LAKE MACQUARIE ECONOMIC STUDY 2018

INFORMING THE VISION FOR LAKE MAC 2050 AND BEYOND: PLANNING FOR THE ECONOMY OF THE FUTURE
Lake Macquarie Economic Study
Informing the Vision for Lake Mac 2050 and Beyond: Planning for the Economy of the Future
This Economic Study has been prepared by:

SC Lennon & Associates Pty Ltd
ACN 109 471 936
ABN 74 716 136 132
PO Box 45
The Gap Queensland 4061
p: (07) 3312 2375
e: sasha@sashalennon.com.au
w: www.sashalennon.com.au

Offices in Brisbane and Melbourne

It has been prepared on behalf of:

Lake Macquarie City Council
126-138 Main Road
Speers Point, NSW 2284
p: (02) 4921 0333
e: council@lakemac.nsw.gov.au
w: www.lakemac.com.au

Disclaimer
This report has been prepared by SC Lennon & Associates Pty Ltd on behalf of Lake Macquarie City Council. It has been prepared on the understanding that users exercise their own skill and care with respect to its use and interpretation. Any representation, statement, opinion or advice expressed or implied in this publication is made in good faith. SC Lennon & Associates Pty Ltd and the individual authors of this report are not liable to any person or entity taking or not taking action in respect of any representation, statement, opinion or advice referred to above.
# TABLE OF CONTENTS

Executive Summary

1. **Introduction** .................................................................................................................. 1  
   1.1 Economic Study Purpose .......................................................................................... 1  
   1.2 Lake Macquarie’s Economic Development Activities .............................................. 2  
   1.3 Core Economic Development Roles and Functions .................................................. 3  

2. **Lake Macquarie’s Economy in the Broader Context** ................................................. 6  
   2.1 Capitalising on Comparative and Competitive Advantage ...................................... 6  
   2.2 Employment by Industry ......................................................................................... 6  
   2.3 Industry Value-Added and Inter-regional Exports ................................................... 7  
   2.4 Lake Macquarie’s Visitor Economy ........................................................................ 8  
   2.5 Lake Macquarie’s ‘Driver’ Sectors and Emerging Industries ................................... 11  
   2.6 Key Megatrends and Lake Macquarie’s Economic Future ...................................... 14  
   2.7 Lake Macquarie’s Deepening Regional Economic Integration ................................ 20  
   2.8 Lake Macquarie’s Opportunity to Integrate with the Global Economy ................... 21  
   2.9 Lake Macquarie - Preparing for Knowledge-based Economic Development .......... 22  

3. **The Economy of the Future: Spatial Implications** ....................................................... 25  
   3.1 Planning for the Economy of the Future: Three Scenarios ...................................... 25  
   3.2 Lake Macquarie’s Economic Futures: Overview of Key Assumptions ....................... 25  
   3.3 Population Futures ................................................................................................. 26  
   3.4 Alternative Population Futures ............................................................................. 28  
   3.5 Forecast Residential Land Supply ......................................................................... 31  
   3.6 Forecast Residential Land Demand ....................................................................... 32  
   3.7 Lake Macquarie’s Labour Force and Employment Futures .................................... 33  
   3.8 Future Employment by Industry Profile .................................................................. 34  
   3.9 Future Occupational Profile .................................................................................. 36  
   3.10 Implications for Lake Macquarie’s Future Employment by Industry ....................... 37  
   3.11 Lake Macquarie’s Future Employment Land Needs ............................................. 39  
   3.12 Preparing for a High-Growth Future: A ‘Smart’ City-Region Corridor .................. 39  

4. **Realising Lake Macquarie’s Economic Future** ............................................................ 42  
   4.1 Planning for Prosperity to 2050 and Beyond: A Partnership Approach .................. 42  
   4.2 Defining Economic Development Roles and Functions ......................................... 42  
   4.3 Recommendations to Realise Future Prosperity ...................................................... 44  

Bibliography
List of Figures

Figure 1. The City of Lake Macquarie........................................................................................................1
Figure 2. The Enablers of Economic Development ..................................................................................3
Figure 3. Lake Macquarie City Council’s ‘Core’ Economic Development Functions .................................5
Figure 4. Employment by Industry, Lake Macquarie City, Hunter Region and NSW, 2017 ...................6
Figure 5. Value-Added by Industry, Lake Macquarie City and Hunter Region, 2017 ............................7
Figure 6. Inter-regional Exports by Industry, Lake Macquarie City, 2017 .............................................8
Figure 7. Lake Macquarie’s ‘Driver’ Industries........................................................................................11
Figure 8. Employment Growth and Share, Lake Macquarie City to NSW, 2011-2016 ..........................12
Figure 9. Employment Capacity, Lake Macquarie City, 2016 .................................................................13
Figure 10. Employment Capacity, Greater Newcastle Metropolitan Area*, 2016 .................................14
Figure 11. Elements of a Smart City / Region..........................................................................................15
Figure 12. Broad Categorisation of Knowledge-Intensive Industries ......................................................22
Figure 13. Lake Macquarie’s Current and Emerging Industry Drivers ....................................................24
Figure 14. Regional NSW Potential Road, Rail and Higher-Speed Corridors ........................................29
Figure 15. Lake Macquarie Population Forecast Scenarios to 2050 .........................................................31
Figure 16. Projected Contributions to the Rate of Australia’s Total Employment Growth by Industry (%),  
Five Years to May 2022 ......................................................................................................................35
Figure 17. Employment by Industry, City of Lake Macquarie, 2016 and 2050 (Forecast) ....................38
Figure 18. The Lake Macquarie-Newcastle to Sydney Smart City-Region Corridor .................................40
Figure 19. Lake Macquarie’s Economic Development Roles and Activities .........................................43

List of Tables

Table 1. Tourism Industry Profile, City of Lake Macquarie, Hunter Region, NSW and Australia, 2017 ......8
Table 2. Tourism Visitation Profile, City of Lake Macquarie, 2016 ..........................................................9
Table 3. City of Lake Macquarie Forecast Population Growth, 2016 to 2036 ..........................................26
Table 4. Dwelling and Household Projections, City of Lake Macquarie, 2016 to 2036 ............................27
Table 5. Projected Ageing of Lake Macquarie’s Population by Locality ..................................................27
Table 6. Comparable Population Forecasts, Lake Macquarie and Greater Newcastle ..........................28
Table 7. Forecast Population Growth Scenarios to 2050, Greater Sydney and City of Lake Macquarie ...30
Table 8. Forecast Residential Land Supply by Locality, City of Lake Macquarie, 2016 to 2036 .............32
Table 9. Estimate of Lake Macquarie’s Future Residential Land Requirements to 2050 .........................33
Table 10. City of Lake Macquarie’s Employment Futures, 2050 ............................................................34
Table 11. Employment by Industry, City of Lake Macquarie, 2016 and 2050 (Forecast) ......................37
Table 12. Forecast Retail, Commercial and Industrial Floorspace and Land Requirements, City of Lake  
Macquarie, 2050 .................................................................................................................................39
Executive Summary

Economic Study Purpose

The City of Lake Macquarie commissioned this Economic Study to inform its new long-term plan (Lake Mac 2050). The study’s focus is on providing policy direction to achieve economic development and how Council can play its role as an enabler and facilitator to help realise the City’s vision for a thriving economy. The City’s vision is:

“Lake Macquarie is a city with a lake at its heart encircled by distinctive towns and villages. We balance our cherished environments with our need for great spaces to live and visit, smart transport options and a thriving economy; which adapt and thrive to be fair to all.”

‘Economic development’ is the continuous process of growing an area’s level of income and capital (wealth) and distributing that wealth (through local expenditure and jobs) to the community. Typically measured in terms of income and employment, economic development is also measured by improvements in education, skills, health, culture, community wellbeing, a sense of place and the environment. Ultimately, economic development is about improving quality of life, or put more simply, it is about delivering prosperity.

While business and industry drives economic growth and development, Lake Macquarie City Council influences the ‘enabling environment’ for growth and prosperity, that is, the services, infrastructure and support mechanisms required to facilitate economic activity.

Addressing the enablers of economic development requires a clear articulation of economic development roles and functions and a shared understanding of where key agents of change can best play their role. Having regard for the above enablers and the structure established by Council to promote and facilitate economic development through Dantia, there are four ‘core’ areas of economic development activity to consider. They are:

1. Preparing for Prosperity - Strategic Planning, Regulation and Place Management;
2. Enabling Prosperity - Infrastructure & Service Provision;
3. Supporting Prosperity - Investment Attraction and Business Support; and

Lake Macquarie City Council established the Lake Macquarie Economic Development Company Ltd (Dantia) to lead, grow and build the City’s economic base, which Council recognises is essential to create an enduring foundation for a liveable city. Dantia has a lead role to play in: supporting new and existing businesses to prosper; attracting business investment to Lake Macquarie in a diverse range of industries; and advocating for planning processes and infrastructure that drive investment toward the City of Lake Macquarie.

The Lake Macquarie community values a strong and diverse economy, which is resilient and adaptable to change, making the best use of the unique advantages of Lake Macquarie’s location and lifestyle. To realise the community’s values, Dantia’s role is to work with business, government and partners to advance the sustainable economic prosperity of Lake Macquarie City. Guided Council’s Adopted Vision and Values, this Economic Study considers how the City of Lake Macquarie can leverage current and emerging demographic and economic trends and prospects and the implications these hold for its ‘socio-economic relationship’ with the Greater Newcastle metropolitan area and Hunter Region, with the NSW Central Coast and with metropolitan Sydney.
Preparing for Knowledge-based Economic Development

A key determinant of sustainable economic development is the capacity to capitalise on strategic comparative and competitive advantages. The combination of Lake Macquarie’s economic history, its industry profile and specialisations and the influence and impact of current and emerging megatrends, points to an economic future which fulfils the region’s potential to transition to a knowledge economy.

Certain industries typically have a higher knowledge-intensity compared to population-driven sectors like retail trade, administrative services and other services. These more knowledge-intensive sectors include key elements of health care and manufacturing, education, agribusiness / ag-tech and professional, scientific, technical and creative services. How Lake Macquarie grows its knowledge economy depends on how it addresses current challenges to growth, and more importantly, how it leverages its local strengths and opportunities for economic development.

Lake Macquarie’s attributes include the area’s unique lakeside / coastal setting, its family-friendly lifestyle supported by a depth of community services and facilities, its proximity to Sydney and potential for vastly improved transport connections, its proximity to major research and learning institutions, health facilities and transport (Port of Newcastle and Newcastle Airport) and its relatively diverse and evolving industrial base.

**Broad Categorisation of Knowledge-Intensive Industries**

Lake Macquarie’s existing businesses as well as those which might be attracted to invest and locate in the area will naturally seek to leverage its natural comparative advantages to build a competitive advantage through increased productivity, using a combination of industry knowledge, resources, skills and the ability to innovate.
Planning for the Economy of the Future

Given the fact that macro-trends will ensure that Lake Macquarie’s future is vastly different to today and that the precise nature of these changes is not yet known, it is prudent to take a contingency based approach to planning for the future. To this end three scenarios are modelled as follows:

Scenario 1 (Low-Growth)

The first scenario reflects population forecasts within the Population, Demographic and Housing Forecasting prepared by REMPLAN. This scenario positively responds to the City’s aspirations for greater economic diversification, employment self-containment and the growth of key employment areas and centres. Planning will proceed on the basis of a reduced population growth rate with a strong emphasis on preserving the qualities of the natural environment. Infill development in existing urban areas and zoned but undeveloped urban areas will be emphasised to contain the need for expanded greenfield development beyond currently designated land.

Scenario 2 (Medium-Growth)

The medium-growth scenario acknowledges and expands on the layers of integration between Lake Macquarie and the wider region - Newcastle and the Lower Hunter - and the opportunities that may flow from this. There are significant benefits to be had by becoming more integrated into a dynamic region. The demand for land required for housing and employment uses will need to be monitored, with progressively updated population forecasts and housing and employment lands needs analyses. Policies on infill development, land release and environmental protection will need to be updated to reflect emerging needs.

Scenario 3 (High-Growth)

The high-growth scenario is a situation where Lake Macquarie finds itself within the purview of the expanding global city that is Sydney. Housing price pressure in Sydney, emerging live and work anywhere trends and enhanced transport links along the Lake Macquarie/Newcastle - Sydney - Wollongong axis have a potential to create growth opportunities and pressures that will need to be curated and managed. Lake Macquarie City’s capacity to realise these opportunities and attend to issues is enhanced by Lake Macquarie City Council’s strategic vision, its management approach and the work of its external economic development company, Dantia.

In order to understand the implications of each scenario, key assumptions are considered and addressed using various data sources with analysis based on the following key parameters:

- Lake Macquarie’s future population and the rate at which it will grow.
- An understanding of the regional economy and how it might develop.
- The labour force participation rate and how it will change as the City and wider region matures.
- The unemployment rate – what is a reasonable target given the likely make-up of the population and Lake Macquarie’s economy in the future?
- The level of self-containment of employment and therefore, jobs located in Lake Macquarie.
- The split between jobs driven by population growth and jobs in the ‘driver’ sectors of the economy.
- Acknowledgement of the City’s and region’s existing industrial structure.
- An understanding of global forces impacting on regional development in Australia.
Lake Macquarie’s Employment Futures

These assumptions inform the City of Lake Macquarie’s employment by industry futures to 2050. If they hold true, the City of Lake Macquarie’s total jobs estimate for the year 2050 is:

- **70,350** (an additional 8,750 jobs) in the low-growth scenario;
- **107,962** (an additional 46,362 jobs) in the medium-growth scenario; and
- **138,517** (an additional 76,917 jobs) in the high-growth scenario.

These employment estimates are indicative of the job numbers that may be involved.

Under the above scenarios, Lake Macquarie’s employment future entails a situation where a large share of employment will be accounted for by Health Care and Social Assistance, followed by Retail Trade, Construction, Education and Training and Accommodation and Food Services. The health, construction and education sectors are also forecast to increase their relative share of employment by industry in Lake Macquarie compared to the situation today.

Consistent with national trends, which have been apparent in recent years, for all three growth scenarios, the largest share of employment growth in Lake Macquarie is expected to occur in the Health Care and Social Assistance sector. Other industries, which are expected to accommodate a notable share of Lake Macquarie’s forecast employment growth to 2050, include Construction, Education and Training, Accommodation and Food Services, Professional, Scientific and Technical Services and Financial and Insurance Services.

**Lake Macquarie’s Current and Emerging Industry Drivers**

The construction sector’s share of employment growth will increase over the long-term in line with population growth. Retail trade on the other hand, is expected to capture a declining share of growth as retail expenditure habits continue to evolve in future with the growth in online retailing and the continued casualisation and mechanisation of the workforce.

As the Lake Macquarie economy transitions to a more knowledge-intensive economic base, the City’s professional, scientific and technical services sector will grow as a share of total employment as will the financial and insurance services sector.

While the local manufacturing sector is not expected to capture a substantial share of Lake Macquarie’s future employment growth, accounting for a smaller share of total employment by industry, it will nonetheless remain an important contributor to the City’s overall economic profile.

**Lake Macquarie’s Future Employment Land Needs**

By applying floorspace ratios (taken from Lake Macquarie City Council’s land use survey conducted in May/June 2018), to future employment numbers, an estimate of floorspace requirements is made. The analysis indicates that in Lake Macquarie, there could be a need for approximately:

- 91.0 hectares in the low-growth scenario (0.91 square kilometres);
- 534.6 hectares in the medium-growth scenario (5.34 square kilometres); and
- 892.3 hectares in the high-growth scenario (8.92 square kilometres).

It is noted that a recent land use survey suggests there is in the order of 6 square kilometres of ‘undeveloped’ land, however, it is not known how suitable this land is to fulfil requirements of the various land use types.

**Preparing for a High-Growth Future: A ‘Smart’ City-Region Corridor**

It is prudent to acknowledge the potential for a quantum change in growth pressures emanating from economic development in Lake Macquarie’s wider region and potential ‘spill over’ from the global city that is Sydney consistent with the high-growth scenario as articulated above. The emergence of new transport technologies and the cumulative effect of a number of ‘megatrends’ may provide the catalyst for this quantum change.

To inform a contingency plan for pro-actively preparing for and embracing the high-growth scenario, the City of Lake Macquarie could play a lead role in planning for a future that looks something like the diagram shown in the figure below – the **Lake Macquarie-Newcastle to Sydney Smart City-Region Corridor**. The key features of the Lake Macquarie-Newcastle to Sydney Smart City-Region Corridor are:

- An interim rapid commuter bus transport solution.
- A high-capacity transport spine following the rail alignment and motorway, which is approximately 130km from Lake Macquarie-Newcastle to Sydney.
- Rail upgraded to very-fast train (VFT) (then links to Melbourne).
- Transport nodes are VFT stations and interchanges with regional and local services.
- Travel time Newcastle to Sydney is maximum one hour @ 150 km/h - with stops.
- Travel time from mid-point of corridor to Sydney is maximum 40 min - with stops.
- Travel time will be reduced as full VFT services are implemented.
- Autonomous buses link transport nodes and collect from and distribute to the band of urban development.
Key features of the band of urban development include:

- Adopt all features of ‘smart cities’.
- Ecologically sustainable development.
- Mixed-use development.
- Higher densities near transport nodes and centres – graduating out.
- Minimum impact on the environment with a habitat / ecosystem offset strategy in place.
- Band is approximately 4 kilometres wide by 70 kilometres (or 280 square kilometres).
- Assume density of 10,000 persons per square kilometre (note – inner Sydney is 15,000 persons per square kilometres, which includes employment uses).
- Capacity is 2.8 million people.

