The Economic Contribution of

neuron

to the Brisbane Economy

October 2022

QEAS Queensland Economic Advocacy Solutions

QEAS Queensland Economic Advocacy Solutions

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Executive Summary

QEAS was commissioned by Neuron Mobility to analyse the economic and environmental contribution of its e-scooter fleet operating in the Brisbane city area. This QEAS report captures the direct, indirect and enabled economic and employment contribution that Neuron's e-scooters make to the Brisbane economy and community. This report seeks to analyse the economic impact of Neuron Mobility's shared micro mobility solutions and the extent to which it is contributing to the prosperity of Brisbane. All data and usage information comes from Neuron Mobility's GPS and user profiles.

In 2021-22 there were a total 1,620,000 individual rider trips taken by Neuron customers in Brisbane, covering a combined distance of over 3 million kms. The average trip length was 2 km and the monthly average trips in 2021-22 was 135,000 and kilometres travelled over 250,000. The prevailing trend has seen a gradual increase in both trips taken and kilometres travelled.

Neuron Mobility's shared e-scooters are assessed by QEAS to contribute significantly to the Brisbane economy and provide considerable other benefits to the community. The expansion of micro-mobility services such as those provided by Neuron Mobility represents a positive impact on the City of Brisbane and its continued evolution to becoming a city of international significance. Neuron Mobility's most recent Brisbane Rider Survey identified that 66.4% of trips result in a purchase. Of these, 42.2% of riders made a purchase as part of their latest ride at a hospitality venue, 32.5% made a purchase at a department store, supermarket or other retail store and 17.9% visited a gym, movie or event. The average spend for each rider trip was $61.05. At present 97% of users believe Neuron e-scooters have a somewhat positive, positive or extremely positive impact.

In 2021-22, Neuron Mobility is estimated to have contributed $116.6 million in direct, indirect and enabled economic activity towards Brisbane's economy. Through enabling affordable, rapid and easily accessible transport options for Brisbane tourists, residents and business community members, we have determined that Neuron services have contributed 6.4 cents in every $100 in Brisbane economic activity. Furthermore, Neuron Mobility is estimated to have created and supported 681 Brisbane based jobs in 2021-22.

QEAS analysis indicates Neuron Mobility's estimated economic contribution towards Brisbane's economy will rise from $116.6 million in 2021-22 to $160.5 million by 2026-27.

Table: Total Economic Contribution of Neuron E-Scooters in Brisbane - $ millions

	2021-22
Direct	$9.04 million
Indirect	$8.68 million
Enabled	$98.88 million
Total	$116.60 million

Source: QEAS 2022

Neuron Mobility's created and supported employment will also rise, from 681 Brisbane based jobs in 2021-22 to 937 jobs by 2026-27.

Table: Total Employment Created by Neuron E-Scooters in Brisbane - persons

	2021-22
Direct	80
Indirect	35
Enabled	566
Total	681

Source: QEAS 2022

Brisbane's current and forecast population and economic growth represents an attractive and significant market for shared e-scooter operations. An efficient transport network is critical to sustaining economic success in modern economies such as Brisbane's.

Brisbane is experiencing deteriorating overall traffic network performance with growing economic and population growth only further exacerbating the resulting traffic congestion and time delays that are emerging. This is unquestionably leading to a substantial economic cost for the city.

Greater utilisation of shared micro-mobility solutions such as Neuron's will undoubtedly help ease this congestion. An estimated 777,428 vehicle trips or 1,451,041 vehicle kilometres in Brisbane were saved as a result of Neuron Mobility operations.

Rider usage of Neuron's shared e-scooters offers a range of other tangible and quantifiable benefits to the Brisbane community.

These benefits include:

- An overall productivity estimate of $2.96 million for Brisbane users of Neuron's E-scooters each year as a result of reduced time travelling annually;
- BCC would save an estimated $3.4 million over three years and the Queensland Government would potentially save up to $6.2 million in road maintenance costs each year; and
- A reduction of 197.9 tonnes of CO_2 emissions from cars travelling on Brisbane roads annually.

At present, Neuron's e-scooters are largely unconstrained based on user demand. Rider survey results identify that users want a larger operating area (52.2%), more or larger parking areas (23.8%) and more available e-scooters, allowing the rider to find one when needed (39.6%).

QEAS has modelled increases in economic and employment contribution under theoretical scenarios underpinned by improvement of Neuron Mobility's commercial arrangement and infrastructure delivered by Brisbane City Council. Based on consultation, this would allow for increased investment by Neuron Mobility in device numbers, locations and service area that would deliver an uplift in rider usage across Brisbane, and in turn increased economic and employment benefits.

QEAS believes it is quite realistic for a 20% annualised uplift in Brisbane rider usage to be possible based on 24% of Neuron riders citing unavailability of e-scooters when needed. A 20% uplift in riders would see:

- Neuron's economic contribution rises from $116.6 million in 2021-22 to $399.4 million in 2026-27 (a $282.8 million increase in economic activity).
- Neuron's employment contribution rises from 681 jobs in 2021-22 to 2,331 jobs in 2026-27 (an increase of 1,650 jobs).

Figure: Modelled Increase in Total Economic Contribution Neuron E-Scooters ($ millions)

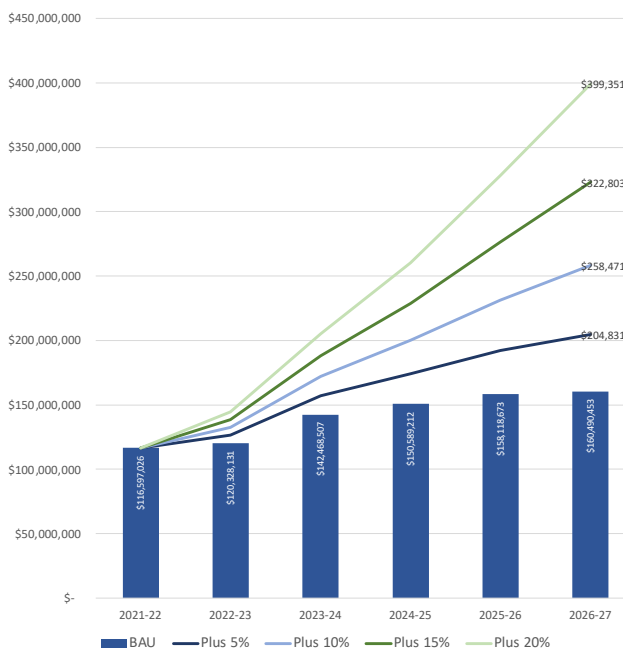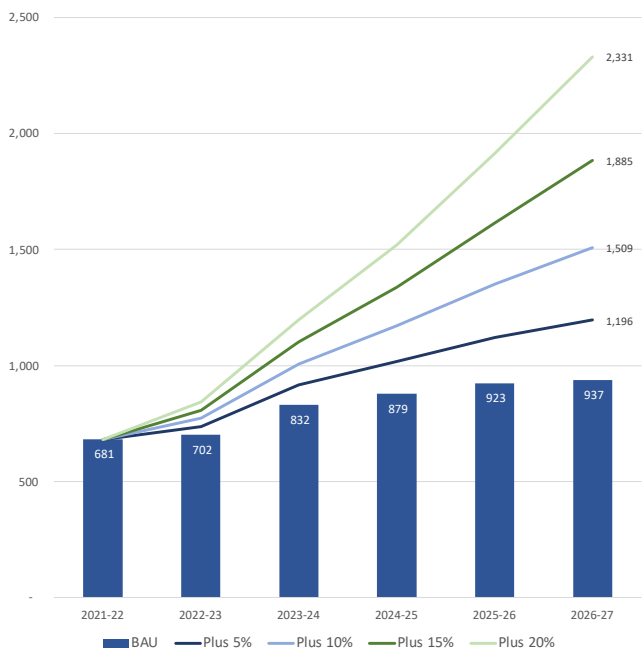Figure: Modelled Increase in Total Created Employment by Neuron E-Scooters (persons)

Source: QEAS 2022

QEAS economic modelling demonstrates that incentivising operators to increase supply of devices will result in significant upside over the coming five years. Such action is anticipated to provide a range of benefits including reduced council costs and greenhouse gas emissions for Brisbane.

1.0 Introduction

Neuron Mobility's shared e-scooters contribute significantly to the Brisbane economy and provide proven environmental benefits. They offer an all-in-one transport solution that make Brisbane commutes more convenient, accessible and productive thereby reducing greenhouse gas emissions and contributing to the local economy.

QEAS was commissioned by Neuron Mobility to analyse this economic and environmental contribution. The QEAS report captures the sizeable direct, indirect and enabled economic and employment contribution that Neuron's e-scooters make to the Brisbane economy and community. . The report seeks to demonstrate that Neuron Mobility shared micro mobility solutions are contributing substantially to the prosperity of Brisbane.

Decision makers are considered to be largely unaware of the significant contribution that Neuron's e-scooters make to the Brisbane economy due to an absence of accurate and timely estimates of its benefit. The scope of this report seeks to fill that void.

