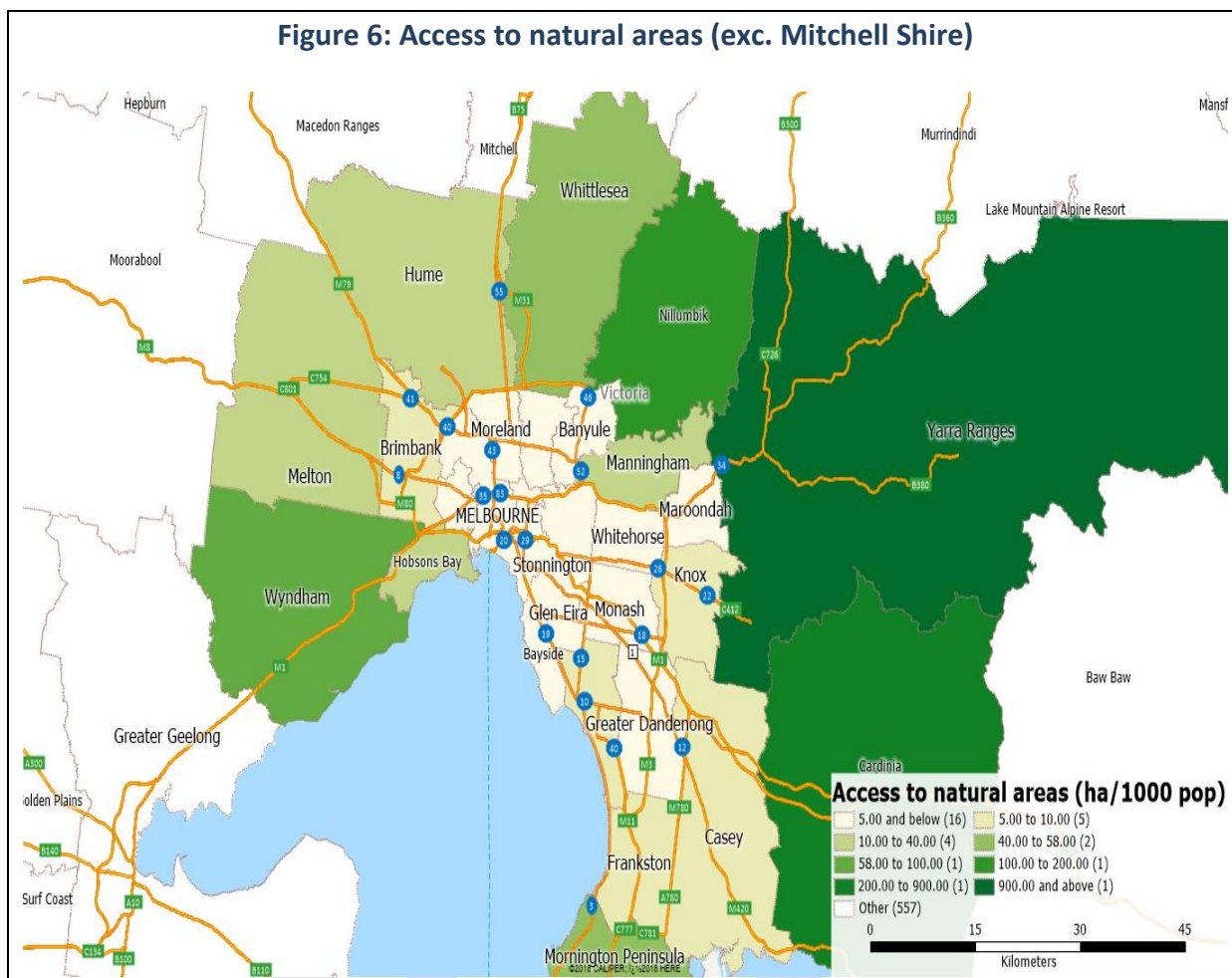
Specific projects
- Urban forest and open space – restart 20 Million Trees Program
- Renewable energy
- Waste management and minimisation
- Storm water recycling

E: Healthier north

NORTH Link and its stakeholders believe that the state of a person's health should not depend on where, within a city or region, the person lives. Unfortunately, that is not the case in Melbourne. Melbourne's north, for example, is facing an obesity challenge. In terms of the percentage weighing in as obese (Figure 7), five of the seven LGAs are rated among the worst 12 out of the 32 in Melbourne (including Mitchell).

