

The Economic Contribution of



to the Darwin Economy



March 2023

A E A S

Australian Economic
Advocacy Solutions

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REPORT PREPARATION

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Executive Summary

AEAS was commissioned to analyse the economic and environmental contribution of Neuron Mobility’s e-scooter fleet across 2022 in Darwin. This AEAS report captures the direct, indirect and enabled economic and employment contribution that Neuron’s e-scooters make to the Darwin 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 Darwin.

In 2022 there were 954,801 individual rider trips taken by Neuron customers covering a combined distance of nearly 1.5 million kms. This represents a significant increase from the first year of operation in 2020 with 557,041 trips and 962,953 kilometres travelled. The average trip length was 2 km during the wet months and 1.4 km during the dry months. The monthly average trips in 2022 were 79,567 and 123,372 kilometres travelled.

Neuron Mobility’s shared e-scooters are assessed by AEAS to contribute significantly to the Darwin 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 Darwin and the continued consolidation of Darwin as a city of national and international significance.

Neuron Mobility’s most recent Darwin Rider Survey identified that 80.3% of trips result in a purchase. Of these, 59.9% of riders made a purchase as part of their latest ride at a hospitality venue; 39.2% made a purchase at a department store, supermarket or other retail store; and 21.2% visited a gym, movie or event. The average spend for each rider trip was \$85.42. At present 98.7% of users believe Neuron e-scooters have a somewhat positive, positive or extremely positive impact on Darwin.

In 2022, Neuron Mobility is estimated to have contributed \$86.68 million in direct, indirect and enabled economic activity towards Darwin’s economy (equivalent to \$173,360 per e-scooter each year). Through enabling affordable, rapid and easily accessible transport options for Darwin tourists, residents and business community members, AEAS has determined that Neuron e-scooters have contributed 83.2 cents in every \$100 in Darwin’s economic activity over this period. Furthermore, Neuron Mobility is estimated to have created and supported 512 Darwin based jobs.

AEAS analysis indicates Neuron Mobility’s estimated economic contribution towards Darwin’s economy will rise from \$86.68 million in 2022 to \$121.50 million by 2027.

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

	2022 Calendar Year
Direct	\$2.74 million
Indirect	\$2.38 million
Enabled	\$81.56 million
Total	\$86.68 million

Source: AEAS 2023

Neuron Mobility’s created and supported employment will also rise, from 512 Darwin based jobs in 2022 to 718 jobs by 2027.

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

	As at December 2022
Direct	28
Indirect	17
Enabled	467
Total	512

Source: AEAS 2023

Darwin’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 Darwin’s.

Greater utilisation of shared micro-mobility solutions such as Neuron’s will undoubtedly help improve overall traffic performance. An estimated 389,559 vehicle trips or 604,029 vehicle kilometres in Darwin were saved as a result of Neuron Mobility operations in 2022.

As a result rider usage of Neuron’s shared e-scooters offers a range of other tangible and quantifiable benefits to the Darwin community.

These benefits include:

- An overall productivity estimate of \$1.15 million for Darwin users of Neuron’s E-scooters each year as a result of reduced time travelling annually;
- The City of Darwin council would save an estimated \$472,000 each year and the Northern Territory Government would potentially save up to \$2.95 million in road maintenance costs each year; and
- A reduction of 82.3 tonnes of CO2 emissions from less cars travelling on Darwin roads annually.

At present, Neuron’s e-scooter usage has opportunity to significantly grow based on user demand. Rider survey results indicate preferences for a larger operating area (60.4%) (including Darwin CBD, Fannie Bay, Parap, Nightcliff, Stuart Park and Casuarina), more or larger parking areas (17.1%) and better availability of e-scooters (24.0%).

AEAS has modelled increases in economic and employment contribution under theoretical scenarios underpinned by improvement of Neuron Mobility’s commercial arrangement and infrastructure delivered by City of Darwin. 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 Darwin, and in turn increased economic and employment benefits.

AEAS believes it is feasible for a 20% annualised uplift in Darwin rider usage to be possible based on 45.2% of Neuron riders citing unavailability of e-scooters when needed. A 20% uplift in riders would see:

- Neuron’s economic contribution rises from \$86.68 million in 2022 to \$302.34 million in 2027 (a \$215.66 million increase in economic activity).
- Neuron’s employment contribution rises from 512 jobs in 2022 to 1,786 jobs in 2027 (an increase of 1,274 jobs).

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

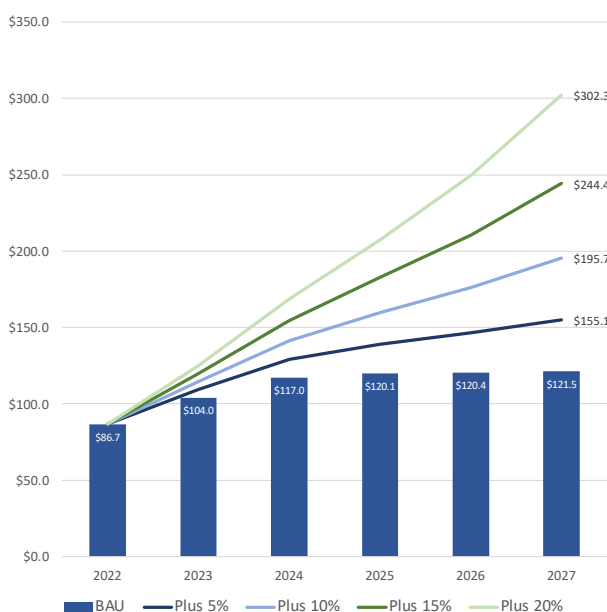
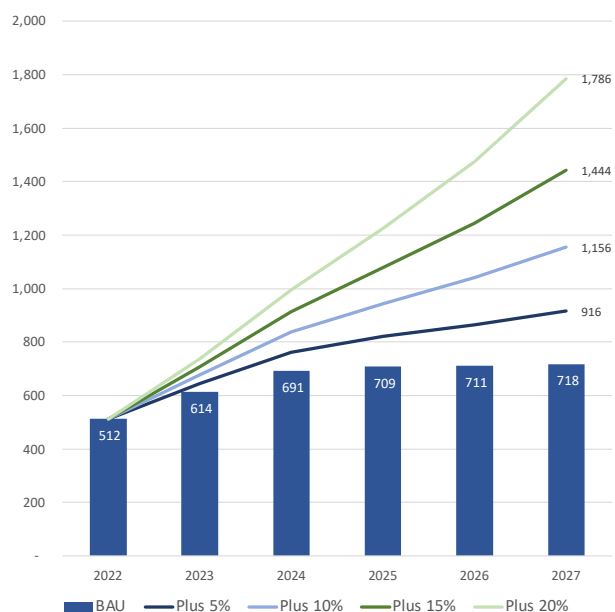


Figure: Modelled Increase in Total Created Employment by Neuron E-Scooters (persons)



Source: AEAS 2023

AEAS economic modelling demonstrates that incentivising Neuron to invest in the future will result in significant upside over the coming five years. Such action is anticipated to provide a range of benefits including increased jobs, greater economic activity, reduced council costs and lower greenhouse gas emissions for greater Darwin.

1.0 Introduction

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

AEAS was commissioned to analyse this economic and environmental contribution. The AEAS report captures the sizeable direct, indirect and enabled economic and employment contribution that Neuron’s e-scooters made to the Darwin economy and community over 2022. The report seeks to demonstrate that Neuron Mobility shared micro-mobility solutions are contributing substantially to the prosperity of Darwin.