2.0 Scope of Report

2.1 Overview

The scope of this report provides an assessment of Neuron's contribution across a range of metrics to assist in establishing Neuron's economic and environmental importance. The report was developed in close consultation with Neuron Mobility and is set out in the below sections:

- Section 3.0: Provides a detailed overview of Neuron Mobility's operations in Brisbane including usage numbers, value to riders, usage reasons and broader benefits to the Brisbane community;
- Section 4.0: Provides a Socio and Economic overview including population, population characteristics, social infrastructure and social drivers, general economic summary, economic composition, employment by industry, employment and unemployment, and description of local businesses in Brisbane;
- Section 5.0: Provides an evaluation of economic impacts including direct and indirect impacts for Neuron Mobility's created employment and economic activity as measured by industry value add as well as estimates for enabled economic activity that Neuron Mobility supports through rider spend in the Brisbane economy;
- Section 6.0: Evaluates other benefits to the community including productivity benefits, environmental benefits and maintenance savings to the Brisbane City Council; and
- Section 7.0 : Provides modelling of economic and employment benefits of more favourable commercial terms offered by Brisbane City Council.

2.2 Neuron Mobility Service Area

Neuron Mobility's service area includes:

- The Wynnum Manly - Operating Area;
- Sandgate, Shorncliffe, Brighton - Operating Area; and
- T1 Brisbane Operating area.

As a result QEAS's economic and environmental benefit assessment of Neuron Mobility's operations focuses on the Brisbane Local Government Area.

In addition, this report captures all of Neuron Mobility's operations across both e-scooters and e-bikes. However it should be noted that 78.6% of riders ride only an e-scooter and 18.6% ride both an e-scooter and e-bike. Only 1.8% of riders ride only an e-bike.

"As a tourist to Brisbane, Neuron has made our visits much more fun and easy. We were able to get around the city and explore more than we would have on foot."
Neuron E-Scooter Rider – August 2022

Figure 1: Neuron Mobility's Brisbane Service Area

Source: Neuron Mobility
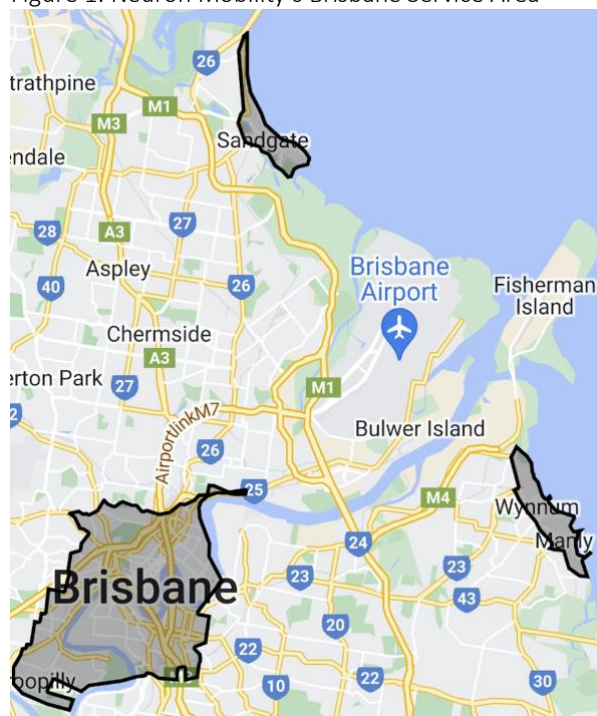
3.0   Neuron Mobility Focus on Brisbane

3.1   Neuron Mobility Overview

Neuron Mobility was founded in Singapore in 2016 and currently has operations in Australia, New Zealand, Canada and the UK. Neuron's distinctive orange e-scooters are designed in-house and manufactured specifically for renting and for safety.

Neuron Mobility generally seeks to partner with key cities to connect people and places in a safe, convenient and fun way. Neuron Mobility is focused on building close relationships with councils, and working hand-in-hand with them to make short trips as safe and efficient as possible. Neuron Mobility is a key and integral part of Brisbane City Council's (BCC) future and growth with Neuron establishing its presence in Queensland's capital city in July 2019. A heat map of the Neuron Mobility rider start locations (left figure) and rider end locations (right figure) is provided below.

Figure 2: Neuron Mobility rider start and end locations
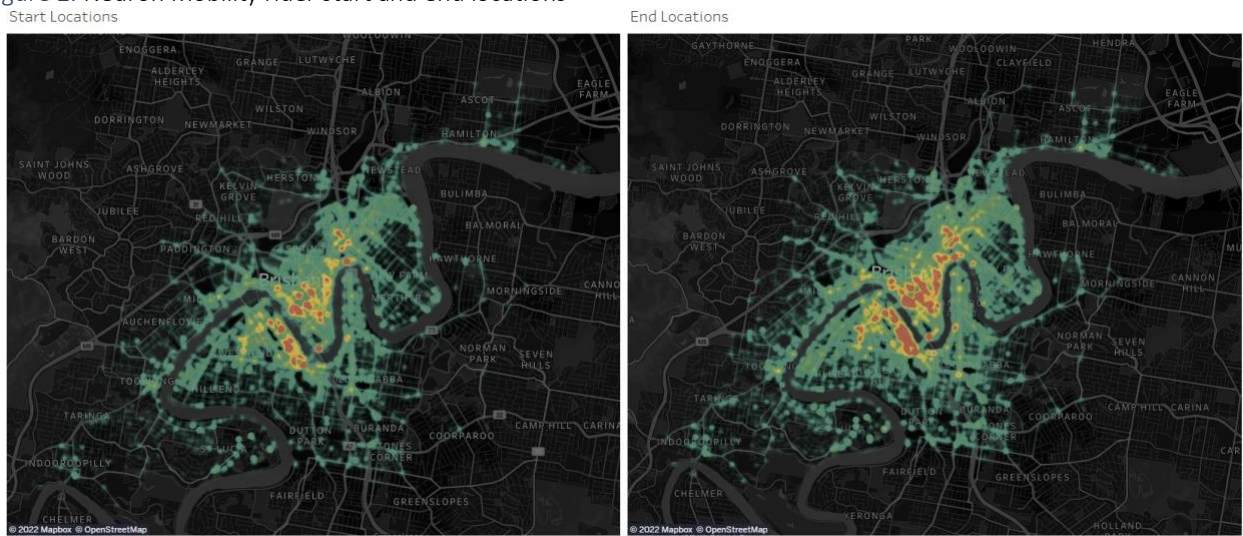
Source: Neuron Mobility

3.2   Neuron E-scooter Usage

In 2021-22 there were a total 1,620,000 individual rider trips taken by Neuron customers covering a combined distance of over 3 million kms. The average trip length was just 2 km and the monthly average trips in 2021-22 was 135,000 and kilometres travelled over 250,000. The prevailing trend has seen a gradual increase in both trips taken and kms travelled.

Figure 3: Neuron Mobility Shared E-Scooter Rider Trips and Kms travelled.
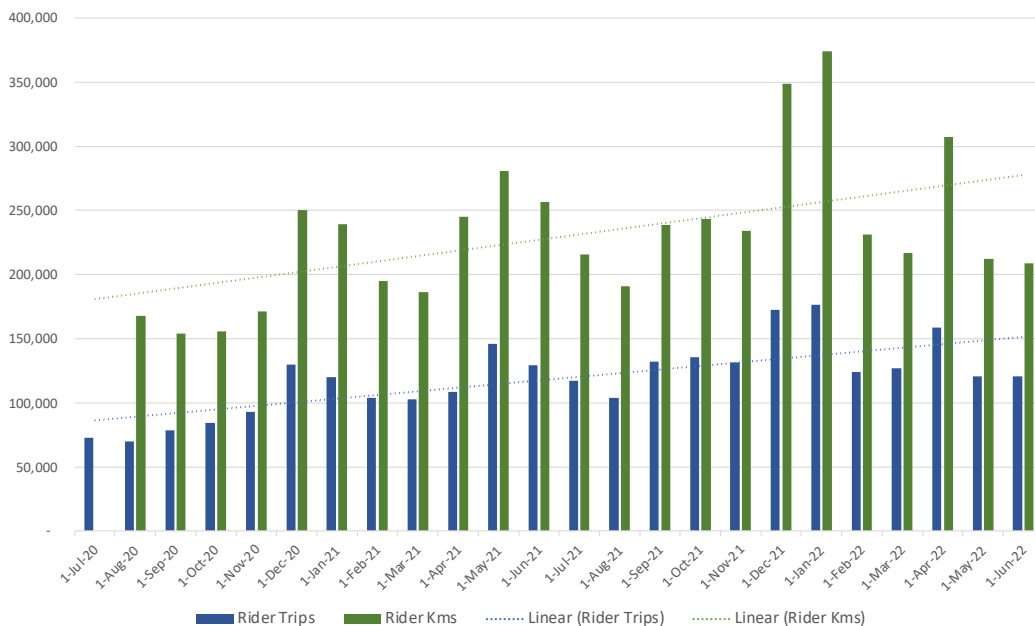
Source: Neuron Mobility & QEAS 2022

3.3   Neuron's Value to Riders

According to a recent survey of Neuron Mobility's Brisbane riders during August 2022, Neuron's e-scooter value, and in turn, increased patronage, has been driven by rider enjoyment (65.4% of riders), it being a faster way to get around and extended range in a given time (58.8%), and in being an easier way to explore the city (54.1%).

