Investment and Economic Development Strategy

Extension 2020 - 2022

CITY OF WHITEHORSE

Draft

Coronavirus Pandemic Update: May 2020

The preparations for this Investment and Economic Development Strategy (I&EDS) Extension 2020-2022 began in late 2019. This document was ready for public comment in March 2020, however at that time the community was facing significant social and economic impacts from COVID-19.

Initially the decision was made to hold all consultation, enabling the community to focus on their immediate needs, as well as actions required by the Government. This also allowed for some time to grasp an understanding of the impacts COVID-19 would have, particularly on the business community.

With the latest announcements made by the Victorian Government (May 2020) and the easing of some restrictions, it is now a more appropriate time seek public comment on this document.

It should be noted that the Mandate from the Economic Development Strategy 2014-2019 remains the same for the I&EDS Extension, however the 5 Strategic Project Areas have changed to provide high level directions for Council to undertake for the duration of the strategy period (2020 to 2022).

The I&EDS Extension aims to allow Council the flexibility and ability to respond to events such as COVID-19.

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Introduction

The City of Whitehorse is located 15 kilometres east of Melbourne's Central Business District (CBD) and covers an area of 64 kilometres.

Access to the CBD from the City of Whitehorse is one of the key reasons businesses have selected the municipality as their base. They are well supported by an extensive train, tram and bus network, as well as arterial road connections, making travelling straightforward and convenient.

The municipality is strategically positioned to take the connective advantage through the Eastern Freeway and Eastlink, providing access to the CBD, Melbourne Airport, the Yarra Valley wine and tourism region in the east and Melbourne's bayside in the south.

The City of Whitehorse prides itself on having some of eastern Melbourne's most liveable suburbs. Residents benefit from the tree lined streets and enjoy a variety of parks, gardens and bushland environments. Restaurant and café dining options are vast and inspired by a diverse range of cultures.

The municipality is also host to a range of internationally renowned education institutions and state of the art health care facilities.

Role of Local Government in Economic Development

Annually, federal and state governments develop policies and allocate resources to national, state, regional and local economic development. Local government are a key stakeholder and local leader because of its close engagement with residents and business communities.

The issues, opportunities and approaches taken to facilitate and promote economic development can and should differ between Councils in response to their local circumstances. It is this ability of local government to understand and respond to local conditions that give it such an important role in facilitating local and regional economic prosperity. However, it should be noted that local governments have limited jurisdiction, resources and a broad range of defined responsibilities.

It is therefore important that local governments carefully define the areas of strategic influence, priority focus areas, and the principles that will guide economic development in their respective jurisdictions.

Part 1A, Section 3C of the Local Government Act 1989 requires that all councils improve the quality of life of people within the local community.

Investment, jobs and the economic vitality of the municipality are all critical components in improving the quality of life for residents within the City of Whitehorse.

Legislative Framework

The Investment & Economic Development Strategy Extension 2020-2022 (I&EDSE 2020-2022) considers the primary economic objectives under the *Local Government Act 1989 Part 1A, Section 3C, Items 2 (a), (c) and (d).*

In seeking to achieve these objectives, the role of council is further specified within the Act as providing leadership by establishing strategic objectives and monitoring their achievement.

**Local Government Act 1989
Part 1A, Section 3C**

2 (a) to promote social, economic and environmental viability and sustainability of the municipal district.

2 (c) to improve the overall quality of life of people in the local community.

2(d) to promote appropriate business and employment opportunities.

Strategic Aim

The I&EDSE 2020-2022 aims to expand on the Economic Development Strategy 2014-2019 and seeks to update, simplify and better align with current and future trends.

Importantly the I&EDSE 2020-2022 seeks to affiliate with the timing of the next Whitehorse Council Vision and Plan.

The I&EDSE 2020-2022 will continue to guide Council in the following areas:

- Retain and expand local businesses.
- Attract new businesses that contribute positively to the overall enhancement of the local economy.
- Support and promote quality of life for the Whitehorse community.

The I&EDSE 2020-2022 sits under the Whitehorse Council Plan 2017-2021 Strategic Direction 5: Support a healthy local economy, and is supported by the following Council strategies, plans, and legislation:

- Whitehorse Council Plan 2017-2021
- Municipal Public Health and Wellbeing Plan 2017-2021
- Whitehorse Industrial Precinct Review 2019
- Tally Ho Major Activity Centre Urban Design Framework
- Whitehorse Industrial Strategy 2011
- Whitehorse Retail Strategy 2010
- MegaMile (West) and Blackburn Activity Centre Urban Design Framework 2010
- Nunawading / MegaMile Major Activity Centre and Mitcham Neighbourhood Activity Structure Plan 2018
- Open Space Strategy 2007
- Whitehorse Planning Scheme
- Box Hill Activity Centre Structure Plan 2007
- *Planning and Environment Act 1987*
- *Local Government Act 1989*

Mission Statement

The I&EDSE 2020-2022 incorporates a mission statement. This statement is intended to give purpose and meaning to why the Investment and Economic Development Unit exists, and provides the foundation and guidance for strategic planning and work priorities.

The Investment & Economic Development Unit exists to direct and implement the 'Investment & Economic Development Strategy Extension 2020-2022 and beyond' focussing on improving quality of life for people living, working, studying and visiting the City of Whitehorse.

Economic Development Mandate

The four key areas of the economic development Mandate remain consistent from the Economic Development Strategy 2014-19, and will continue to guide all economic development work that Council undertakes.

The Mandate informs the manner in which the Strategic Project Areas are chosen and acted on, and are based on sound principles of sustainable economic development.

The Mandate areas include:

- Helping Businesses Grow and Prosper

- Responsible Leadership and Advocacy

- Facilitating Connections

- Promoting Sustainable Development

Strategic Project Areas

The strategic project areas are high level directions that Council commits to undertaking for the duration of the strategy period (2020 - 2022) to achieve the Mission.

The five strategic project areas include:

The objectives associated with these project areas are detailed on page 13 - 14 of this document.

1. Investment

2. Priority Places

3. People, Jobs and Industry Development

4. Regional Development and Advocacy

5. Research, Analysis and Advisory

The Melbourne East Region

Melbourne's East is home to the Cities of Knox, Manningham, Maroondah, Monash, Whitehorse and the Shire of Yarra Ranges.

The region consists primarily of residential zoned land, with centres of knowledge-intensive and population servicing industries. These industries, as well as the increasing level of *know-how* and *human economy*, contribute in making a high-income, high-growth regional economy.