Taking this approach informs an assessment of the economic, employment, and land-use implications for the City of Lake Macquarie should the high-growth scenario be realised. It also informs potential directions Council could ultimately take regarding supportive policies and strategies to achieve the economic components of the City’s vision and values, including strategic infrastructure that may currently be limiting the attractiveness of the City to new businesses as well as to the ‘knowledge-based’ businesses of the future.

The Lake Macquarie-Newcastle to Sydney Smart City-Region Corridor

If the conceptual idea of a Lake Macquarie-Newcastle to Sydney Smart City-Region Corridor can be realised over the medium to long-term, together with a more diverse local industry base linked into the metropolitan and global economies, this could also help facilitate an increase in the proportion of residents who both live and work within the City.
Planning for Prosperity: To 2050 and Beyond

The role of Council in economic development - through its land use planning and regulatory functions and the economic development facilitation and promotion activities of Dantia - is critical to Lake Macquarie’s future prosperity. Having regard for the four ‘core’ areas of economic development activity, the City’s efforts to facilitate and promote economic development will be most effectively served by it focussing on two of the four core areas of economic development activity, being: Preparing for Prosperity - Strategic Planning, Regulation and Place Management; and Enabling Prosperity - Infrastructure & Service Provision.

Dantia, as Council’s economic development company focussed on working with business, government and other partners to advance Lake Macquarie City’s economic prosperity, is best-placed to lead and deliver the City’s efforts in: Supporting Prosperity - Investment Attraction and Business Support; and Promoting Prosperity - Economic Development Advocacy and Partnerships. These roles are illustrated below in the form of ‘economic development activity areas’.

Lake Macquarie’s Economic Development Activity Areas

1. Preparing for Prosperity: Strategic Planning, Regulation and Place Management
2. Enabling Prosperity: Infrastructure and Service Provision
3. Supporting Prosperity: Investment Attraction and Industry Support
4. Promoting Prosperity: Economic Development Advocacy and Partnerships

Source: SC Lennon & Associates
In light of the findings of this Economic Study, 16 strategic recommendations have been identified across the four economic development activity areas as follows.

### Preparing for Prosperity - Strategic Planning, Regulation and Place Management

**Recommendation 1.1:** Identify Strategic Parcels of Land for Lake Macquarie’s Future Employment and Population Growth Activities

**Recommendation 1.2:** Investigate Opportunities for High-Tech Food Production in Lake Macquarie

**Recommendation 1.3:** Develop and Promote a User-Friendly Development Control System

**Recommendation 1.4:** Partner with Land Owners to Develop Town Centre and Strategic Project Concept Plans

**Recommendation 1.5:** Apply ‘Smart City’ Solutions to Support the City’s Economic Development

**Recommendation 1.6:** Establish an Annual Growth Monitoring Program for Lake Macquarie

### Enabling Prosperity - Infrastructure and Service Provision

**Recommendation 2.1:** Work Collaboratively to Advocate for Investment and Innovation in Lake Macquarie’s Internal and External Transport Infrastructure

**Recommendation 2.2:** Deliver World-Class High-Speed Digital Communications Infrastructure

**Recommendation 2.3:** Undertake a Feasibility Study and Prepare a Business Case to Deliver the Bulk of Lake Macquarie’s Car Parking in Public Parking Facilities in Centres

### Supporting Prosperity - Investment Attraction and Business Support

**Recommendation 3.1:** Deliver Lake Macquarie’s (Dantia’s) Economic Development Strategy 2018-2036

**Recommendation 3.2:** Communicate Protocols for Referring Investment Enquiries to Dantia

**Recommendation 3.3:** Expand the DaSH Network of Incubators, Accelerators and Co-working Spaces in Lake Macquarie

**Recommendation 3.4:** Engage with the Mining and Power Generation Industries to Transition and Evolve and Adaptively Re-use Assets and Land

### Promoting Prosperity - Economic Development Advocacy and Partnerships

**Recommendation 4.1:** Undertake a Lake Macquarie Business Audit and Annual Satisfaction Survey

**Recommendation 4.2:** Collaborate with the Tertiary Education Sector to Facilitate and Promote Lake Macquarie’s Economic Development

**Recommendation 4.3:** Cultivate Regional Partnerships to Realise the Economic Vision

Collaborating to cultivate economic development partnerships is key to Lake Macquarie’s capacity to influence its economic future in line with Council’s vision and the community’s values. To this end, it is recommended that Lake Macquarie City Council collaborate with Dantia and its regional partners in support of projects and programs that advance the community’s desire for a strong and diverse economy, which is resilient and adaptable to change, making the best use of Lake Macquarie’s unique location and lifestyle.
1. Introduction

1.1 Economic Study Purpose

The City of Lake Macquarie commissioned this Economic Study to inform its new long-term plan (Lake Mac 2050). The study’s focus is on providing policy direction to achieve economic development and how Council can play its role as an enabler and facilitator to help realise the City’s vision for a thriving economy. The City’s vision is:

“Lake Macquarie is a city with a lake at its heart encircled by distinctive towns and villages. We balance our cherished environments with our need for great spaces to live and visit, smart transport options and a thriving economy; which adapt and thrive to be fair to all.”

The Lake Macquarie community values a strong and diverse economy, which is resilient and adaptable to change, making the best use of the unique advantages of Lake Macquarie’s location and lifestyle. To realise the community’s vision, it is important to understand the City’s socio-economic profile within a broader regional context.

Guided Council’s Adopted Vision and Values, this Economic Study considers how the City of Lake Macquarie can leverage current and emerging demographic and economic trends and prospects and the implications these hold for its ‘socio-economic relationship’ with the Greater Newcastle metropolitan area and Hunter Region, with the NSW Central Coast and with metropolitan Sydney.

Figure 1. The City of Lake Macquarie

Source: REMPLAN
To appreciate what these relationships are and how they may change over the next 30 or more years requires an understanding of Lake Macquarie’s - and the wider region’s - economic structure and industry relationships. It also requires a consideration of socio-economic ‘megatrends’ taking shape on a global scale that will influence the future of how and where people live, how they travel and communicate and how, where and in what sorts of industries and occupations they will work in the future. These broader trends and influences, together with the City’s regional economic relationships and their potential impact on Lake Macquarie’s spatial development pathways, are the focus of this Economic Study.

**1.2 Lake Macquarie’s Economic Development Activities**

‘Economic development’ is the continuous process of growing an area’s level of income and capital (wealth) and distributing that wealth (through local expenditure and jobs) to the community. Typically measured in terms of income and employment, economic development is also measured by improvements in education, skills, health, culture, community wellbeing, a sense of place and the environment. Ultimately, economic development is about improving quality of life, or put more simply, it is about delivering prosperity.

While business and industry drives economic growth and development, Lake Macquarie City Council influences the ‘enabling environment’ for growth and prosperity. These ‘enablers’ refer to the services, infrastructure and support mechanisms required to facilitate economic activity. They include physical and community infrastructure and services, a supportive and pro-active local regulatory and planning framework, education infrastructure and workforce skills; research and innovation infrastructure and a supportive regional planning framework.

*Physical and community infrastructure* underpins economic activity and is fundamental to a prosperous economy. It includes transport infrastructure (roads, rail, seaports and airports), power and water, serviced industrial / employment land and communications. Digital communications technology has become a fundamental enabler of business innovation and economic development, and the emergence of the digital economy has increased the propensity for individuals and businesses to interact and trade with suppliers, partners and customers through information and communications technologies. Quality ‘community’ infrastructure is a fundamental enabler of economic development for the role it plays in facilitating social and economic interaction and exchange. It includes recreation, leisure and entertainment facilities, cultural facilities and community services and facilities.

*A pro-active regulatory and land use planning environment* has a significant impact on both local and regional economic development outcomes and is perhaps the most powerful tool of Councils when working to facilitate and enable economic development. In the City of Lake Macquarie, through the agency of Council’s LEP, structure plans and concept plans, and associated planning and building regulations, the location, form and extent of investment in both the urban and rural environment is heavily influenced by the State and local regulatory and land use planning framework.

*Education infrastructure and skills* are essential for facilitating improvements in a region’s human capital, which can enhance the innovative and productive capacity of the workforce, making the City of Lake Macquarie more attractive to prospective investors. The development of a skilled and adaptable workforce is critical to the future success of the City’s and region’s traditional industry strengths in mining, construction, manufacturing and health, as well as new and emerging ‘knowledge-based’ industry sectors like advanced manufacturing, mining equipment, technology services (METS), defence, professional services and the creative industries.

*Research and innovation infrastructure* is a broad term which refers to facilities, resources and services used by researchers, educators, the science community and industry to conduct research and foster innovation. In the context of the City of Lake Macquarie and the wider Newcastle and Hunter regions, it is defined by spaces where research, knowledge and data can be connected with entrepreneurial ideas to grow high-value and innovative businesses.
Regional planning and collaborative governance refers to the way in which collaborative partnerships are structured and managed and the processes employed to progress a region’s economic development agenda. Collaborative regional governance and effective regional partnerships underpins good planning and is characterised by co-ordinated approaches to: research and information / knowledge-sharing; stakeholder engagement (industries, communities, institutions); engagement with State and Federal Governments (advocacy); regional planning; regional branding and promotion; strategic project identification and prioritisation; and implementation of strategies for the good of the whole region.

1.3 Core Economic Development Roles and Functions

Addressing the enablers of economic development requires a clear articulation of economic development roles and functions and a shared understanding of where key agents of change can best play their role. Lake Macquarie City Council established the Lake Macquarie Economic Development Company Ltd (Dantia) to lead, grow and build the City’s economic base, which Council recognises is essential to create an enduring foundation for a liveable city.

Dantia has a lead role to play in: supporting new and existing businesses to prosper regardless of macroeconomic cycles; attracting a diverse range of employee-hungry industries and business to Lake Macquarie; and advocating for planning processes and infrastructure that drive investment toward the City of Lake Macquarie. Dantia’s ultimate aim is to increase jobs and attract investment in Lake Macquarie by focussing on key drivers of ‘identity’, ‘investment’, ‘infrastructure’ and ‘innovation’. To realise the City’s economic development objective Dantia’s role is to work with business, government, the community and partners to advance the sustainable economic prosperity of Lake Macquarie City.
Having regard for the above enablers and the structure established by Council to promote and facilitate economic development through Dantia, there are four ‘core’ areas of economic development activity to consider. They are:

1. **Preparing for Prosperity** - Strategic Planning, Regulation and Place Management;
2. **Enabling Prosperity** - Infrastructure & Service Provision;
3. **Supporting Prosperity** - Investment Attraction and Business Support; and

Each is explained below.

**Preparing for Prosperity** - Strategic Planning, Regulation and Place Management

Strategic land use planning, development controls and other regulations have a significant impact on economic development outcomes and are perhaps the most powerful tools of Councils when working to facilitate and enable economic development. As well as ensuring that adequate land and floorspace is available for commercial and industrial development, the local regulatory and land use planning regime serves to reinforce existing or emerging industry clusters by providing appropriate signals relevant to the performance and locational requirements of the industries concerned. At the local level, Lake Macquarie City Council can influence a sense of place and the functioning of its activity centres through master planning, place activation and revitalisation programs.

**Enabling Prosperity** - Infrastructure and Service Provision

Lake Macquarie City Council can ensure that the City’s fundamentals for investment attraction and economic development are addressed by planning for and providing local infrastructure and services. For example, it can prioritise local infrastructure needs including ‘lifestyle’ and cultural infrastructure such as museums, libraries and galleries. At a wider regional level, Council can collaborate with regional stakeholders to ensure that these fundamentals for investment and economic development are addressed by planning for and providing regionally significant infrastructure in an informed, planned and co-ordinated manner.

**Supporting Prosperity** – Investment Attraction and Business Support

Investment is fundamental to economic development, and access to markets is a key determinant of long-term economic growth. Through the activities of Dantia, Lake Macquarie City Council can facilitate investment by promoting what the City and the wider Newcastle and Hunter regions have to offer prospective investors in a strategic and targeted fashion. An economic development strategy, which would be prepared and delivered under the auspices of Dantia, can provide the overarching framework for this, supported by a well-articulated investment prospectus.

A successful investment enhancement strategy will be one that also encourages additional investment from business already in the Lake Macquarie area. This means Dantia, which is often a first point of contact for the business community, has a role to play in informing businesses of NSW and Federal Government business assistance programs on offer. Dantia can engage in activities to support local business and employment growth including facilitating access to small business support programs, training workshops and investment forums.

**Promoting Prosperity** - Economic Development Advocacy and Partnerships

Lake Macquarie City Council, Dantia and the City’s regional partners provide a unifying voice for communities and for businesses when lobbying State and Federal Governments on key economic or infrastructure issues. Through the work of Dantia, Council has a key role to play in attracting government investment in enabling infrastructure by identifying strategic priorities and preparing business cases to inform government funding for key projects. By
undertaking the necessary investigations and preparing informed business cases, Council provides a conduit for NSW and Federal Government funding for bigger infrastructure projects like transport infrastructure as well as education, health, cultural and sporting facilities.

Figure 3. Lake Macquarie City Council’s ‘Core’ Economic Development Functions

These four broad categories of economic development activity provide a framework for Lake Macquarie City Council, both as a lead and in partnership with other regional organisations, to plan for the economy of 2050.

By capitalising on the City’s comparative and competitive economic advantages, Council’s economic development promotion and facilitation activities - through its regulatory and land use planning functions and the investment attraction, business liaison and advocacy functions of Dantia - define Lake Macquarie’s economic development potential and its value proposition as defined by its appeal as a place to visit, work, live and invest in. Also fundamental to shaping the City’s economic future will be the influence and impact of broader (global) economic trends and prospects.

Technological, social and economic disruptions that are already occurring and which we can expect to see in the near future will have a bearing on the sort of industries, jobs we can expect to see in Lake Macquarie and the wider region in the next 30 years. Understanding where the City’s economy has come from and how it is already evolving helps to inform ways in which Council, together with Dantia and other key agencies at the regional level, can influence the enablers of economic development and accommodate a preferred economic future in line with the City’s vision and the community’s values.
2. Lake Macquarie’s Economy in the Broader Context

2.1 Capitalising on Comparative and Competitive Advantage

A diverse service-led economy coupled with a strong but declining traditional manufacturing, power generation and mining base, Lake Macquarie’s gross regional product (GRP), at around $9.9 billion, represents approximately 2% of New South Wales’ Gross State Product. The current population of the City is 203,823 with 61,601 local jobs.

A key determinant of sustainable economic development for any region is its capacity to capitalise on its strategic comparative and competitive advantages. Comparative advantage is an area of relative strength or specialisation. Efforts to develop regional economies are most successful when they focus on building on such strengths. Business and industry can also use a region’s comparative advantage to build a competitive advantage, which is developed through the combination of factors such as knowledge, resources, skills and the ability to innovate.

Comparative advantage stems from various sources, such as a region’s geographic location, availability of natural resources, access to infrastructure or the skill profile of the local population. Lake Macquarie’s economic strength is built upon its diverse landscape and natural resource base, with key industries developing out of timber, agriculture, water and minerals. The City aspires to develop into a hub for small to medium-sized enterprises (SMEs) with knowledge and technology-based industries exhibiting strong growth.

2.2 Employment by Industry

The major industries in Lake Macquarie include education and training, health care, retail trade, construction and accommodation and food services. Manufacturing is also strong, with industrial parks playing an important role, and in both industry value-added and employment terms, manufacturing exceeds the NSW State average.

![Figure 4. Employment by Industry, Lake Macquarie City, Hunter Region and NSW, 2017](source: REMPLAN (December 2017) with interpretations by SC Lennon & Associates)
2.3 Industry Value-Added and Inter-regional Exports

The strength of the City’s professional services sector is reflected in its financial and insurance services sector which is the City’s fourth-largest contributor to industry value-added, that is, the value that is added by industry sectors in the City of Lake Macquarie to intermediate inputs.¹

Ownership of Dwellings, which makes the largest contribution to the City’s value-added, reflects the contribution of the housing market to the local economy. Ownership of Dwellings consists of landlords and owner-occupiers of dwellings. The value added associated with Ownership of Dwellings is the provision of housing services by the owner of a dwelling to its occupants, irrespective of whether the owner is also an occupier. Owner-occupiers are regarded as operating a business that generates a gross operating surplus. The imputation of a rent to owner-occupied dwellings enables the services provided by dwellings to their owner-occupiers to be treated consistently with the marketed services provided by rented dwellings to their tenants. Owner-occupiers are regarded as receiving rents (from themselves as consumers), paying expenses, and making a net contribution to the value of production which accrues to them as owners.

Analysis of industry value-added also reinforces the significance of the City’s key contributors to economic activity including health care, construction and manufacturing, with industrial precincts playing an important role in the City.