Figure 4: Neuron's Value to Riders
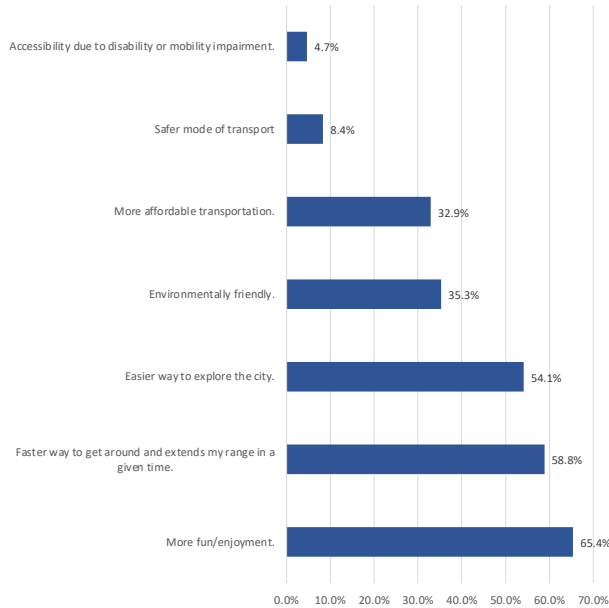
Figure 5: Reason for Neuron Rider Usage
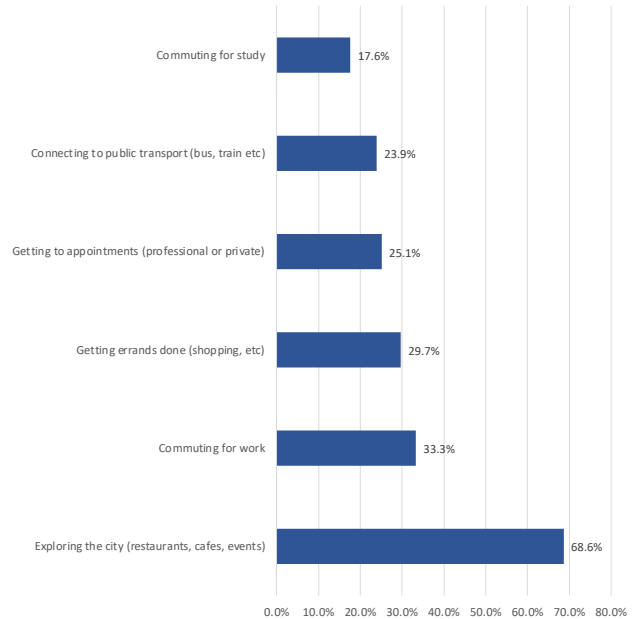
Source: Neuron Mobility Brisbane Rider Survey – August 2022

The Neuron Mobility Brisbane Rider Survey found that the primary reasons for using Neuron's e-scooters are exploring the city (68.6%), commuting for work or study (50.9%) and getting errands done including shopping (29.7%).

3.4   Neuron's Broader Benefits to the Community

The economic benefits of Neuron's shared e-scooters are considered be significant and include:

Increased sales and improved tourism	E-scooters encourage tourism in Brisbane and tourists are highly likely to ride shared e-scooter schemes to gain access to local retail stores, restaurants and entertainment venues. Overall, shared e-scooters help tourists travel around and discover local shops and destinations and in turn spend more.
Higher productivity	E-scooters provide significant time-saving benefits that improves productivity. E-scooters help cut down on travel time by allowing riders to bypass traffic and arrive at destinations faster. E-scooters for commuting help riders go through narrow or alternative routes, which also help cut time travelling. E-scooters directly addresses the issue of commuters spending hours on the road stuck in congestion resulting in loss in productivity for businesses and individuals. In addition riders don't have to waste time looking and paying for parking.
Affordable personal transport	E- scooters offer riders a more affordable transport alternative. People in the lower-income bracket use shared e-scooters because of their affordability. E-scooter users no longer need to pay for fuel costs. Shared e-scooter use for short distances is often cheaper than taking public transport facilities.
Access to opportunities	A key economic benefits of e-scooters is enabling riders to attend their current work and other job opportunities thereby adding to the economy.
Quick and Practical Ride	Commuting on a shared e-scooter allows riders to travel through the city quickly in a practical way. Many use it as a first and last-mile solution. This refers to the distance you take before or after riding public transportation, such as going to the nearest rail or bus station. . Riders can store e-scooters in appropriate parking spaces which also frees up council parking spaces
Avoided council costs	Utilisation of shared e-scooters takes vehicles of the surrounding road network that reduces council maintenance costs and reduces scale requirements for parking and public transport.

The environmental benefits of Neuron's shared e-scooters:

Greenhouse gas emission savings	E-scooters emit significantly lower carbon emissions and harmful gases than vehicles and other motorised vehicles. They help reduce air pollution, especially in highly density cities (eg Brisbane's urban infill). There are little to no direct emissions from e-scooters and related emissions are in their production.

4.0   Brisbane Socio and Economic Overview

Brisbane is the capital of Queensland and encompasses key employment districts including the Brisbane Central Business District, Australia TradeCoast (Brisbane Airport and Port of Brisbane) and the South West Industrial Gateway, which services local businesses as well as those in the broader South-East Queensland. It has a total land area of 1,342.7 km2 and is considered a safe, vibrant, green and prosperous city, valued for its friendly and optimistic character and enjoyable lifestyle. Brisbane's sub-tropical climate makes it an excellent destination for outdoor activities. Brisbane is recognised as having a number of sustainable competitive advantages including:

i.   Brisbane's natural landscapes and visitor attractions providing a strong foundation for tourism, with a large international airport providing a visitor gateway to attractions on the Gold Coast, Sunshine Coast, Northern New South Wales and the rest of Queensland;

ii.   Brisbane's location and proximity to the growing markets of Asia, underpins significant trade in SEQ as well as Queensland and Australia;

iii.   Brisbane's concentration of transport assets, including international gateways that connect the region directly to international markets – the Port of Brisbane and Brisbane Airport. These gateways are serviced by the region's road and heavy rail freight networks providing clear north-south and east-west connections to support economic activity through the efficient and effective movements of goods from industry to market.;

iv.   Brisbane has a number of world-class health, education and training facilities that contribute to the region's knowledge and technology precincts.

Brisbane and SEQ are the most rapidly growing regions in Australia in terms of population growth, and subsequent levels of urban development.

4.1   Brisbane's resident population

Brisbane has experienced significant population growth, driven by the region's enviable lifestyle and economic opportunities. Brisbane has an estimated resident population of 1,264,024 persons as at 30 June 2021 and accounts for approximately 24.2% of Queensland's population. Average annual growth rate over five years has been 1.3% and over the last ten years has been 1.5%.

Table 1: Estimated resident population, Brisbane (C) LGA and Queensland

LGA / State	As at 30 June					Average annual growth rate	
	2001	2006	2011	2016	2021pr	2001–2021pr	2016–2021pr
	— number —					— % —	
Brisbane (C)	885,787	987,831	1,089,879	1,184,752	1,264,024	1.8	1.3
Queensland	3,571,469	4,007,992	4,476,778	4,845,152	5,217,653	1.9	1.5

Source: Queensland Government Statistician's Office, QEAS 2022

As at 30 June 2021, 17.6% of Brisbane's population was aged 0–14 years; 69.2% aged 15–64 years; and 13.2% aged 65+ years. This compares to Queensland's 19.0% aged 0–14 years; 64.5% aged 15–64 years; and 16.6% aged 65+ years.

Table 2: Estimated resident population by age, Brisbane (C) LGA and Queensland

Age group	As at 30 June										Average annual growth rate
	2001		2006		2011		2016		2021pr		2001 to 2021pr
	number	%	number	%	number	%	number	%	number	%	%
Brisbane (C)											
0-14 years	159,181	18.0	175,420	17.8	189,916	17.4	210,025	17.7	222,318	17.6	1.7
15-24 years	140,392	15.8	158,335	16.0	171,222	15.7	180,461	15.2	176,887	14.0	1.2
25-44 years	281,449	31.8	313,767	31.8	355,006	32.6	382,339	32.3	405,767	32.1	1.8
45-64 years	198,153	22.4	227,178	23.0	248,979	22.8	268,002	22.6	292,589	23.1	2.0
65 years and over	106,612	12.0	113,131	11.5	124,756	11.4	143,925	12.1	166,463	13.2	2.3
Total	885,787	100.0	987,831	100.0	1,089,879	100.0	1,184,752	100.0	1,264,024	100.0	1.8
Queensland											

0-14 years	760,583	21.3	817,879	20.4	891,838	19.9	954,419	19.7	989,461	19.0	1.3
15-24 years	500,770	14.0	564,584	14.1	624,631	14.0	648,778	13.4	651,113	12.5	1.3
25-44 years	1,063,529	29.8	1,145,736	28.6	1,265,565	28.3	1,333,767	27.5	1,416,854	27.2	1.4
45-64 years	830,782	23.3	994,777	24.8	1,114,986	24.9	1,194,963	24.7	1,295,777	24.8	2.2
65 years and over	415,805	11.6	485,016	12.1	579,758	13.0	713,225	14.7	864,448	16.6	3.7
Total	3,571,469	100.0	4,007,992	100.0	4,476,778	100.0	4,845,152	100.0	5,217,653	100.0	1.9

Source: Queensland Government Statistician's Office, QEAS 2022

Brisbane's median age was 35.9 years as at 30 June 2021 and represents an increase of 1.3 years from median age of 34.6 years as at 30 June 2011. This compares to a median age of 38.4 years for Queensland.

