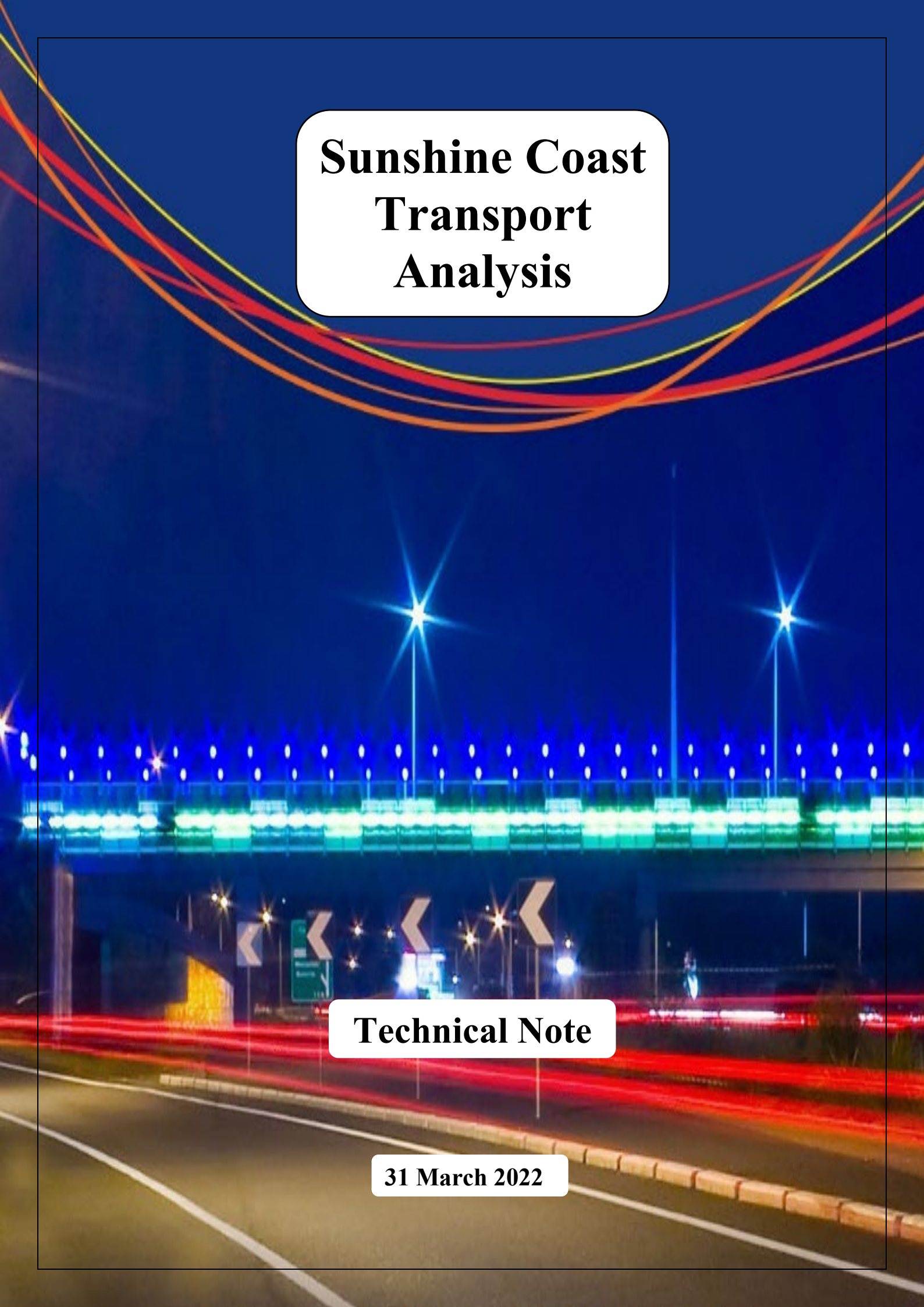
Sunshine Coast Transport Analysis



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1.0 Introduction

Sunshine Coast Council (SCC) prepared this report to document Council's transport network planning including transport modelling to service current and future development on the Sunshine Coast.

The establishment cost of the current and future transport network is also documented in this report.