Figure 7: People reporting being obese (per cent)
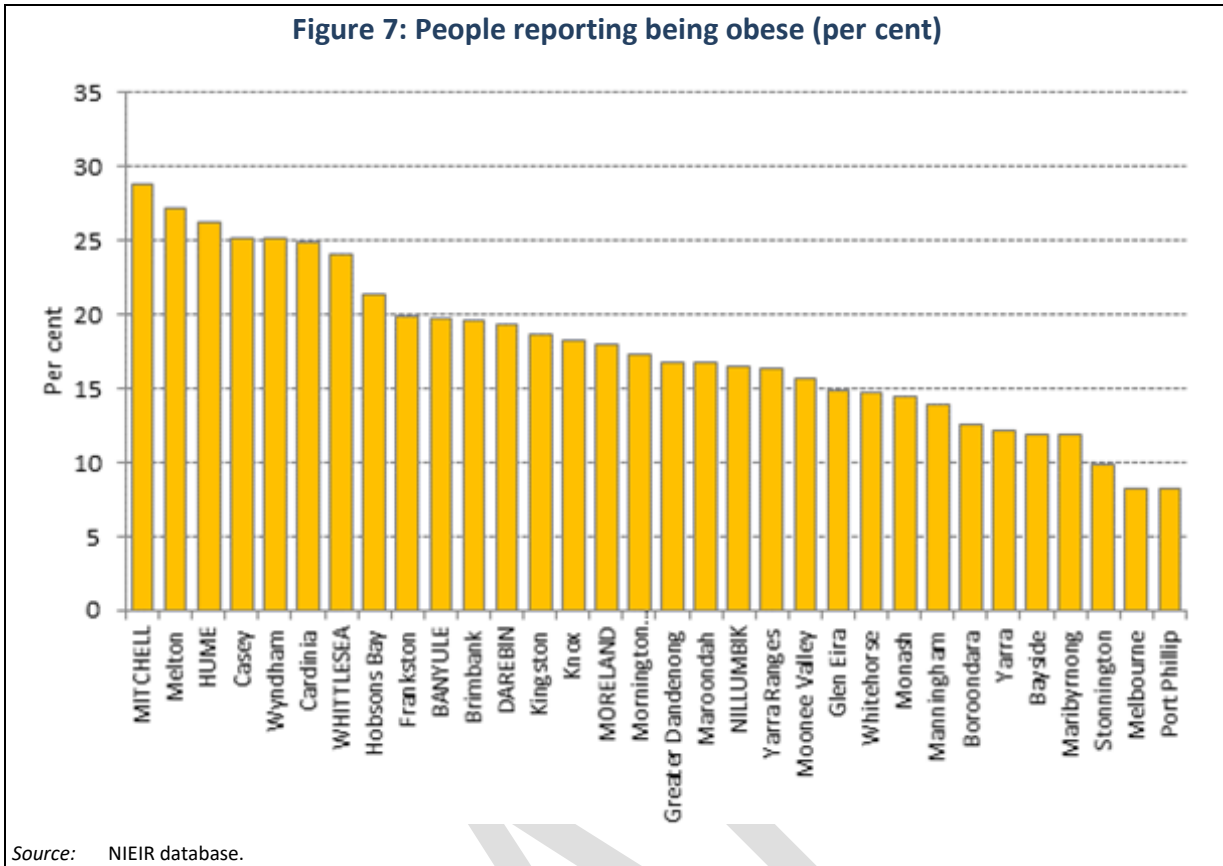
Source: NIEIR database.

Growth pressures are evident in the region's health sector. Northern Health advises that Emergency Department activity has recently increased at 8 per cent per annum, inpatient admissions at 11 per cent per annum, and that there is a substantial and growing shortfall of hospital beds. Northern Health is the major provider of acute, maternity, sub-acute and ambulatory specialist services in Melbourne's north.

Mental health issues are a concern for most councils and, for example, in the City of Hume there have been no new beds for mental health patients and there is a need for more. Youth mental health is an issue for the region, as identified by (for example) the Northern Metropolitan Partnership's Youth Forum. This is particularly concerning in outer growth suburbs of Mitchell Shire Council and the City of Whittlesea. The Northern Metropolitan Partnership is currently working on a project around this issue. It is noted that 30 mental health beds opened at Brunswick Private Hospital in February 2020.

The region has Melbourne's largest Aboriginal and Torres Strait Islander population. The Northern Metropolitan Partnership supports several important initiatives relating to their health and wellbeing and promoting reconciliation, ranging from advancing the treaty process, through Indigenous cultural recognition to the development of a Centre for Excellence for Indigenous Sport, Culture and Wellbeing within the region. Such initiatives are of national significance.

A range of initiatives set out in this report should help to tackle some of the social determinants involved in health outcomes, by (for example) increasing job opportunities, supporting social inclusion and community connectedness, and encouraging greater engagement with nature. The Victorian Government's Royal Commission into Victoria's Mental Health System is one important part of a response. Early provision of suitable services in areas of high need should be a priority. Community education regarding the causes of obesity, provided by local councils, would also be of benefit.

Increased sporting and recreational participation is important for preventative health and needs appropriate facilities, including for women, whose involvement in sporting events is increasing significantly. One barrier to better health through exercise is the shortage of public open space in Moreland and Darebin, where there is strong pressure to lift densities. These shortages will extend to growth suburbs over the coming decade. Providing increased opportunities to access good quality open space is an important part of a regional health strategy, as is supporting improved access to nature (part of a greener north). The development of La Trobe's world-class sports park is currently underway and is complemented by the University's partnerships with major sporting organisations including Melbourne City FC, Carlton FC and others. There is an opportunity to leverage La Trobe's sporting infrastructure, research capability and industry partnerships to the benefit of the region's communities' health and wellbeing.

Improved health can also be promoted by growing services at the Northern Hospital, the construction of a new, highly accessible major regional hospital (this report has suggested Broadmeadows as a suitable location), additional/improved community hospital capacity (e.g. Craigieburn and Whittlesea) and integrated primary care hubs, together with further 'virtual bed' capacity and support. A new multiday acute campus is needed in the northern growth corridor, located to be accessible for patients and staff. Provision of affordable housing for key workers, with good proximity to jobs, needs to be an important consideration in planning for the major health facilities. La Trobe's University City of the Future plans entail a dedicated health and wellbeing hub to increase health care services in the region and offers governments and the private sector a range of co-investment opportunities.