Owing to the scale of its organisations, health and education is the most concentrated sector. These organisations include;
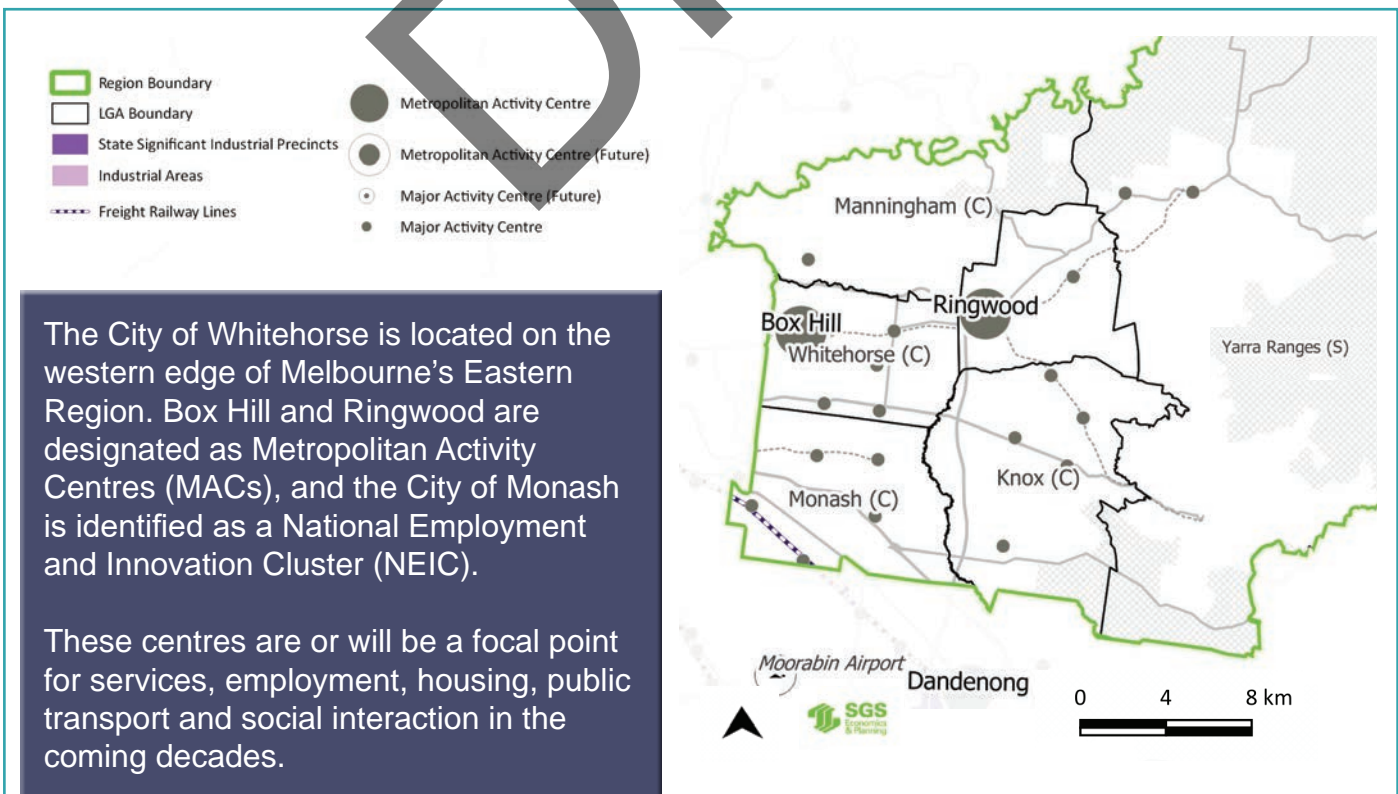- Box Hill Institute
- Deakin University
- Monash University

- Box Hill Hospital
- Knox Private Hospital
- Maroondah Hospital
- Monash Medical Centre
- Monash National Employment Innovation Cluster (NEIC)

Major freight and road networks include;
- Burwood Highway
- Eastern Freeway
- EastLink
- Maroondah Highway
- Monash Freeway
- Princess Highway

Key Economic Features of the Eastern Metro Region

The City of Whitehorse is located on the western edge of Melbourne's Eastern Region. Box Hill and Ringwood are designated as Metropolitan Activity Centres (MACs), and the City of Monash is identified as a National Employment and Innovation Cluster (NEIC).

These centres are or will be a focal point for services, employment, housing, public transport and social interaction in the coming decades.

Source: SGS Economics and Planning (2019)

The Whitehorse Economy

The health care and education industries are key industries for Whitehorse. They are more concentrated in Whitehorse than Greater Melbourne and are set for growth over the coming decades. They also act as export industries, providing products and service to people and businesses from outside of Whitehorse.

Professional, scientific and technical services, and knowledge jobs are important industries to the Whitehorse economy. Box Hill will be the focal area for the knowledge economy to expand strongly in Whitehorse, and more broadly in Melbourne's Eastern Region. By 2041 Whitehorse will account for more than 40% of the Eastern Melbourne region's knowledge-intensive jobs. Box Hill will account for 15% on its own.

The growth in knowledge-intensive industries, alongside health care and education, will create jobs, increase the scale of trade in goods and services, and attract talent and investment into the municipality. The growth in knowledge-intensive jobs, plus health care and education, adds up to a high income, high growth economy into the future.

There is a pipeline of investment in transport infrastructure set to be rolled out in Whitehorse. These investments include the State Government infrastructure projects,

- North East Link

- Suburban Rail Loop, and

- Mont Albert and Surrey Hills level crossing removals.

This infrastructure will assist in making Whitehorse a more desirable place to live and work as well as improving the productivity of the Whitehorse economy.
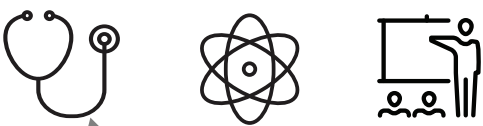
Gross Regional Product

Gross Regional Product is a monetary measure of the market value of all final goods and services in a region.

In 2018/19 Whitehorse's Gross Regional Product (GRP) was $10.8 billion accounting for 3.05% of the value of goods and services produced in Greater Melbourne.
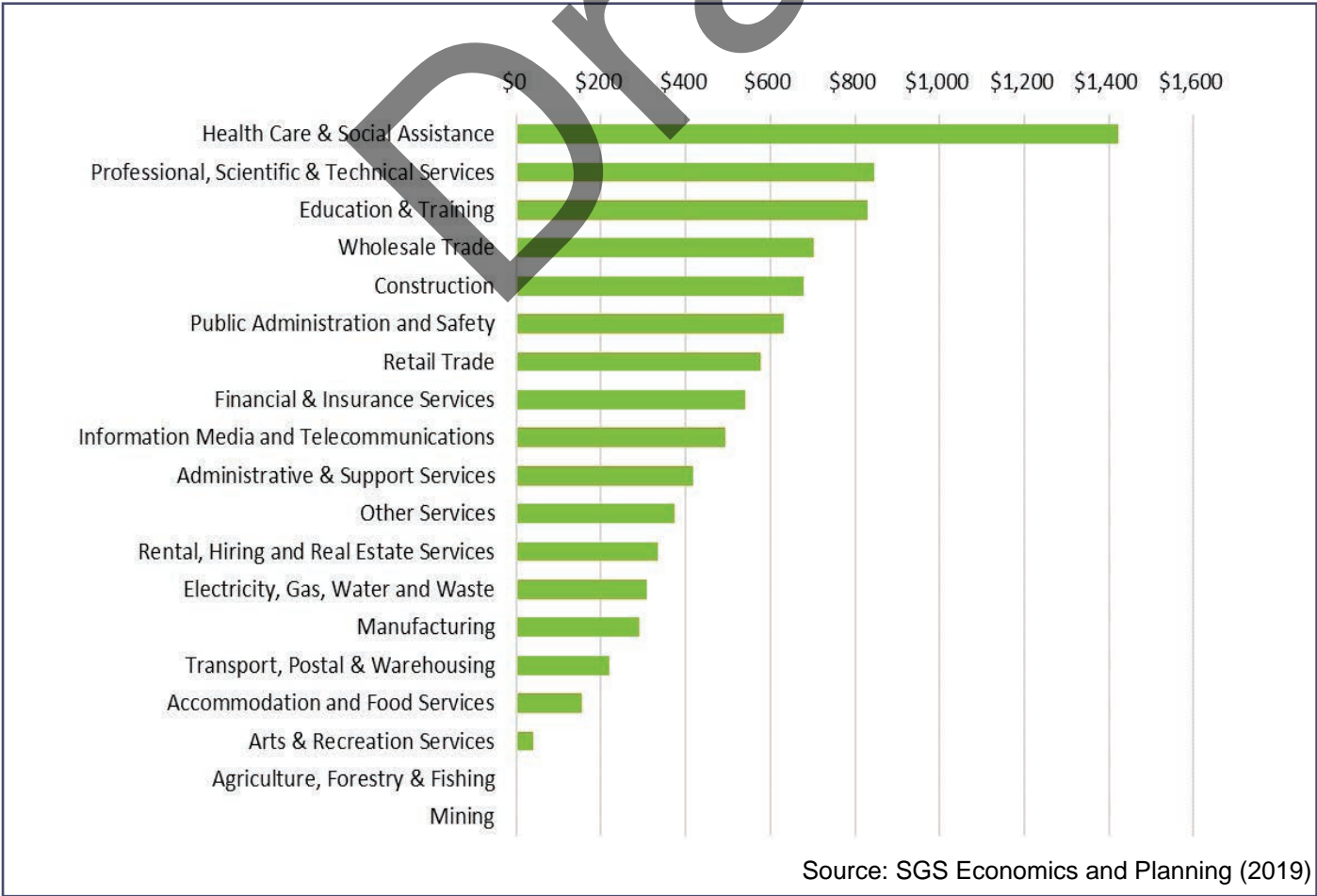
For comparison, Whitehorse's population is around 3.6% of Greater Melbourne's.

The largest industries in Whitehorse, in terms of the gross value of goods and services produced, are:

• Health Care and Social Assistance

• Professional Scientific and Technical

• Education and Training.