The analysis outlined in this report has been conducted in accordance with the Sustainable Planning Act and associated references, and covers the entire Sunshine Coast Regional Council area.

1.1 Background

State legislation seeks to integrate land use planning and infrastructure planning and to establish a framework that is equitable and accountable by requiring local governments to prepare a Local Government Infrastructure Plan (LGIP).

In broad terms the LGIP sets out Council's plans for *trunk development infrastructure,* which includes major transport, water supply, sewerage, stormwater management infrastructure, public parks and land for community facilities. The LGIP forms part of the Sunshine Coast Planning Scheme and includes the following components:

- A map of the Priority Infrastructure Area (area serviced by or planned to be serviced by all types of development infrastructure that accommodates 10-15 years growth in the region)
- Growth assumptions of residential, commercial and industrial development
- For each type of infrastructure:
- Desired Standards of Service
- Forecasting of demand to inform network planning
- Plans For Trunk Infrastructure (these will show existing and proposed infrastructure to meet the above standard of service)
- References to any relevant State plans

The following sections of this report outline the various assumptions made in determining future road network upgrades, the methodology followed and results gained in conducting the transport network analysis.

2.0 Methodology

The methodology is summarised as follows:

1. Identify and value existing trunk network by:
    a. Reviewing statutory references and technical standards and guidelines;
    b. Consultation with key stakeholders including internal council staff;
    c. Maintain and enhance relevant spatial datasets;
    d. Maintain and enhance network valuation including unit rates provided by consultants.
2. Develop Desired Standards of Service (DSS) through:
    a. Review statutory references and technical standards and guidelines;
    b. Consultation with key stakeholders including internal council staff.
3. Establish network demand by:
    a. Review and enhance demographic, employment and education datasets for current and future ABS census years;
    b. Use a strategic 4-step transport model (Sunshine Coast Integrated Multi-Modal Model version 2.13) to forecast current and future trips.
4. Establish current and future network performance and potential future projects by:
    a. Maintaining and enhancing various transport models including regional models, detailed area models and micro-simulation as required;
    b. Analysing network performance and identifying, by reference to the desired standard of service, locations that need upgrading to service the long term land use pattern within the region;
    c. Considering options for remedial works at identified locations.
5. Valuing the future network by:
    a. Preparing reference designs for priority network upgrades;
    b. Preparing planning estimates for priority network upgrades;
    c. Prioritising potential network upgrades.

3.0 Trunk Roads

Under planning legislation, Infrastructure Charges can only be expended on trunk infrastructure. State Government guidelines define Trunk Infrastructure as "the 'higher order' or 'shared' development infrastructure required to ensure the healthy and safe functioning of the uses it is servicing. Trunk infrastructure's primary purpose is to service catchment areas with a large number of users, rather than providing connections to individuals or small groups of users."

The Sunshine Coast Council's road hierarchy consists of State roads, arterial, sub-arterial, district collector, neighbourhood collector and local access roads. Of these, the following are classified as trunk transport infrastructure and can be funded through infrastructure charges:

- Highways;
- Arterial roads;
- Sub-arterial roads; and
- District Collector Streets.

Transport infrastructure items on these trunk roads include:

- Road pavements and surfacing;
- Intersections;
- Bridges (and culverts); and
- Associated works (e.g. traffic signalling, kerb and channel, and local drainage).

Excluded from trunk roads and their costs are federal and state roads, neighbourhood collectors, local streets, bus stops and active infrastructure which are in the LGIP Active Transport schedule.

Road network planning for the Sunshine Coast Planning Scheme process has addressed the long term needs of the region's road network at arterial and sub-arterial level, and has identified those existing collector and minor collector streets that will need to be reclassified to reflect the changing role of the road as the region develops. Alternatively, these minor collector streets will need to be protected from through traffic if the current classification is to be maintained. Further to this, likely locations of future Collectors were identified by various Council officers and consultants taking into consideration the Sunshine Coast Planning Scheme landuse zones, current applications for development, forecast demand and network connectivity in greenfield areas.

Sunshine Coast Council's current road hierarchy is depicted in Figure 1. The road hierarchy is used to establish trunk roads.