Increasing the regional mode share of public and active travel for personal trips will further improve regional health through the increase in incidental exercise associated with these choices. Roll out of the Regional Cycling Trails Strategy is also a good opportunity to promote health, as is development of 20-minute walkable neighbourhoods.

Specific projects

- Major new public hospital in outer north – commitment and planning
- Construction of committed community hospitals and integrated primary care hubs
- More hospital beds in existing facilities
- Indigenous health and wellbeing
- Increased mental health support, especially in outer north
- Northern Hospital R&D/biotech, health precinct, Hospital in the Home project
- Aged care facilities
- Community centres
- Advanced Manufacturing Assistive Technology Centre
- Northern Regional Trails
- Sporting facilities

F: Well-educated and skilled north

Rapid population growth and Victorian Government policy initiatives in relation to three-year-old kindergartens are creating a substantially increased need for supportive infrastructure, particularly (but not only) in the outer growth suburbs. Demand for primary and secondary education places is also under considerable pressure as population growth surges, with the upwards revisions in population projections only adding to these pressures.

Melbourne's north has a reasonable proportion of tertiary qualified residents but faces challenges in Year 9 literacy (Figure 8) and numeracy in several LGAs, and in early childhood development. Responses to the latter are beyond the scope of this project but should be part of a regional development strategy.

Skills are central to the success of a region because the skills available within a region's employment catchment are one of the core drivers of a region's economic performance. A region rich in high-tech skills is likely to have much better prospects in attracting high-tech firms.

The presence of two major universities in the region plays a significant role in educating the region's communities and preparing them for work in the knowledge economy.

Some priorities for future skills formation include:

- growing skills and knowhow regarding the digital economy

- STEM workers will need to be more flexible and entrepreneurial in their thinking and learn both creative and technical skills; these workers are required when building international markets

- professional services are expected to grow; building stronger regional clusters will assist the growth and spread of these occupations throughout the region

- VET skills are important and attention should continue to focus on assisting the TAFE sector to rebuild and rebrand, and to develop the student skills needed to use new materials and technologies

- individuals increasingly need to take a lifecycle approach to their education and training needs; how proactive education and training providers are to industry change and shifts in skill requirements will have a significant impact on regional opportunities for employment

- new TAFE campus(es) in outer north

- alignment of TAFE redevelopment of Bendigo Kangan Institute Broadmeadows campus with development of Broadmeadows Metropolitan Activity Centre

- incentives to support greater collaboration between the university and VET sectors in the region to meet industry needs and skills shortages.

Figure 8: Year 9 literacy

*Source:* NIEIR database.
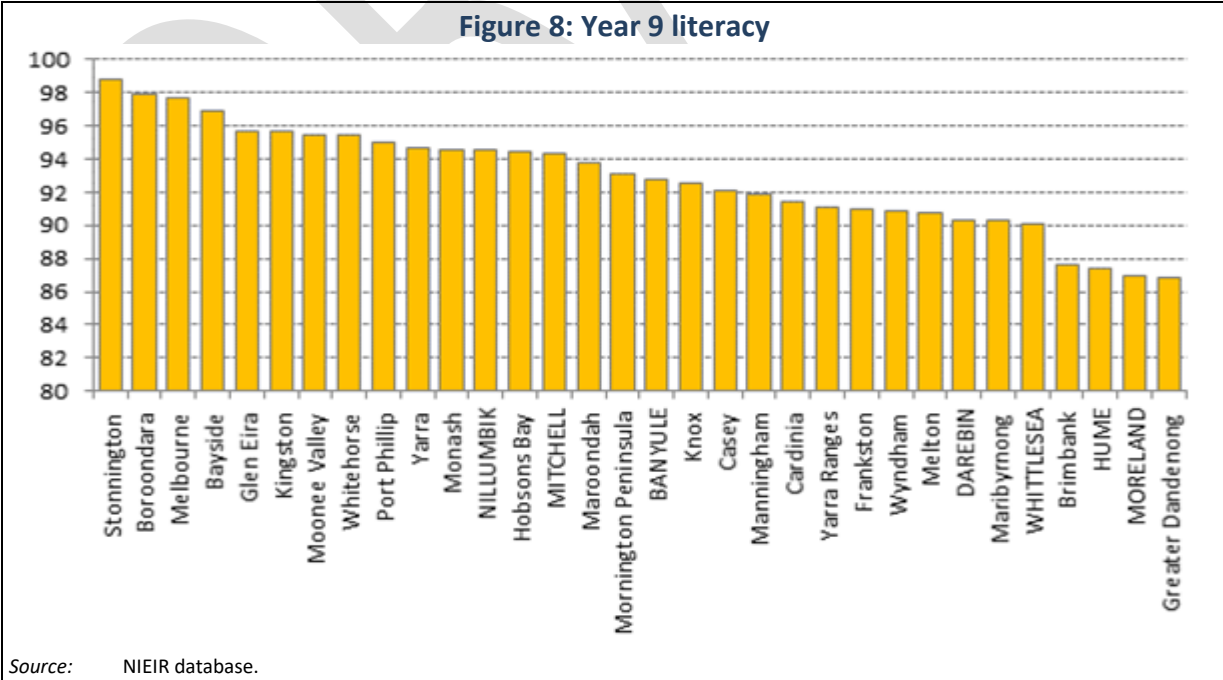
Specific projects
- La Trobe NEIC development