The community and tiers of government are considered to be largely unaware of the significant contribution that Neuron’s e-scooters make to the Darwin 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 Darwin including usage numbers, value to riders, usage reasons and broader benefits to the Darwin 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 and a description of local businesses in Darwin;
- 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 Darwin economy;
- Section 6.0: Evaluates other benefits to the community including productivity benefits, environmental benefits and maintenance savings to Councils and the Northern Territory Government; and
- Section 7.0 : Provides modelling of economic and employment benefits of more favourable commercial terms offered by Councils and the Northern Territory Government.

2.2 Neuron Mobility Service Area

Neuron Mobility’s service area includes:

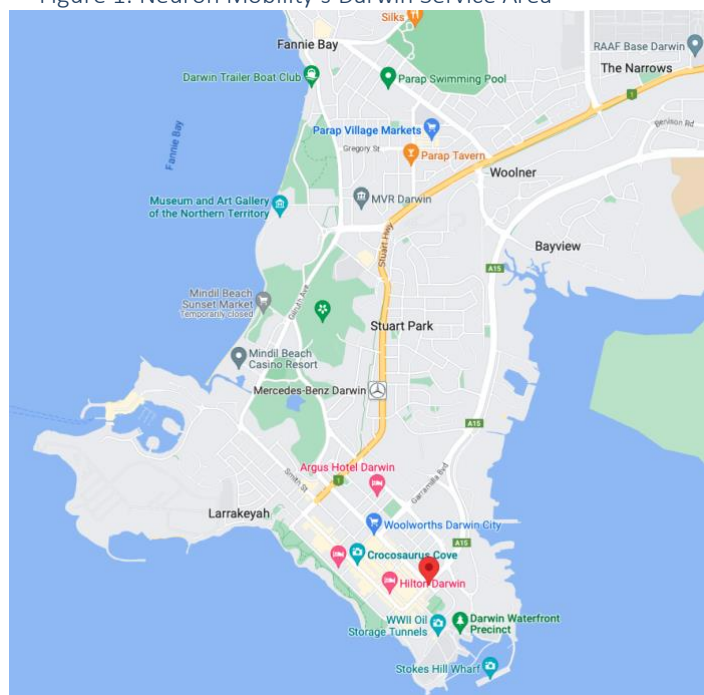
- the City of Darwin,

As a result AEAS’s economic and environmental benefit assessment of Neuron Mobility’s operations focuses on this area of Darwin Local Government Area.

An economic and socio summary of the service area is provided in section 4.0.

“Neuron is a fantastic transport system! It has enabled me to quickly, conveniently, cheaply and safely travel around Darwin to enjoy all that the city has to offer!” Neuron Rider

Figure 1: Neuron Mobility’s Darwin Service Area



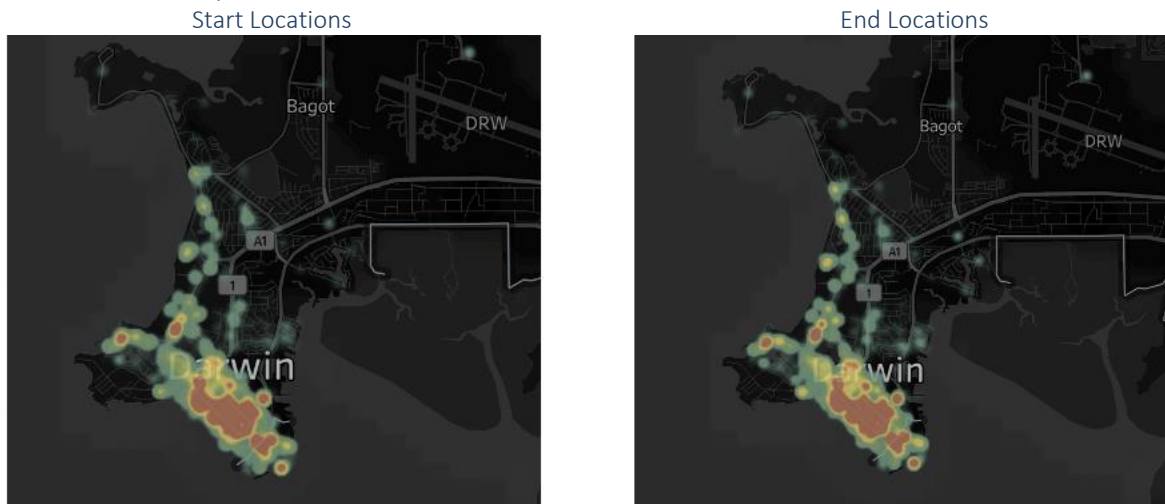
3.0 Neuron Mobility Focus on Darwin

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 City of Darwin’s future and growth with Neuron establishing its presence in Northern Territory’s capital city in early 2022. 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

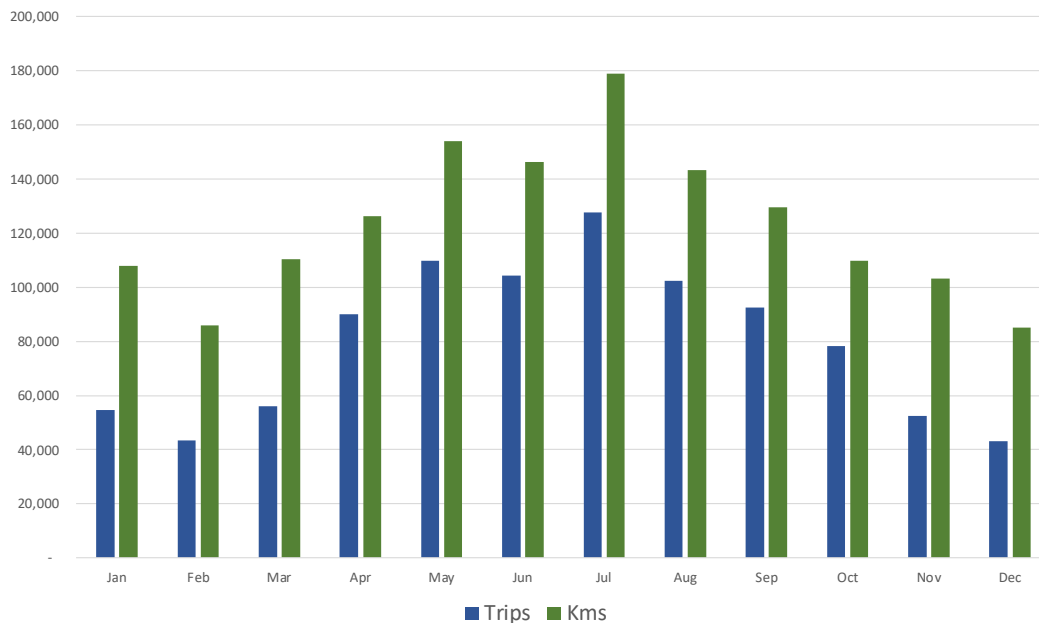


Source: Neuron Mobility

3.2 Neuron E-scooter Usage

In 2022 there were 954,801 individual rider trips taken by Neuron customers covering a combined distance of nearly 1.5 million kms. This represents a significant increase from the first year of operation in 2020 with 557,041 trips and 962,953 kilometers travelled. The average trip length was 2 km during the wet months and 1.4 km during the dry months. The monthly average trips were 79,567 and 123,372 kilometres travelled. The prevailing trend is for a steady build in trip and kms travelled peaking in July during the peak dry and tourism season.

Figure 3: Neuron Mobility Shared E-Scooter Rider Trips and Kms travelled 2022



Source: Neuron Mobility

3.3 Neuron’s Value to Riders

According to a recent survey of Neuron Mobility’s Darwin riders during September 2022, Neuron’s e-scooter value, and in turn, increased patronage, has been driven by rider enjoyment (73.6% of riders), easier way to explore the city (66.2%) and a faster way to get around and extended range in a given time (54.6%).