Figure 5. Value-Added by Industry, Lake Macquarie City and Hunter Region, 2017

Source: REMPLAN (December 2017) with interpretations by SC Lennon & Associates

¹ Compared to gross output, value-added is considered to be a better reflection of the strength or otherwise of a local or regional economy because it refers to only the value of output generated in the region less the cost of inputs such as the purchase of machinery and equipment and other non-labour inputs used in the production process.
The strength of the City’s manufacturing, mining and construction sectors is further reinforced by the contributions these sectors make to the City’s inter-regional export income. Economic modelling by REMPLAN shows the value of goods and services produced by industry sectors in the City of Lake Macquarie that are sold to consumers, businesses, and governments based outside the LGA’s boundaries. This includes ‘exports’ to locations in other parts of NSW, Australia and overseas. The total estimated value of regional exports for the City of Lake Macquarie is $4.6 billion, which is 15% of the Hunter Region’s economic output.

Figure 6. Inter-regional Exports by Industry, Lake Macquarie City, 2017

Source: REMPLAN (December 2017) with interpretations by SC Lennon & Associates

2.4 Lake Macquarie’s Visitor Economy

Statistically, ‘tourism’ is an amalgam of activities across various industry sectors including retail, accommodation, cafes & restaurants, transport services and cultural & recreational services. Of the 61,601 people working in the City of Lake Macquarie it is estimated that 2,606 jobs are supported by tourism.

Table 1. Tourism Industry Profile, City of Lake Macquarie, Hunter Region, NSW and Australia, 2017

<table>
<thead>
<tr>
<th></th>
<th>Per cent</th>
<th>Output</th>
<th>Employment</th>
<th>Value-Added</th>
<th>Wages and Salaries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lake Macquarie</td>
<td>2.46%</td>
<td>4.23%</td>
<td>2.55%</td>
<td>2.93%</td>
<td></td>
</tr>
<tr>
<td>Hunter Region</td>
<td>2.98%</td>
<td>5.61%</td>
<td>3.15%</td>
<td>3.52%</td>
<td></td>
</tr>
<tr>
<td>New South Wales</td>
<td>3.42%</td>
<td>5.67%</td>
<td>3.41%</td>
<td>3.77%</td>
<td></td>
</tr>
<tr>
<td>Australia</td>
<td>3.43%</td>
<td>5.73%</td>
<td>3.45%</td>
<td>3.82%</td>
<td></td>
</tr>
<tr>
<td>Lake Macquarie (number)</td>
<td></td>
<td>$475.3m</td>
<td>2,607 jobs</td>
<td>$229.9m</td>
<td>$4.8m</td>
</tr>
</tbody>
</table>

Source: REMPLAN (December 2017) and ABS National Accounts, Tourism Satellite Accounts, with interpretations by SC Lennon & Associates
Table 1 shows that only 4.23% of all jobs in Lake Macquarie are in the Tourism sector compared to 5.61% in the Hunter Region. Lake Macquarie lags behind the Hunter Region, the State and the nation on all counts. Lake Macquarie has 18 accommodation establishments with 15 rooms or more with an occupancy rate of 64% (source: Australian Bureau of Statistics, Survey of Tourist Accommodation, 2016). In the Hunter Region there are 120 establishments with an occupancy rate of 56%.

The short-term rental market plays a significant role in Lake Macquarie’s tourism market with an estimated 653 short-term rentals listed in the 2018 calendar year. As of July 2018, there were 364 active rentals, with an occupancy rate of 32% (source: https://www.airdna.co/market-data/app/au/new-south-wales/lake-macquarie/overview).

Of the 1,534 tourism businesses in Lake Macquarie: 576 have no employees; 539 have 1 to 4 employees; 347 have 5 to 19 employees; and 68 have more than 20 employees (source: Tourism Research Australia Local Government Area Profiles 2016). Visitation survey results are shown in Table 2.

### Table 2. Tourism Visitation Profile, City of Lake Macquarie, 2016

<table>
<thead>
<tr>
<th>Lake Macquarie Visitation 2016</th>
<th>International</th>
<th>Domestic Overnight</th>
<th>Domestic Day Trip</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visitors</td>
<td>9,000</td>
<td>315,000</td>
<td>797,000</td>
<td>1,121,000</td>
</tr>
<tr>
<td>Nights</td>
<td>159,000</td>
<td>825,000</td>
<td></td>
<td>984,000</td>
</tr>
<tr>
<td>Average Stay (Nights)</td>
<td>18</td>
<td>3</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Spend</td>
<td>$7</td>
<td>$88</td>
<td>$81</td>
<td>$176</td>
</tr>
<tr>
<td>Spend per Trip</td>
<td>$758</td>
<td>$280</td>
<td>$102</td>
<td>$158</td>
</tr>
<tr>
<td>Spend per Night</td>
<td>$42</td>
<td>$107</td>
<td></td>
<td>$97</td>
</tr>
<tr>
<td>Commercial Accommodation Spend/Night</td>
<td>$64</td>
<td>$156</td>
<td></td>
<td>$142</td>
</tr>
<tr>
<td>Total Spend</td>
<td>$6,822,000</td>
<td>$88,200,000</td>
<td>$81,294,000</td>
<td>$177,118,000</td>
</tr>
</tbody>
</table>

Source: Tourism Research Australia Local Government Area Profiles (2016)

While international visitation (top market is the UK) is relatively low, domestic overnight and day trips are high. This reflects the presence of a large number of holiday homes and proximity to Sydney. ‘Holiday’ and ‘Visiting Friends and Relatives’ are the main purposes of trips with ‘Business’ not significant. The main form of accommodation is the home of a friend or relative.

Visitation growth in the region is potentially strong as suggested by MacroPlan Dimasi:

*Over the period 2015-25, TRA forecasts that domestic overnight tourism numbers to regional areas in NSW, including the Hunter region, will grow about 3% per annum. In terms of day trip numbers, population growth and the faster growth in the retired cohort with leisure time, coupled with improved access to the region with the North Connex out of Sydney and the Hunter Expressway into the Hunter wine region, should see day trip numbers grow by 2-3% per annum.*

*In terms of international visitor numbers, driven largely by growth from the Asian markets, TRA is forecasting numbers into the Sydney/NSW market will rise by 5.5% per annum. In terms of overnight stayers and day trippers from Sydney, this will see the international market continue to increase in importance to the region.*
The City’s natural assets include:

- Lake Macquarie – the largest coastal saltwater lake in the Southern Hemisphere.
- Watagan National Park.
- Beaches, rocky points and cliff tops.
- Numerous creeks, estuaries, outcrops and beaches.
- Multiple State Parks.

The tourist attractions promoted in Lake Macquarie (e.g. visitNSW.com and the Council’s website) are confined to the Lake, beaches, walking trails, conservation areas and picnic facilities. These are high quality attractions that appeal to the Sydney market, particularly for day trips. However, these offerings are similar to a significant proportion of the area accessible to the Sydney market. Furthermore, the area lacks iconic man-made attractions such as might be found in the hinterland of other major cities. For example, there are no high profile health/wellbeing spas or resorts, eco-lodges, convention facilities, wineries or major art galleries/cultural institutions.

One area where Lake Macquarie has strength is in its calendar of events. Examples of the types of events listed on the visitNSW web site (17 in total) include:

- Markets /Fairs.
- Tours.
- Music.
- Art
- Sport (golf and mountain bikes)
- Heritage.
- Surf Lifesaving
- Air Display.

The City of Lake Macquarie has an emerging profile and competitive advantage in a key growth industry, which is sports tourism. With regard to sports, tourism and events, the City of Lake Macquarie, an integral component of the wider regional economy, has a significant competitive advantage. Surfing and swimming are popular activities and the City boasts some high quality facilities such as the Hunter Sports Centre and the Regional Football Facility in addition to a broad range of local facilities that are the subject of a ‘Sports Upgrade Plan’.

Lake Macquarie houses the Hunter Sports High School with links to the Newcastle Knights National Rugby League and Newcastle Jets A-League clubs. The City is also home to the successful Australian Ice Hockey League team the Newcastle Northstars and the major training school and facilities of Northern Football NSW are located in the City of Lake Macquarie.

The yachting industry is currently the home of numerous yacht builders, other boat builders, and Olympic and international sailors. There is potential to link the local expertise at the University of Newcastle with the sports industry to build up an area of economic advantage, which is not yet evident in Australia, as it offers diversity, rather than concentration of sports.

Given Lake Macquarie’s natural attributes and its existing sporting facilities, sports tourism is an area that can be built upon. There is scope for Lake Macquarie to increase its share of visitation to the wider region and of the future growth that is forecast. There is significant potential for employment growth in this sector. Establishment of some iconic attractions would enhance the ‘brand’ and the appeal of Lake Macquarie as a tourist destination.
Lake Macquarie City Council has recently finalised its *Draft Destination Management Plan 2018-2022*. The Plan is based on market analysis and an assessment of strengths and weaknesses. Future iterations of the plan should explore the scope for attracting iconic ‘destination enhancers’ and the means by which investment may be promoted.

### 2.5 Lake Macquarie’s ‘Driver’ Sectors and Emerging Industries

The industries which are the key drivers of the City of Lake Macquarie’s economy in terms of inter-regional exports, employment, value-added and local expenditure on goods and services (backward linkages) are detailed below.

Construction is a traditional driver of the City of Lake Macquarie’s economy, accounting for a significant share of the City’s industry value-added, jobs and inter-regional exports. The construction sector’s backward linkages through other sectors in the local economy are strong suggesting the local construction industry sources key inputs such as construction and design services from businesses located within the City of Lake Macquarie.

The manufacturing sector is Lake Macquarie’s third-largest industry of employment and the biggest contributor to inter-regional exports. Proportionally, manufacturing contributes more to local industry value-added compared to the wider Hunter Region and accounts for around 20% of the Hunter Region’s manufacturing industry value-added. This coupled with the City’s strong professional services sector, augers well for the development of advanced manufacturing activities in the City of Lake Macquarie and wider region.

![Figure 7. Lake Macquarie’s ‘Driver’ Industries](image)

Lake Macquarie’s financial services sector has a strong inter-regional export-earning profile suggesting the local industry serves both businesses and people living in a wider Greater Newcastle metropolitan catchment, reflecting the City’s growing profile as a hub for knowledge-based SMEs.

The City’s health care sector is the largest contributor to local employment and the third-largest contributor to industry value-added behind construction and ownership of dwellings. With a growing and ageing population and evolving lifestyle demands, health care is poised to be one of the region’s strongest growth sectors over the next 25 years.

There is a need to diversify the economy of Lake Macquarie away from its reliance on retail, mining, manufacturing, health and education. There is a desire to encourage new industries, namely creative, knowledge-based and other non-traditional industries.
Prospects for Lake Macquarie’s economic development are strong, based on traditional sectors of employment as well as the potential for new and developing ‘knowledge-based’ industries in engineering and ‘advanced manufacturing’, related industries such as logistics, health and education, tourism and the professional, scientific and technical services sector.

To understand how the region’s economy is evolving and how it could develop in future, requires an assessment of recent industry growth trends and prospects. As illustrated in the employment industry growth-share matrix below, the City of Lake Macquarie’s expanding industry sectors (high growth and high specialisation relative to the NSW average) include the health care and social assistance, education and training, construction, accommodation and food services and other service sectors.

The local manufacturing industry, despite its relative strength and specialisation compared to the NSW average, is in a transformative stage of development given its recent decline in employment numbers.

The professional services sector is in an emerging industry with positive growth. It is the City of Lake Macquarie’s (and the wider region’s) ‘advanced’ knowledge-intensive services are particularly valuable in an ever-evolving global economy where value chains have become ‘unbundled’ because they provide essential inputs to a raft of other key driver industries, both in Lake Macquarie and elsewhere.

**Figure 8. Employment Growth and Share, Lake Macquarie City to NSW, 2011-2016**

As well as identifying local attributes and opportunities for growth, local challenges must be acknowledged and addressed in planning to assist industry growth, diversification and economic development in Lake Macquarie. Lake Macquarie City’s level of ‘employment capacity’, that is, the City’s jobs-to-workers ratio, is relatively low at
just 63% meaning that there are far fewer jobs located in the City of Lake Macquarie than there are resident workers (that is, residents who have a job, either in Lake Macquarie or elsewhere).

According to the Draft Greater Newcastle Metropolitan Plan 2036 (Local Government Area Narratives), local employment opportunities in the new economy include innovation ecosystems capitalising on fast technology infrastructure which will reverse the flow of people who work outside of Lake Macquarie.

Technological advancement will change the jobs we do and the way we work in the future. Data sharing will also provide opportunities for improvements in business and government functions. This points to a future Lake Macquarie economy that is more closely integrated with the metropolitan Newcastle, Sydney and global economies, and vice-versa.

Taking a broader regional view shows that employment capacity in the combined Lake Macquarie and Newcastle regions is actually quite strong. As illustrated below, when viewed as a single economic region, the combined Lake Macquarie and Newcastle LGAs demonstrates a high level of employment capacity across all industry sectors.

**Figure 9. Employment Capacity, Lake Macquarie City, 2016**


Those industries with a higher number of local jobs compared to resident workers employed in those industries include: agriculture; transport, postal and warehousing; health care and social assistance; retail trade; rental hiring.
and real estate services; wholesale trade; professional, scientific and technical services; accommodation and food services; and utilities.

**Figure 10. Employment Capacity, Greater Newcastle Metropolitan Area*, 2016**

Lake Macquarie’s economic profile illustrates the need for an approach to long-term planning which recognises a deepening integration in a growing and evolving Lake Macquarie and Newcastle region. It also highlights the need to consider the future economy of Lake Macquarie in a much broader, global context with particular regard for current and emerging megatrends that will impact upon and influence the region’s economic development prospects – both in the short to medium-term and over the next 30 years.

### 2.6 Key Megatrends and Lake Macquarie’s Economic Future

A megatrend is a significant shift in environmental, economic and social conditions that will play out over the coming decades. The following megatrends, though not exhaustive, are particularly relevant to Lake Macquarie and the Greater Newcastle Metropolitan Region. The following economic, technological and transport-driven megatrends are particularly relevant to Lake Macquarie’s economic future.

---

* Greater Newcastle is defined as the City of Lake Macquarie and Newcastle City LGAs combined

The Internet of Things and the Growth of the Digital Economy

The Internet of Things (IoT) is the collective term for machines, sensors, and mobile platforms that autonomously measure and analyse their environment and is an integral element in the development of smart cities. The IoT generates data as diverse as the location of mobile phones, weather patterns over a country, sensor readings from jet engines, the temperature in one’s home, and satellite images of Earth.

The IoT is poised to revolutionize every sector of the economy, creating new business models for every industry, and significantly altering how societies and governments function. In a June 2015 report, McKinsey Global Institute refers to “the transformative potential for many types of participants and stakeholders” of the Internet of Things. For example, use of the Internet has progressed from communication to social media and now to the new sharing economy. Right now, customers are sharing media and ideas on social technologies, but in the future, they’ll use similar technologies to share products and services, which will cause a ripple of impacts far more disruptive than what we’ve seen before.

In its many manifestations, the IoT also has the potential to be an important tool in addressing difficult policy issues of the future, such as urban congestion and water resource management. If the City of Lake Macquarie and its partners in economic development build on their existing strategies now, to shift resources to new digital initiatives, and redesign their approach to business and governance, will have a distinct advantage.

The Emergence of the Smart City / Region and its Growth

The most significant megatrend in urbanised economies is the global development of smart cities – a series of projects designed to improve productivity, employment and efficiency in services provision in urban areas. ‘Smart Cities’ projects integrate dynamic information technologies, fast internet, the interconnectedness of the Internet of Things (IoT) and social media in a digital mesh to foster local and regional economic growth, improve the efficiency and effectiveness of services provision to business and residents, and resolve increasing urban problems including mobility, access, waste, climate change, urban community connectivity and business support.

**Figure 11. Elements of a Smart City / Region**

Source: SC Lennon & Associates using various ‘smart city’ references
Combining cities with smart tech solutions has become the expectation of today’s digital age. Great ‘smart’ cities: attract talent and investment; encourage innovation; and create jobs and economic prosperity. Smart cities integrate IoT technologies into city management for purposes such as improving services, reducing costs or enhancing the liveability of places and connecting communities.

Through Dantia, the City of Lake Macquarie launched a private sector/collaborative Long Range Wide Area Network or LoRaWAN (July 2018). The launch of the LoRaWAN and comprehensive review of the City of Lake Macquarie Smart Cities Strategy will offer a platform for the City to develop into a comprehensive smart city with an integrated plan to foster business, social and community growth.

**A Growing Trend to Live, Work and Study Anywhere**

The digital economy has supported changing work practices and has created new lifestyle opportunities for both the employed and self-employed. Corporate downsizing, the greater premium placed on skills and knowledge, the ability of businesses to readily source inputs from remote suppliers, the need (or opportunity) for greater worker flexibility in many occupations and enhanced communications and information technology have provided opportunities for new and more flexible modes of working and have given rise to ‘home-based businesses’.

As telecommunications technologies become a reliable substitute for face-to-face communication, people will have greater choices to work or study from home, via technology hubs or shared workplaces and the world via a screen people will want to be flexible with respect to where they undertake work, especially if they can avoid long commutes.

**A Changing Population and Evolving Transport Needs**

Infrastructure Australia has projected that, between 2011 and 2031, growth in Australia’s capital cities alone will be approximately 6.4 million persons. This is equivalent to a new Melbourne and Brisbane. In 40 years New South Wales’ population is forecast to be 11.2 million, around 50 per cent more people than live in the State today. Future Transport NSW projects that most of this growth will occur in Sydney and in coastal regional cities like Newcastle, Wollongong, Gosford and Coffs Harbour. This trend will place increasing pressure on urban roads and public transport services.