- Redevelopment of Bendigo Kangan Institute
- Construction of new TAFE campus(es) in outer north
- Primary schools
- Secondary schools
- Childcare and kindergarten facilities
- Food and beverage kitchen incubator for start-ups
- North and West Melbourne Data Analytics Hub increased funding
- Infrastructure Skills Roundtable

G: Fairer north

According to the ABS Socio-Economic Indexes for Areas, five of the region's LGAs are among the most disadvantaged nine (out of 32) in the Melbourne metropolitan area. Banyule and Nillumbik are notable exceptions.

In many parts of the region, levels of local job availability are low in relation to population numbers (Figure 9). Nillumbik, Moreland, Mitchell and Whittlesea are among the lowest nine out of the 32 metropolitan LGAs. The ratio in Hume is higher, but with problems of skill mix. A key focus of this report is to increase regional job generation and improve access to jobs.

Figure 9: Jobs per 1000 population

Source: NIEIR database.
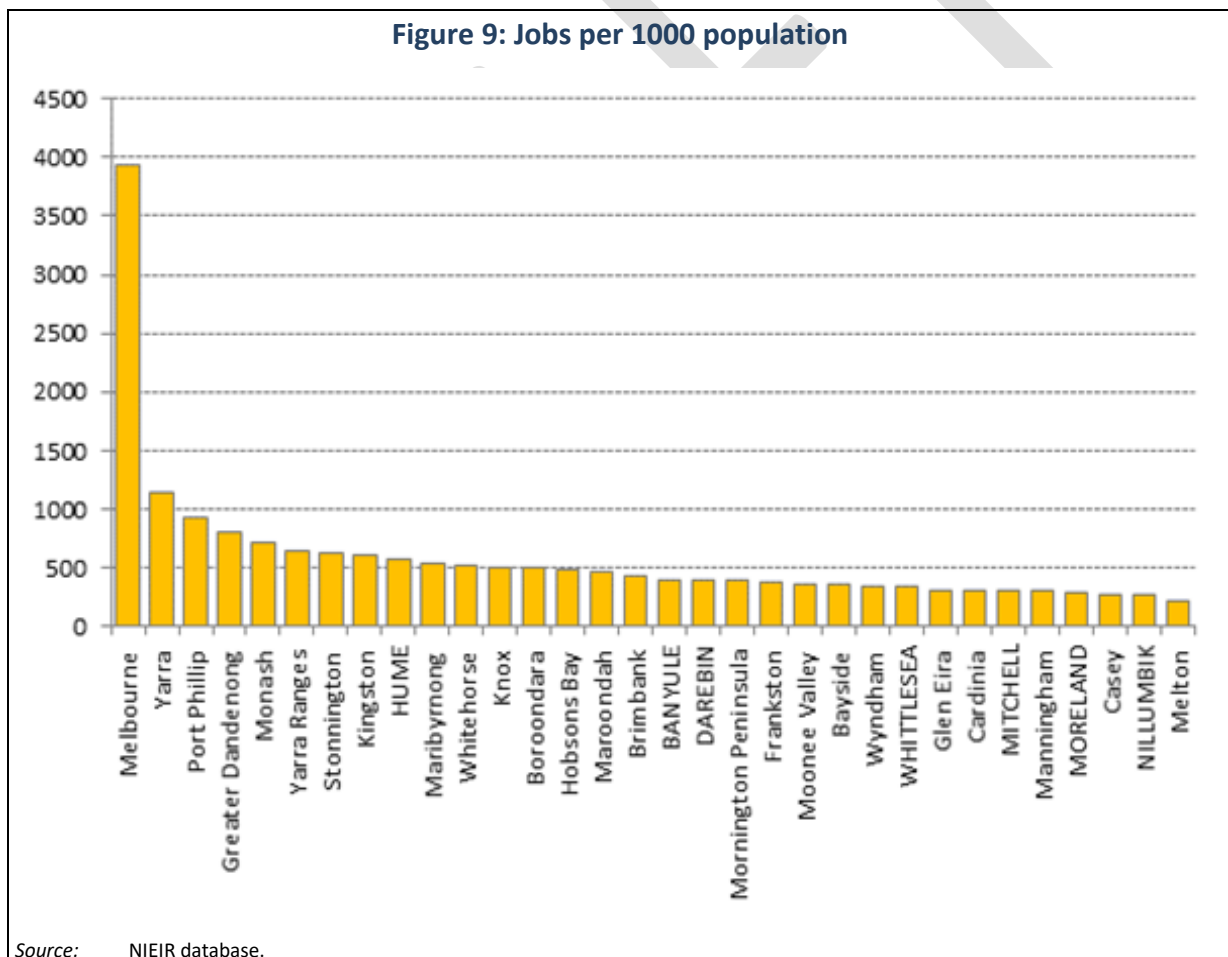
Affordable housing and youth homelessness are both major challenges, requiring involvement of all levels of government, the private sector, the community housing sector and others in delivering solutions. As noted in the discussion about health, one focus in the consideration of affordable housing is availability for key workers, such as teachers, police and health care workers, in

reasonable proximity to employment. A range of supportive mechanisms is available here, including governmental provision/funding support for affordable and social housing, increasing the diversity of dwelling typologies, use of planning mechanisms such as inclusionary zoning and voluntary agreements between councils and proponents for the provision of affordable housing, together with reducing/removing minimum parking requirements for new multi-unit developments in highly accessible locations, such as near railway stations.