Table 3: Median age, Brisbane (C) LGA and Queensland

LGA / State	As at 30 June					Total change
	2001	2006	2011	2016	2021pr	2001 to 2021
	— years —					years
Brisbane (C)	34.5	34.7	34.6	34.5	35.9	1.4
Queensland	35.0	36.1	36.6	37.0	38.4	3.4

Source: Queensland Government Statistician's Office, QEAS 2022

Brisbane's population is projected to reach 1,551,149 persons by 30 June 2041 an 22.3% increase over the next 20 years. Correspondingly Queensland's population is projected to increase by 36.1%.

Table 4: Projected population, Brisbane (C) LGA and Queensland

LGA / State	As at 30 June					Average annual growth rate
	2021	2026	2031	2036	2041	2021–2041
	— number —					%
Brisbane (C)	1,268,413	1,334,432	1,396,911	1,474,285	1,551,149	1.1
Queensland	5,261,567	5,722,780	6,206,566	6,686,604	7,161,661	1.6

Source: Queensland Government Statistician's Office, QEAS 2022

4.2   Brisbane's Economy

Brisbane has a modern and diversified economy driving economic growth estimated at 2.3 per cent per annum[1]. Brisbane accounts for the largest share of economic activity in Queensland, generating over half of the State's gross state product. In 2020-21 Brisbane's Gross Regional Product was estimated to be $182 billion[2].

The top three industries in Brisbane are health care and social assistance; professional, scientific and technical services, and education and training. These industries employ a total of 227,540 workers accounting for 32% of total jobs within the Brisbane Local Government Area (LGA). Key features of these industries include:

- Health care and social assistance, 93,936 jobs. 76% female employees; 24% male employees; 10,860 registered businesses. Key employment locations include; South Brisbane, Kelvin Grove-Herston, Woolloongabba, Chermside and Spring Hill.

- Professional, scientific, and technical services, 70,261 jobs. 56% male employees, 44% female employees, 22,155 registered businesses. Key employment locations include; City centre, Fortitude Valley, Paddington-Milton, Newstead-Bowen Hills and South Brisbane.

- Education and training, 63,343 jobs. 68% female employees, 32% male employees, 2269 registered businesses*. Key employment locations include; St Lucia, City centre, Kelvin Grove-Herston, South Brisbane and Salisbury-Nathan.[3]

  Brisbane's total number of jobs is estimated to increase by 30.9% over the period to 2041. Professional, Scientific and Technical Services is estimated to experience the largest increase in the number of workers over this period. Other industries estimated to experience an increase in the number of workers are Preschool and School Education; Hospitals; Food and Beverage Services; Medical and Other Health Care Services; and Property Operators and Real Estate Services.[4]

Table 5: Employment by Industry Brisbane (C) LGA and Queensland, Persons

Industry	Brisbane (C) LGA		Queensland	
	number	%	number	%
Agriculture, forestry and fishing	2,126	0.3	60,460	2.8
Mining	8,486	1.2	48,308	2.3
Manufacturing	42,691	6.0	128,666	6.0
Electricity, gas, water and waste services	8,123	1.1	23,806	1.1
Construction	44,517	6.2	189,766	8.9
Wholesale trade	22,769	3.2	56,050	2.6
Retail trade	59,545	8.3	211,506	9.9
Accommodation and food services	45,959	6.4	156,938	7.4
Transport, postal and warehousing	46,627	6.5	107,676	5.1
Information media and telecommunications	12,356	1.7	25,317	1.2
Financial and insurance services	29,670	4.2	54,230	2.5
Rental, hiring and real estate services	15,276	2.1	42,545	2.0
Professional, scientific and technical services	70,261	9.8	132,686	6.2
Administrative and support services	23,246	3.3	75,300	3.5
Public administration and safety	59,699	8.4	139,160	6.5
Education and training	63,343	8.9	192,699	9.0
Health care and social assistance	93,936	13.2	277,396	13.0
Arts and recreation services	11,833	1.7	33,784	1.6
Other services	25,774	3.6	83,385	3.9
Total[a]	714,220	100.0	2,130,869	100.0

Source: Queensland Government Statistician's Office, QEAS 2022

The number of registered businesses within the Brisbane Local Government Area is estimated at 130,570 with 97.2% of them defined as being a small business which is in par with the Statewide percentage. As at 30 June 2021, 18.2% of businesses were in the Professional, scientific and technical services industry, 13.3% in Rental, hiring and real estate services industry; and 9.3% in Healthcare and social assistance.

Table 6: Registered businesses by industry, Brisbane (C) LGA and Queensland, 30 June 2021

Industry	Brisbane (C) LGA		Queensland	
	number	%	number	%
Agriculture, forestry and fishing	1,348	1.0	41,139	8.9
Mining	560	0.4	1,786	0.4
Manufacturing	3,877	3.0	17,229	3.7
Electricity, gas, water and waste services	369	0.3	1,449	0.3
Construction	16,791	12.9	79,260	17.2
Wholesale trade	4,633	3.5	14,009	3.0
Retail trade	7,631	5.8	27,447	6.0
Accommodation and food services	5,627	4.3	18,520	4.0
Transport, postal and warehousing	10,781	8.3	34,454	7.5
Information media and telecommunications	1,466	1.1	3,723	0.8
Financial and insurance services	7,528	5.8	18,660	4.0
Rental, hiring and real estate services	17,331	13.3	54,473	11.8
Professional, scientific and technical services	23,702	18.2	56,794	12.3
Administrative and support services	6,727	5.2	20,720	4.5
Public administration and safety	307	0.2	1,205	0.3
Education and training	2,348	1.8	7,123	1.5
Health care and social assistance	12,101	9.3	31,662	6.9
Arts and recreation services	1,945	1.5	6,152	1.3
Other services	5,339	4.1	24,444	5.3
Not classified	167	0.1	573	0.1
Total[a]	130,570	100.0	460,807	100.0

Source: Queensland Government Statistician's Office, QEAS 2022

Brisbane's unemployment rate has remained lower than the rates of both South East Queensland and Queensland. In the March quarter 2022 Brisbane's unemployment rate was 4.3% and compares to Queensland's unemployment rate of 4.9%.[5]

Table 7: Unemployment and labour force(a), Brisbane (C) LGA and Queensland, March quarter 2022

LGA / State	Unemployed	Labour force	Unemployment rate
	— number —		%
Brisbane (C)	32,670	761,880	4.3
Queensland	137,561	2,805,826	4.9

Source: Queensland Government Statistician's Office, QEAS 2022

Key projects underway or planned in SEQ which will materially impact positively on Neuron's customer demand include:

- Brisbane Valley Highway Safety Upgrades
- Brisbane Metro – Woolloongabba Station
- Brisbane Metro – South Bank
- Kangaroo Point Green Bridge
- Inland Rail
- Cross River Rail
- Toowoomba to Brisbane Passenger Rail
- Queens Wharf;
- Brisbane Live
- Gabba Upgrade

The key projects listed above are a consequence and illustrative of Brisbane's growth and potential. Both the recently signed SEQ City Deal and the confirmation of the SEQ 2032 Olympic and Paralympic Games will build on this growth.

4.3   Brisbane's Tourism

Tourism is major economic driver for Brisbane and both influences and relies on Neuron Mobility's shared micro mobility solutions. Prior to COVID-19 (considered to be the return to state) domestic overnight visitors (year ending March 2020) was 7.9 million and represented 85% of all visitors to Brisbane.

International visitors (year ending March 2020) were 1.4 million and represented 15% of Brisbane's visitor market.[6] International visitors came from New Zealand 2223,353 visitors or 16%; China 2220,829 visitors or 16% ; United States of America 104,059 visitors or 8%; England 101,744 visitors or 7%; and Germany 54,523 visitors or 4%.[7]

The main reasons for visiting Brisbane include visiting friends and relatives, international 28% and domestic 41%; Business and or employment, international 14% and domestic 24%; Holiday, international 49% and domestic 28%; and Education; international 7% and not applicable for domestic.[8]

For the year ending March 2020; International expenditure was $2.7 billion and Domestic Expenditure was $5 billion.[9]

4.4   Brisbane Commuting

The areas of Brisbane with the highest concentration of workers (ranging from 3.01% to 17.20%) are City Centre, South Brisbane, Rocklea-Acacia Ridge, Fortitude Valley and Brisbane Airport. City Centre, South Brisbane and Fortitude Valley are directly facilitated by Neuron Mobility with other areas also facilitated following use of public transport into the city.

Brisbane's workers mainly commute from 68% of Brisbane workers live and work in Brisbane; 32% of Brisbane workers work in Brisbane but live outside of Brisbane; Of the 32% of Brisbane workers who work in Brisbane but live outside of Brisbane: 11% commute from Moreton Bay; 7% commute from Logan; 5% commute from Ipswich; 4% commute from Redland; 3% commute from Gold Coast ; 2% commute from other areas.