History tells us that transport technologies are the principal catalyst for changes in patterns of urban development. Humans have always used technology to solve their transport problems, whether through the horse and cart, steam train, car or aeroplane. What’s different now is the pace of innovation. New technologies are emerging with promises to transform the way we travel, whether it’s automated vehicles, drones, or quantum computing. It is challenging to predict which of these emerging technologies will deliver on their promises, when they will become viable, what they will cost and whether customers will take them up in critical numbers.

As population dynamics evolve, a large number of people are increasingly less likely to drive cars. In New South Wales, data published by the NSW Government Department of Roads and Maritime Services reveals that, compared to years past, fewer people between the ages 16 and 25 years are obtaining a driver’s licence. This, coupled with an expanding older population cohort which is less likely to drive, means there will be a need to ensure that the public transport system is able to meet people’s changing needs.

Public transport services are likely to be complemented with new types of responsive on-demand transport and other new modes of service provision. The phenomenon of ‘customer empowerment’ (through the web and social media) is making a big mark on public transport as private companies begin to provide alternatives to government as a provider. Compounding this trend, the NSW Government has stated a commitment to achieve net-zero
emissions by 2050 through its Climate Change Policy Framework. To meet this objective, transport will need to transition to renewable sources of electricity, which will require extensive changes to vehicles and fuelling stations.

Customers are also reshaping freight and logistics through the rise of online and mobile shopping where markets are being met by companies connecting businesses directly to customers. To meet the growing demand for faster deliveries, companies continue to look to new technologies such as automated vehicles and drones.

**Designing Places for Healthier Lifestyles**

Around the world, people’s health is being negatively impacted by congestion and sedentary lifestyles. Encouraging walking and cycling for short local trips can provide many benefits to cities, centres and towns. Apart from activating lifestyles that are positive for preventing chronic illnesses, these are important steps for reducing congestion plus lowering carbon emissions and air pollutants. Communities that have corridors, where walking and cycling connects people to green spaces, shops, services, schools and entertainment, will also be attractive places in which to live and work. This is important for the wellbeing of the community members and for attracting skilled workers that facilitate globally competitive businesses to employ people.

**New Technologies and Energy Industry Adaptation**

According to research reported by the Planning Institute of Australia (2016) worldwide energy usage is forecast to rise by 40% between 2009 and 2035, with all sources of energy expected to experience growth. Australia is forecast to experience a 35% growth in total energy consumption by 2030. It is anticipated that the most rapidly growing sources of energy will be coal seam gas (3.4% per year) and renewables (3.5% per year).

With climate change a global issue and coal a carbon-intensive source of energy, the long-term place of coal in the global energy mix is uncertain. The International Energy Agency (IEA) (2016) is projecting a shift in investment towards renewables in the period 2016-2040, suggesting that 60% of future investment will be in oil, gas and coal extraction and supply, down from 70% in the period 2000-2015, and with most of that investment directed towards the replacement of exhausted fields and mines.

According to the IEA, in the power sector, the relationship between electricity supply and generating capacity is changing. The large share of future investment will be in renewables-based capacity that tends to run at relatively low utilisation rates, so every additional unit of electricity generated is set to necessitate the provision of 40% more capacity than during the period 1990-2010. The increased share of spending on capital-intensive technologies is balanced in most cases by minimal operational expenditures, e.g. zero fuel costs for wind and solar power.

MacroPlan Dimasi (2017) states that while there will be a shift in investment towards renewables in the period 2016-2040 given the high quality of coal in the Hunter Valley, the downside risks over the twenty years to 2036 appear to be low. The latest forecasts by IBISWorld (April 2018) suggest Australia’s black coal industry revenue will decline over the next five years. Competition from Colombia, South Africa and Indonesia is anticipated to intensify over the period, as these countries are likely to ramp up export volumes of black coal.

Domestic demand is also anticipated to decline over the next five years, as firms in the fossil fuel electricity generation industry move from coal to renewable energy alternatives. This is largely due to the age of existing coal fire power stations that are reaching the end of their economic life. A period of slower growth in the mining industry will have low-on effects to all suppliers, from manufacturing to all the service sectors involved feeding off the mining industry. As far as Lake Macquarie’s economic development is concerned, for these sectors, this will present the opportunity or incentive to seek out other market opportunities for growth.
The Shift from Old Industries to Advanced Manufacturing

Advanced manufacturing is the process by which knowledge-intensive value is added in both the pre- and post-production phase in areas including R&D, concept design, planning, engineering and after-sales service. The Advanced Manufacturing Growth Centre (AMGC) estimates that as much as 41 per cent of global trade is now in intermediate goods, for example, components and research.

Some examples of advanced manufacturing technologies and processes include: additive manufacturing/3D printing; advanced materials such as carbon fibre and graphene to make stronger, lighter or more durable products; ‘Industry 4.0’ which connects big data and analytics with automation and robotics, cloud computing and software integration to create ‘smart factories’; biotechnologies such as genetically engineered crops; and nanotechnologies such as engineering and technology conducted at the nanoscale to produce products such as disease-targeted drugs and lighter sporting equipment.

In Australia, the future for manufacturing is in highly specialised products and processes in areas such as medical technology, agri-business, bio-pharmaceuticals, mining and processing technologies, timber processing technologies, aerospace and defence. The OECD found in 2012 that Australia’s investment in high-tech industries was lower overall than other advanced economies, but said Australia had prospects in specialised niches - such as medical devices, biomaterials, mining equipment and aerospace.

There are a number of government programs aimed at supporting the advanced manufacturing sector. For example, the Cooperative Research Centres (CRC) Program supports industry-led collaborations between industry, researchers and the community. It’s a proven model for linking university researchers with industry to focus on research and development towards use and commercialisation. These types of projects are built over a long period of time, based on collaborations with STEM areas within universities.

STEM is a strength of the University of Newcastle with some of Australia’s most significant researchers in engineering, robotics, sensor development, community health management and energy systems which offers strong potential for partnerships. There is scope for Lake Macquarie to take advantage of this and related programs in partnership with industry through UoN and other universities.

High-Tech Food Production and the Growth of Agri-business

Agriculture in Australia is continually evolving. For example, the horticultural sector is rapidly-growing and is Australia’s third-largest agricultural sector after livestock and broad acre farming. The industry is changing with a growing trend towards the construction of technologically complex, high-yielding and resource-efficient greenhouses using renewable energy such as wind and solar generation to grow a diversity of crops.

The Internet of Things has already come to the farm in the form of irrigation technologies and crop yield monitoring. Technological advances underpin 21st Century precision agriculture or ‘satellite farming’, which uses GPS tracking systems and satellite imagery to monitor crop yields, soil levels, and weather patterns to increase efficiency on the farm. With drones, farmers can locate precisely where a diseased or damaged plant is, more accurately release fertilizer and pesticides, or take photos and have immediate information about a certain area of the farm.

These trends have a bearing on the future of food production in the Hunter Region where traditional industry strengths in agriculture bode well for the development of new economic activities in agribusiness and food production.
The Rise of the Creative Industries

Creativity and design are at the forefront of a rapidly changing world. The creative industries refers to a broad grouping of individuals and organisations (businesses) that turn original creativity into commercial outcomes. Creative industries can be distinguished from other industries by the fact that ‘creativity’ is their primary source of value. They include activities focussed on cultural production, such as film, music and art, and the ‘creative services’ like architecture & design, advertising & marketing and software & digital content.

The creative industries generates US$2.25 billion in revenue, 3% of world GDP, and 29.5 million jobs worldwide (Queensland University of Technology). Creative industries are innovation-led, knowledge-intensive and highly exportable, and they make a larger contribution to Australia’s GDP than a number of traditional industry groups. According to Queensland University of Technology, employment in creative industries is currently growing 40% faster than the Australian economy as a whole.

Replacing and Complementing Jobs with Technology

Australia’s economy is becoming increasingly reliant on the growth of knowledge-intensive jobs and industries focused on ideas and problem-solving, with the largest increase in jobs being those that require higher-level of cognitive skills and qualifications. At the same time, numerous jobs, including some highly-skilled occupations, are being replaced with technology.

It can be argued that a focus on technology’s ‘replacement’ role fails to appreciate how it also can also be complementary. Job loss in some occupations will continue, but it will be accompanied by gains in different fields, just as in the past. As explained by McQueen (2018), according to a 2013 study by researchers at Oxford University, while technological disruption will see some jobs in retail, journalism, postal services, telemarketing and administration automated, there are others that will be more or less ‘disruption-proof’. These occupations include physicians and surgeons, psychologists, dentists, anthropologists, chief executives, computer systems analysts and marine engineers to name a few.

The biggest risk is that technology will polarize the labor market as the demand for workers grows on both the high and low ends in terms of education. Highly skilled individuals in managerial, professional and technical occupations have all seen improvements. For the City of Lake Macquarie, strategies which support investment in education infrastructure and services and which seek to identify and accommodate businesses which demand skilled and adaptable labour, will have the strongest prospects for supporting economic development by enabling investment and economic activity which relies on the generation, distribution and use of new ideas.

Education as a Driver of Regional Economic Development

During previous waves of automation, workers could switch from one kind of routine work to another; but this time many workers will have to switch from routine, unskilled jobs to non-routine, skilled jobs to stay ahead of automation. That makes it more important than ever to help workers acquire new skills quickly.

Economists have noted the high correlation between regional economic growth and higher educational attainment, which can be observed in cities and regions throughout the world. In Ireland for example, the Western Development Commission highlights the role of education, along with enterprise and employment - what it refers to as the ‘3Es’ - as a key lever for economic development along with infrastructure and innovation.

Regions are successful because enterprises in these regions are successful. When enterprises grow, employment grows, and this depends on skilled and educated people. Policy to support the ‘3Es’ of enterprise, employment and education must work together at all of a national, state and regional level to create dynamic regions.
The tertiary education sector is at the frontier of the knowledge economy. Students at universities in Australia’s regions face unique challenges compared to their metropolitan counterparts such as lower average incomes and social dislocation associated with having to move away from home to attend university. According to the Australian Bureau of Statistics, people from major cities are twice as likely to hold a degree than those from regional and remote areas. All of this points to the opportunity for the City of Lake Macquarie to collaborate with the established educators in the wider region and with industry to meet the challenge of equipping the workforce to address the skills gaps that will emerge through the impending wave of digitisation and automation.

By pro-actively collaborating with the region’s key industry, government and institutional stakeholders, Lake Macquarie City Council’s economic development activities will help facilitate the City’s stronger integration with the regional economy, supporting higher levels of business investment and employment creation in the City.

2.7 Lake Macquarie’s Deepening Regional Economic Integration

Rather than being separate to Newcastle, Lake Macquarie is an integral component of a greater Lake Macquarie-Newcastle region. The latest REMPLAN data shows that Lake Macquarie represents around one-fifth of the 240,049 people working in wider Hunter Region. Greater Newcastle has a robust and diverse economy with strong global links. The region has successfully transitioned from being a ‘steel’ city to a services city since the closure of BHP in 1999. This is evidenced by its low rate of unemployment (5.9% as of March 2018), the net inflow of workers into the economy, and its highly specialised health, education, defence, tourism and creative sectors comfortably filling the gap created by the old manufacturing sector.

Key strategic infrastructure in the region includes:

- The airport – with a potential to strengthen links into the national and global economies;
- Defence facilities – with a potential to grow the aerospace sector and related industries;
- The port – with potential to expand into a container port and a cruise ship destination;
- The university – one of the three regional universities of national significance;
- Health facilities – serving a wide region; and
- Transport Infrastructure – includes the new Hunter Expressway (HEX) and North Connex that will improve currently very poor connections to Sydney.

According to the Greater Newcastle Metropolitan Strategy Economic and Demographic Outlook prepared by MacroPlan Dimasi (September 2017), Greater Newcastle is projected to grow, from its present population of 570,000 to a city of 690-750,000 in the period 2016-36. This population growth will in part reflect Australia and NSW’s population growth in this period which will lift population in all urban areas, but it will also reflect Greater Newcastle’s comparative strengths.

Compared to the wider Hunter Region, those industries in Lake Macquarie that make a proportionally higher contribution to industry value-added include construction, education and training, health care and social assistance, financial and insurance services, manufacturing, accommodation and food services and retail trade. This profile reflects the City’s role as a services hub to a wider population catchment and to business and industry throughout the wider region, in that:

- Lake Macquarie is a location for SMEs serving the wider metropolitan Newcastle and Hunter regions in, for example, construction and financial services;
- It is a central location for the delivery of health care services;
- It has a robust local education sector serving the needs of the local population and beyond; and
• It is a hub of manufacturing and related services to the mining industry - metal and metal product manufacturing, transport equipment and parts manufacturing and technical equipment and appliance manufacturing together account for almost half of the total value of Lake Macquarie’s manufacturing industry value-added and 43% of manufacturing industry employment.

As identified in the Hunter Regional Plan 2036 and the Smart Specialisation Strategy for the Hunter Region, Greater Newcastle’s economic growth is expected to be led by high-value knowledge and advanced manufacturing sectors, which are demonstrating the potential to grow prosperity and a sustainable competitive economy into the future. A key initiative in the Smart Specialisation Strategy was the formation of the Hunter Innovation Network. A Smart Specialisation Summit was held in Newcastle on 16 December 2015. The Summit identified seven areas of strengths and potential growth that will be important for the Hunter’s future. These are:

• Advanced Manufacturing;
• Creative Industries;
• Defence;
• Food and Agribusiness;
• Medical Technologies and Pharmaceuticals;
• Mining Equipment, Technology and Services (METS); and
• Oil, Gas and Energy Resources.

The growth of these sectors is complemented by a growing health, social support and home maintenance sectors required to support ageing in place and retirement living, which along with growth in retail trade and tourism, will importantly also provide jobs for less skilled residents.

According to a report by MacroPlan Dimasi (2017), that growth will also lift living standards in the Greater Newcastle economy, with gross regional product (GRP) per capita expected to rise by 1.3% in real terms. It will also deepen labour markets and create more opportunities for young people to stay and build careers in Greater Newcastle. This provides opportunities not only for Newcastle, but for the City of Lake Macquarie as well.

2.8 Lake Macquarie’s Opportunity to Integrate with the Global Economy

As an economy, about 50% of Greater Newcastle’s activity is in traded goods and services which ties the regional economy into the global economy much more than other Australian cities. That exposes the region to competitive global forces but, at the same time, that exposure drives the Greater Newcastle economy to maintain a competitive edge.

Greater Newcastle’s past suggests that it has a capacity to respond to global forces of change and the competitive pressures they pose. Globalisation has made Greater Newcastle more integrated with the world economy and this trend is set to continue. Growth in China and India will see demand for resources and resource-related engineering services, manufactured food products, education, tourism and health services from those countries increase. Many of those same forces are likely to see the Greater Lake Macquarie-Newcastle economy integrate more into Australia’s national economy.

The Greater Lake Macquarie-Newcastle region is developing possibly the world’s first automated vehicle implementation strategy supported by the NSW Government that will leverage its advanced manufacturing sector and the aeronautical technology park to develop automated vehicle (AV) capability and technology development and niche manufacturing of AV technology.
It will build capability and experience in modifying the urban environment to facilitate AV implementation to maximise the benefits of this new technology through solving the first and last kilometre dilemma with public transport, making the urban environment legible for AVs and strategising around how to make no-regrets infrastructure decisions to reduce potential redundancy before the value of the asset is realised.

Supporting opportunities for new ways of moving people and goods to, from and around the Greater Lake Macquarie-Newcastle area should be a priority, particularly in light of the rapid advances in transport technologies that are either anticipated or already having an impact.

2.9 Lake Macquarie - Preparing for Knowledge-based Economic Development

The combination of Lake Macquarie-Newcastle region’s economic history, its current industry profile and specialisations and the influence and impact of current and emerging megatrends, points to an economic future which fulfils the region’s potential to transition to a knowledge economy.

A knowledge economy is one which is directly based on the generation, distribution and use of knowledge and information, where the keys to prosperity are encapsulated in the application of ideas, technologies and innovation embedded in all sectors of the economy. This means that rather than being a separate sector of the economy, ‘knowledge’ is embedded in all industries.

Certain industries typically have a higher knowledge-intensity compared to population-driven sectors like retail trade, administrative services and other services. These more knowledge-intensive sectors include health care, education, manufacturing (or elements of it), agribusiness / ag-tech and professional, scientific, technical and creative services.

Figure 12. Broad Categorisation of Knowledge-Intensive Industries
These are the industries which can form the backbone of an emerging ‘knowledge economy’. How Lake Macquarie grows its knowledge economy depends on how it addresses current challenges to growth, and more importantly, how it leverages its local strengths and opportunities for economic development. These attributes include the area’s unique lakeside / coastal setting, its family-friendly lifestyle supported by a depth of community services and facilities, its proximity to the Sydney CBD and potential for vastly improved transport connections, its proximity to major research, health and learning institutions in the Newcastle CBD and its relatively diverse and evolving industrial base.

Lake Macquarie’s existing businesses as well as those which might be attracted to invest and locate in the area will naturally seek to leverage its natural comparative advantages to build a competitive advantage through increased productivity, using a combination of industry knowledge, resources, skills and the ability to innovate.

In an increasingly competitive global economy, access to knowledge and innovation are central to the abilities of businesses to deliver new cost savings or to add value through product differentiation. As a result, highly skilled ‘knowledge workers’ - people who are paid to solve problems and generate opportunity and wealth through the creation of new ideas - have become the new drivers of economic prosperity. Attracting and retaining ‘knowledge workers’, and the occupations and industries they are engaged with, should therefore underpin the City of Lake Macquarie’s efforts to grow a strong and diverse economy, which is resilient and adaptable to change, making the best use of the unique advantages of Lake Macquarie’s location and lifestyle.