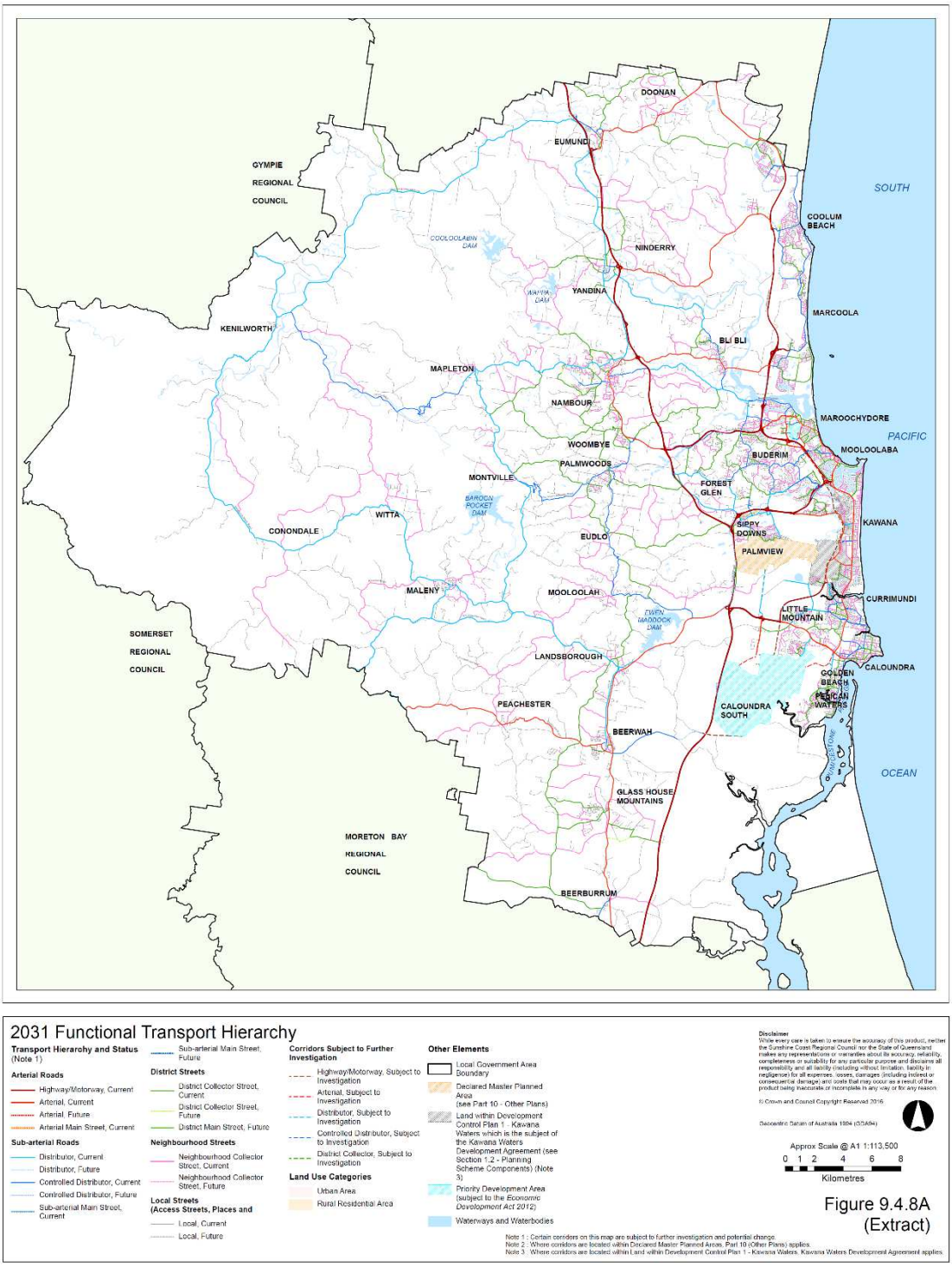

Figure 1 - Road hierarchy that informs trunk road planning

4.0 Transport Network Valuation

The replacement cost of each trunk road must be calculated. It would be an enormous task to include a detailed calculation of the replacement value of each section of road within the region. Hence, an assessment was made of the unit rate valuation of each road type as well as various higher cost infrastructure items such as bridges and signalised intersections based on recent construction costs. These unit valuations as well as the preliminary cost estimate for proposed strategic road projects and intersection signalisation projects, are detailed below.