Major urban clusters and transit corridors across Melbourne's north, which are highlighted in this report as crucial for shaping future regional development, are ideal locations for boosting the supply of affordable housing. Improved transport connectivity to the region's universities – in particular La Trobe – will also serve to address population inequities regarding access to education. In terms of the supply of social housing, the Victorian Government has announced the intent to develop around 6,000 social housing homes and apartments. This valuable initiative needs to be extended.

Figure 1 (section 1) shows the infrastructure investment gap in Melbourne's north compared to elsewhere in Melbourne, and the scale of additional spending needed to close that gap. Equity between Melbourne's regions demands that this gap is removed, with a range of candidate projects identified in this report.

Specific projects

- Affordable housing
- Planning for TAFE campus(es) in outer north
- Seymour Revitalisation project
- Increase commercial and industrial space
- Equity around transport, schools, kindergartens, health and community centre funding

6. Governance

The importance of effective and committed partnerships to deliver the kinds of changes foreshadowed in this report cannot be over-stated and will be crucial for outcome achievement. All levels of government need to be involved, together with business, non-government entities, educational institutions, community groups and people who live, work, study in or visit the region.

Many initiatives require working across functional areas to get the best results. Governance arrangements need to actively foster such integrated approaches, with a strong regional driving influence. This might be organised by the establishment of multi-stakeholder working groups for each of the seven themes set out in this report, coordinated through NORTH Link and comprising local leaders and others strongly committed to a great future for Melbourne's north. Some of the report themes are likely to require multiple working groups, such as for fostering regional innovation (e.g. where some industry-based groups will be needed, together with an overarching group to foster cross-sectoral collaboration).

Though the region is justifiably proud of its capacity to work together, this does not always extend to relationships with other authorities. For example, there is a perceived lack of integrated planning for the La Trobe NEIC. One respondent expressed it this way: '*Plan Melbourne* set out the NEIC but we have been left to get on with it'. More generally, single-purpose Victorian Government delivery agencies often make it hard for councils to achieve multiple purposes as infrastructure is developed.

These governance issues arise at the interface between the state and local government. Removing unnecessary barriers is fundamental to achieving more liveable regions. Governance arrangements should be overhauled to facilitate faster and more integrated processes. The Metropolitan Partnerships are one positive mechanism here but regional evidence suggests that more is needed.

7. Background to this document

NIEIR was commissioned by NORTH Link on behalf of the Northern Melbourne Partnership group to undertake the Northern Horizons Strategy, building on the 2014 and 2016 versions of the Strategy (NORTH Link and Arup 2014, 2016). This task was to be done in collaboration with the existing and former Northern Horizons working group members, with the new report intended to provide an updated set of strategic directions for the region.

The NORTH Link Board represents key stakeholder groups across Melbourne's north, encompassing industry, education, health and local government. NORTH Link also works in close conjunction with the Northern Councils Alliance, representing the Mayors and CEOs of all seven councils in Melbourne's north.

The primary strategic directions or development themes set out in this report have been informed by an extensive consultation process, review of recent reports by relevant government agencies and others, including priorities identified by the Northern Metropolitan Partnership's Northern Assembly and Youth Forum, and by drawing on NIEIR's extensive data and knowledge bases. The Northern Assembly's top three priorities, for example, are access to local jobs, equitable access to public transport, and health and wellbeing (Victorian Government 2019a). Responses to these three priorities and others figure prominently in this report.

The report responds to the NORTH Link brief by discussing:

■ the consultation program that took place and a summary of the main policy developments of recent years

■ differences between this report and prior Northern Horizon reports

■ foundations of a regional development strategy

■ strategic developmental themes set out in the report

■ modelling of the economic impacts of some key initiatives

■ some governance issues.

An accompanying 'evidence report' by NIEIR (NIEIR 2019) provides more detailed discussion and evidence supporting positions set out in this report.

8. Stakeholder consultation and recent policy developments[10]

Discussions were held with senior executives of seven councils (plus representative bodies), four tertiary institutions, relevant Victorian Government agencies (e.g. water, health and human services, education, transport, Infrastructure Victoria), developers and major employers (e.g. Melbourne Airport, Melbourne Market Authority, Dysons).

A list of all stakeholders consulted, including the Project Working Group, is at the back of this report.

Emerging policy issues

In shaping the Northern Horizons 2019 Update it is important to recognise wider policy settings within which the strategy will be received. Infrastructure Victoria's innovative 30 Year Strategy (Infrastructure Victoria 2016) mirrors *Plan Melbourne's* intent (Victorian Government 2017) that Melbourne becomes a more compact city. Backlog needs in the fast-growing outer LGAs, however,

---

[10] Chapter 2 of NIEIR (2019) sets out supporting detailed information.

necessarily compete for prioritisation with initiatives that might help drive that more compact urban form.