Contribution of Industry Sectors to Whitehorse GRP 2018/19 ($millions)

Industry Sector	$ millions
Health Care & Social Assistance	~1,420
Professional, Scientific & Technical Services	~870
Education & Training	~850
Wholesale Trade	~740
Construction	~720
Public Administration and Safety	~620
Retail Trade	~560
Financial & Insurance Services	~540
Information Media and Telecommunications	~490
Administrative & Support Services	~410
Other Services	~370
Rental, Hiring and Real Estate Services	~350
Electricity, Gas, Water and Waste	~320
Manufacturing	~310
Transport, Postal & Warehousing	~250
Accommodation and Food Services	~230
Arts & Recreation Services	~40
Agriculture, Forestry & Fishing	~0
Mining	~0

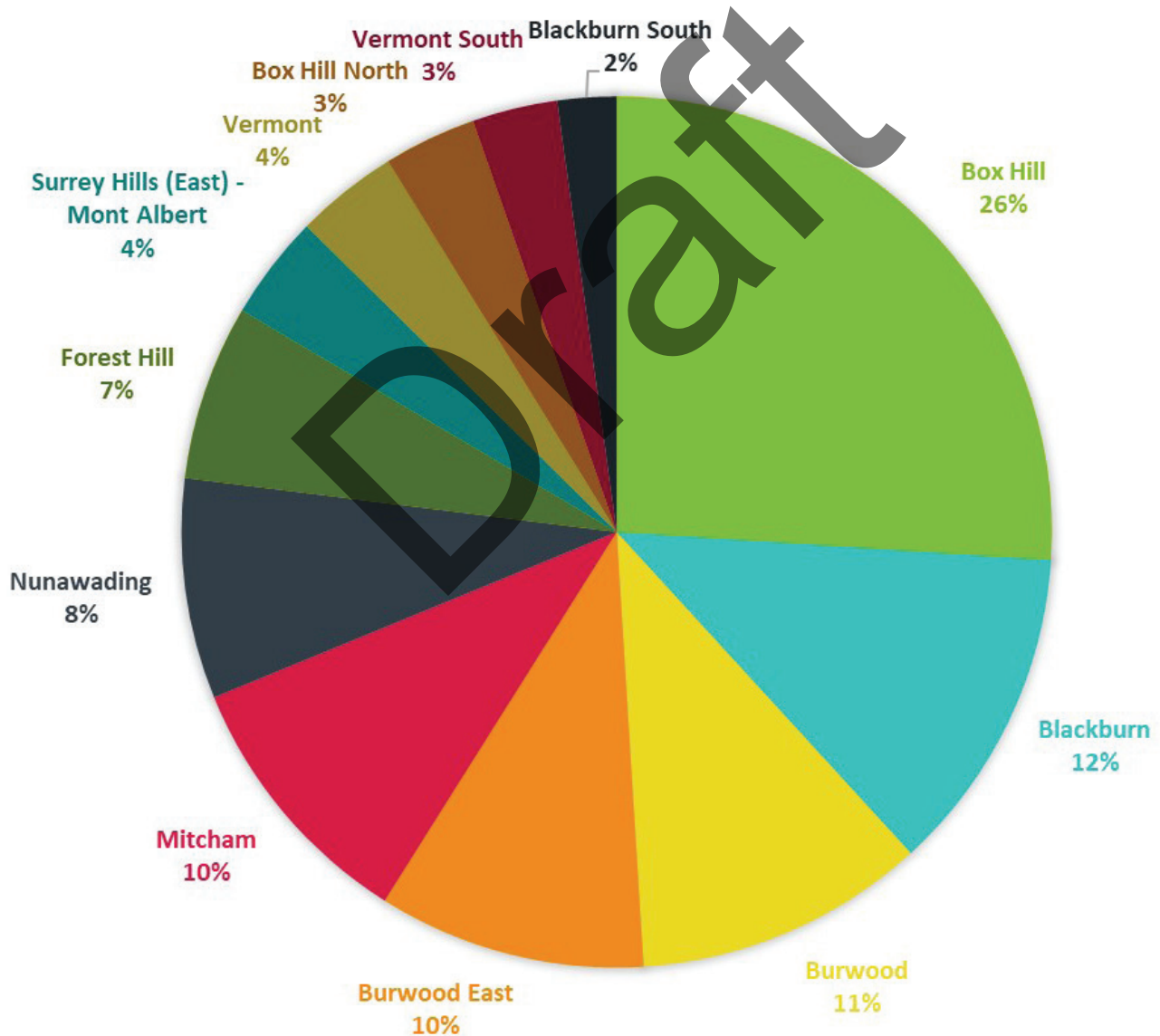Source: SGS Economics and Planning (2019)

The production of goods and services is not evenly distributed across the LGA.

As shown in the graph below, a quarter of the goods and services are produced in Box Hill alone.

Share of Whitehorse's Gross Value of Goods and Services Produced in 2018/19 (by SA2)

Blackburn South 2%

Vermont South 3%

Box Hill North 3%

Vermont 4%

Surrey Hills (East) - Mont Albert 4%

Forest Hill 7%

Nunawading 8%

Mitcham 10%

Burwood East 10%

Burwood 11%

Blackburn 12%

Box Hill 26%

Source: SGS Economics and Planning (2019)

Effective Job Density

In Whitehorse, Effective Job Density (EJD) is high but lower than the inner suburbs of Melbourne and suburbs to the south. Access to highways, train and rail lines and population centres are broadly spread across Whitehorse.

From a business perspective, higher levels of connectivity mean that businesses enjoy advantages through better access to skills, suppliers and complementary enterprises. It is this access that drives new knowledge and innovation in modern economies.

Businesses located in Whitehorse may have a slight disadvantage compared to other areas of Melbourne. Results are more favorable when looking at car transport only and this suggests Whitehorse's lower ranking is impacted by a lower supply of public transport connectivity to population centres.

> Effective Job Density is a measure that indicates the accessibility of workers for businesses in a given area and is based on how long it takes workers to get to jobs. This is strongly linked to the provision of public transport and road networks.

Effective Job Density 2016 - Road Network and Public Transport

Source: SGS Economics and Planning (2019)
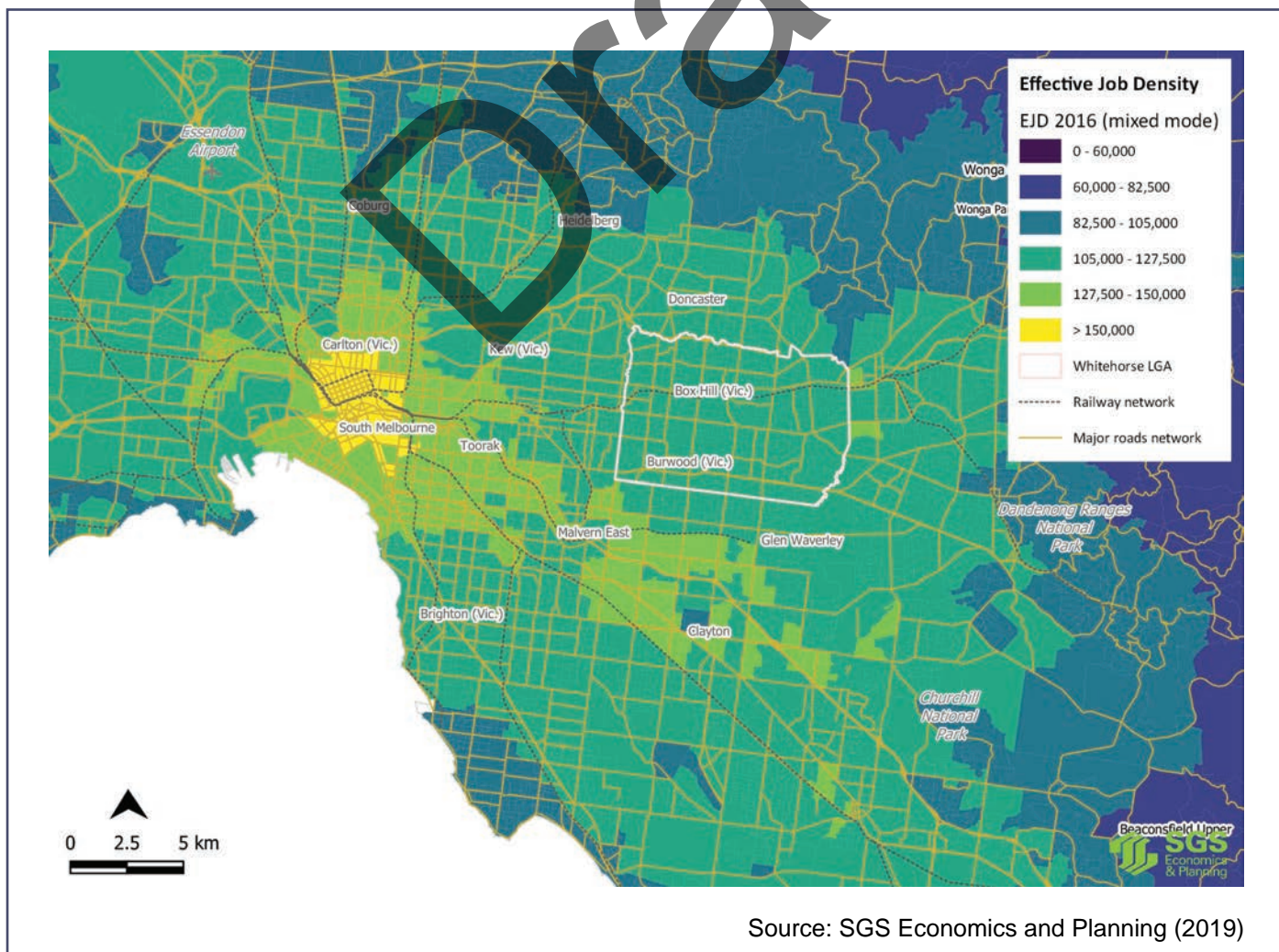
Industry Grouping By Share