Figure 4: Neuron’s Value to Riders

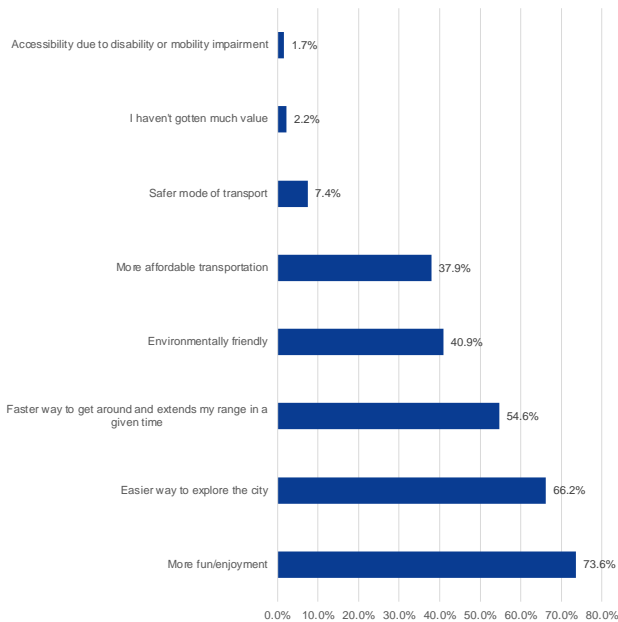
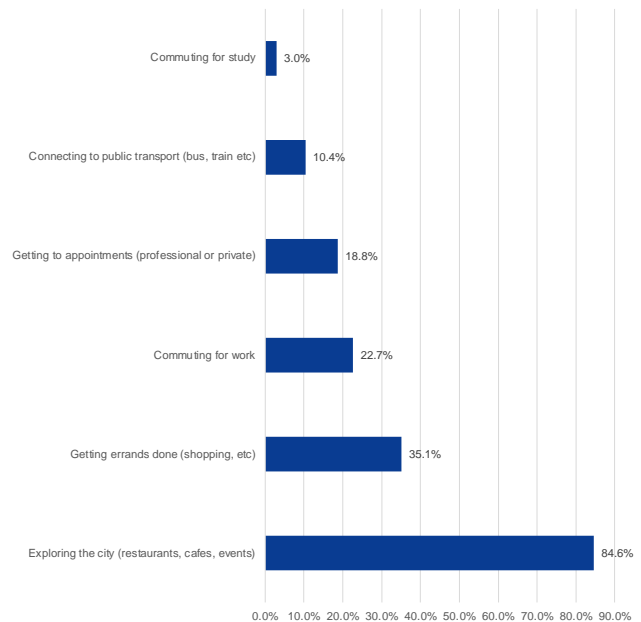


Figure 5: Reason for Neuron Rider Usage



Source: Neuron Mobility Darwin Rider Survey – November 2022

The Neuron Mobility Darwin Rider Survey found that the primary reasons for using Neuron’s e-scooters are exploring the city (84.6%), commuting for work or study (25.7%) and getting errands done including shopping (35.1%).

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 Darwin 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 and accordingly help reduce air pollution. There are little to no direct emissions from e-scooters and related emissions are in their production.
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4.0 Darwin Socio and Economic Overview

4.1 Introduction

Darwin is a modern capital city highly valued by its diverse and multicultural population, with a strong position in business and industry. As the closest Australian capital city to the rapidly developing region to the north, Darwin is often referred to as the Gateway to Asia.

The city is the social, cultural and economic heart of the Northern Territory. As Australia's Northern Region continues to integrate further into Asian markets, Darwin is well-positioned to enhance the strategic economic link between global supply chains and trade to drive Australia's future. The City is closer to the Indonesian capital of Jakarta than it is to Canberra and is about the same flying time from Singapore and Manila as it is from Sydney and Darwin.

Darwin is the main service centre for a wide range of industries headed by mining, offshore oil and gas production, pastoralism, tourism and tropical horticulture. The Port of Darwin is also the main outlet for Australia's live cattle export trade into South East Asia.

Table 1: Statistical Summary – City of Darwin

	City of Darwin
Estimated resident population (no.)	85 397
Working age population (aged 15-64 years) (%)	70.6
Aboriginal and Torres Strait Islander Peoples (no.)	7 003
Persons born overseas (no.)	27 485
Median total income (\$)	62 538
Total number of businesses	7 193
Number of jobs	84 430
Land area (ha)	632

Source: ABS & AEAS 2023¹

Key competitive advantages of Darwin include:

- The city’s multicultural mix is particularly highlighted by its many exciting ethnic cultural festivals and weekly food and craft markets;
- Darwin has developed into a vibrant, dynamic modern capital city offering a wide range of accommodation, cafes, restaurants, and nightlife options for business and leisure travellers;
- Local residents are known for being warm and welcoming and offer friendly hospitality;
- Darwin is one of Australia’s cruise ship ports;
- Darwin enjoys a year-round tropical climate averaging 30°C (86°F);
- From May to September, the days are warm with sunny blue skies, while the nights are slightly cooler. This time of year is known as the ‘dry season’ with gorgeous weather, lower humidity and minimal rain;
- From December to March, Darwin experiences a tropical summer, known as the ‘wet season’. It is the ideal time to use Darwin to see the Northern Territory at its greenest, enjoying secluded waterholes, cool waterfalls and billabongs teeming with exotic wildlife;
- The coolest months of the year are June and July, when daily temperature ranges from 19°C (66.2°F) to 30°C (86°F);
- Summer clothing is worn year-round, with a light jumper, cardigan or jacket required occasionally in air-conditioned spaces; and
- Casual clothes are a mark of Darwin lifestyle but smarter attire is worn in offices, hotels and restaurants.

All of these attributes leads Neuron scooters to be a popular mode of transport in Darwin.

4.2 Population and Demographics

The City of Darwin’s population peaked in 2017 and as at June 2021 its population was estimated at 85,3697 persons². Following international impact of COVID-19 population is expected to rebound quickly and grow progressively to 2031 and beyond.

Table 2: Population Metrics - City of Darwin

	2016	2017	2018	2019	2020	2021
Estimated resident population (no.)	85 323	86 722	86 333	85 781	85 716	85 397
Population density (persons/km ²)	766.9	779.4	775.9	771	770.4	767.5
Median age - persons (years)	34.1	34.1	34.2	34.4	34.7	35
Working age population (aged 15-64 years) (%)	72.7	72.4	71.9	71.5	71.1	70.6

Source: ABS & AEAS 2023³

Darwin has a population density needing efficient transport solutions. In 2021 City of Darwin’s population density was estimated 767.5persons per km⁴. Darwin has a young population with higher take up of newer transport options. City of Darwin’s median age is 35 years.⁵ Darwin has a significant working age population needing transport options to their working place. 70.6 per cent of the City of Darwin’s population is aged between 15-64 years.⁶

4.3 Darwin’s Economy

Darwin has a modern and diversified economy driving average annual economic growth estimated at 4.69 per cent per annum over the past decade⁷. Darwin accounts for 41.5 per cent of Northern Territory’s total economic activity.