In respect to how Brisbane's workers get to work prior to COVID-19, 62% of Brisbane workers drive to work with 23% of Brisbane workers driving from outside Brisbane, 9% of Brisbane workers catch the train to work, 7% of Brisbane workers catch the bus to work, 4% of Brisbane workers work from home; 3% of Brisbane workers walk to work; Less than 2% of Brisbane workers ride a bicycle to work; and less than 1% of Brisbane workers catch a ferry to work.[10]

4.5   Implications for Neuron Mobility

Both Brisbane's current and forecasted population and economic growth represent an attractive and significant market for shared e-scooter operations. An efficient transport network is critical to sustaining economic success in modern economies such as Brisbane's. The transport network facilitates physical mobility and enhances communities' access to a wide range of economic, social, cultural and recreational activities.

However the impressive social and economic performance of Brisbane comes at a price. Brisbane is experiencing deteriorating overall traffic network performance with growing demand only further serving to exacerbate the resulting traffic congestion and time delays that are emerging. This is unquestionably leading to a substantial economic cost.

For example the Queensland Government's State Budget Service Delivery Statements reveal morning peak average travel times (minutes per 10 kilometres) have risen from 10.9 in 2011-12 to 11.5 in 2018-19 (the latest year before COVID-19). In the afternoon / evening peak, the travel time has increased from 11.2 (minutes per 10 kilometres) in 2011-12 to 11.9 in 2018-19[11].

Congestion imposes significant costs on Brisbane motorists and the economy, including extra travel time, increased vehicle operating costs, and environmental costs such as poorer air quality. The Bureau of Infrastructure, Transport and Regional Economics (BITRE) has estimated the range of congestion costs for Brisbane to rise from $2.8 billion in 2018 to $4.1–$5.9 billion by 2030.[12]

The combination of both population and economic growth over coming decades will serve to further compound the deteriorating traffic performance and prolonging commuting times for motorists. Greater use of share micro-mobility solutions, paired with public transport, will help ease this congestion.

5.0   Evaluation of Economic Impacts

5.1   Methodology

The QEAS report was developed in consultation with Neuron Mobility and Crisis and Comms Co identifying a range of vital statistics that Neuron e-scooters contributes to the Brisbane economy and Council together with growth scenarios and associated economic and environmental benefits.

QEAS' approach to measuring the economic and employment contribution of Neuron Mobility's contribution to the Brisbane economy is articulated below. The economic contribution assessment for this reports considers primarily contributions to industry value added (and employment, assessed quantitatively using both survey returns and Input-Output methodology. Key aspects of QEAS methodology included:

- QEAS identified the processes and direct expenditure involved in the operation of Neuron Mobility through a comprehensive request for information and supplemented with detailed survey results of Neuron customers in Brisbane during the month of August 2022.
- Desktop research was undertaken to establish information currently available for Neuron and other shared micro-mobility solutions for use as a foundation and benchmarking for QEAS calculated results; and
- Estimates utilising QEAS Input-Output model were made of the direct and indirect contribution of Neuron Mobility to the Brisbane economy, employment and other indicators were prepared. Direct impacts, are the first round of effects from direct operational expenditure on goods and services of Neuron Mobility. The flow-on or indirect effects (i.e. the multiplier effects) are estimated in two parts: production-induced and consumption-induced effects. The production-induced effects arise from expenditure by Neuron Mobility on goods and services supplied by other firms in Brisbane and more broadly. The consumption-induced effects arise from expenditure of Neuron Mobility employees' income on goods and services supplied by Brisbane businesses.

The adopted methodology provides an estimate of the total economic impact and employment effect of Neuron Mobility. The two types of economic impacts that have been analysed using I-O modelling in this report are Gross Value Added and employment, outlined below.

Table 8: QEAS IO model Metrics

Gross Value added	Employment
Gross value added (GVA) is the measure of the value of goods and services produced in an area, industry or sector of an economy. Value added for is comprised of wages and salaries, gross operating surplus of the Neuron and its indirect taxes.	A measure of employment levels (full time equivalents) required to service the demand for economic output per annum.

Source: QEAS 2022

5.2   Value Add to the Brisbane Economy

Based on QEAS modelling, in 2021-22 Neuron Mobility directly contributed $9.04 million towards Brisbane's economy and indirectly through its supply chain and expenditure of employee wages indirectly contributed another $8.7 million. Collectively its value add to the Brisbane economy in 2021-22 was estimated at $17.7 million.

Table 9: Direct and Indirect Economic Value Add of Neuron E-Scooters in Brisbane - $ millions

	2021-22
Direct	$9.04 million
Indirect	$8.68 million
Total	$17.72 million

Source: QEAS 2022

5.3   Employment contribution to the Brisbane Economy

Direct employment by Neuron Mobility as at 30 June 2022 was estimated 80 persons. Through Neuron Mobility's supply chain businesses and expenditure of employee wages another 35 jobs were indirectly created. In total 115 jobs are estimated directly and indirectly created by Neuron operations in Brisbane.

Table 10: Direct and Indirect Employment of Neuron E-Scooters in Brisbane – Persons as at 30 June 2022

	2021-22
Direct	80
Indirect	35
Total	115

Source: QEAS 2022

5.4   Enabled Economic Contribution

Neuron Mobility's main contribution comes through the economic activity and employment that it facilitates. Neuron Mobility plays a key role as an economic enabler, facilitating the movement of people who ultimately spend money across Brisbane based cafes, restaurants, retail stores etc.

According to the Neuron Mobility Brisbane Rider Survey – 66.4% of trips result in a purchase. Of these, 42.1% of riders made a purchase as part of their latest ride at a hospitality venue, 32.5% made a purchase at a department store, supermarket or other retail store and 17.9% visited a gym, movie or event. The average spend for each rider trip was $61.05. All of this economic activity and spend is enabled by Neuron's e-scooters.

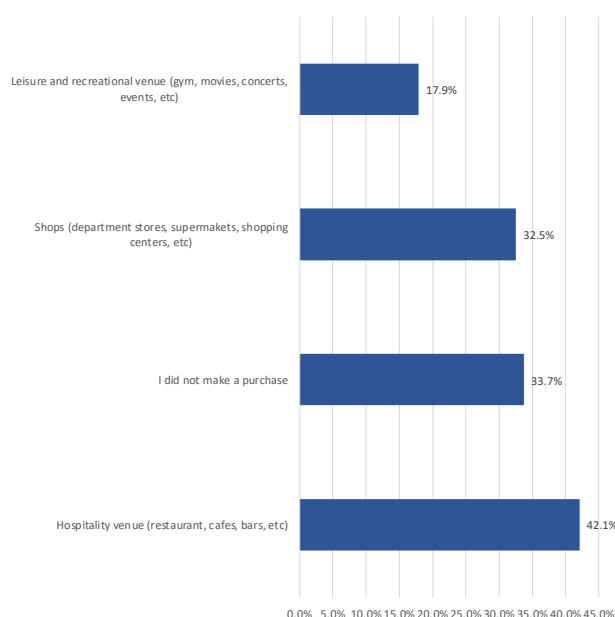Figure 6: Rider Purchasing Behaviour when riding Neuron E-Scooters

Category	%
Leisure and recreational venue (gym, movies, concerts, events, etc)	17.9%
Shops (department stores, supermakets, shopping centers, etc)	32.5%
I did not make a purchase	33.7%
Hospitality venue (restaurant, cafes, bars, etc)	42.1%

Figure 7: Value of Purchase ($) by Neuron E-Scooter Rider

Value	%
$0	33.9%
$1 - $50	39.7%
$51 - $100	12.3%
$101 - $150	4.8%
$151 - $200	4.8%
$201 - $250	1.3%
$251 - $300	0.5%
Over $300	2.6%
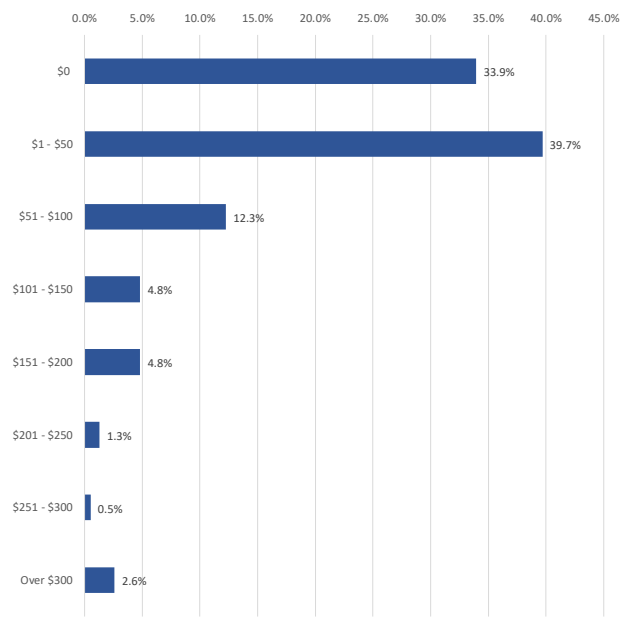
Source: Neuron Mobility Brisbane Rider Survey – August 2022

As a result, in 2021-22 Neuron is estimated to have enabled $98.9 million in economic activity across the Brisbane LGA through the movement of goods and people and their resulting spend. In turn, this economic activity is estimated to have supported 566 jobs in 2021-22.
.
An example of this enabled benefit is occurring through Neuron's e-scooters playing a vital role in facilitating Brisbane's night time economy that is enabling visitors to safely and efficiently commute between venues and home. This benefit is evidenced in the below case study.