The most notable specific initiatives supported in the Infrastructure Victoria strategy, as far as the north is concerned, are the North East Link, Outer Metropolitan Ring Road and Airport Rail link, although the latter was put in the 15 to 30- year timeframe by Infrastructure Victoria. More broadly, the Infrastructure Victoria Strategy is very supportive of the *Plan Melbourne* NEICs, which includes La Trobe NEIC, trunk and local bus service improvements, active travel, environmental initiatives, affordable housing, place making and shared initiatives. Some of these areas are not major foci of the 2014 or 2016 versions of the Northern Horizons Strategy but are part of this update.

Infrastructure Australia (2018) has recently drawn attention to shortfalls in public transport service levels in the fast growing outer suburbs of Melbourne, in particular. But the highest priorities in that organisation's infrastructure priority listing (Infrastructure Australia 2019) focus instead on a small number of large road projects, a couple of which are in Melbourne's north (North East Link and M80 Ring Road upgrade). Heavy and light rail initiatives, several of which will benefit Melbourne's north, are noted in Infrastructure Australia's second level priority category but lower cost bus and active travel initiatives do not appear in the Infrastructure Australia priorities for Melbourne. This could possibly be because of the high project cost thresholds that Infrastructure Australia uses to define national priorities.

The most recent Victorian and Australian Government budgets have tended to focus on delivering a small number of high cost projects, particularly road and heavy rail projects. The Victorian State Budget 2019-2020 (Victorian Government 2019b) includes provision for roads funding for the North East Link and the Northern Roads Upgrade package, which will improve six arterial roads in the outer north. Heavy rail improvements include Stage 2 of the Hurstbridge Line upgrade and level crossing removals, particularly along the Upfield Line. The Victorian Government budget also includes funding for the Melbourne Airport rail link, which will eventually form part of the Suburban Rail Loop (funding has been allocated for planning). Funding for these road and heavy rail projects is significantly higher than for improvements to smaller tram, bus and bike path projects. This 'big-project' focus in transport inevitably limits the opportunity to tackle large numbers of small needs, which are distributed more widely but typically show high returns relative to their cost. The balance between big projects and small, high value initiatives continually requires attention but particularly when growth pressures are intense.

Outside the transport sector, fully funded three-year-old kindergartens are expected to place great pressure on early childhood infrastructure over the next 10 years, while new and upgraded schools will serve areas of growth and four new community hospitals will be built in the north.

The Australian Government Budget 2019-2020 provides support to several major infrastructure initiatives that will have an impact on Melbourne's north. For example, federal support has been offered for the Melbourne Airport Rail Link and North East Link. Local roads and train station car parks also stand to benefit from the Urban Congestion Fund and the Local and State Government Road Safety Package, which is available to all localities across Australia. Initiatives also targeted strengthening housing demand from first home buyers and easing pressure on the aged care sector.

Plan Melbourne 2017-2050 (Victorian Government 2017) has underlined the importance of the (now) seven NEICs in Melbourne's future urban development, together with the importance of 20-minute neighbourhoods for shifting the planning focus to where people live most of their lives. These planning constructs are important to consider in updating the Northern Horizons Strategy.

The Northern Horizons 2016 Update (NORTH Link and Arup 2016) was heavily weighted toward transport projects/initiatives. Of the 40 short, medium and long-term initiatives set out in that Strategy, 26 are transport/travel initiatives. This dwarfs other initiatives, with health (including aged care and child-care) at 6 and education/early childhood at 4 the next most frequently listed needs.

This simple categorisation says nothing about the scale of individual needs but some of the transport projects are high capital cost, probably reinforcing the heavy orientation to that sector.

Looking at the priorities reflected in work by Infrastructure Victoria, and research undertaken for Infrastructure Australia, and at the *Plan Melbourne* focus on NEICs and 20-minute neighbourhoods, there are good reasons, in updating the Northern Horizons Strategy, to:

- put increased emphasis on supporting the role of major urban clusters as growth poles, particularly the La Trobe NEIC in Melbourne's north

- broaden the scope of the initiatives embedded in the Northern Horizons Strategy, with greening/environmental and health initiatives obvious target areas (recognising frequent connections between these policy areas)

- think about the balance between big and small projects (including programs of small projects) within the strategy, including a need for greater focus on bus, tram and active travel opportunities.

At the same time, it is important to recognise Infrastructure Australia's focus on Strategic Foresight, which includes a preference for initiatives that will be robust to a range of futures. This has been recognised in assembling the initiatives in this update.

9. Northern Horizons Strategy 2019 and 2014: main differences

The region's population growth rate has been higher than was forecast, which suggests that needs are accelerating and have probably been underestimated. The region is now forecast to add 500,000 residents from 2016 to 2036, one-third more than previously forecast. This is partly because growth rates are increasing in Moreland and Darebin, changing the pattern of need by adding the challenges of coping with increasing densification to those of fast outer area growth.

This strategy refresh is moving more towards being a regional development strategy. In this vein, it suggests a vision and goals for the region, based partly on an assessment of regional competitive strengths and weaknesses. Initiatives are identified and structured according to themes that support the achievement of the vision and goals, mainly by enhancing competitive strengths or mitigating weaknesses. Greater emphasis is being placed on integration for multiple-goal achievement to support regional development.