Table 3: City of Darwin Regional Gross Product –\$ millions nominal prices

	GRP - \$ millions
2011	\$6,294
2012	\$6,691
2013	\$7,248
2014	\$8,225
2015	\$8,648
2016	\$9,861
2017	\$10,242
2018	\$10,446
2019	\$10,813
2020	\$9,866
2021	\$10,419
Decade Growth	65.5%

Source: Remplan & AEAS 2023⁸

The three largest industry sectors in Darwin in terms of economic contribution are very much services industries and are Public Administration & Safety (21.6% of total); Rental, Hiring & Real Estate Services (11.5%); and Health Care & Social Assistance (9.7%). These industry sectors are geographically located in the Darwin CBD.

Table 4: City of Darwin Industry Value Add by Industry –\$ millions nominal prices

Industry sector	Darwin	% of Total	Northern Territory	% of Total
Public Administration & Safety	\$2,148	21.6%	\$4,850	20.4%
Rental, Hiring & Real Estate Services	\$1,143	11.5%	\$2,628	11.0%
Health Care & Social Assistance	\$967	9.7%	\$1,901	8.0%
Construction	\$715	7.2%	\$1,827	7.7%
Professional, Scientific & Technical Services	\$669	6.7%	\$950	4.0%

Electricity, Gas, Water & Waste Services	\$600	6.0%	\$885	3.7%
Education & Training	\$562	5.7%	\$1,286	5.4%
Mining	\$491	4.9%	\$4,000	16.8%
Transport, Postal & Warehousing	\$476	4.8%	\$987	4.2%
Financial & Insurance Services	\$339	3.4%	\$490	2.1%
Retail Trade	\$315	3.2%	\$691	2.9%
Manufacturing	\$249	2.5%	\$507	2.1%
Accommodation & Food Services	\$242	2.4%	\$536	2.3%
Administrative & Support Services	\$224	2.3%	\$470	2.0%
Other Services	\$216	2.2%	\$441	1.9%
Wholesale Trade	\$189	1.9%	\$377	1.6%
Information Media & Telecommunications	\$163	1.6%	\$227	1.0%
Arts & Recreation Services	\$161	1.6%	\$276	1.2%
Agriculture, Forestry & Fishing	\$77	0.8%	\$460	1.9%
Total	\$9,945	100.0%	\$23,788	100.0%

The Darwin economy supports an estimated 52,227 jobs, representing 46.5% of the 112,217 people working in Northern Territory. The top three employing industries in the City of Darwin are Public Administration & Safety (9,746); Health Care and Social Assistance (8,814); and Education & Training (4,508).⁹ These industry sectors are also clustered in the Darwin CBD and surrounds.

Table 5: City of Darwin Employment by Industry, Persons

Industry sector	Darwin	% of Total	Northern Territory	% of Total
Public Administration & Safety	9,746	18.7%	20,632	18.4%
Health Care & Social Assistance	8,814	16.9%	17,216	15.3%
Education & Training	4,508	8.6%	10,697	9.5%
Accommodation & Food Services	4,065	7.8%	8,594	7.7%
Professional, Scientific & Technical Services	3,944	7.6%	5,618	5.0%
Construction	3,851	7.4%	9,451	8.4%
Retail Trade	3,717	7.1%	8,161	7.3%
Other Services	2,210	4.2%	4,464	4.0%
Transport, Postal & Warehousing	2,195	4.2%	4,772	4.3%
Administrative & Support Services	1,723	3.3%	3,520	3.1%
Arts & Recreation Services	1,406	2.7%	2,723	2.4%
Manufacturing	1,232	2.4%	2,524	2.2%
Electricity, Gas, Water & Waste Services	1,078	2.1%	1,737	1.5%
Wholesale Trade	842	1.6%	1,684	1.5%
Rental, Hiring & Real Estate Services	835	1.6%	1,306	1.2%
Financial & Insurance Services	758	1.5%	1,047	0.9%
Information Media & Telecommunications	569	1.1%	893	0.8%
Mining	374	0.7%	4,355	3.9%
Agriculture, Forestry & Fishing	360	0.7%	2,823	2.5%
Total	52,227	100.0%	112,217	100.0%

Source: Remplan & AEAS 2023¹⁰

The number of registered businesses as at 30 June 2022, within the City of Darwin is estimated at 7,626. 15.7 per cent of businesses were in Construction, 14.4 per cent in Rental, hiring and real estate services industry; and 12.9 per cent were in Professional, Scientific & Technical Services.¹¹

Table 6: Registered businesses by industry, City of Darwin as at 30 June 2022

Industry	June-22	% of Total
Agriculture, Forestry & Fishing	138	1.8%
Mining	29	0.4%
Manufacturing	221	2.9%
Electricity, Gas, Water & Waste Services	30	0.4%
Construction	1,200	15.7%
Wholesale Trade	140	1.8%
Retail Trade	439	5.8%
Accommodation and Food Services	452	5.9%
Transport, Postal & Warehousing	830	10.9%
Information Media and Telecommunications	58	0.8%
Financial and Insurance Services	279	3.7%
Rental, Hiring & Real Estate Services	1,097	14.4%
Professional, Scientific & Technical Services	982	12.9%
Administrative and Support Services	417	5.5%
Public Administration and Safety	32	0.4%
Education and Training	119	1.6%
Health Care and Social Assistance	624	8.2%
Arts and Recreation Services	118	1.5%
Other Services	404	5.3%
Not Classified	17	0.2%
Total	7,626	100.0%

Source: Remplan & AEAS 2023¹²

4.4 Darwin Commuting

In respect to how Darwin's workers get to their workplace the absolute majority of Darwinians commute to work via a car or taxi with 39,956 persons or 76.5 per cent choosing this transport option. ¹³

Table 7: Method Travel to Work, City of Darwin – persons

Method of Travel to Work	Persons	% of Total
(One method) Bus	1,158	2.2%
(One method) Ferry	3	0.0%
(One method) Tram (includes light rail)	3	0.0%
(One method) Taxi	146	0.3%
(One method) Car, as driver	36,527	69.9%
(One method) Car, as passenger	3,035	5.8%
(One method) Truck	88	0.2%
(One method) Motorbike/scooter	545	1.0%
(One method) Bicycle	1,059	2.0%
(One method) Other	390	0.7%
(Two methods) Bus and Other	3	0.0%
(Two methods) Bus and Car as driver	32	0.1%
(Two methods) Bus and Car as passenger	71	0.1%
(Two methods) Ferry and Other	15	0.0%
(Two methods) Taxi and Other	12	0.0%
(Two methods) Car and Other	133	0.3%
(Three methods) Bus and other two methods (excludes train)	12	0.0%
(One method) Walked only	2,234	4.3%
Worked at home	2,200	4.2%
Did not go to work	4,518	8.7%
Method of travel not stated	43	0.1%
Other	0	0.0%
Total	52,227	100.0%

Source: Remplan & AEAS 2023¹⁴

4.5 Implications for Neuron Mobility

E-scooters play a significant role for the City of Darwin. An efficient transport network is critical to sustaining economic success in modern economies such as Darwin’s. The transport network facilitates physical mobility and enhances communities’ access to a wide range of economic, social, cultural and recreational activities.