Case Study – Brisbane's Night Time Economy (NTE)

In April 2020, Lord Mayor Adrian Schinner announced a new Community, Arts and Night-time Economy committee chaired by Cr Vicki Howard. The committee is working with the business community to develop the night time economy in key precincts such as Fortitude Valley and the CBD.

The Brisbane Vision 2031 Strategy includes the theme of a "vibrant, creative city" and commits to a target of "a variety of music and night time entertainment precincts" in the City.

Brisbane City Council is working with local businesses and industry stakeholders to identify ways it can support its NTE to adapt and become stronger, safer, and more diverse than ever before.

Brisbane is Australia's largest NTE, with the highest number of Core NTE establishments.. Its substantial geography stretches over 1,343km2. However, within its central postcodes (4000 CBD, 4006 Fortitude Valley and 4101 West End) the NTE is particularly dense.

The Core NTE makes an important contribution to Brisbane's labour market, representing almost one in ten jobs. Brisbane's Core NTE is distributed across the Food, Drink and Entertainment sub-sectors.

Source: Measuring the Australian Night Time Economy [13]

E-scooters are a vital and effective way for patrons to travel to and between venues, and home safely.

5.5   Total Economic Contribution

In total, Neuron Mobility is estimated to have contributed $116.6 million in direct, indirect and enabled economic activity towards Brisbane's economy. That is 6.4 cents in every $100 in Brisbane economic activity is provided and enabled by Neuron Mobility.

Table 11: Total Economic Contribution of Neuron E-Scooters in Brisbane - $ millions

	2021-22
Direct	$9.04 million
Indirect	$8.68 million
Enabled	$98.88 million
Total	$116.60 million

Source: QEAS 2022

In total, Neuron Mobility is estimated to have created and supported 681 Brisbane based jobs in 2021-22.

Table 12: Total Employment Created by Neuron E-Scooters in Brisbane - persons

	2021-22
Direct	80
Indirect	35
Enabled	566
Total	681

Source: QEAS 2022

5.6 Economic Contribution – Estimated Future

Demand for shared micro-mobility solutions in Brisbane is expected to grow across the next five years as evidenced by section 4.0. In turn, Neuron Mobility's economic and employment contribution is also expected to increase over this period.

The expected increase in both population as well as economic, employment and tourism growth together with rising traffic congestion across the Brisbane's road network will boost demand for Neuron's e-scooters. Other factors that are anticipated to influence increased usage of shared e-scooters are provided in the below table.

Table 13 : Drivers of demand for Neuron Mobility

| Demographics	Commercial Activity	Transport Options	Land Use	Demand Management	Prices
- Number of people (residents, employees and visitors) - Employment rate - Wealth/incomes - Age/lifecycle - Lifestyles Preferences	- Number of jobs - Business activity - Freight transport - Tourist activity	- Walking - Cycling - Public transit - Ridesharing - Taxi services - Telework - Delivery services	- Density - Mix - Walkability - Connectivity - Transit service proximity - Roadway design	- Road use prioritization - Pricing reforms - Parking management - User information - Promotion campaigns	- Fuel prices and taxes - Vehicle taxes and fees - Road tolls - Parking fees - Vehicle insurance - Transit fares

Source: Victorian Transport Policy Institute[14] and QEAS 2022

QEAS analysis indicates Neuron Mobility's direct and indirect economic contribution is expect to rise from $17.7 million in 2021-22 to $24.4 million by 2026-27. In respect to employment, Neuron Mobility's direct and indirect employment contribution will rise from 115 persons in 2021-22 to 158 persons by 2026-27.

Figure 8: Forecasted Direct and Indirect Economic Value Add of Neuron E-Scooters - $ millions

Figure 9: Forecasted Direct and Indirect Employment of Neuron E-Scooters– Persons
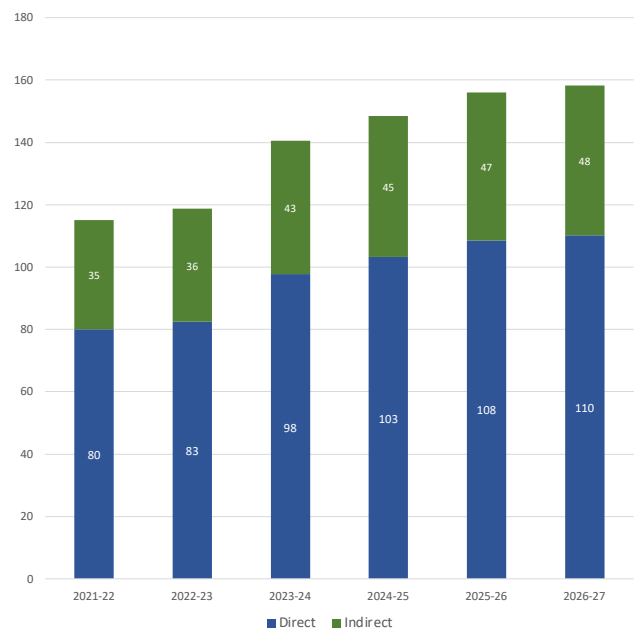
Source: QEAS 2022

In respect to enabled economic activity, QEAS analysis indicates Neuron Mobility's enabled economic contribution as a consequence of rider spend across the Brisbane economic is expected to rise from $98.9 million in 2021-22 to $136.1 million by 2026-27. In respect to employment, Neuron Mobility's enabled employment contribution will rise from 566 persons in 2021-22 to 779 persons by 2026-27.

QEAS Queensland Economic
Advocacy Solutions

Figure 10: Forecasted Direct and Indirect Economic
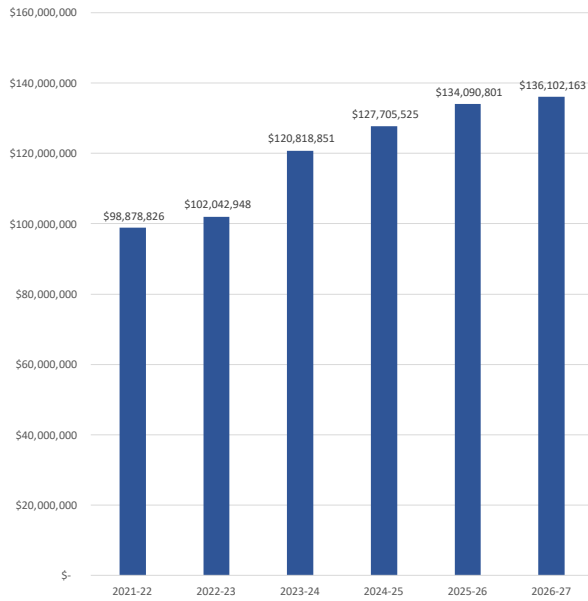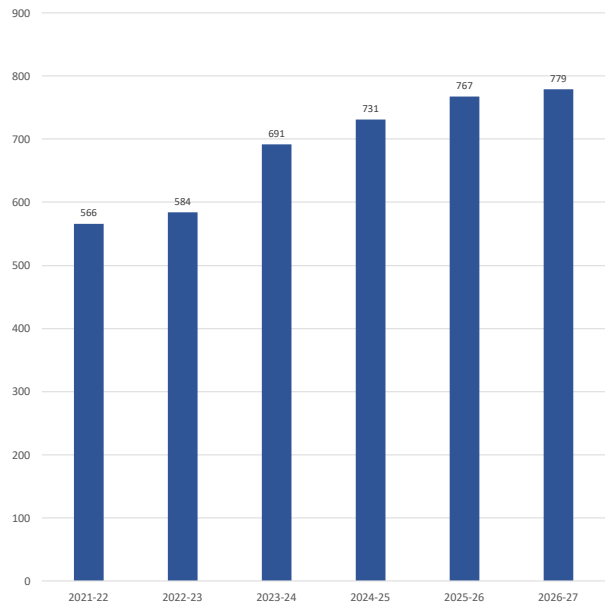Value Add of Neuron E-Scooters - $ millions

Figure 11: Forecasted Direct and Indirect Employment
of Neuron E-Scooters– Persons

Source: QEAS 2022

In total, Neuron Mobility's estimated economic contribution towards Brisbane's economy will rise from $116.6 million in 2021-22 to $160.5 million in 2026-27. Neuron Mobility's created and supported employment will rise from 681 Brisbane based jobs in 2021-22 to 937 jobs by 2026-27.

6.0   Evaluation of Other Benefits

6.1   Neuron reduced overall passenger vehicle trips

Rider usage of Neuron's shared e-scooters offer a range of other tangible and quantifiable benefits to the Brisbane community. These benefits arise as a result of substitution away from usage of uber/taxi and personal car. According to the Neuron Mobility Brisbane Rider Survey – 48.0% of riders would have used either an uber/taxi or personal car if the Neuron e-scooter or e-bike was unavailable. Accordingly an estimated 777,428 vehicle trips or 1,451,041 vehicle kilometres in Brisbane were saved as a result of Neuron Mobility operations. This results in productivity benefits, reduced road costs and environmental benefits to the Brisbane community.