To be an attractive, globally-connected investment location, Lake Macquarie needs to be a productive and accessible place, but it also needs to be liveable. Great ‘smart’ cities around the world attract talent and investment, they encourage innovation and they provide jobs and economic prosperity. Cities and regions that are ‘smart’ have the latest technologies in place, they are innovative, they have access to innovative funding and financing and they are built on the concept of collaboration and sustainability.

The Lake Macquarie-Newcastle region’s manufacturing heritage and broader industry trends and prospects suggest emergent opportunities in advanced manufacturing linked to the resources sector and to other key industries, including medical technologies and pharmaceuticals. The future of manufacturing is in those areas with a natural home bias or building off a comparative advantage in agriculture, and those firms with an innovative edge allowing them to compete despite the higher costs of operating in Australia.

Despite some areas of decline in the region’s traditional industrial activities, new opportunities are emerging in sectors like advanced manufacturing, health and education and it is critical that the City of Lake Macquarie is in a position to respond to investment enquiries and development proposals in an informed manner as they are received. To better understand employment land capabilities, Lake Macquarie City Council can take the lead by determining a forecast quantum of demand and supply for employment land in line with the City’s desired economic future.

According to the latest 2016 Census data release, Australia’s health care and social assistance sector has grown more than any other industry over the five years to 2016, from 11.6% of total employment to 12.6%. The only other industry to show positive employment growth and an increase in its share of total industry employment in Australia over this period is Education and Training, which grew from 8% of national employment to 8.7%.

The tertiary education sector is at the frontier of the knowledge economy. The University of Newcastle (UoN), in its own words, is committed to equity and excellence and to creating a better future for its regions through a focus on innovation and impact. Potential synergies between education and training courses at UoN, research and development and the Lake Macquarie-Newcastle region’s emerging medical and health industries, the creative
industries, construction and manufacturing provides the impetus for local research links and/or clusters to establish, underlying the region’s transition to a knowledge economy.

**Figure 13. Lake Macquarie’s Current and Emerging Industry Drivers**

Lake Macquarie is poised to further develop a depth and diversity of visitor attractions and experiences for locals and visitors alike through continued investment in sports and tourism infrastructure to support economic growth. Opportunities that continue to evolve and which require the attention of regional stakeholders include: sport and recreation by developing facilities and building on the sporting infrastructure and events already on offer in the region; and conferences - expanding partnerships between the private sector and the University of Newcastle to build upon existing conference tourism activities in the region.

Lake Macquarie’s economic profile coupled with emerging trends and prospects reinforce the defining role of new technologies in shaping how and where we live, work and do business. In order to plan for a future Lake Macquarie economy defined by rapidly changing technology and the emergence of new industries, activities and jobs, the City of Lake Macquarie needs to address the enablers of economic development to ensure the City is ready for the next wave of economic growth and development to 2050.
3. The Economy of the Future: Spatial Implications

3.1 Planning for the Economy of the Future: Three Scenarios

Given the fact that macro-trends will ensure that Lake Macquarie’s future is vastly different to today and that the precise nature of these changes is not yet known, it is prudent to take a contingency based approach to planning for the future. To this end three scenarios are modelled as follows:

Scenario 1 (Low-Growth)

The first scenario reflects population forecasts within the Population, Demographic and Housing Forecasting prepared by REMPLAN. This scenario positively responds to the City’s aspirations for greater economic diversification, employment self-containment and the growth of key employment areas and centres. Planning will proceed on the basis of a reduced population growth rate with a strong emphasis on preserving the qualities of the natural environment. Infill development in existing urban areas and zoned but undeveloped urban areas will be emphasised to contain the need for expanded greenfield development beyond currently designated land.

Scenario 2 (Medium-Growth)

The medium-growth scenario acknowledges and expands on the layers of integration between Lake Macquarie and the wider region - Newcastle and the Lower Hunter - and the opportunities that may flow from this. There are significant benefits to be had by becoming more integrated into a dynamic region. The demand for land required for housing and employment uses will need to be monitored, with progressively updated population forecasts and housing and employment lands needs analyses. Policies on infill development, land release and environmental protection will need to be updated to reflect emerging needs.

Scenario 3 (High-Growth)

The high-growth scenario is a situation where Lake Macquarie finds itself within the purview of the expanding global city that is Sydney. Housing price pressure in Sydney, emerging live and work anywhere trends and enhanced transport links along the Lake Macquarie/Newcastle - Sydney - Wollongong axis have a potential to create growth opportunities and pressures that will need to be curated and managed. Lake Macquarie City’s capacity to realise these opportunities and attend to issues is enhanced by Lake Macquarie City Council’s strategic vision, its management approach and the work of its external economic development company, Dantia.

In order to understand the implications of each scenario, key assumptions are considered and addressed using various data sources as explained below.

3.2 Lake Macquarie’s Economic Futures: Overview of Key Assumptions

If the vision for Lake Macquarie’s economic development is to be realised, this will necessitate an increase in the number of people living and working in the City / region and connecting with economic activity, both physically and functionally, elsewhere in Australia and throughout the world. Realising the City’s vision for a diverse economy that is resilient and adaptable to change, and which makes the best use of Lake Macquarie’s location and lifestyle advantages should see the City capturing a greater share of employment that is geared towards more knowledge-intensive activity in Lake Macquarie’s traditional and ‘driver’ industries.

To realise the City’s vision, there are employment implications and hence implications for Lake Macquarie’s land use and infrastructure planning. This analysis is based on the following key parameters:
• Lake Macquarie’s future population and the rate at which it will grow.
• An understanding of the regional economy and how it might develop.
• The labour force participation rate and how it will change as the City and wider region matures.
• The unemployment rate – what is a reasonable target given the likely make-up of the population and Lake Macquarie’s economy in the future?
• The level of self-containment of employment and therefore, jobs located in Lake Macquarie.
• The split between jobs driven by population growth and jobs in the ‘driver’ sectors of the economy.
• Acknowledgement of the City’s and region’s existing industrial structure.
• An understanding of global forces impacting on regional development in Australia.

3.3 Population Futures

The low-growth scenario relies on population forecasts prepared by REMPLAN, which assumes a continuation of current trends, as summarised in Table 3.

Table 3. City of Lake Macquarie Forecast Population Growth, 2016 to 2036

<table>
<thead>
<tr>
<th>Location</th>
<th>2011</th>
<th>2016</th>
<th>2036</th>
<th>2016-2036</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belmont</td>
<td>19,198</td>
<td>19,673</td>
<td>20,290</td>
<td>617</td>
</tr>
<tr>
<td>AAGR*</td>
<td>0.5%</td>
<td>0.2%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cardiff-Glendale</td>
<td>30,586</td>
<td>32,857</td>
<td>38,213</td>
<td>5,356</td>
</tr>
<tr>
<td>AAGR</td>
<td>1.4%</td>
<td>0.8%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Charlestown</td>
<td>30,615</td>
<td>31,382</td>
<td>33,027</td>
<td>1,645</td>
</tr>
<tr>
<td>AAGR</td>
<td>0.5%</td>
<td>0.3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Morisset</td>
<td>22,581</td>
<td>24,440</td>
<td>34,811</td>
<td>10,371</td>
</tr>
<tr>
<td>AAGR</td>
<td>1.6%</td>
<td>1.8%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Swansea</td>
<td>13,861</td>
<td>14,721</td>
<td>18,216</td>
<td>3,495</td>
</tr>
<tr>
<td>AAGR</td>
<td>1.2%</td>
<td>1.1%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toronto</td>
<td>28,928</td>
<td>29,370</td>
<td>31,746</td>
<td>2,376</td>
</tr>
<tr>
<td>AAGR</td>
<td>0.3%</td>
<td>0.4%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Warners Bay</td>
<td>33,107</td>
<td>33,727</td>
<td>35,305</td>
<td>1,578</td>
</tr>
<tr>
<td>AAGR</td>
<td>0.4%</td>
<td>0.2%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>West Wallsend</td>
<td>17,936</td>
<td>20,239</td>
<td>24,920</td>
<td>4,681</td>
</tr>
<tr>
<td>AAGR</td>
<td>2.4%</td>
<td>1.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>196,812</td>
<td>206,409</td>
<td>236,528</td>
<td>30,119</td>
</tr>
<tr>
<td>AAGR</td>
<td>1.0%</td>
<td>0.7%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Average Annual Growth Rate

Source: REMPLAN (August 2017), Population, Demographic and Housing Forecast Modelling: Supplementary Report, for Lake Macquarie City Council

The forecast is for the growth rate to fall from the 2011 trend of 1.0% per annum to 0.7% per annum from 2016 to 2032. Over a third of the growth is forecast to occur in Morisset where the growth rate going forward is 1.8% per annum. Swansea and West Wallsend have future growth rates at or above trend, and all other localities have lower growth rates.
It appears that the forecast is based for the main part on projected natural increase (product of births and deaths) and, except for Morisset, there is little in-migration assumed. The implications for dwelling and household numbers are summarised in Table 4.

Table 4. Dwelling and Household Projections, City of Lake Macquarie, 2016 to 2036

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2036</th>
<th>Increase pa</th>
<th>AAGR*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>206,409</td>
<td>236,528</td>
<td>3,012</td>
<td>0.7%</td>
</tr>
<tr>
<td>Dwellings</td>
<td>87,763</td>
<td>101,991</td>
<td>1,423</td>
<td>0.8%</td>
</tr>
<tr>
<td>Households</td>
<td>81,436</td>
<td>93,901</td>
<td>1,247</td>
<td>0.7%</td>
</tr>
<tr>
<td>Persons per Household</td>
<td>2.35</td>
<td>2.32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2006 to 2016 AAGR</td>
<td></td>
<td></td>
<td>0.9%</td>
<td></td>
</tr>
</tbody>
</table>

* Average Annual Growth Rate

Source: REMPLAN (August 2017), Population, Demographic and Housing Forecast Modelling: Supplementary Report, for Lake Macquarie City Council

It can be seen that the forecast is for the size of households to contract from 2.35 persons per household to 2.32 reflecting the ageing of the population and changes in household structure. Dwelling numbers exceed household numbers due to the prevalence of ‘holiday homes’. The proportion of holiday homes is forecast to increase from 7% to 9%.

The projected ageing of the population under this low-growth scenario is illustrated in Table 5, which shows the percentage point increases in the over 55 year-old cohorts for localities within Lake Macquarie.

Table 5. Projected Ageing of Lake Macquarie’s Population by Locality

<table>
<thead>
<tr>
<th>Locality</th>
<th>Increase in % Over 55 year-olds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belmont</td>
<td>2.9%</td>
</tr>
<tr>
<td>Cardiff-Glendale</td>
<td>10.9%</td>
</tr>
<tr>
<td>Charlestown</td>
<td>3.0%</td>
</tr>
<tr>
<td>Morisset</td>
<td>-2.3%</td>
</tr>
<tr>
<td>Swansea</td>
<td>-0.5%</td>
</tr>
<tr>
<td>Toronto</td>
<td>0.5%</td>
</tr>
<tr>
<td>Warners Bay</td>
<td>4.3%</td>
</tr>
<tr>
<td>West Wallsend</td>
<td>7.1%</td>
</tr>
</tbody>
</table>

Source: REMPLAN (August 2017), Population, Demographic and Housing Forecast Modelling: Supplementary Report, for Lake Macquarie City Council

It can be seen that, according to the REMPLAN forecasts, only Morisset and Swansea have these cohorts contracting, while in all other localities the proportion of retirees and elderly is projected to grow. This has implications for workforce participation and business investment in the area.
3.4 Alternative Population Futures

It is instructive to compare the REMPLAN population forecast with comparable forecasts as per Table 6.

**Table 6. Comparable Population Forecasts, Lake Macquarie and Greater Newcastle**

<table>
<thead>
<tr>
<th>Source</th>
<th>Area</th>
<th>2016</th>
<th>2036</th>
<th>AAGR*</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSW Department of Planning and Environment</td>
<td>Lake Macquarie LGA</td>
<td>202,350</td>
<td>226,800</td>
<td>0.57%</td>
</tr>
<tr>
<td>REMPLAN</td>
<td>Lake Macquarie LGA</td>
<td>206,409</td>
<td>236,528</td>
<td>0.68%</td>
</tr>
<tr>
<td>Draft Greater Newcastle Metropolitan Plan</td>
<td>Greater Newcastle</td>
<td>540,000</td>
<td>700,000</td>
<td>1.31%</td>
</tr>
<tr>
<td>Draft Greater Newcastle Metropolitan Plan</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>id Population Forecast Newcastle</td>
<td>Newcastle LGA</td>
<td>164,657</td>
<td>202,049</td>
<td>0.89%</td>
</tr>
</tbody>
</table>

* Average Annual Growth Rate

Source: As noted

The NSW Department of Planning forecast is for growth of only 0.57% per annum in Lake Macquarie to 2036. This is consistent with rural NSW. The Department assumes that regions north of the Hawkesbury River are divorced from Sydney growth pressures. The Draft Greater Newcastle Metropolitan Plan, which includes Lake Macquarie, is forecasting 1.31% per annum growth, and id Consulting is forecasting 0.89% per annum growth for the Newcastle LGA. Hence there is a lack of consistency between forecasts. This is a critical issue that will require close monitoring going forward.

Department of Planning and Environment forecasts for Sydney assume that large numbers of people can be accommodated with the existing urban area. However, the ‘de-densifying’ implications of new technologies such as autonomous vehicles and the difficulties associated with continued infill development and issues of housing affordability, suggest that spill over into the hinterland is entirely possible, if not likely. The extent to which this will occur will depend upon a range of factors including whether fast and efficient transit services are provided.

The NSW Government’s transport plan as articulated in its *Future Transport Strategy 2056*, foresees this eventuality. The strategy espouses a future where the vision for Greater Sydney as a metropolis of three cities will guide planning, investment and deliver customer outcomes including faster, convenient and reliable travel times to one of the three cities or to the nearest strategic centre. By 2056, economic and housing growth around Greater Sydney will drive integration across the city’s hinterland, establish Gosford and Wollongong as ‘satellite cities’ and Newcastle, Canberra and the Gold Coast as ‘global gateway cities’ – the key entry points to NSW. Population and economic growth in these areas will require fast transit connections to Greater Sydney.

According to the *Future Transport Strategy 2056*, regional cities and centres will be connected to outlying towns and centres by a ‘hub and spoke’ network, as illustrated below. They will be centres for health, education, and justice services as well as providing access to employment opportunities and air transport connections. Towns and villages will offer employment and housing and will continue to be important in attracting domestic and international visitors, bringing job opportunities and economic benefits to rural communities.
The Draft Greater Newcastle Metropolitan Plan includes a strategy for creating higher-speed connections to Sydney to encourage new employment opportunities. It is stated “Higher speed connections between Greater Newcastle and Greater Sydney can support economic growth within the broader corridor via the Central Coast. National and international case studies indicate benefits such as closer economic and social integration, lifestyle improvements from a shorter commute time and a lower cost of living from doing business outside of capital cities”.

Of course, growth in Lake Macquarie will depend on land availability and infrastructure provision and importantly, environmental constraints. The situation in Sydney over the past two or three decades has been one in which land has been in short supply and this has resulted in constraints on growth and associated net outwards migration. Table 7 shows that under a scenario currently being forecast by the NSW Department of Planning and Environment, there is a potential for an additional 3 million people (extrapolated) to be accommodated in Greater Sydney by 2050.

**Figure 14. Regional NSW Potential Road, Rail and Higher-Speed Corridors**

The NSW Department of Planning and Environment population forecast assumes that Lake Macquarie’s share of future growth will fall from 4.3% to 3.2% meaning that the City of Lake Macquarie will receive only 1.3% of future growth. The population is forecast to increase by only 43,350 persons or 21.4%. The average annual (compound)
growth rate (AAGR) for Lake Macquarie is forecast to be only 0.6% per annum compared to 1.5% per annum for Sydney. It is considered that this could be an under-estimate of growth potential.

Table 7. Forecast Population Growth Scenarios to 2050, Greater Sydney and City of Lake Macquarie

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Sydney 2016</th>
<th>Sydney 2050</th>
<th>Increase</th>
<th>% Increase</th>
<th>AAGR*</th>
</tr>
</thead>
<tbody>
<tr>
<td>P &amp; E Forecast</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lake Macquarie</td>
<td>4,681,800</td>
<td>7,760,700</td>
<td>3,078,900</td>
<td>65.8%</td>
<td>1.5%</td>
</tr>
<tr>
<td>Share of Sydney</td>
<td>202,350</td>
<td>245,700</td>
<td>43,350</td>
<td>21.4%</td>
<td>0.6%</td>
</tr>
<tr>
<td>Maintain Share</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lake Macquarie</td>
<td>202,350</td>
<td>335,422</td>
<td>133,072</td>
<td>65.8%</td>
<td>1.5%</td>
</tr>
<tr>
<td>Share of Sydney</td>
<td>4.3%</td>
<td>4.3%</td>
<td>4.3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increase Share</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lake Macquarie</td>
<td>202,350</td>
<td>388,035</td>
<td>185,685</td>
<td>91.8%</td>
<td>1.9%</td>
</tr>
<tr>
<td>Share of Sydney</td>
<td>4.3%</td>
<td>5.0%</td>
<td>6.0%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Average Annual Growth Rate
Source: NSW Department of Planning and Environment and SC Lennon & Associates

Table 7 shows two additional scenarios. The first is a situation where Lake Macquarie maintains its growth share at 4.3%. In this scenario the population increases by 133,072 or 65.8%. This is a substantial change that is considered to be entirely plausible. The second is a scenario where there is a modest increase in the share of Sydney’s growth to 5%. In this scenario the population increases by 185,685 or 91.8%. This is also considered plausible.