Darwin’s impressive social and economic performance comes at a price. Darwin will require optimised traffic network performance with growing demand only further serving to challenge this complex issue. Congestion imposes significant costs on Darwin motorists and the economy, including extra travel time, increased vehicle operating costs, and environmental costs such as poorer greenhouse gas emissions. The Bureau of Infrastructure, Transport and Regional Economics (BITRE) has estimated the range of congestion costs for Darwin to rise from \$44 million to \$54 –\$70 million by 2030.¹⁵

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

5.0 Evaluation of Economic Impacts

5.1 Methodology

The AEAS report was developed in consultation with Neuron Mobility identifying a range of vital statistics that Neuron e-scooters contributes to the Darwin economy and Council together with growth scenarios and associated economic and environmental benefits. AEAS’ approach to measuring the economic and employment contribution of Neuron Mobility’s contribution to the Darwin 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 AEAS methodology included:

- AEAS identified the processes and direct expenditure involved in the operation of Neuron Mobility through a comprehensive request for information (featuring 2022 operations) and supplemented with detailed survey results of Neuron customers in Darwin during the month of September 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 AEAS calculated results; and
- Estimates utilising AEAS Input-Output model were made of the direct and indirect contribution of Neuron Mobility to the Darwin 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 Darwin and more broadly. The consumption-induced effects arise from expenditure of Neuron Mobility employees’ income on goods and services supplied by Darwin 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: AEAS 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: AEAS 2023

5.2 Value Add to the Darwin Economy

Based on AEAS modelling, in 2022 of operation Neuron Mobility is estimated to have directly contributed \$2.74 million towards Darwin’s economy and indirectly through its supply chain and expenditure of employee wages indirectly contributed another \$2.38 million. Collectively its value add to the Darwin economy in 2022 was estimated at \$5.12 million.

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

	2022 Calendar Year
Direct	\$2.74 million
Indirect	\$2.38 million
Total	\$5.12 million

Source: AEAS 2023

5.3 Employment contribution to the Darwin Economy

Direct employment by Neuron Mobility as at February 2023 was 28 persons. Through Neuron Mobility’s supply chain businesses and expenditure of employee wages another 17 jobs were indirectly created. In total 45 jobs are estimated directly and indirectly created by Neuron operations in Darwin.

Table 10: Direct and Indirect Employment of Neuron E-Scooters in Darwin – February 2023

	December 2022
Direct	28
Indirect	17
Total	45

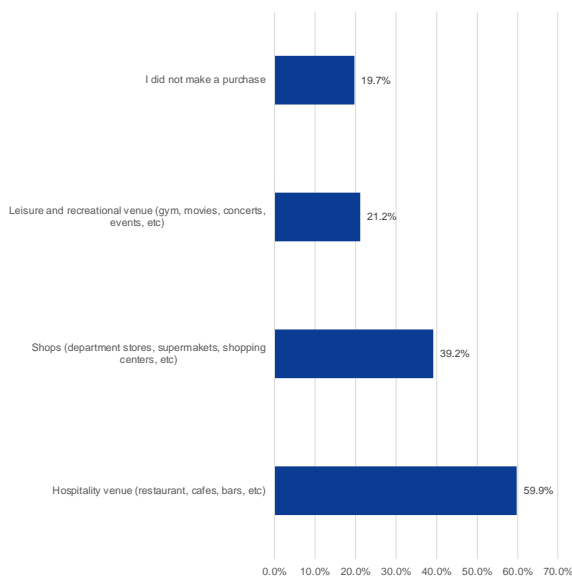
Source: AEAS 2023

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 Darwin based cafes, restaurants, retail stores etc.

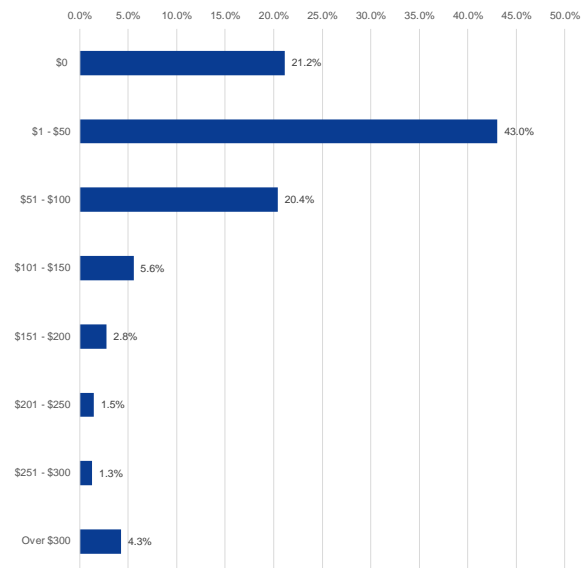
According to the Neuron Mobility Darwin Rider Survey – 80.3% of trips result in a purchase. Of these, 59.9% of riders made a purchase as part of their latest ride at a hospitality venue; 39.2% made a purchase at a department store, supermarket or other retail store; and 21.2% visited a gym, movie or event. The average spend for each rider trip was \$85.42. All of this economic activity and spend is enabled by shared e-scooters.

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



Source: Neuron Mobility Darwin Rider Survey – September 2022

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



As a result, in 2022 Neuron is estimated to have enabled \$81.56 million in economic activity across Darwin through the movement of goods and people and their resulting spend. In turn, this economic activity is estimated to have supported 467 jobs in 2022.

5.5 Total Economic Contribution

In total, Neuron Mobility is estimated to have contributed \$86.68 million in direct, indirect and enabled economic activity towards Darwin’s economy in 2022. That is 83.2 cents in every \$100 in Darwin economic activity is provided and enabled by Neuron Mobility.

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

	2022 Calendar Year
Direct	\$2.74 million
Indirect	\$2.38 million
Enabled	\$81.56 million
Total	\$86.68 million

Source: AEAS 2023

In total, Neuron Mobility is estimated to have created and supported 512 Darwin based jobs in 2022.

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

	December 2022
Direct	28
Indirect	17
Enabled	467
Total	512

Source: AEAS 2023

5.6 Economic Contribution – Estimated Future

Demand for shared micro-mobility solutions in Darwin 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 Darwin’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
<ul style="list-style-type: none"> ▪ Number of people (residents, employees and visitors) ▪ Employment rate ▪ Wealth/incomes ▪ Age/lifecycle ▪ Lifestyles ▪ Preferences 	<ul style="list-style-type: none"> ▪ Number of jobs ▪ Business activity ▪ Freight transport ▪ Tourist activity 	<ul style="list-style-type: none"> ▪ Walking ▪ Cycling ▪ Public transit ▪ Ridesharing ▪ Taxi services ▪ Telework ▪ Delivery services 	<ul style="list-style-type: none"> ▪ Density ▪ Mix ▪ Walkability ▪ Connectivity ▪ Transit service proximity ▪ Roadway design 	<ul style="list-style-type: none"> ▪ Road use prioritization ▪ Pricing reforms ▪ Parking management ▪ User information ▪ Promotion campaigns 	<ul style="list-style-type: none"> ▪ Fuel prices and taxes ▪ Vehicle taxes and fees ▪ Road tolls ▪ Parking fees ▪ Vehicle insurance ▪ Transit fares

Source: Northern Territory Transport Policy Institute¹⁶ and AEAS 2023

AEAS analysis indicates Neuron Mobility’s direct and indirect economic contribution is expected to rise from \$5.12 million in 2022 to \$7.18 million by 2027. In respect to employment, Neuron Mobility’s direct and indirect employment contribution will rise from 45 persons in 2022 to 63 persons by 2027.