The map below shows employment in Whitehorse in 2016, separated into four broad industry groupings.

Population Serving
Industries that supply goods and services to the local population, eg. retail trade and construction. These industries are most prevalent in areas that are predominantly residential.

Health and Education
Made up of hospitals and other health services, and education, from childcare through to University. These industries are most prominent in Box Hill, Burwood and Blackburn South.

Industrial
Including manufacturing, agriculture, utilities and transport industries. Mitcham and Nunawading have the highest number of industrial jobs in Whitehorse.

Knowledge-Intensive
These industries include the financial and insurance services industry and the professional, scientific and technical services industry. 40% of these jobs are located in Box Hill.

Box Hill has the highest number of jobs with 22,501, followed by Blackburn with 9,388.

Map of Industry Grouping Share (by SA2)

The circles in this figure are scaled for the number of jobs.
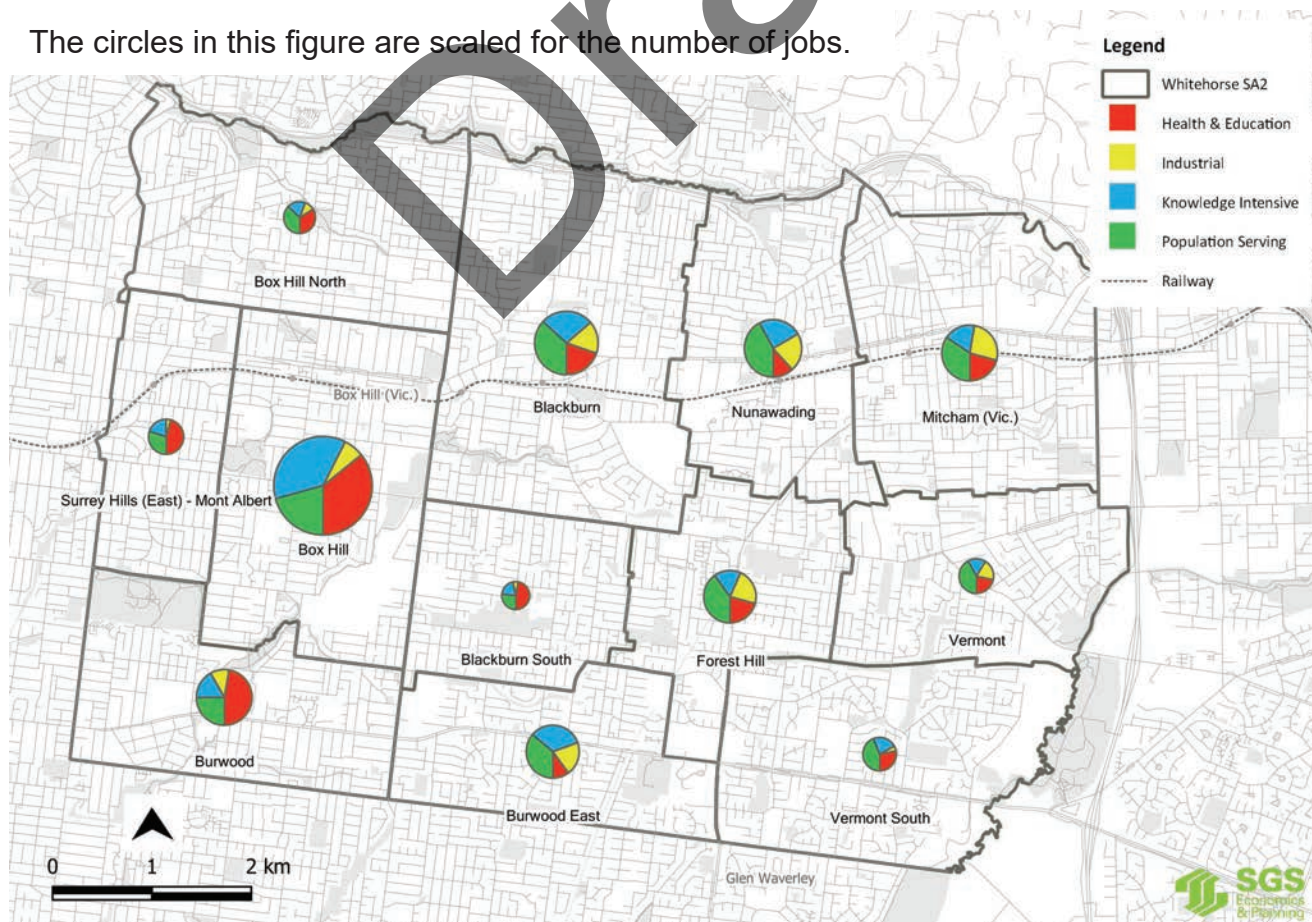
Source: SGS Economics and Planning (2019)

Employment

The graph below shows employment in these four industry groups in 2011 and 2016, and also projections for 2021, 2026 and 2031. The projections show the following.

Population Serving
The population and housing boom have driven rising demand for population serving activity. This is forecast to continue into the future.

Health and education
This is forecast to be the largest industry group by 2021. Employment in this industry group has grown strongly since 2011 with this growth forecast to continue.

Industrial
This industry group saw a decline between 2011 and 2016. Employment is projected to remain relatively static from 2021 onwards. A loss of jobs in these sectors reflects broader macroeconomic changes towards automation and contraction of these sectors in inner cities.

Knowledge Intensive
The number of jobs in knowledge intensive industries are also forecast to grow, but not at the same rate as health and education.