Having regard for the population forecasts described above, and focusing on Lake Macquarie, the three growth scenarios - low, medium and high - are adopted to represent the full range of possibilities. The three scenarios are:

**Low-Growth Scenario**
- Based on NSW Government Department of Planning and Environment.
- Assumed average annual growth rate is 0.6%.
- Forecast population increase between 2016 and 2050 is 43,027.

**Medium-Growth Scenario**
- Maintain share of Sydney’s forecast population growth
- Assumed average annual growth rate is 1.5%.
- Forecast population increase between 2016 and 2050 is 130,297.

**High-Growth Scenario**
- Increase share of Sydney’s forecast population growth.
- Assumed average annual growth rate is 1.9%.
- Forecast population increase between 2016 and 2050 is 176,469.

These trajectories are illustrated in Figure 15 overleaf.
3.5 Forecast Residential Land Supply

According to REMPLAN, in 2006, 86.6% of all dwellings in Lake Macquarie were separate houses, which was similar to the situation in 2016 (88.2%). There was a marginal increase in the number of medium and high-density dwellings as a proportion of total dwellings, from 7.53% in 2006 to 9.0% in 2016. Lake Macquarie City Council provided REMPLAN with the geographic boundaries of each of the Planning Areas (localities), as well as the Urban Development Program (UDP) land supply data (December 2016), which was defined as either ‘Greenfield’ or ‘Infill’ development.

Based on data provided by Council, a total of 16,760 lots have been identified as potentially available for the Lake Macquarie LGA between 2016 and 2036. Future residential land supply includes land with Development Application (DA) Approval through to longer-term supply that would require rezoning and development of either infill or greenfield sites.

Table 8 summarises forecast residential land supply in Lake Macquarie. It shows that, according to the forecasts, only Morisset and Swansea have a potential supply ‘buffer’. Overall, there appears to be only a ‘bare equivalence’ in the supply and demand for lots. While there may be some equivalence between future lot demand and potential supply at a point in the future, an issue to consider is the need for a supply buffer to moderate lot prices. Without such a buffer (e.g. 15% is often cited) competition is limited and landowners can hold out for higher prices. It is
noted that the high proportion of holiday houses has not been factored in. If the required re-zonings lag housing demand this too will put upward pressure on prices.

Table 8. Forecast Residential Land Supply by Locality, City of Lake Macquarie, 2016 to 2036

<table>
<thead>
<tr>
<th>Locality</th>
<th>Dwellings Required</th>
<th>Lot Supply to 2036</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belmont</td>
<td>363</td>
<td>438</td>
<td></td>
</tr>
<tr>
<td>Cardiff-Glendale</td>
<td>2,337</td>
<td>2,221</td>
<td></td>
</tr>
<tr>
<td>Charlestown</td>
<td>976</td>
<td>1,049</td>
<td>All Supply is 'Infill'</td>
</tr>
<tr>
<td>Morisset</td>
<td>4,624</td>
<td>5,958</td>
<td>Limited Infill</td>
</tr>
<tr>
<td>Swansea</td>
<td>1,756</td>
<td>1,858</td>
<td></td>
</tr>
<tr>
<td>Toronto</td>
<td>1,333</td>
<td>1,796</td>
<td></td>
</tr>
<tr>
<td>Warners Bay</td>
<td>822</td>
<td>791</td>
<td></td>
</tr>
<tr>
<td>West Wallsend</td>
<td>1,998</td>
<td>2,649</td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td>14,209</td>
<td>16,760</td>
<td></td>
</tr>
</tbody>
</table>

Note: Supply excludes land potentially re-zoned for higher densities.

Sources: REMPLAN (August 2017), Population, Demographic and Housing Forecast Modelling: Supplementary Report, for Lake Macquarie City Council and lot supply data provided by Lake Macquarie City Council

The potential supply analysis does not factor in any ‘infill’ development over and above historic trends. Given the historic observed preference for separate houses over flats, units or apartments (88%) it will take a quantum shift in preferences to achieve a greater proportion of infill. It is noted that all of the future ‘lot supply’ in Charlestown is assumed to be infill. Further, Council advises that recent population growth data indicates that growth in Charlestown is well below trend.

On the basis that housing preferences are changing with an ageing of the population and a need for aged care accommodation and ‘downsizing’, a trend towards a greater proportion of infill housing is likely. However, the extent to which this will occur remains to be seen. It is clear that the future supply of housing opportunities may become an issue and this needs to be monitored closely.

3.6 Forecast Residential Land Demand

An indicative estimate of residential land requirements to 2050 is provided in Table 9. Assumptions made in the analysis are:

- The number of persons per dwelling is 2.46. This remains constant as while the existing population ages, new residents have a younger profile.
- The proportion of occupied dwellings (85.4%) to unoccupied dwellings remains constant.
- Three assumptions on the proportion of infill development are tested.
- Separate houses are developed at a density of 15 dwellings per hectare.

In the high-growth scenario, and assuming the proportion of infill is as it is today (14.6%), the number of new lots required is approximately 76,000, requiring 5,000 hectares (or 50 square kilometres) of land. Even in the low-
growth scenario with the high infill figure (35%), the number of lots required is 19,166, requiring 1,278 hectares (or 12.78 square kilometres) of land.

Table 9. Estimate of Lake Macquarie’s Future Residential Land Requirements to 2050

<table>
<thead>
<tr>
<th></th>
<th>Low-Growth Scenario</th>
<th>Medium-Growth Scenario</th>
<th>High-Growth Scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population 2050</td>
<td>245,874</td>
<td>333,144</td>
<td>379,316</td>
</tr>
<tr>
<td>Persons per Dwelling</td>
<td>2.46</td>
<td>2.46</td>
<td>2.46</td>
</tr>
<tr>
<td>Occupied Dwellings</td>
<td>99,949</td>
<td>135,425</td>
<td>154,194</td>
</tr>
<tr>
<td>Unoccupied Dwellings</td>
<td>9,644</td>
<td>13,067</td>
<td>14,878</td>
</tr>
<tr>
<td>Total Dwellings 2050</td>
<td>109,593</td>
<td>148,492</td>
<td>169,072</td>
</tr>
<tr>
<td>Current Dwellings</td>
<td>80,106</td>
<td>80,106</td>
<td>80,106</td>
</tr>
<tr>
<td>Dwellings Required</td>
<td>29,487</td>
<td>68,386</td>
<td>88,966</td>
</tr>
<tr>
<td>Lots if Infill 14.6%</td>
<td>25,182</td>
<td>58,402</td>
<td>75,977</td>
</tr>
<tr>
<td>Lots if Infill 20%</td>
<td>23,589</td>
<td>54,709</td>
<td>71,173</td>
</tr>
<tr>
<td>Lots if Infill 35%</td>
<td>19,166</td>
<td>44,451</td>
<td>57,828</td>
</tr>
<tr>
<td>Assume 15 Lots per ha</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Land if Infill 14.6%</td>
<td>1,679ha</td>
<td>3,893ha</td>
<td>5,065ha</td>
</tr>
<tr>
<td>Land if Infill 20%</td>
<td>1,573ha</td>
<td>3,647ha</td>
<td>4,745ha</td>
</tr>
<tr>
<td>Land if Infill 35%</td>
<td>1,278ha</td>
<td>2,963ha</td>
<td>3,855ha</td>
</tr>
</tbody>
</table>

Source: Australian Bureau of Statistics and SC Lennon & Associates

Lake Macquarie City Council’s land supply analysis indicates that there is a potential for 16,760 lots to be supplied to the year 2036. This falls well short of even the most conservative estimate of demand (by approximately 2,400 lots). Hence the housing supply situation must be monitored closely.

3.7 Lake Macquarie’s Labour Force and Employment Futures

Key assumptions include the following:

- **Population**: Three scenarios - low-growth, medium-growth and high-growth - as described above, have been adopted to cover the full range of possibilities to 2050.

- **Working Age Population**: The 2016 ABS Census reveals that the number of people of working age (age 15 to 69) in Lake Macquarie is 67.4%. In the low-growth scenario with little in-migration it is expected the population will age somewhat and therefore, the working age population will contract to around 67% by 2050. In the high-growth scenario with a high rate of in-migration, Lake Macquarie’s population profile will be younger, lifting the working age population to around 74%. For the medium-growth scenario, 70.5% is adopted.

- **Labour Force Participation Rate**: According to ABS Labour Force Survey statistics, the number of persons aged 15 years or older who are employed or actively seeking work has averaged around 63% for Lake Macquarie and 65% for Greater Sydney. Given the forecast ageing of Lake Macquarie’s population in the low-growth scenario, it is assumed that the long-term average labour force participation rate for Lake Macquarie will decrease to 60%. In the high-growth scenario 65% is adopted. For the medium-growth scenario 62.5% is adopted.
• **Unemployment**: According to REMPLAN, the unemployment rate in Lake Macquarie is 5.1% and has remained steady for twelve months. The March 2018 quarter small area labour markets data of the Department of Jobs and Small Business records an unemployment rate of 5.2% for the City of Lake Macquarie, which sits below the national rate of 5.5%. The Reserve Bank of Australia is forecasting a rate of 5.25% to 2020. For Lake Macquarie, an indicative rate of 5.1% is assumed for 2050.

• **Self-containment of Employment (Employment Capacity)**: In 2016 the ratio of jobs to workers in Lake Macquarie was 68%. In Newcastle it was 130% and in Greater Newcastle 97%. This confirms that a large number of Lake Macquarie resident workers are commuting outside the LGA for work, meaning the City’s current level of employment capacity or ‘self-containment’ has room for improvement. With the success of the City’s current employment promotion policies, such as those for Lake Macquarie’s activity centres, it can be expected that the level of employment self-containment in the City of Lake Macquarie can be increased to around 75% for the low-growth scenario and 80% for the high-growth scenario by 2050. For the medium-growth scenario 77.5% is adopted.

These assumptions inform the City of Lake Macquarie’s employment by industry futures to 2050 (see Table 10). If they hold true, the City of Lake Macquarie’s total jobs estimate for the year 2050 is:

- 70,350 (an additional 8,750 jobs) in the low-growth scenario;
- 107,962 (an additional 46,362 jobs) in the medium-growth scenario; and
- 138,517 (an additional 76,917 jobs) in the high-growth scenario.

It is stressed that these employment estimates are indicative of the job numbers that may be involved.

### Table 10. City of Lake Macquarie’s Employment Futures, 2050

<table>
<thead>
<tr>
<th>Factor</th>
<th>Low-Growth</th>
<th></th>
<th>Medium-Growth</th>
<th></th>
<th>High-Growth</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rate</td>
<td>Number</td>
<td>Rate</td>
<td>Number</td>
<td>Rate</td>
<td>Number</td>
</tr>
<tr>
<td>Population 2050</td>
<td>245,874</td>
<td>333,144</td>
<td>379,316</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working Age</td>
<td>67.0%</td>
<td>164,735</td>
<td>70.5%</td>
<td>234,867</td>
<td>74.0%</td>
<td>280,694</td>
</tr>
<tr>
<td>Labour Force Participation</td>
<td>60.0%</td>
<td>98,841</td>
<td>62.5%</td>
<td>146,792</td>
<td>65.0%</td>
<td>182,451</td>
</tr>
<tr>
<td>Unemployment</td>
<td>5.1%</td>
<td>5,041</td>
<td>5.1%</td>
<td>7,486</td>
<td>5.1%</td>
<td>9,305</td>
</tr>
<tr>
<td>Lake Macquarie Workforce</td>
<td>5.1%</td>
<td>93,800</td>
<td>139,305</td>
<td>173,146</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Containment</td>
<td>75.0%</td>
<td>70,350</td>
<td>77.5%</td>
<td>107,962</td>
<td>80.0%</td>
<td>138,517</td>
</tr>
<tr>
<td>Total Jobs</td>
<td>70,350</td>
<td>107,962</td>
<td>138,517</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2016 Jobs</td>
<td>61,600</td>
<td>61,600</td>
<td>61,600</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Additional Jobs to 2050</td>
<td>8,750</td>
<td>46,362</td>
<td>76,917</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: SC Lennon & Associates

### 3.8 Future Employment by Industry Profile

According to Australian Government employment projections to May 2022 (Department of Jobs and Small Business, November 2017), labour market conditions in Australia over the five years to October 2017 have experienced intermittent periods of both weakness and, more recently, considerable strength. Employment has increased by 919,800 or 8.1 per cent over the period at a rate of 1.6 per cent per annum, which is the same as the rate of growth over the last decade. Employment growth has been strong over the last year alone, increasing by 346,700 (or 2.9 per cent) to stand at 12,301,200 in October 2017. Looking ahead, total employment is projected...
to increase by 948,400 (7.8 per cent or 1.5 per cent per annum) over the five years to May 2022. The relative contributions by industry are shown in Figure 16.

The Health Care and Social Assistance industry is projected to make the largest contribution to Australia’s employment growth (up by 250,500 or 16.1 per cent), as the industry adjusts to full implementation of the National Disability Insurance Scheme (NDIS), the ongoing ageing of the population and increasing demand for childcare and home-based care services.

The second-largest contribution is projected to come from the Professional, Scientific and Technical Services sector, where employment is projected to increase by 126,400 (or 12.5 per cent), reflecting ongoing strength in demand for business services, including those that support the Construction industry.

**Figure 16. Projected Contributions to the Rate of Australia’s Total Employment Growth by Industry (%), Five Years to May 2022**

Source: Australian Government, Department of Jobs and Small Business (November 2017)

Strong infrastructure investment and non-residential building activity, along with continuing high levels of residential construction (albeit more in line with population growth) are also expected to support strong projected employment growth in the Construction industry (up by 120,700 or 10.9 per cent). Employment in the Education and Training sector is projected to increase by 116,200 (or 12.0 per cent) with continued growth in the school-aged population and international education sector.
Together, these four industries - Health Care and Social Assistance, Professional, Scientific and Technical Services, Construction and Education and Training - are projected to provide almost two-thirds (or 5.1 of the total 7.8 percentage points) of total employment growth to May 2022. By contrast, declines in employment are projected for the: Manufacturing; Electricity, Gas, Water and Waste Services; and Agriculture, Forestry and Fishing industries.

Employment in the Manufacturing industry is projected to decline by 38,300 (or 4.2 per cent), in line with the long-term structural decline in manufacturing employment and recent plant closures by major car manufacturers. Employment in the Electricity, Gas, Water and Waste Services industry is projected to decline by 9,000 (or 7.0 per cent) due to competition in the supply of electricity, weak electricity consumption growth and technological change.

Agriculture, Forestry and Fishing employment is projected to fall by 2,400 (or 0.8 per cent), in line with its longer-term history of employment declines that have largely been driven by technology advancement. The projected employment decline in these three industries subtracts less than one-half of a percentage point from the rate of total employment growth.

3.9 Future Occupational Profile

According to the Department of Jobs and Small Business, strong employment growth is projected to continue for Professionals (up by 344,400 or 12.1 per cent) and Community and Personal Service Workers (242,900 or 19.2 per cent), consistent with strong projected growth in the service industries that are leading employers of these occupational groups. Together, these two occupational groups are expected to account for well over half of the total growth in employment over the next five years. Employment of Managers is projected to grow at the average rate of growth (up by 120,000 or 7.8 per cent).

Below-average employment growth is projected for Technicians and Trades Workers (up by 82,000 or 4.8 per cent) and Labourers (64,300 or 5.3 per cent), while relatively weak growth is projected for Sales Workers (39,400 or 3.6 per cent), Machinery Operators and Drivers (27,900 or 3.6 per cent) and Clerical and Administrative Support Workers (27,400 or 1.7 per cent).

The occupations with the weakest employment projections show the ongoing challenges that globalisation and technological change present for some occupations. Some of these occupations are from the Clerical and Administrative Workers group, where work is routine in nature and susceptible to automation, such as Secretaries (down by 11,100 or 24.9 per cent), Accounting Clerks (8,400 or 6.6 per cent), Bookkeepers (3,400 or 3.2 per cent), Keyboard Operators (2,700 or 4.6 per cent) and Checkout Operators and Office Cashiers (2,700 or 2.1 per cent).

The continuing development of technology in the Agricultural sector is also expected to reduce projected employment of Livestock Farmers (down by 10,300 or 16.4 per cent) and Mixed Crop and Livestock Farmers (4,600 or 17.8 per cent). The impact of continuing structural change on the Manufacturing industry in Australia is expected to sustain the pre-existing trend of falling projected employment in occupations like Product Assemblers (down by 6,000 or 20.9 per cent), Metal Fitters and Machinists (5,600 or 5.7 per cent) and Structural Steel and Welding Trades Workers (3,300 or 4.5 per cent).