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

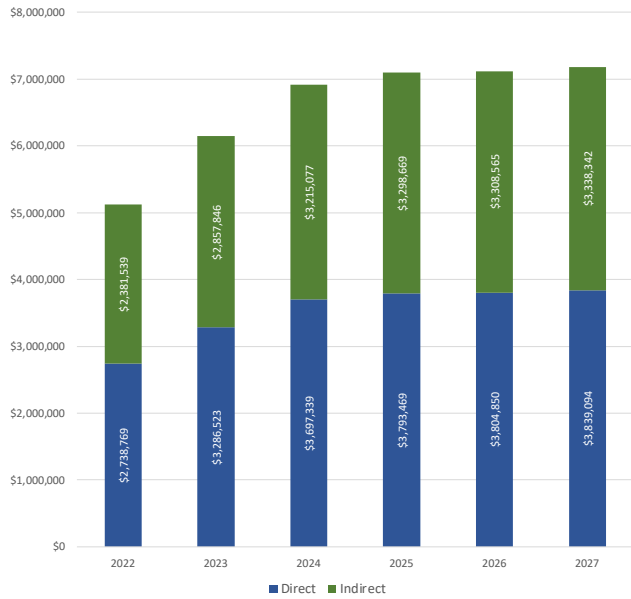
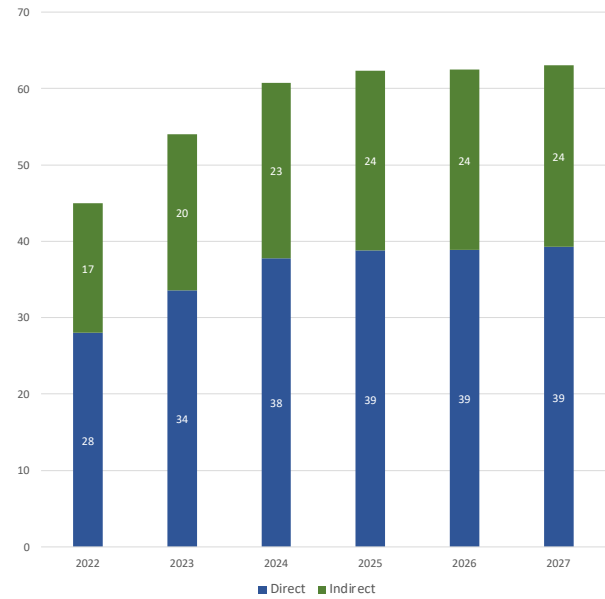


Figure 9: Forecasted Direct and Indirect Employment of Neuron E-Scooters– Persons



Source: AEAS 2023

In respect to enabled economic activity, AEAS analysis indicates Neuron Mobility’s enabled economic contribution as a consequence of rider spend across the Darwin economy is expected to rise from \$81.56 million in 2022 to \$114.33 million by 2027. In respect to employment, Neuron Mobility’s enabled employment contribution will rise from 467 persons in 2022 to 655 persons by 2027.

Figure 10: Forecasted Enabled Economic Value Add of Neuron E-Scooters - \$ millions

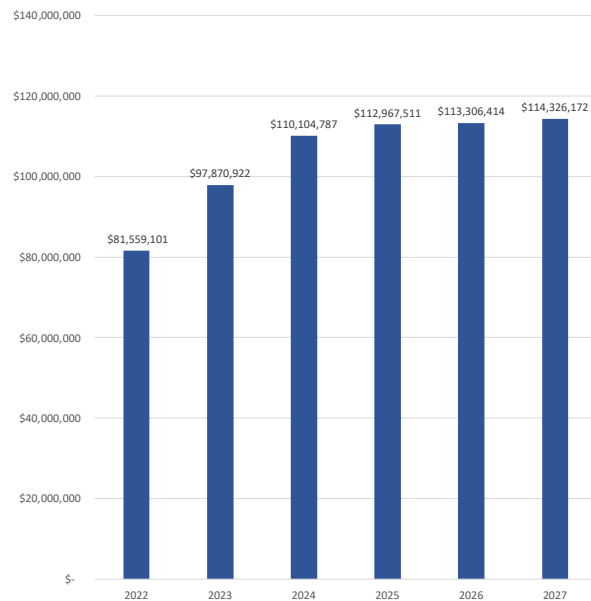
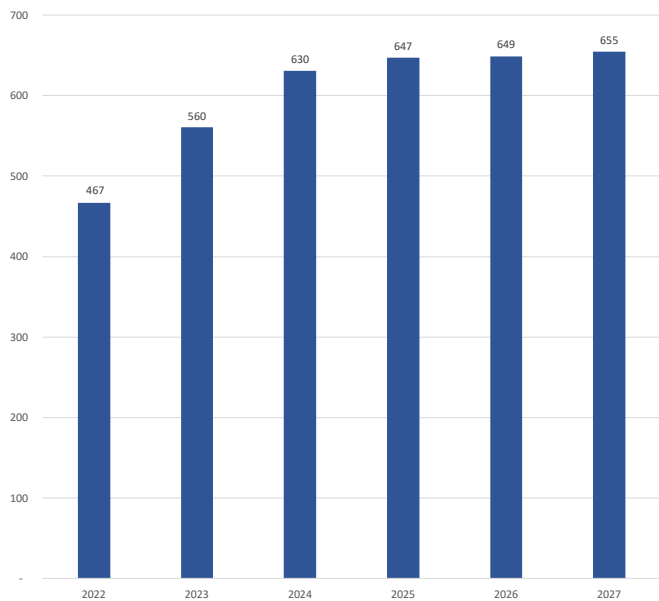


Figure 11: Forecasted Enabled Employment of Neuron E-Scooters– Persons



Source: AEAS 2023

In total, Neuron Mobility’s estimated economic contribution towards Darwin’s economy will rise from \$86.68 million in 2022 to \$121.50 million in 2027. Neuron Mobility’s created and supported employment will rise from 512 Darwin based jobs in 2022 to 718 jobs by 2027.

Table 14: Total Economic and Employment Contribution of Neuron E-Scooters in Darwin - \$ millions / persons

	2022	2023	2024	2025	2026	2027
Total Value Add	\$86.68	\$104.02	\$117.02	\$120.06	\$120.42	\$121.50
Total Employment	512	614	691	709	711	718

Source: AEAS 2023

6.0 Evaluation of Other Benefits

6.1 Neuron reduced overall passenger vehicle trips

Rider usage of shared e-scooters offer a range of other tangible and quantifiable benefits to the Darwin community. These benefits arise as a result of substitution away from usage of uber/taxi and personal car. According to the Neuron Mobility Darwin Rider Survey – 60.8% of riders could have used either an uber/taxi or personal car if the Neuron e-scooter was unavailable. Accordingly an estimated 389,559 vehicle trips or 604,029 vehicle kilometres in Darwin are estimated to be saved as a result of Neuron Mobility operations in 2022. This results in productivity benefits, reduced road costs and environmental benefits to the Darwin 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 1.55 km e-scooter trip takes versus a 1.55 km average passenger vehicle trip in congested traffic coupled with the removal of parking time, an overall productivity estimate of \$1.15 million for Darwin users of Neuron's E-scooters each year has been calculated. This is considered extremely conservative as it does not factor into consideration any traffic standstill in the CBD that are likely to result in significantly higher time savings.¹⁷

6.3 Reduced Road Costs

Utilisation of shared e-scooters takes vehicles off the surrounding road network that reduces council and Northern Territory Government maintenance costs and reduces scale requirements for public transport and parking. Based on the number of passenger vehicle kilometres in Darwin saved as a result of usage of Neuron's e-scooters, the City of Darwin Council would save an estimated \$472,000 each year and the Northern Territory Government would potentially save up to \$2.95 million in road costs each year.¹⁸

6.4 Environmental Benefits

E-scooters emit little to no carbon emissions and any CO2 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 high density cities such as Darwin. There are considerable environmental benefits arising from taking cars off the road as a result of substitution to Neuron's shared e-scooters. The 604,029 vehicle kilometres saved in 2022 are estimated to result in 82.3 tonnes of reduced CO2 emissions for the Darwin community.¹⁹

7.0 Building Sustainable Future Growth for Darwin

7.1 Establishing commercial terms that reflect benefits

AEAS has modelled increases in economic contribution under theoretical scenarios underpinned by improvement of Neuron Mobility's commercial arrangements and infrastructure delivered by Darwin City Council. At present Neuron Mobility is paying the City of Darwin for the right to operate in Darwin.