Employment by Broader Industry sector in the Whitehorse Local Government Area (2011-31)

Source: SGS Economics and Planning (2019)
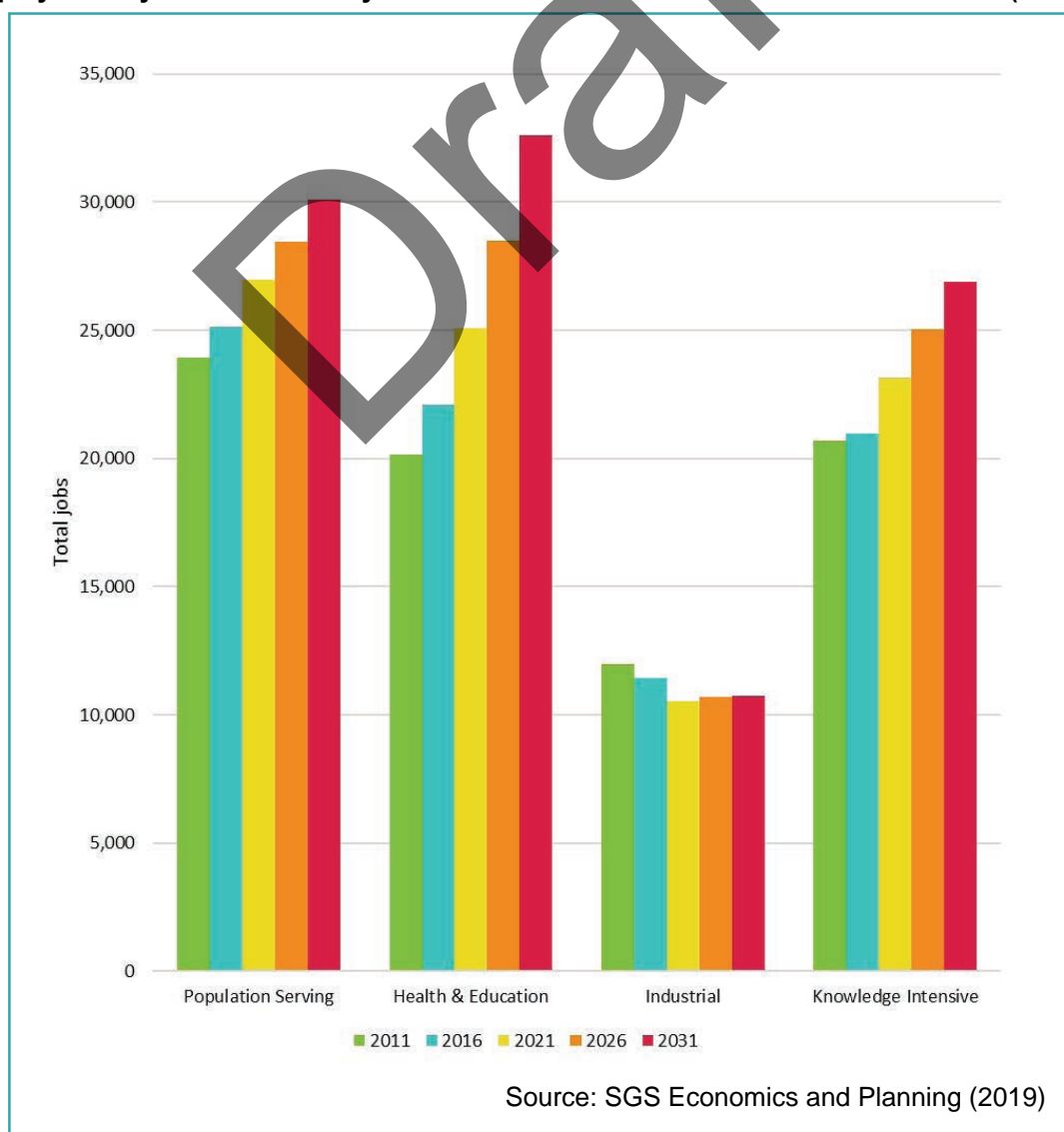
Whitehorse's Comparative Advantage

Location Quotient (LQ) analysis captures the comparative strengths of a local area's economy and can reveal what makes an area 'unique' based on physical, technological and intellectual characteristics.

When the LQ value is higher than one, it is an indication that a local economy is relatively specialised and has a competitive advantage in that industry over other regions (in this case the rest of Greater Melbourne).

An LQ of greater than 1.2 is generally regarded as an industry sector with a significant specialisation and possibly a key economic strength; higher numbers mean greater specialisations.

Whitehorse has five industry sectors (out of 19) with a LQ score above 1.2:

- Health Care and Social Assistance (1.59)

- Education and Training (1.50)

- Other Services (including repair and personal services, i.e. mechanics or hairdressers) (1.50).

- Public Administration and Safety (including knowledge-intensive government services and offices) (1.22)

- Information, Media and Telecommunications (1.22). This industry is knowledge intensive.

The LQ score of Health Care and Social Assistance, Information, Media and Telecommunications and Other Services have been increasing since 2011. An increase suggests that these industry sectors are growing in Whitehorse faster than Greater Melbourne.

Strategic Project Area Objectives

The objectives for each of the five Strategic Project Areas are listed below.

These key objectives, which all work towards achieving the I&EDSE 2020-2022 Mission have been developed in line with the four economic development Mandate themes, and an analysis of the local economy.

An Action Plan will accompany this Strategy Extension and will outline how the objectives will be achieved.

1. Investment

a.   Monitor and support innovation and emerging sectors.

b.   Promote Whitehorse's growing knowledge economy focusing on the leading sectors.

c.   Continue to advocate for appropriate infrastructure provisions across the municipality.

d.   Maintain and grow existing partnerships and relationships across all levels of government.

e.   Advocate for investments in quality transport infrastructure that will support innovative, knowledge based business and commercial activity.

2. Priority Places

a.   Foster the shared vision for Box Hill Metropolitan Activity Centre (MAC).

b.   Identify and address barriers to growth and development of Box Hill MAC through policy and action.

c.   Advocate for Whitehorse as a destination choice to visit, live, study and work.

d.   Collaborate with major stakeholders and businesses throughout Whitehorse to facilitate sustainable investment and economic viability within the municipality.

3. People, Jobs and Industry Development

a. Provide relevant and effective support to local businesses and business associations (i.e. Whitehorse Business Group).

b. Promote and support ongoing prosperity of retail activity centres, industrial precincts, and business parks.

c. Provision of up to date information on business services, funding and grants to local businesses.

d. Facilitate opportunities for businesses to connect.

e. Advocate for appropriate land uses and quality open spaces to attract skilled residents and employers to the municipality.

4. Regional Development and Advocacy

a. Monitor and support Whitehorse industry sectors, and identify potential impacts from infrastructure projects.

b. Leverage opportunities and advocate for positive outcomes relating to major projects that will have an impact on exisiting Whitehorse industries (i.e. Suburban Rail Loop).

c. Provide relevant and effective support to regional business, and economic development associations.

5. Research, Analysis and Advisory

a. Research and identify emerging and future trends (i.e. social, economic, environmental and technological).

b. Analysis of global and national trends to assist in stimulating the local economy.

c. Provide advisory services to relevant stakeholders, based on current economic research and analysis.

SGS
Economics
& Planning

Draft

ANALYSIS OF WHITEHORSE ECONOMY

FINAL
NOVEMBER 2019

Prepared for
City of Whitehorse

Independent
insight.

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No table of figures entries found.

THE WHITEHORSE ECONOMY

This short report provides information on the Whitehorse economy, including Gross Regional Product, the number of jobs, future employment forecasts, access to workers and comparative advantage.

The Melbourne East Region

The metropolitan area of Melbourne operates as 6 interconnected regional economies. Whitehorse is located in the on the western edge of the Eastern Region (Figure 1).