A core emphasis in this update is on local activity generation. This has a jobs and skills focus, pursued in large part through an emphasis on cluster development and improved connectivity. Clusters encompass both spatial clusters and key regional industry clusters. High quality inter- and intra-regional connectivity is fundamental to successful cluster development and to equitable sharing of the benefits that flow therefrom, while also supporting wider beneficial economic and social outcomes. This emphasis aligns with key policy directions in *Plan Melbourne 2017-2050* (Victorian Government 2017). Improved circumferential public transport connectivity and the future development of La Trobe NEIC are the two most important specific initiative areas proposed in this Update.

Importantly, in terms of the balance of emphasis, there is now a greater focus at the local level (e.g. canopy cover, arts and culture, community health, actions consistent with 20-minute neighbourhoods). These changes increase the relative significance of non-transport initiatives.

10. Foundations for a regional development strategy[11]

The two previous Northern Horizons reports were primarily listings of priority infrastructure projects, grouped on a functional basis. As noted above, the current report takes more of a regional development approach, founded on building regional competitive strengths and mitigating weaknesses. The major focus is on infrastructure initiatives, but complementary initiatives are also included. This provides a foundation for a full regional development strategy.

Northern Horizons Strategy – outcomes since 2016

The 2016 Northern Horizons document was a successful advocacy tool, resulting in a number of positive outcomes including:

- Victorian Government commitment to the North East Link project
- commitment of feasibility funding for Melbourne Market expansion, after some delays
- La Trobe NEIC – commitment of Victorian Government feasibility funding for La Trobe University City of the Future redevelopment
- telecommunications – rollout of the NBN to most of the region (however, concerns remain about the suitability of technology for businesses that require substantial bandwidth; there are also reports of continued mobile blackspot issues)
- commitment to business case for Airport Rail Link (federal and state governments)
- commitment of joint federal/state funding to Somerton Freight Terminal
- inclusion of Beveridge Intermodal Freight Terminal as a priority in *Plan Melbourne Refresh*
- additional aged care and child care facilities and additional kindergartens
- construction of Mernda rail line, the Hurstbridge rail line (Stage 1) – Hurstbridge Stage 2 committed
- Sunbury Rail Upgrade – contracts let
- removal of several level crossings in the north (and a commitment to removing others)
- enhancement of key outer north arterial roads e.g. Sunbury Rd, Yan Yean Rd, Plenty Rd
- commitment by Victorian Government to Northern Roads Upgrade
- Tullamarine Freeway enhancements completed
- Yarra River Crossings – Chandler Highway Bridge construction
- expansion of Northern Hospital at Epping ($160m)
- commitment to construct railway station carparks
- minor commitment to some of the Northern Regional Trails walking and bicycle infrastructure
- infrastructure commitments resulting from Broadmeadows Revitalisation Board deliberations.

There needs to be further progress, however, on improving Northern Regional Trails and road-based public transport. The construction of new hospitals in the outer north and sporting facilities is also

---

[11] See Chapter 3 of the Evidence Report for more detailed discussion.

lagging. The La Trobe NEIC has seen progress in the health and wellbeing hub and in sports precinct development but still has poor public transport accessibility, particularly circumferential.

Better definition of and alignment of infrastructure to Metropolitan and Major Activity Centres also needs further commitment and work.

A balanced approach – economy + communities

Recognising the central role that location plays in realising the potential of Melbourne's north, the connectivity challenges that need to be confronted to maximise the potential that this advantage offers and the region's commitment to fully engaging its diverse communities, the following vision is suggested: ***Melbourne's Northern Region – Building communities, connecting people*.**

Strategic goals for the region should include the following:

- ■ **increase economic productivity** – building on the region's competitive strengths, including spatial/industry cluster development, will be critical in the achievement of this goal. Issues such as reducing traffic congestion and improving public transport connectivity are substantially about this goal but also have an impact on other goals

- ■ **reduce environmental footprint and meet critical environmental constraints** – this covers both local (e.g. greening) and global issues, especially greenhouse gas emission reduction

- ■ **increase social inclusion, reduce inequality and provide a decent base level of capabilities** for all, which extends to issues of housing affordability/availability

- ■ **improve health and safety outcomes,** which includes issues such as (safe) access to green space and urban cooling

- ■ **engage communities** widely.

11. List of stakeholders consulted and Project Working Group

Stakeholders consulted

Melbourne Polytechnic (TAFE)

Department of Jobs, Precincts and Regions (Victorian Government)

Office of Suburban Development & State Development (Victorian Government)

Caravan Industry Association (Industry Association)

Mitchell Shire Council (Council)

RMIT University (University)

City of Darebin (Council)

National Growth Areas Alliance (Authority)

Melbourne Market Authority (Authority)

Hume City Council (Council)

Department of Transport (Victorian Government)

Infrastructure Victoria (Victorian Government)

Department of Health and Human Services, Policy and Planning, Health and Wellbeing Division (Victorian Government)

Dyson Group (Industry)

NORTH Link (Industry Association)

Yarra Valley Water (Utility)

Melbourne Airport (Airport)

Northern Councils Alliance (Association)