Occupations that are classified in the two highest skill levels (out of five) are projected to make up well over half of Australia’s projected employment growth over the five years to 2022. The relatively strong rates of growth at the top end of the skill distribution highlight the importance of educational and qualification attainment, both for those in the workforce who seek career advancement as well as for labour market entrants who wish to improve their employment prospects.
3.10 Implications for Lake Macquarie’s Future Employment by Industry

By application of the relative sectoral growth rates from the Department of Job and Small Business reviewed above, extrapolating those forecasts to 2050 and making some adjustments for Lake Macquarie relative to the national average, an estimate of the breakdown of future jobs by industry sector has been made. The forecast breakdown of employment by industry located in the City of Lake Macquarie in 2050 is shown in Table 11 and Figure 17.

Table 11. Employment by Industry, City of Lake Macquarie, 2016 and 2050 (Forecast)

<table>
<thead>
<tr>
<th>Industry</th>
<th>2016</th>
<th>2050 Low-Growth</th>
<th>2050 Medium-Growth</th>
<th>2050 High-Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Jobs</td>
<td>%</td>
<td>Jobs</td>
<td>%</td>
</tr>
<tr>
<td>Health Care &amp; Social Assistance</td>
<td>11,135</td>
<td>18.08%</td>
<td>14,792</td>
<td>21.0%</td>
</tr>
<tr>
<td>Retail Trade</td>
<td>8,533</td>
<td>13.85%</td>
<td>8,946</td>
<td>12.7%</td>
</tr>
<tr>
<td>Construction</td>
<td>7,172</td>
<td>11.64%</td>
<td>8,423</td>
<td>12.0%</td>
</tr>
<tr>
<td>Education &amp; Training</td>
<td>5,468</td>
<td>8.88%</td>
<td>6,498</td>
<td>9.2%</td>
</tr>
<tr>
<td>Accommodation &amp; Food Services</td>
<td>5,048</td>
<td>8.19%</td>
<td>5,787</td>
<td>8.2%</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>3,965</td>
<td>6.44%</td>
<td>3,991</td>
<td>5.7%</td>
</tr>
<tr>
<td>Other Services</td>
<td>3,047</td>
<td>4.95%</td>
<td>3,152</td>
<td>4.5%</td>
</tr>
<tr>
<td>Professional, Scientific &amp; Technical Services</td>
<td>2,782</td>
<td>4.52%</td>
<td>3,501</td>
<td>5.0%</td>
</tr>
<tr>
<td>Public Administration &amp; Safety</td>
<td>2,709</td>
<td>4.40%</td>
<td>2,840</td>
<td>4.0%</td>
</tr>
<tr>
<td>Administrative &amp; Support Services</td>
<td>2,213</td>
<td>3.59%</td>
<td>2,351</td>
<td>3.3%</td>
</tr>
<tr>
<td>Transport, Postal &amp; Warehousing</td>
<td>1,930</td>
<td>3.13%</td>
<td>2,078</td>
<td>3.0%</td>
</tr>
<tr>
<td>Financial &amp; Insurance Services</td>
<td>1,889</td>
<td>3.07%</td>
<td>2,086</td>
<td>3.0%</td>
</tr>
<tr>
<td>Mining</td>
<td>1,399</td>
<td>2.27%</td>
<td>1,428</td>
<td>2.0%</td>
</tr>
<tr>
<td>Wholesale Trade</td>
<td>1,168</td>
<td>1.90%</td>
<td>1,208</td>
<td>1.7%</td>
</tr>
<tr>
<td>Rental, Hiring &amp; Real Estate Services</td>
<td>979</td>
<td>1.59%</td>
<td>1,013</td>
<td>1.4%</td>
</tr>
<tr>
<td>Arts &amp; Recreation Services</td>
<td>749</td>
<td>1.22%</td>
<td>796</td>
<td>1.1%</td>
</tr>
<tr>
<td>Electricity, Gas, Water &amp; Waste Services</td>
<td>726</td>
<td>1.18%</td>
<td>731</td>
<td>1.0%</td>
</tr>
<tr>
<td>Information Media &amp; Telecommunications</td>
<td>452</td>
<td>0.73%</td>
<td>487</td>
<td>0.7%</td>
</tr>
<tr>
<td>Agriculture, Forestry &amp; Fishing</td>
<td>237</td>
<td>0.38%</td>
<td>245</td>
<td>0.3%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>61,601</td>
<td>100.00%</td>
<td>70,350</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

Source: SC Lennon & Associates
Lake Macquarie’s employment future entails a situation where a large share of employment will be accounted for by Health Care and Social Assistance, followed by Retail Trade, Construction, Education and Training and Accommodation and Food Services. The health, construction and education sectors are also forecast to increase their relative share of employment by industry in Lake Macquarie compared to the situation today.

Consistent with national trends, which have been apparent in recent years, for all three growth scenarios, the largest share of employment growth in Lake Macquarie is expected to occur in the Health Care and Social Assistance sector.

Other industries, which are expected to accommodate a notable share of Lake Macquarie’s forecast employment growth to 2050, include Construction, Education and Training, Accommodation and Food Services, Professional, Scientific and Technical Services and Financial and Insurance Services. The construction sector’s share of employment growth will increase in line with population growth. Hence, the construction industry’s share of total employment can be expected to be higher under the medium and high-growth scenarios. Retail trade on the other hand, is expected to capture a declining share of growth as retail expenditure habits continue to evolve in future with the growth in online retailing and the continued casualisation and mechanisation of the workforce.

As the Lake Macquarie economy transitions to a more knowledge-intensive economic base, the City’s professional, scientific and technical services sector will grow as a share of total employment as will the financial and insurance services sector.

**Figure 17. Employment by Industry, City of Lake Macquarie, 2016 and 2050 (Forecast)**

![Graph showing employment by industry for Lake Macquarie, 2016 and 2050 forecasts.]
While the local manufacturing sector is not expected to capture a substantial share of Lake Macquarie’s future employment growth, accounting for a smaller share of total employment by industry, it will nonetheless remain an important contributor to the City’s overall economic profile.

### 3.11 Lake Macquarie’s Future Employment Land Needs

By applying floorspace ratios (taken from Lake Macquarie City Council’s land use survey conducted in May/June 2018), to future employment numbers, an estimate of floorspace requirements is made. The analysis indicates that in Lake Macquarie, there could be a need for approximately:

- 91.0 hectares in the low-growth scenario (0.91 square kilometres);
- 534.6 hectares in the medium-growth scenario (5.34 square kilometres); and
- 892.3 hectares in the high-growth scenario (8.92 square kilometres).

**Table 12. Forecast Retail, Commercial and Industrial Floorspace and Land Requirements, City of Lake Macquarie, 2050**

<table>
<thead>
<tr>
<th>Employment Growth 2016 to 2050</th>
<th>Low-Growth Scenario</th>
<th>Medium-Growth Scenario</th>
<th>High-Growth Scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial / Institutional Floorspace Needed</td>
<td>180,410 sqm</td>
<td>782,095 sqm</td>
<td>1,267,753 sqm</td>
</tr>
<tr>
<td>Retail Floorspace Needed</td>
<td>44,269 sqm</td>
<td>227,866 sqm</td>
<td>382,327 sqm</td>
</tr>
<tr>
<td>Industrial Floorspace Needed</td>
<td>105,461 sqm</td>
<td>783,581 sqm</td>
<td>1,325,513 sqm</td>
</tr>
<tr>
<td><strong>Total Floorspace</strong></td>
<td><strong>330,141</strong></td>
<td><strong>1,793,541</strong></td>
<td><strong>2,975,593</strong></td>
</tr>
<tr>
<td>Commercial / Institutional Land Needed</td>
<td>36.8ha</td>
<td>159.6ha</td>
<td>258.7ha</td>
</tr>
<tr>
<td>Retail Land Needed</td>
<td>12.0ha</td>
<td>61.6ha</td>
<td>103.3ha</td>
</tr>
<tr>
<td>Industrial Land Needed</td>
<td>42.2ha</td>
<td>313.4ha</td>
<td>530.2ha</td>
</tr>
<tr>
<td><strong>Total Land</strong></td>
<td><strong>91.0ha</strong></td>
<td><strong>534.6ha</strong></td>
<td><strong>892.3ha</strong></td>
</tr>
</tbody>
</table>

Source: SC Lennon & Associates

It is noted that a recent land use survey suggests there is in the order of 6 square kilometres of ‘undeveloped’ land, however, it is not known how suitable this land is to fulfil requirements of the various land use types.

### 3.12 Preparing for a High-Growth Future: A ‘Smart’ City-Region Corridor

It is prudent to acknowledge the potential for a quantum change in growth pressures emanating from economic development in Lake Macquarie’s wider region and potential ‘spill over’ from the global city that is Sydney consistent with the high-growth scenario as articulated above. The emergence of new transport technologies and the cumulative effect of a number of ‘megatrends’ may provide the catalyst for this quantum change.

To inform a contingency plan for pro-actively preparing for and embracing the high-growth scenario, the City of Lake Macquarie could play a lead role in planning for a future that looks something like the diagram shown in Figure 18 – the Lake Macquarie-Newcastle to Sydney Smart City-Region Corridor.
The key features of the **Lake Macquarie-Newcastle to Sydney Smart City-Region Corridor** are:

- An interim rapid commuter bus transport solution.
- A high-capacity transport spine following the rail alignment and motorway, which is approximately 130km from Lake Macquarie-Newcastle to Sydney.
- Rail upgraded to very-fast train (VFT) (then links to Melbourne).
- Transport nodes are VFT stations and interchanges with regional and local services.
- Travel time Newcastle to Sydney is maximum one hour @ 150 km/h - with stops.
- Travel time from mid-point of corridor to Sydney is maximum 40 min - with stops.
- Travel time will be reduced as full VFT services are implemented.
- Autonomous buses link transport nodes and collect from and distribute to the band of urban development.

**Figure 18. The Lake Macquarie-Newcastle to Sydney Smart City-Region Corridor**

Key features of the band of urban development include:

- Adopt all features of ‘smart cities’.
- Adopt all features of ecologically sustainable development.
- Mixed-use development.
- Higher densities near town centres and transport nodes – graduating out.
- Minimum impact on the environment with a habitat / ecosystem offset strategy in place.
- Band is 4 kilometres wide by 70 kilometres (or 280 square kilometres).
• Assume density of 10,000 persons per square kilometre (note – inner Sydney is 15,000 persons per square kilometres, which includes employment uses).
• Capacity is 2.8 million people.

Taking this approach informs an assessment of the economic, employment, and land-use implications for the City of Lake Macquarie should the high-growth scenario be realised. It also informs potential directions Council could ultimately take regarding supportive policies and strategies to achieve the economic components of the City’s vision and values, including strategic infrastructure that may currently be limiting the attractiveness of the City to new businesses as well as to the ‘knowledge-based’ businesses of the future.

The conceptual idea of a Lake Macquarie-Newcastle to Sydney Smart City-Region Corridor is consistent with the NSW Government’s vision as articulated in its Future Transport Strategy 2056, which would see economic and housing growth around Greater Sydney driving integration across the city’s hinterland, the establishment Gosford and Wollongong as ‘satellite cities’ and Newcastle, Canberra and the Gold Coast as ‘global gateway cities’ and the key entry points to NSW. Population and economic growth in these areas will require fast transit connections to Greater Sydney.

If the economic vision for Lake Macquarie is to be realised, this will necessitate an increase in the number of people living and working in the region and connecting with economic activity, both physically and functionally, elsewhere in Australia and throughout the world. If the key connections between the Sydney and the regions’ global gateway cities (including Lake Macquarie) can be realised over the medium to long-term, it will result in greater economic performance, enabling businesses to reach new markets and attract new investment.

In Lake Macquarie, a more diverse economic base that is linked into the metropolitan and global economies, will also help facilitate an increase in the proportion of residents who both live and work within the City.

Realising the City’s vision for a diverse economy that is resilient and adaptable to change, and which makes the best use of Lake Macquarie’s location and lifestyle advantages should see the City capturing a greater share of population growth and a shift in employment and economic activity towards more knowledge-intensive activity in Lake Macquarie’s traditional and ‘driver’ industries.
4. Realising Lake Macquarie’s Economic Future

4.1 Planning for Prosperity to 2050 and Beyond: A Partnership Approach

To realise its vision for a diverse and resilient economy that is adaptable to change, the City of Lake Macquarie needs to be prepared for the potential impacts of economic globalisation, rapid advances in digital communications, technological ‘disruption’, climate change and a changing industrial landscape. This entails a change in or decline of some traditional industries and the emergence of new ‘post-carbon’ jobs and industries. These anticipated changes are reflected in the (indicative) employment forecasts presented in this report. If this employment future can be realised, the City of Lake Macquarie will have realised its objective to transition away from ‘old economy’ industries to those emblematic of a future ‘knowledge economy’.

While the forecast economic future looks towards 2050, now is the time for locally-appropriate planning and policy development to realise the vision. This requires the City of Lake Macquarie to employ its core economic development functions in an effort to attract and facilitate the growth of knowledge-based industries and the knowledge workers who drive those industries.

It also requires Council to be pro-active in promoting a partnership approach between the region’s Councils, the Hunter Joint Organisation and other stakeholders in government, the non-government sector, the community and industry. This includes Federal Government departments and agencies such as Regional Development Australia (RDA) Hunter, the Department of Defence and State Government agencies including the Department of Planning & Environment, the Department of Industry, the Office of Regional Development of the Department of Premier and Cabinet and Destination NSW. Council’s strategic economic development partnerships also include private sector organisations and non-government institutions. Council can liaise with these important contributors to economic development through its established networks and the relationships developed by Dantia.

4.2 Defining Economic Development Roles and Functions

To identify supportive, locally-appropriate policy directions to achieve the economic components of the City of Lake Macquarie’s vision and values, including strategic infrastructure and broad land use recommendations, it is necessary to identify where Council can make a meaningful and measurable difference, through its regulatory and land use planning functions and the investment attraction, business liaison and advocacy functions of Dantia.

The role of Council in economic development is critical to Lake Macquarie’s future prosperity. With a considered and informed vision for economic development, Lake Macquarie City Council is well-placed to influence the factors that facilitate the competitiveness and ultimate success of its local industries, both today and in future.

Having regard for the four ‘core’ areas of economic development activity described in Section 1.3 of this report, the City of Lake Macquarie’s economic development vision and objectives will be most effectively served by focusing Council’s efforts on its regulatory and land use planning functions in support of business investment, employment creation and economic prosperity.

Complementing and reinforcing Council’s economic development activities, is the role Dantia plays, as the City’s economic development company, in: supporting new and existing businesses to prosper; attracting a diverse range of employee-hungry industries and business to Lake Macquarie; and advocating for planning processes and infrastructure that drive investment toward the City of Lake Macquarie.
The City’s efforts to facilitate and promote economic development will be most effectively served by it focussing on two of the four core areas of economic development activity, being: Preparing for Prosperity - Strategic Planning, Regulation and Place Management; and Enabling Prosperity - Infrastructure & Service Provision. These are the activities Lake Macquarie City Council leads and delivers while Dantia, as Council’s principal economic development agency, participates and assists.

Dantia, as Council’s economic development company focussed on working with business, government and other partners to advance Lake Macquarie City’s economic prosperity, is best-placed to lead and deliver the City’s efforts in: Supporting Prosperity - Investment Attraction and Business Support; and Promoting Prosperity - Economic Development Advocacy and Partnerships.

These roles are illustrated below in the form of ‘economic development activity areas’.

**Figure 19. Lake Macquarie’s Economic Development Roles and Activities**
As illustrated above, the economic development activity areas are interrelated and interdependent. This reflects the holistic nature of the ‘enabling’ role Council, in partnership with Dantia, plays in promoting and facilitating economic development and the importance of collaborative partnerships with other key agents of change in supporting a strong and diverse economy, which is resilient and adaptable to change, making the best use of the unique advantages of Lake Macquarie’s location and lifestyle.

4.3 Recommendations to Realise Future Prosperity

In light of the findings of this Economic Study, 16 strategic recommendations have been identified across the four economic development activity areas as follows.

1. Preparing for Prosperity - Strategic Planning, Regulation and Place Management

Recommendation 1.1: Identify Strategic Parcels of Land for Lake Macquarie’s Future Employment and Population Growth Activities

Changes in the nature of manufacturing, warehousing and (space-intensive) retailing has generated a growing demand for large sites. There is also a growing demand to accommodate small advanced manufacturing enterprises, potentially to be located in centres. These can be low impact employment generating uses. Lake Macquarie’s manufacturing heritage presents opportunities for the City to accommodate new ‘knowledge-intensive’ forms of manufacturing as well as employment in new manufacturing industries and supporting sectors including logistics. Changing employment land requirements means there may be a need for smaller footprint warehousing to accommodate ‘last mile’ delivery options, possibly at the neighbourhood level.

It is recommended that Lake Macquarie City Council consider undertaking a demand and supply study documenting the changing nature of manufacturing, warehousing and retailing to inform the City’s next planning scheme review. The study should include a review of current and anticipated future land requirements in centres as there is a potential for the City’s activity centres to expand to accommodate employment uses beyond traditional retailing and commercial uses. The review would consider a more flexible zoning approach that can respond in a more agile way to rapidly changing megatrends. On the supply side, all land should be mapped with GIS layers articulating the use of the land and infrastructure services. The findings of the study would include recommendations to inform Council’s planning scheme approach, which could incorporate partnership-based approaches to concept planning. Given population is critical to industry expansion and employment growth, a similar exercise needs to be conducted for residential dwelling supply.