FIGURE 1: KEY ECONOMIC FEATURES OF THE EASTERN METRO REGION
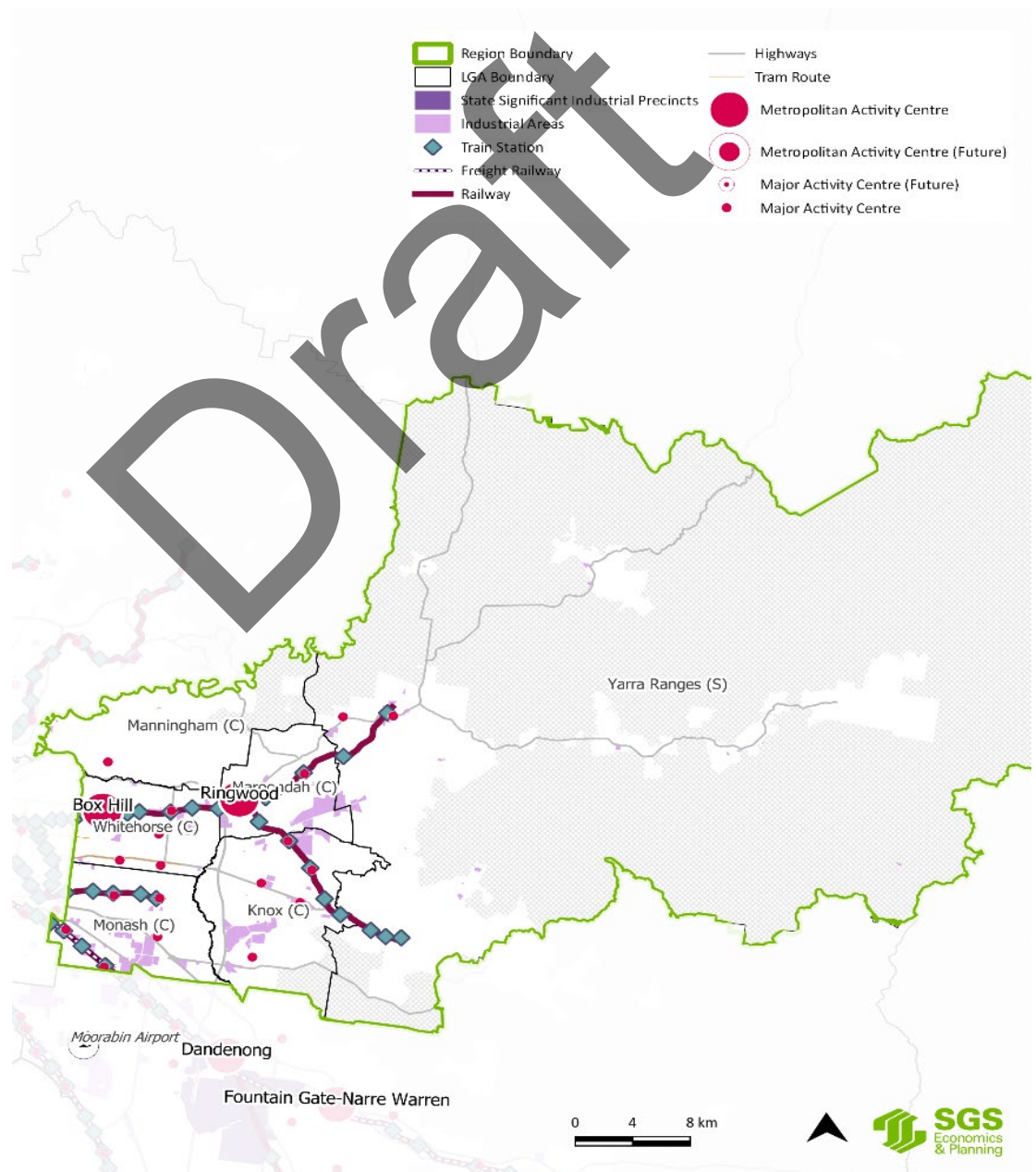
Source: SGS Economics and Planning (2019)

In the region, Monash is identified as a National Employment and Innovation Cluster (NEIC) and Box Hill and Ringwood are designated as Metropolitan Activity Centres (MACs). These centres are or will be the suburban focal point for services, employment, housing, public transport and social interaction in the coming decades.

The region consists primarily of residential zone land, with centres of knowledge-intensive and population servicing industries. Owing to the scale of its institutions, health and education is the most concentrated broad sector in the Region (Monash University and the Monash NEIC, Deakin University, Box Hill TAFE, Box Hill and Maroondah Hospital, Monash Medical Centre, and Knox Private Hospital). The Eastern Region has less industrial land compared to other regions of Melbourne. Major freight and road networks include the Monash Freeway, Princess Highway, Maroondah Highway, Burwood Highway, EastLink, and the Eastern Freeway.

The region's economy is underpinned by the growing knowledge-intensive and health and education sectors. These industries contribute to the uplift of the region's current and future economy. Melbourne's Eastern Region is rapidly accumulating know-how and human capital making for a high-income, high-growth regional economy.

The Whitehorse economy

Gross regional product

Gross regional product (GRP) is a monetary measure of the market value of all final goods and services produced in a region. The GRP of Greater Melbourne in 2018/19 was $354 billion.

In Whitehorse LGA, the GRP in 2018/19 was $10.8 billion accounting for 3.05% of the value of goods and services produced in Greater Melbourne. For comparison, Whitehorse's population is around 3.6% of Greater Melbourne's. The largest industries in Whitehorse, in terms of the gross value of goods and services produced, are health care and social assistance, professional scientific and technical services (which are technical white-collar jobs such as architecture, engineering, law, accountancy, advertising etc.) and education and training.
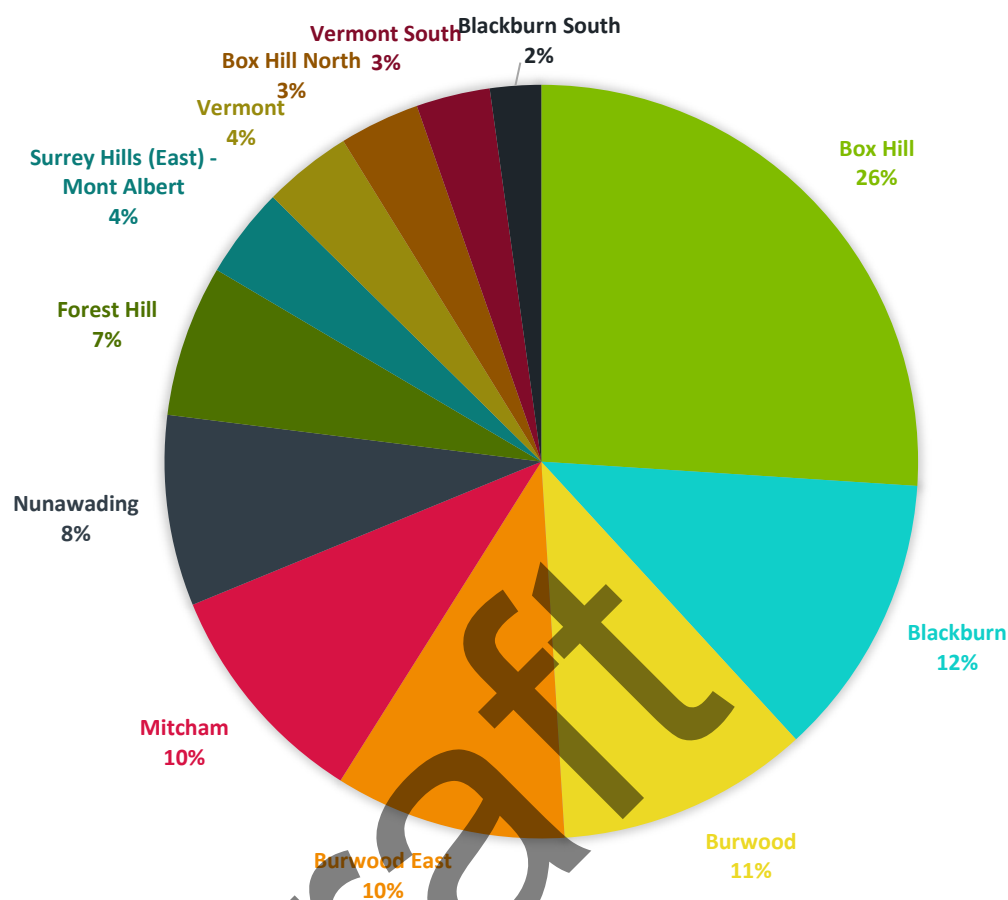
Source: SGS Economics and Planning (2019)

The production of goods and services is not evenly distributed across the LGA. A quarter of the goods and services are produced in Box Hill alone (Figure 3).

Vermont South 3%
Blackburn South 2%
Box Hill North 3%
Vermont 4%
Surrey Hills (East) - Mont Albert 4%
Forest Hill 7%
Nunawading 8%
Mitcham 10%
Burwood East 10%
Burwood 11%
Box Hill 26%
Blackburn 12%

Source: SGS Economics and Planning (2019)

Access to workers

Effective job density (EJD) is a measure of agglomeration that indicates the accessibility to workers for businesses in a given area. Accessibility is based on how long it takes workers to get to jobs. EJD is strongly linked to accessibility to large clusters of jobs and the provision of public transport and road networks.

In Whitehorse, effective job density is high but lower than the inner suburbs of Melbourne and suburbs to the south (Figure 4). Suburbs within the Whitehorse LGA have similar EJD scores. Access to highways, train and rail lines and population centres are broadly spread across the LGA.