City of Whittlesea (Council)

Nillumbik Shire Council (Council)

Bendigo Kangan Institute (TAFE)

MAB (Developer)

Banyule City Council (Council)

La Trobe University (University)

Moreland City Council (Council)

Department of Education and Training (Victorian Government)

Northern Health (Health Services)

DPV Health (Health Services)

Melbourne's North Food Group (Industry Association)

Project Working Group

The Northern Horizons Project Working Group comprised:

- Domenic Isola, CEO City of Hume (Chair)
- Terry Larkins, Chair Northern Metropolitan Partnerships Committee
- Chris James, Executive Director, NORTH Link
- Tony Coppola, Deputy Executive Director, NORTH Link
- Jessica Boyle, Program Co-ordinator, Office for Suburban Development
- Kai Streicher, Senior Investment Manager, Department of Jobs, Precincts and Regions
- Sue Davies, Director, Community and Industry Engagement, La Trobe University.

12. References

Bryant, C. (2008), 'Understanding Bushfire: Trends in Deliberate Vegetation Fires in Australia', *Technical and background paper no. 27*, Canberra: Australian Institute of Criminology.

Buxton, M., Haynes, R., Mercer, D. and Butt, A. (2011), 'Vulnerability to bushfire risk at Melbourne's urban fringe: the failure of regulatory land use planning', *Geographical Research*, 49(1), 1-12.

Collins, K., Owen, A., Price, F. and Penman, T. (2015), 'Spatial patterns of wildfire ignitions in south-eastern Australia', *International Journal of Wildland Fire*, *24*, 1098–1108.

Department of Environment, Land, Water and Planning (2019), *Victoria in Future 2019: Population Projections 2016 to 2056 July 2019,* Melbourne: Government of Victoria.[12]

Department of Environment, Land, Water and Planning (2019), *Plan Melbourne 2017-2050, Addendum 2019*; Melbourne: Government of Victoria.

Infrastructure Australia (2018), *Outer Urban Public Transport – Improving accessibility in lower density urban areas, October 2018*, Sydney: Author.

Infrastructure Australia (2019), *An assessment of Australia's future infrastructure needs: The Australian Infrastructure Audit 2019*, Available at https://www.infrastructureaustralia.gov.au/sites/default/files/2019-08/Australian%20Infrastructure%20Audit%202019.pdf. Viewed 16 August 2019.

Infrastructure Victoria (2016), *Victoria's 30 Year Infrastructure Strategy, December 2016*, Melbourne: Author.

March, A., Nogueira de Moraes, L., Riddell, G., Dovers, S., Stanley, J., van Delden, H., Beilin, R., Maier, H. (2018), *Australian Inquiries into Natural Hazard Events: Recommendations Relating to Urban Planning for Natural Hazard Mitigation (2009-2017),* University of Melbourne, The University of Adelaide, Australian National University.

NIEIR (2019), *Northern Horizons Update 2019, Report prepared for NORTH Link*, Melbourne: Author.

NORTH Link and Arup (2014), *Northern Horizons – 50 Year Infrastructure Strategy for Melbourne's North,* Melbourne: Author.

NORTH Link and Arup (2016), *Northern Horizons – 50 Year Infrastructure Strategy for Melbourne's North – Update 2016,* Melbourne: Author.

Pease, K. (1998), 'Repeat victimisation: taking stock'. *Home Office Police Research Group, Crime Detection and Prevention Series, Paper 90*. London: Home Office.

Rail Futures Institute (2019), *The Melbourne Rail Plan 2020-2050,* Melbourne: Author. Available at https://www.railfutures.org.au/wp-content/uploads/2019/09/15329_MRP2050main_FinalPages.pdf. Viewed 24 September 2019.

Resilient Melbourne and The Nature Conservancy (2019a), *Living Melbourne Strategy: Technical Report,* Melbourne: Authors. Available at https://resilientmelbourne.com.au/wp-content/uploads/2019/06/LivingMelbourne_TechnicalReport_onlineLR.pdf. Viewed 24 September 2019.

---

[12] It is acknowledged that different councils use different projection tools, and this may over or under state projected populations.

Resilient Melbourne and The Nature Conservancy (2019b), *Living Melbourne Strategy,* Melbourne: Authors .Available at https://resilientmelbourne.com.au/wp-content/uploads/2019/05/LivingMelbourne_Overview_online.pdf. Viewed 24 September 2019.

Stanley, J. and Brain, P. (2015), 'Urban land use transport integration and the vital role for Australia's forgotten inner/middle suburbs', *Bus and Coach Industry Policy Paper 5*, Canberra: Bus Industry Confederation.

Stanley, J. and Brain, P. (2016), Investing in Melbourne's National Employment Clusters, Report prepared for Infrastructure Victoria. Available at http://www.infrastructurevictoria.com.au/wp-content/uploads/2019/04/Professor-John-Stanley-and-Dr-Peter-Brain-Investing-in-Melbournes-National-Employment-Clusters.pdf.

Victorian Government (2017), *Plan Melbourne 2017-2050*, Melbourne: Author.

Victorian Government (2019a), *Northern Metropolitan Partnership: Report Back 2019*, Melbourne: Author.

Victorian Government (2019b), *Budget paper 4: State Capital Program*, Melbourne: Author.