Consultation with Neuron Mobility indicates that commercial arrangements should be reflective of the net positive benefits that are provided to the community. Figure 12 confirms that 98.7 per cent of users believe Neuron e-scooters have a somewhat positive, positive or extremely positive impact on Darwin. Accordingly, Neuron believes commercial arrangements between Neuron Mobility and City of Darwin can be optimised with the view to maximising economic and environmental benefits for Darwin ratepayers.

7.2 Operational Changes Required to Lift Usage

The Neuron Mobility Darwin Rider Survey confirms that usage of Neuron e-scooters are largely unconstrained based on user demand. Riders cite preferences for a larger operating area (60.4%) (including Darwin CBD, Fannie Bay, Parap, Nightcliff, Stuart Park and Casuarina), more or larger parking areas (17.1%) and better availability of e-scooters (24.0%).

This analysis clearly demonstrates there is significant public support and demand to increase the availability of scooters to other tourist and commercial centres in the greater Darwin area. This would lead to consequently greater economic benefit to businesses in these areas and further reductions of CO₂ emissions.

Consultation with Neuron Mobility has indicated that a key driver for the future is the application of more favourable commercial terms (including increasing the operating area, certainty around contract length and a sufficient operating period). On the basis of more sustainable commercial terms, to the company from Darwin City Council, Neuron would be able to invest in devices, locations and service area.

Figure 12: Rider views on Overall Impact on Darwin

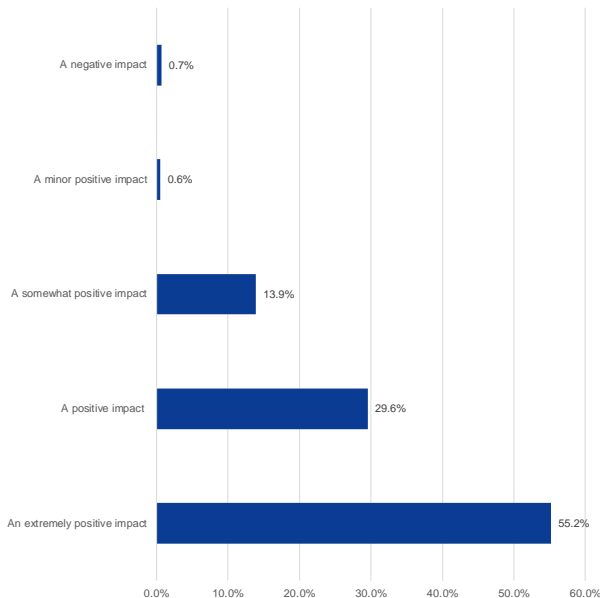
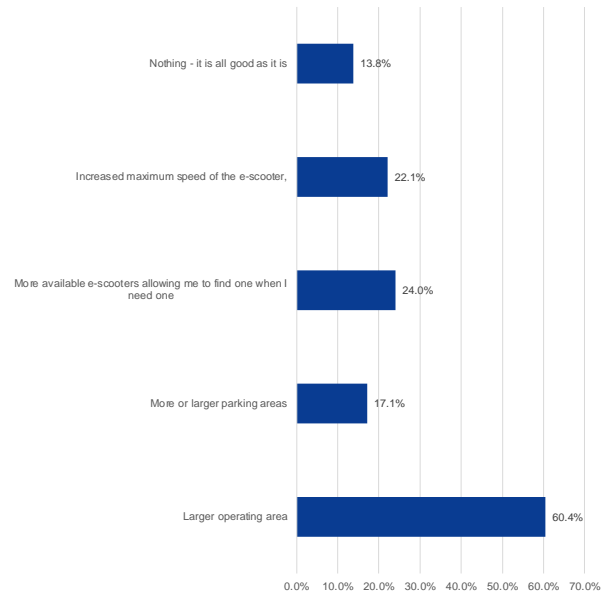


Figure 13: Changes that would deliver increase usage



Source: Neuron Mobility Darwin Rider Survey – September 2022

7.3 Increased Economic Activity and Employment

Neuron Mobility maintains that City of Darwin together with the Northern Territory Government can maximise the economic and other benefits if they elect to build infrastructure and implement commercial arrangements optimising use of shared e-scooters.

Darwin and Northern Territory with more favourable policies towards shared micro mobility systems (including commercial arrangements and infrastructure) could be giving the City of Darwin Council and the State Government a potential significant boost towards economic recovery as e-scooter programs generate additional economic activity, council revenues, state revenues, jobs and avoid costs.

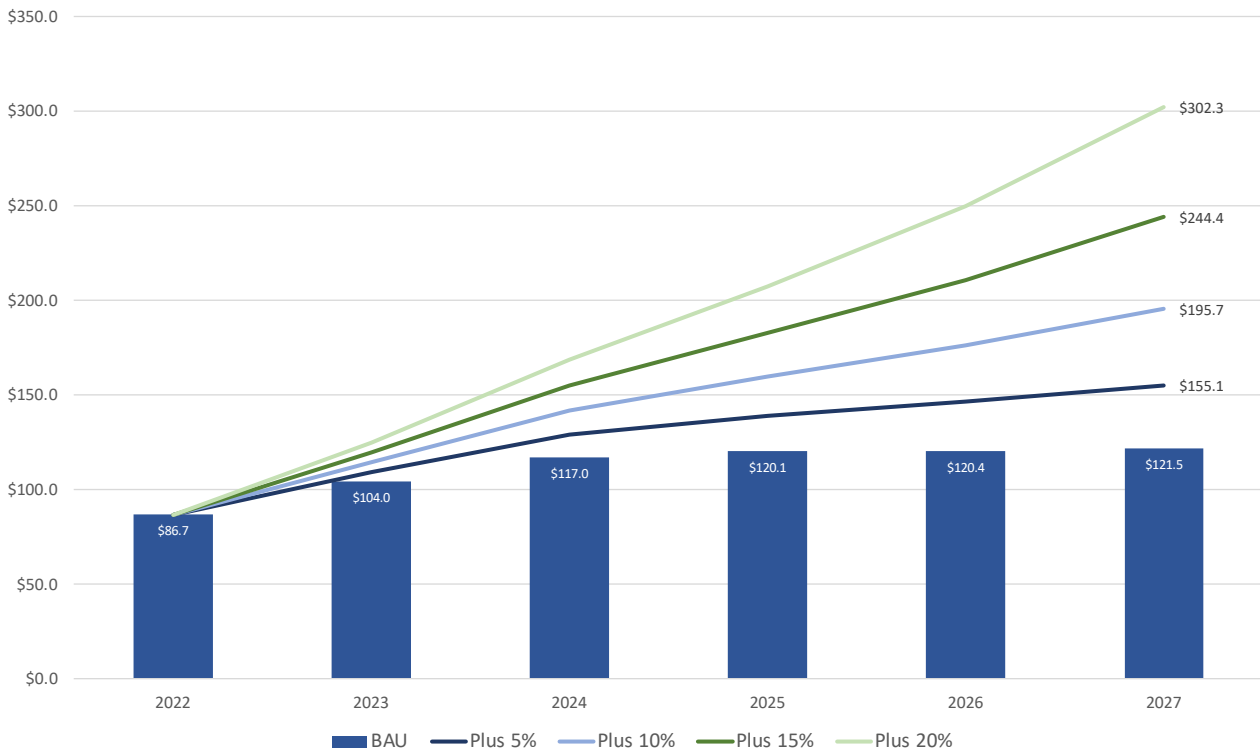
To this end, AEAS has modelled growth scenarios, utilising Neuron Mobility’s contractual and investment recommendations. That is, the economic benefits that would be realised to the Darwin economy based on increases in rider trips.