From a business perspective, higher levels of connectivity mean that businesses enjoy scale and productivity advantages through better access to skills, suppliers and complementary enterprises. It is this access – referred to as 'agglomeration' - that drives new knowledge and innovation in modern economies. Given the EJD scores in Figure 4, businesses located in Whitehorse are at a slight locational disadvantage compared to other areas of Melbourne. EJD scores are more favourable for Whitehorse when looking at car transport only, suggesting that EJD is impacted by a lower supply of public transport connectivity to population centres compared to areas of inner Melbourne.
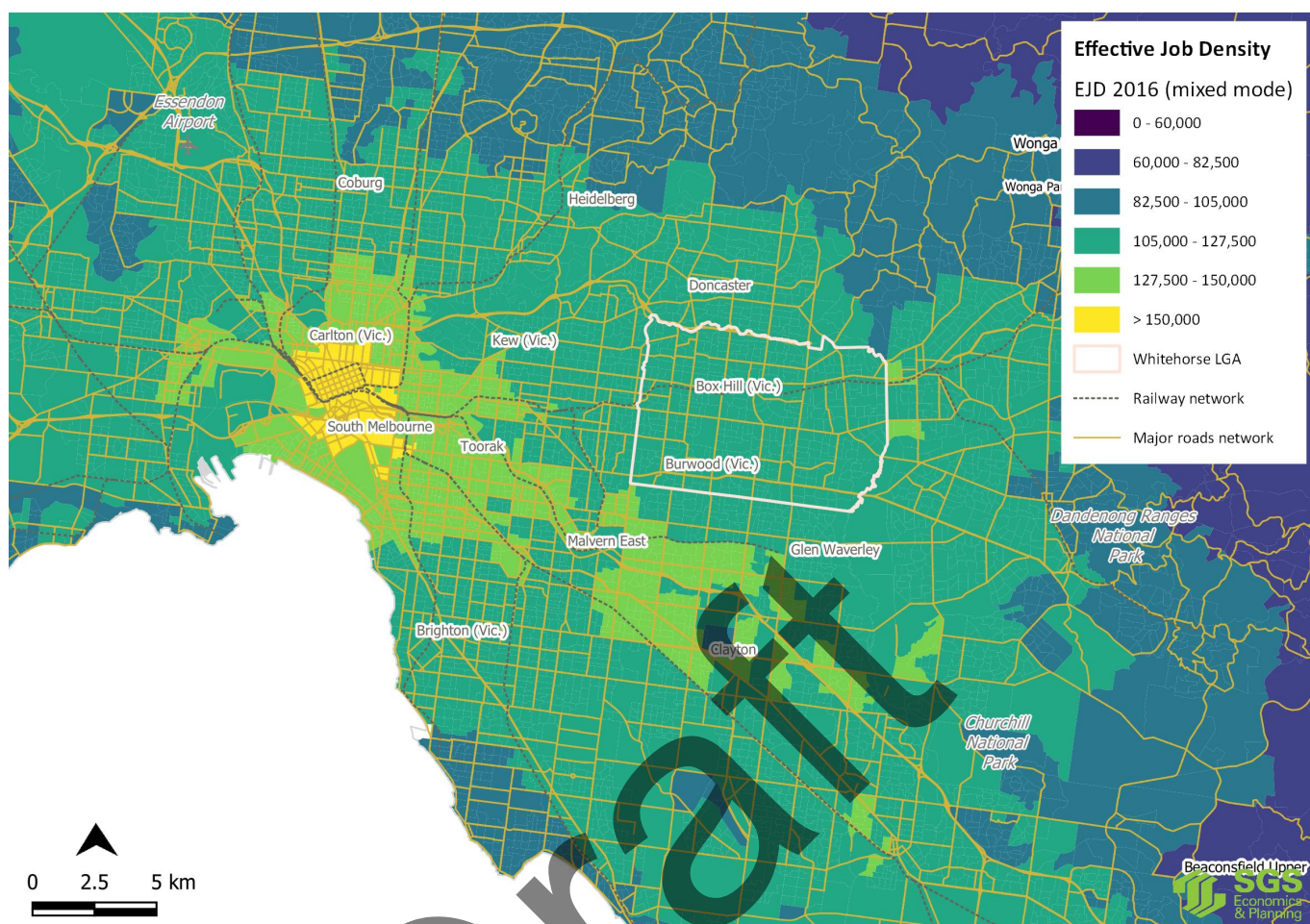
Source: SGS Economics and Planning (2019)

There is a pipeline of investment in transport infrastructure set to be rolled out in Whitehorse. These investments include State Government infrastructure projects the North East Link, the Suburban Rail Loop, and the Mont Albert and Surrey Hills level crossing removals. This infrastructure will improve the effective job density scores, as well as making Whitehorse a more desirable place to live and work and improving the productivity of the Whitehorse economy.

Number of jobs

Moving to employment, Figure 5 shows employment in Whitehorse in 2016 by SA2, separated into four broad industry groupings:

- **Population serving** industries are those that provide goods and services to the local population, for example, retail trade and construction. These industries are most prevalent in areas that are predominantly residential.
- **Health and Education** industries are made up of hospitals and other health services, and education, from childcare through to University. These industries are prominent in the west of the LGA, most notably in Box Hill, Burwood and Blackburn South.
- **Industrial** industries include manufacturing, agriculture, utilities and transport industries. Mitcham and Nunawading have the highest number of industrial jobs in Whitehorse.
- **Knowledge-intensive** industries include the financial and insurance services industry and the professional, scientific and technical services industry. 40% of these jobs are located in Box Hill.