6.2   Productivity Benefits

E-scooters provide significant time-saving benefits that improve productivity. E-scooters help cut down on travel time by allowing riders to bypass traffic and arrive at destinations faster. E-scooters for commuting help riders go through narrow or alternative routes, which also help cut time travelling. E-scooters directly address the issue of commuters spending hours delayed in congestion resulting in a loss in productivity for businesses and individuals. In addition, riders save time and money looking for and paying for parking.

Based on the average length of time, a 2km e-scooter trip takes versus a 2km average passenger vehicle trip in congested traffic coupled with the removal of parking time, an overall productivity estimate of $2.96 million for Brisbane users of Neuron's E-scooters and each year has been calculated. This is considered extremely conservative as it does not factor into consideration traffic standstill in the CBD nor cross-river trips that are likely to result in significantly higher time savings.[15]

6.3   Reduced Road Costs

As part of the Brisbane City Council's Budget for 2022-23, Council announced a three year $360 million road resurfacing program. Furthermore for the 2022-23 financial year the Queensland Government is allocating over $660.1 million in transport infrastructure management and delivery for Brisbane based roads.[16] Utilisation of shared e-scooters takes vehicles off the surrounding road network that reduces council and Queensland Government maintenance costs and reduces scale requirements for public transport and parking. Based on the number of passenger vehicle kilometres in Brisbane saved as a result of usage of Neuron's e-scooters, BCC would save an estimated $3.4 million over three years and the Queensland Government would potentially save up to $6.2 million in road costs each year.[17]

6.4   Environmental Benefits

E-scooters emit little to no carbon emissions and any CO_2 value arises from their manufacture and charging from the electricity grid. They are significantly less harmful than vehicles. They help reduce air pollution, especially in highly density cities such as Brisbane. There are considerable environmental benefits arising from taking cars off the road as a result of substitution to Neuron's shared e-scooters. The 1,451,041 vehicle kilometres saved in 2021-22 are estimated to have resulted in 197.7 tonnes of reduced CO_2 emissions for the Brisbane community..[18]

7.0   Building Sustainable Future Growth for Brisbane

7.1   Establishing commercial terms that reflect benefits

The Neuron Mobility Brisbane Rider Survey confirms that usage of Neuron e-scooters are largely unconstrained based on user demand. Riders cite preferences for a larger operating area (52.2%), more or larger parking areas (23.8%) and better availability of e-scooters (39.6%).

At the same time usage data indicates that while more e-scooter devices will mean more trips, there is a reducing marginal rate of return for additional devices. In addition, devices in areas of lower density such as suburban areas, experience lower usage, per device; but also require greater costs based on the operator's 24/7/365 support operating model. This includes team-member trips to "rebalance" e-scooters (move them to where they are needed), battery swapping and maintenance, and responding to requests from the community.

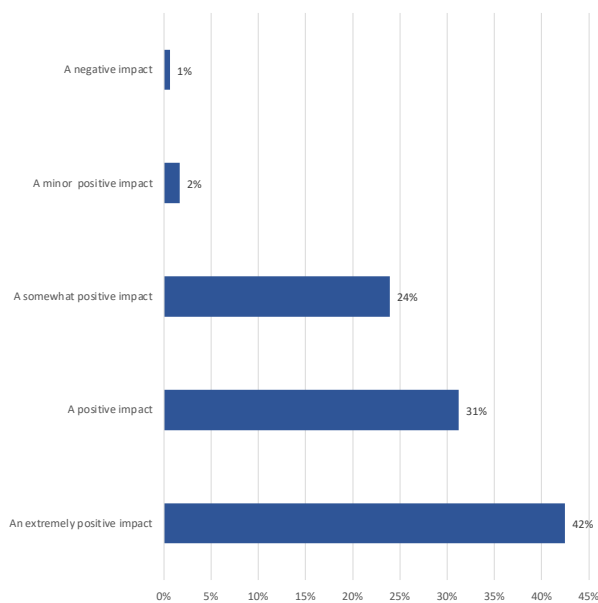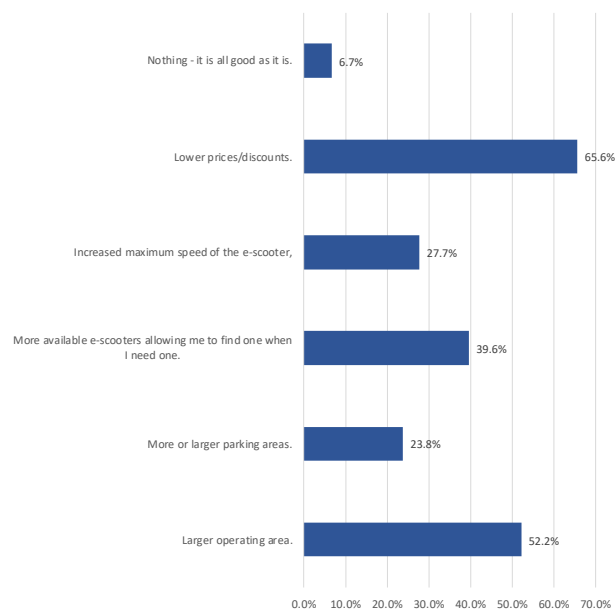Figure 12: Rider views on Overall Impact on Brisbane

Figure 13: Changes that would deliver increase usage

Source: Neuron Mobility Brisbane Rider Survey – August 2022

7.2   Increased Economic Activity and Employment

Neuron Mobility maintains that both the Brisbane City Council and the Queensland Government can maximise the economic and other benefits if they elect to build infrastructure and implement commercial arrangements optimising use of shared e-scooters.

Brisbane and Queensland with more favourable policies towards shared micro mobility systems could be giving the City and State a potential significant boost towards economic recovery as e-scooter programs generate additional economic activity, council revenues, state revenues, jobs and avoid costs.

To this end, QEAS has modelled growth scenarios, utilising Neuron Mobility's contractual and investment recommendations. That is, the economic benefits that would be realised to the Brisbane economy based on increases in rider trips.

Based on QEAS modelling, total economic activity would rise under four scenarios assuming 5%, 10%, 15% and 20% annual uplift in riders over and above existing business as usual growth:

- Business as usual sees economic contribution rise from $116.6 million in 2021-22 to $160.5 million in 2026-27 (a $43.9 million increase in economic activity);

- A 5% annual uplift in riders sees economic contribution rise from $116.6 million in 2021-22 to $204.8 million in 2026-27 (a $88.2 million increase in economic activity);

- A 10% annual uplift in riders sees economic contribution rise from $116.6 million in 2021-22 to $258.5 million in 2026-27 (a $141.9 million increase in economic activity);

- A 15% annual uplift in riders sees economic contribution rise from $116.6 million in 2021-22 to $322.8 million in 2026-27 (a $206.2 million increase in economic activity); and

- A 20% annual uplift in riders sees economic contribution rise from $116.6 million in 2021-22 to $399.4 million in 2026-27 (a $282.8 million increase in economic activity).

Figure 14: Modelled Increase in Total Economic Contribution Neuron E-Scooters ($ millions)
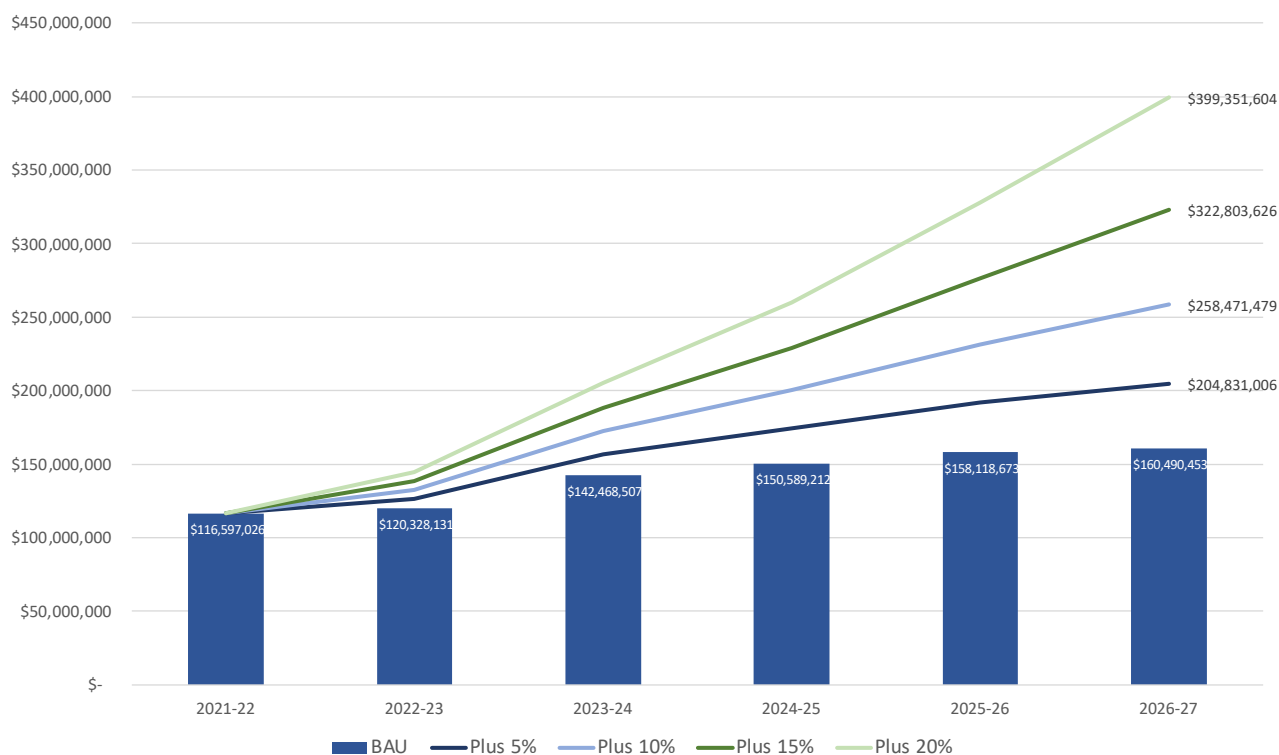
Based on QEAS modelling, total employment would rise under four scenarios assuming 5%, 10%, 15% and 20% annual uplift in riders over and above existing business as usual growth:

- Business as usual sees employment contribution rise from 681 jobs in 2021-22 to 937 jobs in 2026-27 (an increase of 256 jobs);

- A 5% annual uplift in riders sees employment contribution rise from 681 jobs in 2021-22 to 1,196 jobs in 2026-27 (an increase of 515 jobs);

- A 10% annual uplift in riders sees employment contribution rise from 681 jobs in 2021-22 to 1,509 jobs in 2026-27 (an increase of 828 jobs);

- A 15% annual uplift in riders sees employment contribution rise from 681 jobs in 2021-22 to 1,885 jobs in 2026-27 (an increase of 1,204 jobs); and

- A 20% annual uplift in riders sees employment contribution rise from 681 jobs in 2021-22 to 2,331 jobs in 2026-27 (an increase of 1,650 jobs).

The assessed uplift in rider demand is based on survey feedback that 24% of riders have experienced a situation whereby an e-scooter or e-bike was unavailable for their usage. 22% of riders indicated that an e-scooter or e-bike was only available about half the time, 3% indicated they were rarely available and 1% indicated they were never available. On this basis QEAS believes it is not unreasonable for the plus 20% scenario to be achievable for Neuron Mobility and for the BCC.

Figure 15: Modelled Increase in Total Created Employment by Neuron E-Scooters (persons)
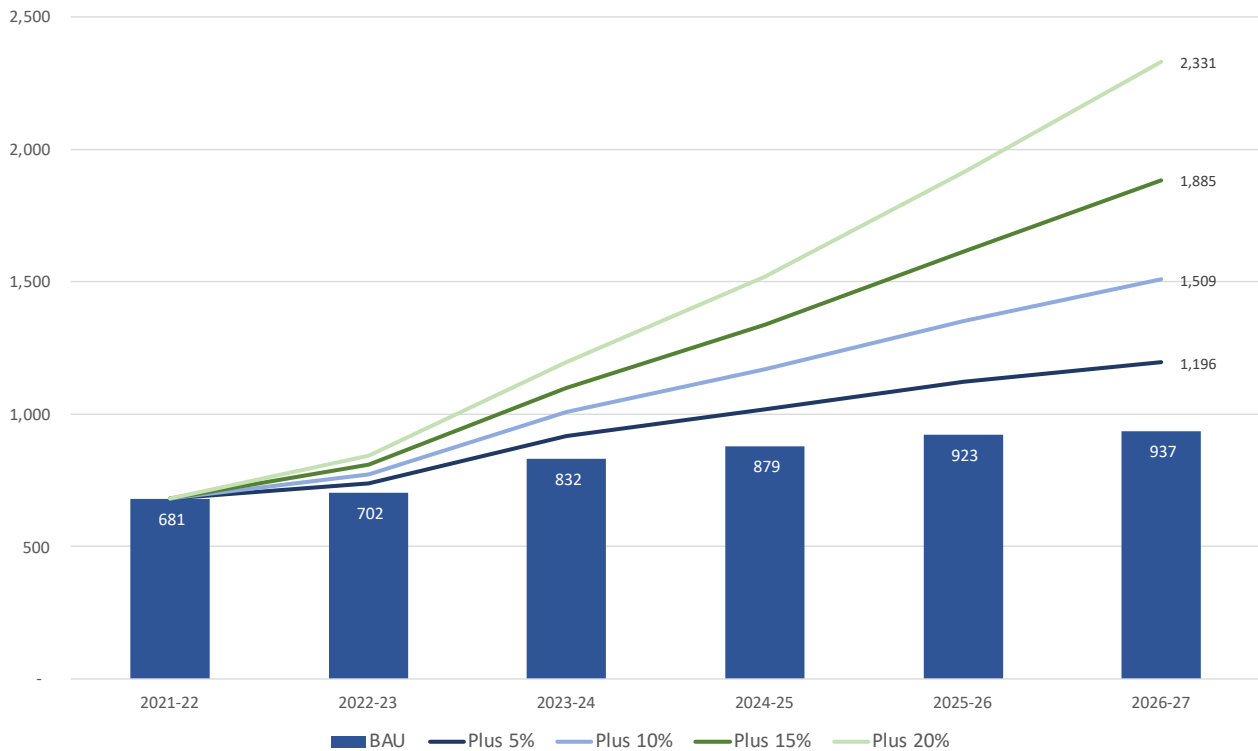
Source: QEAS 2022

If achieved, more attractive commercial arrangements offered by the Brisbane City Council are assessed to provide an excellent economic and employment strategy for the Council. In addition, such action is anticipated to provide a range of other benefits including reduced council costs and greenhouse gas emissions for Brisbane.

QEAS Queensland Economic Advocacy Solutions

Appendix One: QEAS Business Information

Queensland Economic Advocacy Solutions delivers services in economic analysis, research and advocacy in Australia and was set up by Nick Behrens following two decades of experience applying these skills in the real world for Australia's business community. More specifically QEAS provides:

- Economic Contribution and Valuation Analysis;
- Data Analysis, Market research and Economic Modelling;
- Stakeholder Consultation; and
- Government Relations and Submissions.

QEAS delivers services nationally to exemplary organisations including Australian Industry Group, Australian Gas Industry Trust, BASF, Brisbane Airport Corporation, CCIQ, Canegrowers, IOR Pty Ltd, LifeFlight, Master Builders Australia, Natroads, Port of Brisbane, Property Council of Australia, Queensland Resources Council, RACQ, Remondis, Suncorp, VTA, Victorian Waste Management Association, unions, local government authorities, the Commonwealth and State Governments and many others.

We can be engaged for either a special project (for the entire project or just the parts our clients need help with) or on an ongoing basis. We will take the time to understand your unique challenge and create a partnership with you to tailor a solution specific to your budget. We engage with confidentiality and integrity. Choose QEAS for our expertise, professionalism and ability to work with our valued clients to achieve exceptional results.

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Across his professional career Nick has realised many outstanding outcomes to complex challenges for the business community. He possesses significant experience in gathering and presenting information, and leveraging that information to achieve results across a range of areas including economic, taxation, regulatory environment, workers compensation, employment legislation, population, infrastructure and planning issues. As Director of Queensland Economic Advocacy Solutions (QEAS), Nick provides:

- Exceptional understanding of social, political and economic issues impacting on business and the economy;
- Considerable real-world application of project, business and economic research and analysis;
- Significant expertise in advocacy, including government and stakeholder relations;
- In-depth and firsthand knowledge of the workings of Government;
- Extensive networks in political, government, business and community sectors;
- Previous appointments on a number of high level Government committees; and
- Media commentator and public speaker.

Nick's representations are based on extensive research and his preferred approach to economic analysis, research and advocacy is to achieve results by working with stakeholders behind the scenes to secure positive and lasting outcomes. He places much emphasis on having a thorough and convincing evidence that is readily understood and in turn leads to real world application and solutions.

Appendix Two: References

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[3] Australian Bureau of Statistics Census of Population and Housing, 2016, Working Population Profile, based on Place of Work at ANZSIC 1 digit level

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[7] Tourism Research Australia, International Visitor Survey, Year Ending March 2020

[8] Tourism Research Australia, National Visitor Survey, International Visitor Survey, Year Ending March 2020

[9] Tourism Research Australia, National Visitor Survey, International Visitor Survey, Year Ending March 2020

[10] Australian Bureau of Statistics, Census of Population and Housing, 2016, TableBuilder, based on Place of Work

11 https://budget.qld.gov.au/files/SDS-Transport%20and%20Main%20Roads-2018-19.pdf

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[13] https://www.lordmayors.org/wp-content/uploads/2021/09/Measuring_the_Australian_NTE_2019-20_FINAL.pdf

[14] Victoria Transport Policy Institute 2018, Understanding Transport Demands and Elasticities - how prices and other factors affect travel behaviour

[15] These assumptions are based on Table 3.4 in Austroads, 2012, Guide to Project Evaluation Part 4: Evaluation Data. The estimates in this table for June 2010 have been inflated to current values using ABS estimates of growth in the wage price index since then.

[16] https://budget.qld.gov.au/files/Budget_2022-23_SDS_Department_of_Transport_and_Main_Roads.pdf

[17] Australian Bureau of Statistics Survey of Motor Vehicle Use, Australia 2020

[18] UK Department for Business, Energy & Industrial Strategy – Greenhouse has reporting conversion factors. Calculation is based on 1,451,041km, ave car emission of 192g per km and ave e-scooter emission of 55.6g per km.

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