Based on AEAS 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 \$86.68 million in 2022 to \$121.50 million in 2027 (a \$34.82 million increase in economic activity);
- A 5% annual uplift in riders sees economic contribution rise from \$86.68 million in 2022 to \$155.07 million in 2027 (a \$68.39 million increase in economic activity);
- A 10% annual uplift in riders sees economic contribution rise from \$86.68 million in 2022 to \$195.68 million in 2027 (a \$109.00 million increase in economic activity);

- A 15% annual uplift in riders sees economic contribution rise from \$86.68 million in 2022 to \$244.39 million in 2027 (a \$157.71 million increase in economic activity); and
- A 20% annual uplift in riders sees economic contribution rise from \$86.68 million in 2022 to \$302.34 million in 2027 (a \$215.66 million increase in economic activity).

Figure 14: Modelled Increase in Total Economic Contribution Neuron E-Scooters (\$ millions)



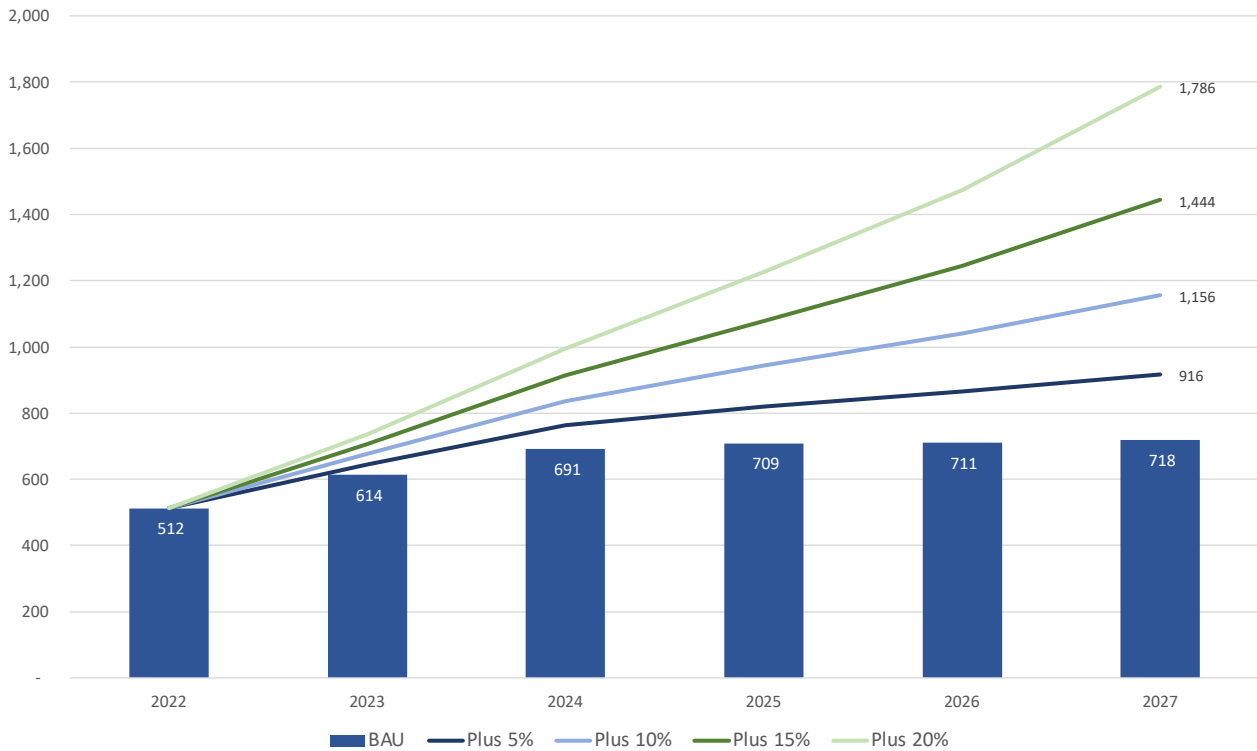
Source: AEAS 2023

Based on AEAS 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 512 jobs in 2022 to 718 jobs in 2027 (an increase of 206 jobs);
- A 5% annual uplift in riders sees employment contribution rise from 512 jobs in 2022 to 916 jobs in 2027 (an increase of 404 jobs);
- A 10% annual uplift in riders sees employment contribution rise from 512 jobs in 2022 to 1,156 jobs in 2027 (an increase of 644 jobs);
- A 15% annual uplift in riders sees employment contribution rise from 512 jobs in 2022 to 1,444 jobs in 2027 (an increase of 932 jobs); and
- A 20% annual uplift in riders sees employment contribution rise from 512 jobs in 2022 to 1,786 jobs in 2027 (an increase of 1,274 jobs).

The assessed uplift in rider demand is based on survey feedback that 45.2% of riders have experienced a situation whereby an e-scooter or e-bike was unavailable at least half the time for their usage (18.8% of riders indicated that an e-scooter was only available about half the time, 18.4% indicated they were rarely available and 8.0% indicated they were never available). Neuron has indicated as fleet numbers increase availability will improve. On this basis, AEAS believes it is feasible for the plus 20% scenario to be achievable for Neuron Mobility and for the City of Darwin.

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



Source: AEAS 2023

If achieved, more attractive commercial arrangements offered by the City of Darwin 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 the City of Darwin.

Appendix One: AEAS Business Information

Australian 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 AEAS provides:

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

AEAS delivers services nationally to exemplary organisations including Australian Industry Group, Australian Gas Industry Trust, BASF, Darwin Airport Corporation, CCIQ, Canegrowers, IOR Pty Ltd, LifeFlight, Master Builders Australia, Natroads, Port of Darwin, 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 AEAS 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 Australian Economic Advocacy Solutions (AEAS), 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

-
- ¹ Australian Bureau of Statistics, <https://dbr.abs.gov.au>
- ² Ibid
- ³ Ibid
- ⁴ Ibid
- ⁵ Ibid
- ⁶ Ibid
- ⁷ <https://app.remplan.com.au/darwin/economy/trends/gross-regional-product?state=OQG6cN!n6GvCVQrnU96ReBhkOxb0sMSwH8KrTOHxHN6fnIQtdI8hrOw>
- ⁸ <https://app.remplan.com.au/Darwin-lga/economy/trends/gross-regional-product?state=GLZrFN!WRJcVgBDF620LgsAGNj2focoINJ1HJIKlvZfqI3hxUVNR>
- ⁹ <https://app.remplan.com.au/darwin/economy/industries/employment?state=O6XACb!zveOUIXNpfZXnMKSNE84QigSrHqAKU8VIVOHeBEBDFbH3gSpInfAlwwgQIDVO>
- ¹⁰ Ibid
- ¹¹ <https://app.remplan.com.au/darwin/economy/trends/business-counts-staff?state=OQG6cN!AperUdjZzC6QqXDseBJnMs7SwHexRcKqNlyS4HrPohKH7IDgrzI6I8hM56>
- ¹² Ibid
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- ¹⁴ Ibid
- ¹⁵ Traffic and congestion cost trends for Australian capital cities, BITRE 2015
- ¹⁶ Northern Territory Transport Policy Institute 2018, Understanding Transport Demands and Elasticities - how prices and other factors affect travel behaviour
- ¹⁷ 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.
- ¹⁸ Australian Bureau of Statistics Survey of Motor Vehicle Use, Australia 2020
- ¹⁹ UK Department for Business, Energy & Industrial Strategy – Greenhouse gas 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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