In total, Box Hill has the highest number of jobs with 22,501, followed by Blackburn with 9,388. The circles in the figure below are scaled for the number of jobs.
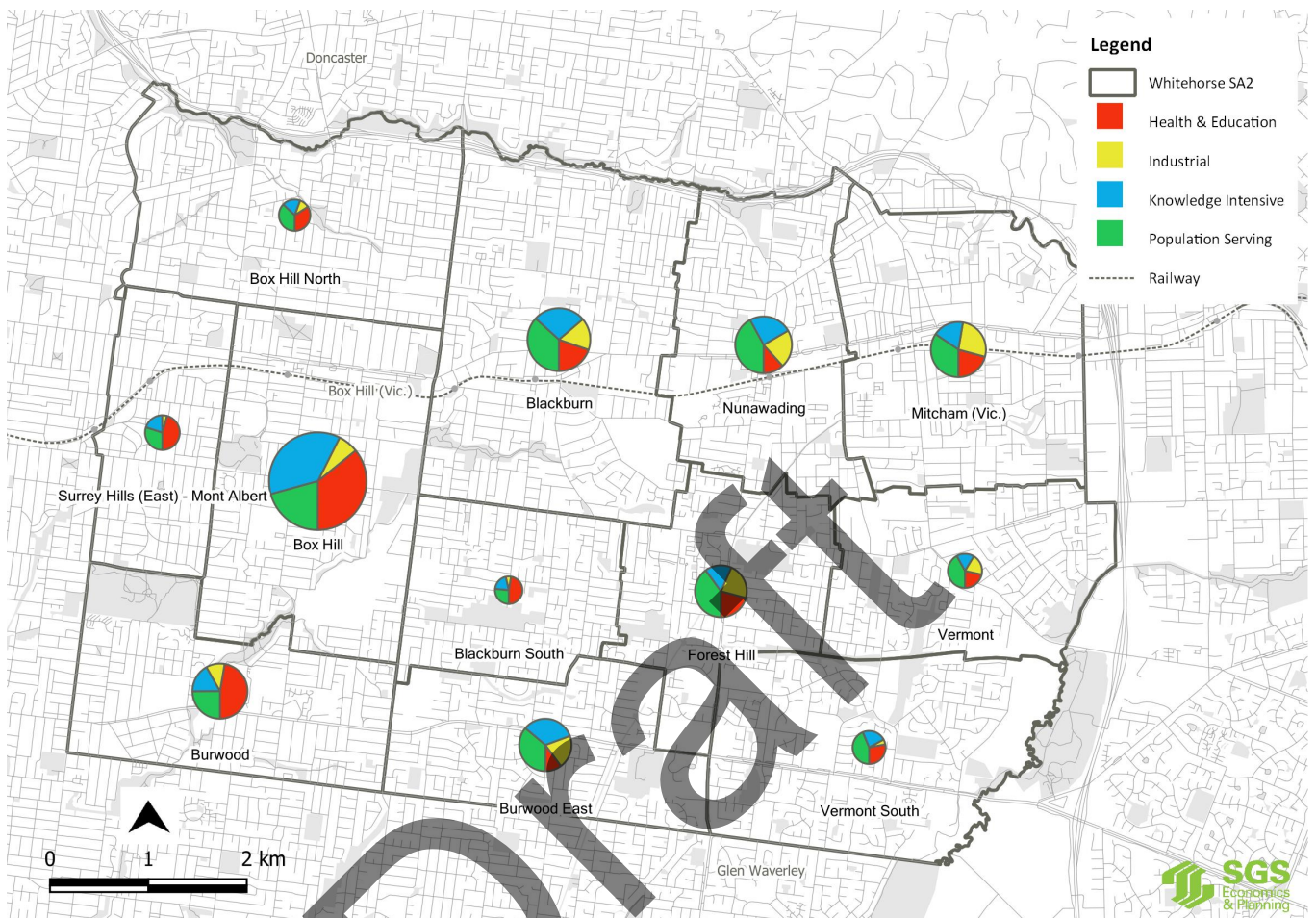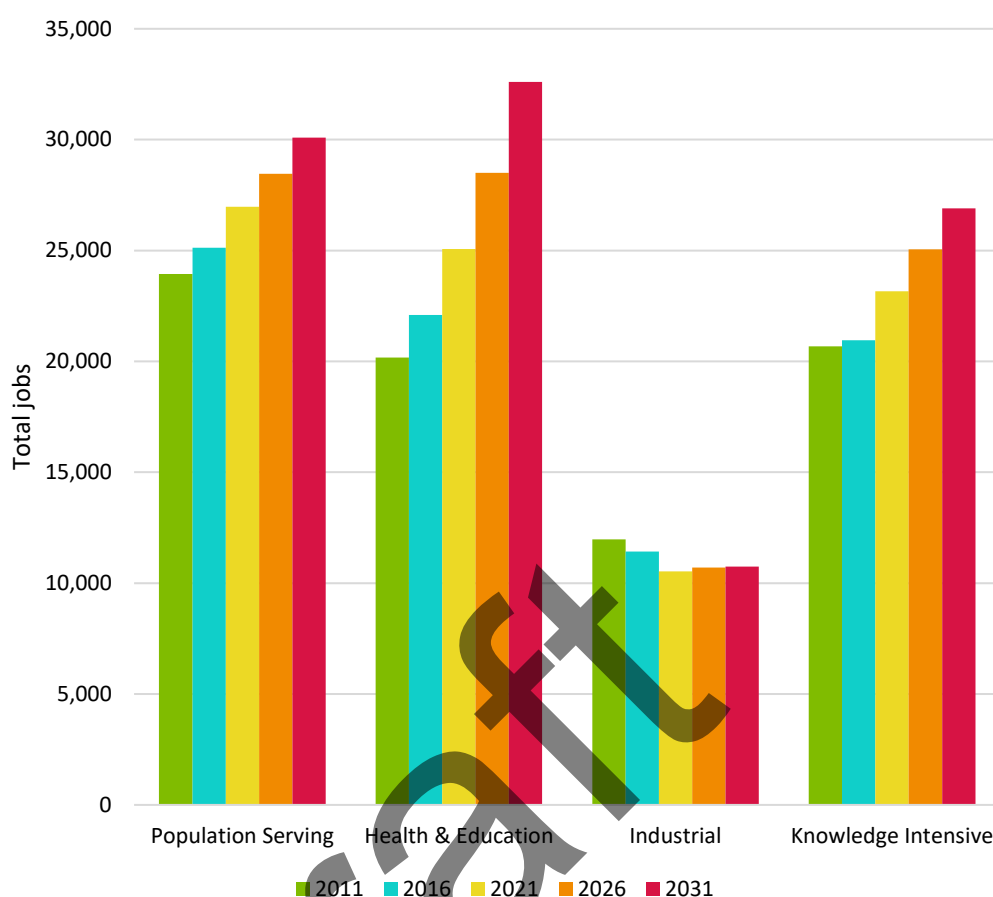
Source: SGS Economics and Planning (2019)

Figure 6 shows employment in the four industry groups in 2011 and 2016, and also projections for 2021, 2026 and 2031. The projections show that:

- The population and housing boom have driven rising demand for **population serving** activity. This is forecast to continue into the future.
- **Health and education** is forecast to be the largest industry group by 2021. Employment in this industry group has grown strongly since 2011 with this growth forecast to continue.
- The **industrial** industry group saw a decline between 2011 and 2016. Employment is projected to remain relatively static from 2021 onwards. A loss of jobs in these sectors reflects broader macroeconomic changes towards automation and contraction of these sectors in inner cities.
- The number of jobs in **Knowledge intensive** industries are also forecast to grow, but not at the same rate as health and education.

Source: SGS Economics and Planning, Small Area Model (2019)

Comparative advantage

Another tool for assessing industry sector strength is a location quotient (LQ) analysis. LQ captures the comparative strengths of a local area's economy and assists in guiding economic development policy. It can reveal what makes an area 'unique' based on physical, technological and intellectual characteristics.

Local areas like Whitehorse have cost, productivity and other strategic advantages relative to other local economies. Comparative strategic advantages are widely considered to be the key drivers of regional economic growth, especially in an increasingly global economy.

Comparative strategic advantages result in high levels of employment in industries that benefit from local strengths. LQ analysis reveals these advantages. When the LQ value is higher than one, it is an indication that a local economy is relatively specialised and has a competitive advantage in that industry over other regions (in this case the rest of Greater Melbourne). Typically, a local economy is a net exporter if the location quotient is high (that is >1), and a net importer if the location quotient is low (that is <1). Net exports can include services such as education and health if people from other LGAs travel to Whitehorse to use these services.

An LQ of greater than 1.2 is generally regarded as an industry sector with a significant specialisation and possibly a key economic strength; higher numbers mean greater specialisations. Anything over 2 is a major specialisation, but can also represent a lack of industry diversity.

For Whitehorse, there are five industry sectors (out of 19) with a score above 1.2:

- Health Care and Social Assistance (LQ score of 1.59)
- Education and Training (1.50)
- Other Services (which includes repair and personal services, i.e. mechanics or hairdressers) (1.50). This industry is population serving.
- Public Administration and Safety (which includes knowledge-intensive government services and offices) (1.22)
- Information, Media and Telecommunications (1.22). This industry is knowledge intensive.

The LQ score of health care and social assistance, information, media and telecommunications and other services have been increasing since 2011. An increase suggests that these industry sectors are growing in Whitehorse faster than Greater Melbourne as a whole, indicating an increasing advantage in these sectors.

Findings

The health care and education industries are the key industries for Whitehorse. They generate much of the LGAs GRP and employment, are more concentrated in the LGA than Greater Melbourne more broadly and act as export industries. Export industries provide products and service to people and businesses from outside of Whitehorse; this includes uses of education and health facilities. These services bring new money into the local economy via the expenditure generated and the jobs created. These industries are also set for growth over the coming decades. This growth will increase the EJD scores in the municipality as jobs located nearby residential populations.

Professional, scientific and technical services, and knowledge jobs more broadly are also important industries in the Whitehorse economy. Box Hill is the obvious bridgehead for the knowledge economy to expand strongly in Whitehorse, but also in the Eastern Region of Melbourne more broadly. By 2041 Whitehorse will account for more than 40% of the Eastern Melbourne region's knowledge-intensive jobs. Box Hill will account for 15% on its own.

The growth in knowledge-intensive industries, alongside health care and education, will create jobs, increase the scale of trade in goods or services, and attract talent and investment into the municipality. The growth in knowledge-intensive jobs, plus health care and education, adds up to a high income, high growth economy into the future.

APPENDIX

How EJD is calculated

For a given spatial zone, $EJD_i = \sum_j \left[\dfrac{PTMS_j * Emp_j}{PT_{i,j}} + \dfrac{PVMS_j * Emp_j}{PV_{i,j}} \right]$

Where:

- Emp_j = Employment in zone j
- EJD_i = Effective Job Density of zone *i*
- $PTMS_j$ = per cent of trips <u>to zone</u> *j* which involve public transport
- $PVMS_j$ = per cent of trips <u>to zone</u> *j* which involve private vehicles (i.e. Car)
- $PT_{i.j}$ = Travel time from zone *i* to zone *j* by public transport
- $PV_{i.j}$ = Travel time from zone *i* to zone *j* by private vehicle