Recommendation 1.2: Investigate Opportunities for High-Tech Food Production in Lake Macquarie

There are changes taking place in the locational aspects and nature of agricultural production and trends that may have implications for planning scheme provisions in Lake Macquarie. For example, there is a potential for some ‘high-tech’ food production enterprises to locate within centres and there are pressures for the conversion of rural land for intensive agriculture and/or rural living.

In response to these developments and to inform the City’s next planning scheme review, it is recommended that Lake Macquarie City Council undertake a study documenting the changing nature of agricultural industries - including the emergence of ag-tech and new forms of agri-business - to inform the potential for high-tech food production industries strategically-located in a corridor between rail and road infrastructure.
Recommendation 1.3: Develop and Promote a User-Friendly Development Control System

In order to facilitate private investment in the built environment to provide housing and spaces for businesses to operate, the development control system must be constantly monitored and reviewed. Issues of particular relevance include development contributions, environmental offsets and parking requirements. Development contributions are a significant cost on development and the level of uncertainty about their cost prior to applications can act as a dis-incentive to invest. Parking requirements can also be a significant cost factor and can affect site design. Reform is required at the State level where the system is impeding effective development control at the local level. Some of the obstacles can be overcome with local initiatives, but not all.

It is recommended that Lake Macquarie City Council implement the findings from previous reviews and initiate a rolling program of system user surveys and consultations to assist with improving internal procedures and to inform reviews of the controls. In addition, it is recommended that Council consider joining with other Councils in the wider region to lobby the NSW Government for reforms, potentially through the agency of the Hunter Joint Organisation.

Recommendation 1.4: Partner with Land Owners to Develop Town Centre and Strategic Project Concept Plans

Lake Macquarie City Council has in place a suite of place management and improvement initiatives including for its centres, residential areas and environmental areas. Council is active in the climate change adaption area and in planning for ‘lifestyle’ and cultural infrastructure such as museums, libraries and galleries, as well as key infrastructure to support and attract knowledge workers including cycleways, streetscape improvements, etc.

Building on the City’s existing attributes and programs in place to enhance Lake Macquarie’s appeal as a place in which to work, live and invest will help facilitate the attraction of new and innovative commercial, retail and entertainment uses to activate streets and grow the night-time economy. The night-time / after-hours economy is a key factor in attracting and retaining key demographic groups who appreciate the lifestyle attributes of vibrant centres and are who are incentivised to live, work and invest locally. Promotion of a night-time economy in Lake Macquarie’s activity centres has a potential to create employment through expanded business hours and the establishment of new businesses. If successful, this will enhance the amenity and vitality of the places, including enhanced levels of safety.

It is timely to undertake a comprehensive situation review and to involve land owners to provide an opportunity for the investment market to further develop and share in the Council’s vision. It is recommended that Council partner with land owners to develop town centre concept plans that: (a) promote the night-time economy; (b) respond to new technologies in support of a ‘smart city’; and (c) enhance the City’s ‘liveability’ attributes consistent with the City’s vision and community values. The package of initiatives that result might include, for example, development of apartments to establish a critical mass of demand for night-time economy goods and services, enhancing the amenity of Lake Macquarie’s centres and ensuring the highest level of safety in the public domain.

Recommendation 1.5: Apply ‘Smart City’ Solutions to Support the City’s Economic Development

It is recommended that the City of Lake Macquarie build on the City’s recent achievements to continue to adapt and apply ‘smart city’ solutions to improve the Lake Macquarie’s liveability, sustainability and economic diversity, and to develop local innovation to build an international profile to attract talent and investment. Through Dantia, the City of Lake Macquarie has launched a private sector/collaborative Long Range Wide Area Network or LoRaWAN as a basis for a smart city in the LGA. This offers a platform for the City to develop into a comprehensive smart city with an integrated plan to foster business, social and community growth.
Amongst other outcomes, the application of smart city solutions to address economic development challenges and opportunities should identify ways to support the reduction of red tape for businesses in the form of processing times, regulations complexities and duplication issues that business owners face when establishing or growing their business.

**Recommendation 1.6: Establish an Annual Growth Monitoring Program for Lake Macquarie**

Preparing for prosperity requires Council to ‘keep an eye on the future’ by continually monitoring broader economic and demographic trends and influences which may cause a step change in Lake Macquarie’s socio-economic prospects. While the current population forecast by REMPLAN is for a drop in the City of Lake Macquarie’s population trend growth rate to 2036, it is prudent to acknowledge the potential for a quantum change in growth pressures emanating from economic growth in the wider region and potential ‘spill over’ from the global city that is Sydney consistent with the high-growth scenario as articulated in this Economic Study. The emergence of new transport technologies and the cumulative effect of a number of ‘megatrends’ may provide the catalyst for this quantum change.

Accordingly, it is recommended that Council put in place a growth monitoring program on an annual basis, documenting indicators such as building approvals, lot production and population growth. This could involve expanding the Urban Development Program to include employment land to closely monitor the take-up of all land categories.

2. **Enabling Prosperity - Infrastructure and Service Provision**

**Recommendation 2.1: Work Collaboratively to Advocate for Investment and Innovation in Lake Macquarie’s Internal and External Transport Infrastructure**

The level of service provided by Lake Macquarie’s transport networks, with limited rail and road connectivity to Sydney and poor bus services to Newcastle, compromises the liveability of the City and reduces its attractiveness to knowledge workers and others. Low levels of accessibility impact adversely on the productivity and profitability of businesses. While some improvements have been made to the regional road network, the situation needs to be addressed. A related issue is the likely disruption to be caused by emerging new transport and communications technologies and management models, including ride sharing, autonomous vehicles and alternative fuels requiring new re-fuelling infrastructure.

It is recommended that Lake Macquarie City Council review its position on future transport planning and advocacy for investment in transport infrastructure, including both the City’s internal transport networks and its external connections, including in particular, its connections to Sydney. This could be done by working collaboratively at a regional level, potentially through the agency of the Hunter Joint Organisation and in collaboration with transport agencies and the region’s neighbouring Councils.

**Recommendation 2.2: Deliver World-Class High-Speed Digital Communications Infrastructure**

Digital communications technology has become a fundamental enabler of business innovation and economic development, and the emergence of the digital economy has increased the propensity for individuals and businesses to interact and trade with suppliers, partners and customers through information and communications technologies.

To ensure Lake Macquarie is poised for knowledge-based economic development, it is recommended that the City accelerate efforts to facilitate the delivery and utilisation of digital communications infrastructure as a priority. This includes identifying and utilising innovative funding and partnerships to expedite the test, trial and full utilisation phases of new technologies and associated infrastructure.
Recommendation 2.3: Undertake a Feasibility Study and Prepare a Business Case to Deliver the Bulk of Lake Macquarie’s Car Parking in Public Parking Facilities in Centres

The availability of parking is a key issue for people wishing to access goods and services and can be a key factor in the competitiveness of centres. Parking requirements imposed on developments can affect investment feasibility. In a situation where use of buses is a last resort in Lake Macquarie due to the level of service offered, vehicle use is dominant and parking demand is high. Alternatives such as walking and cycling, require the local destinations to offer end-of-trip facilities and a wide range of goods and services.

The most effective means of supplying parking efficiently, and to apply ‘demand management’ initiatives, is for the bulk of parking in centres to be provided in public parking facilities (garages). It is recommended that Council undertake a feasibility study and prepare a business case (including funding options) for supplying the bulk of parking in public parking garages in town centres.

3. Supporting Prosperity - Investment Attraction and Business Support

Recommendation 3.1: Deliver Lake Macquarie’s (Dantia’s) Economic Development Strategy 2018-2036

In order to drive Lake Macquarie City Council’s efforts to facilitate and promote economic development in a strategic, informed and targeted manner, a strategic work plan is required, and this should be underpinned by a clearly articulate vision and mission for achieving sustainable economic development for the benefit of the City’s residents, businesses and investors.

It is recommended that Lake Macquarie City Council support the implementation of the Lake Macquarie Economic Development Strategy 2018-2036 being prepared by Dantia. The strategy provides Council with an important planning document by providing the overarching framework to articulate Council’s (and Dantia’s) economic development activities and priorities. The strategy should be monitored and reviewed annually and updated in four years.

Recommendation 3.2: Communicate Protocols for Referring Investment Enquiries to Dantia

Investment is fundamental to economic development, and access to markets is a key determinant of long-term economic growth. Lake Macquarie City Council, through Dantia, must continue to resource efforts to attract investment by promoting what the City and the wider Hunter region has to offer prospective investors in a strategic and targeted fashion. Investment attraction is the remit of Dantia which is charged with responsibility for articulating and promoting the Lake Macquarie investment attraction package.

Complementing the City’s efforts to attract investment, priority should be given to promoting and facilitating additional investment from businesses already operating in the Lake Macquarie area. This is also the role of Dantia. This means Dantia needs to be the ‘go-to’ first point of contact for the business community. Lake Macquarie City Council and Dantia should ensure protocols and procedures are in place to ensure this occurs.

Opportunities exist to continue to facilitate new business investment from within and to promote Lake Macquarie to prospective investors (via the web and other means) across a range of areas, for example:

- Promote the City of Lake Macquarie as an ideal location for call centres/ data centres and back-office functions for large professional services companies and consumer services firms;
- Support programs to increase home-based and micro-business capacity building and innovation in the City;
- Provide information and referrals to existing business development and mentoring programs and networks available through the Dantia DaSH workspace network; and
- Promote services available to small business to assist them to establish, develop and grow.
It is recommended that Dantia and Council confirm and promote (both internally and to other key agencies) procedures, protocols and supporting material to ensure that all business investment enquiries are directed to Dantia as the City’s principal economic development agency.

**Recommendation 3.3: Expand the DaSH Network of Incubators, Accelerators and Co-working Spaces in Lake Macquarie**

Dantia, on behalf of Lake Macquarie City Council, operates DaSH, a highly successful co-working space in Charlestown (and soon-to-be-established at Warners Bay) with an incubator role to support an innovative business community. This provides an opportunity for local start-ups to establish and grow (close to home) in a collaborative and supportive environment. It is recommended that Council actively resource and support Dantia to undertake a feasibility study and business plan for potentially extending the business incubator, accelerator and co-work space concept to other suitable centres throughout the City.

**Recommendation 3.4: Engage with the Mining and Power Generation Industries to Transition and Evolve and Adaptively Re-use Assets and Land**

With the significant scaling down of the mining and power generation industries in the region reflecting the end of the asset lives of the mines and plants in ten to fifteen years, there is a need to consider the potential to transfer capital and jobs to alternative ‘new economy’ industry sectors in line with those identified in this Economic Study. This may include the transition away from ‘old economy’ forms of mining and power generation into renewable energy industries. Logically this should be tackled at the regional level, although there is a potential for locally focussed ‘sub-strategies’.

It is recommended that through Dantia’s lead, Lake Macquarie City Council engage and collaborate with the mining and power generation industries to transition and evolve into knowledge-based industries.

**4. Promoting Prosperity - Economic Development Advocacy and Partnerships**

**Recommendation 4.1: Undertake a Lake Macquarie Business Audit and Annual Satisfaction Survey**

There is an opportunity for Lake Macquarie City Council to assist with business sector resourcing in the city. It is recommended that Council in collaboration with Dantia undertake an audit of the City’s small business sector (including home-based business and new classes of entrepreneur) with a view to raise the visibility of the sector and to identify opportunities to facilitate business establishment and growth.

Council may also consider the establishment of a business start-up grants program to facilitate and support emergent business growth in the City. In addition, it is recommended that Dantia undertake a regular (annual) business needs and issues survey and prepare a report to Council that summarises concerns and needs identified by local business. The survey findings would also be used to report back to the City’s businesses on Council’s response and to inform supplementary investigations on verified priority issues raised by the business community.

**Recommendation 4.2: Collaborate with the Tertiary Education Sector to Facilitate and Promote Lake Macquarie’s Economic Development**

Tertiary institutions including the University of Newcastle (UoN) have nationally-significant expertise in research and development in areas including infrastructure, construction, the environment, sports development, education and creative industries. This is an underutilised resource that can potentially attract and grow business enterprises and it can provide a vehicle for accessing grant funding for locally-focussed projects from a wide range of sources. According to the OECD, successful cities attract talented young highly-skilled workers, are centres of innovation and entrepreneurship and are competitive locations for global and regional headquarters. The proximity of
universities to research and production facilities means cities are where new products are developed and commercialised. More than 80% of patents are filed in cities. It is recommended that, through Dantia, Council continue to liaise with the UoN to explore opportunities for collaboration on research and grants-funded projects in support of Lake Macquarie’s (and the wider region’s) economic development.

**Recommendation 4.3: Cultivate Regional Partnerships to Realise the Economic Vision**

Lake Macquarie City Council, Dantia and its local and regional partners provide a unifying voice for communities and for businesses when lobbying State and Federal Governments on key economic or infrastructure issues. Council and Dantia both have a role to play in attracting government investment in enabling infrastructure by identifying strategic priorities and preparing business cases to inform government funding for key projects. By undertaking the necessary investigations and preparing informed business cases, Council provides a conduit for NSW and Federal Government funding for bigger infrastructure projects like transport infrastructure as well as education, health, cultural and sporting facilities.

Collaborating to cultivate economic development partnerships is key to Lake Macquarie’s capacity to influence its economic future in line with Council’s vision and the community’s values. Civic leadership and partnerships - what is otherwise known as ‘collaborative governance’ - will underly all matters concerning Lake Macquarie City Council’s role in facilitating and promoting sustainable economic development.

To this end, it is recommended that Lake Macquarie City Council collaborate with Dantia, the Hunter Joint Organisation of Councils, RDA Hunter, the NSW Government, the University of Newcastle and other relevant stakeholders in support of projects and programs that advance the community’s desire for a strong and diverse local economy, which is resilient and adaptable to change, making the best use of Lake Macquarie’s unique location and lifestyle.
Bibliography


Australian Bureau of Statistics (2016), *Census Data – General Community Profile, Lake Macquarie (C)*, cat. no. 2001.0

Australian Bureau of Statistics (2016), *Census Data – General Community Profile, Newcastle (C)*, cat. no. 2001.0


Australian Bureau of Statistics (2011), *Census Data – Basic Community Profile, Lake Macquarie (C)*, cat. no. 2001.0


Australian Government Department of Jobs and Small Business (2018), *Small Area Labour Markets Australia, March Quarter 2018*

Australian Government Department of Jobs and Small Business (November 2017), *Employment Outlook to May 2022*

Australian Government, Infrastructure Australia (May 2015), *Australian Infrastructure Audit – Our Infrastructure Challenges – Executive Summary*

Australian Manufacturing Growth Centre Ltd (2017), *Advanced Manufacturing, A New Definition for A New Era*


Borland, J. and Coelli, M. (August 2017), *Are robots taking our jobs?*, Department of Economics, University of Melbourne

Commonwealth of Australia, Department of the Prime Minister and Cabinet (2017), *National Cities Performance Framework Report*


Greater Sydney Commission (October 2017), *Our Greater Sydney 2056, Draft Greater Sydney Regional Plan, a metropolis of three cities – connecting people*


IBISWorld (April 2018), *How 5G Could Start a Transportation Revolution in Smart Cities*

IBISWorld (April 2018), *Black Coal Mining in Australia*

IBISWorld (October 2017), *Tourism in Australia*


Lake Macquarie City Council (May 2018), *Draft Lake Mac 2050 – Internal Exposure Draft v. 2.9*

Lake Macquarie City Council (2017), *Lake Mac 2050 – Are we on the Right Track? Community Engagement Summary Report*

Lake Macquarie City Council (November 2017), *Draft Destination Management Plan 2018-2022*


MacroPlan Dimasi (September 2017), *Greater Newcastle Metropolitan Strategy – Economic and Demographic Outlook*, prepared for NSW Department of Planning & Environment


McQueen, M. (2018), *How to Prepare Now for What’s Next: A Guide to Thriving in An Age of Disruption*, John Wiley & Sons Australia, Ltd

NSW Government, Department of Planning & Environment (2017), *Draft Greater Newcastle Metropolitan Plan 2036*

NSW Government, Department of Planning & Environment (October 2016), *Hunter Regional Plan 2036*


NSW Government, Transport for NSW (November 2017), *Draft Greater Newcastle Future Transport Plan*

Regional Development Australia Hunter (2016), *Smart Specialisation Strategy (S3) for the Hunter Region: A strategy for innovation-driven growth*

REMPLEN (August 2017), *Population, Demographic and Housing Forecast Modelling: Supplementary Report*, prepared for Lake Macquarie City Council

REMPLEN (2018), *Unpublished Data*

The Centre for International Economics (October 2013), *Reform of the NSW planning system – Regulation Statement*, prepared for NSW Planning and Infrastructure

Tourism Research Australia (2016), *Local Government Area Profiles*


http://carbonpricemodelling.treasury.gov.au/content/overview/page16.asp, viewed 7th June 2018


http://www.gartner.com/newsroom/id/2684616, viewed 7th June 2018

http://www.information-age.com/iot-developing-smart-cities-123463276/, viewed 31st May 2018

http://www.oecd.org/cfe/regionalfoci/oecdterritorialreviewscompetitivecitiesintheglobaleconomy.htm, viewed 31st July 2018


http://www.rms.nsw.gov.au/cgi-bin/index.cgi?action=statstabldefault, viewed 14th August 2018

http://stat.data.abs.gov.au/, viewed 1st June 2018


https://economy.id.com.au/, viewed 8th June 2018