According to State guidelines an infrastructure charge may only be levied for the establishment cost of a trunk infrastructure network. Establishment cost is defined in the Act, and includes:

1. For future infrastructure
    i. Up to 3% master planning including modelling;
    ii. Survey, geotechnical investigations, design, project management, contract admin & environmental;
    iii. Financing costs,
    iv. Construction, and
    v. Land acquisition (not including donated land).
2. For existing infrastructure
    i. Current replacement value – i.e. the cost of reconstructing the same works using contemporary materials, techniques and technologies.

It should be noted that the maintenance, rehabilitation or replacement cost of existing aged or obsolete components of the transport network are not included in the establishment cost.

Other costing assumptions used in the charges analysis for the trunk transport network are:

- Costs are exclusive of GST;
- Costs have been stated in June 2016 dollars;
- Inflation rate of 2.71% has been used to model future construction related costs (Road & Bridge Construction Index);
- Discount rate of 2.79% (Council's cost of capital, based on the 20 year Treasury bond rate);
- Land index 1.8%.

Table 1 summarises the valuation of the existing trunk transport network derived from Council's spatial datasets and unit rates provided by Cardno. These cost include existing trunk roads, bridges, major intersections and land. Calculation for the unit costs for roads are shown in Appendix C. A full list of existing trunk roads and their hierarchy in the network is provided in Appendix D.

Future projects identified later in this report were estimated using reference designs, quantities where available and unit rates appropriate for this region.

Table 1 - Value 2016 Transport Network

Asset Category	Hierarchy	Lanes	Description	Unit Rate (June 2012 $)	Unit Rate (June 2016 $)	Quantity (m)	Total ($)
Road	Arterial Roads	6	Major Arterial (including lighting and basic earthworks)	5465	6,901	1526	$10,530,731
Road	Arterial Roads	2	Arterial road divided (including lighting and basic earthworks)	3166	3,998	1773	$7,087,580
Road	Arterial Roads	4	Arterial road divided (including lighting and basic earthworks)	4166	5,260	2545	$13,388,445
Road	Arterial Roads	2	Arterial road (including lighting and basic earthworks)	3156	3,985	3525	$14,049,899
Road	Sub-Arterial Roads	2	Sub-Arterial road divided (including lighting and basic earthworks)	2834	3,578	19851	$71,030,649
Road	Sub-Arterial Roads	4	Sub-Arterial road divided (including lighting and basic earthworks)	3619	4,569	1573	$7,188,529
Road	Sub-Arterial Roads	2	Sub-Arterial road (including lighting and basic earthworks)	2747	3,468	101247	$351,174,151
Road	Sub-Arterial Roads	4	Sub-Arterial road (including lighting and basic earthworks)	3527	4,453	1374	$6,119,921
Road	District Streets	2	District Collector divided	1777	2240	577	$1,292,135
Road	District Streets	2	District Collector	1530	1940	305552	$592,771,596
ROAD SUB TOTAL						**439544**	**$1,074,633,636**
Intersection		1	Single Lane Roundabout	56500	73287	79	$5,789,643
Intersection		2	Two Lane Roundabout	137000	177705	10	$1,777,047
Intersection		1	4-Way Intersection, Signalised	465100	623397	19	$11,844,543
Intersection		2	T-Intersection, Signalised	380600	503672	24	$12,088,128
Intersection		3	Non Signalised Intersection	267200	147094	12	$1,765,128
INTERSECTION SUB TOTAL						**144**	**$33,264,489**
Bridge			Trunk Bridges	**3994**	**5915**	**23643**	**$139,848,345**
Land Purchase			Whole or Part Purchases		**Varies**	**56 Properties**	**$10,221,930**
TOTAL EXISTING TRANSPORT NETWORK							**$1,257,968,400**

5.0 Desired Standard of Service

Desired Standards of Service (DSS) for Sunshine Coast's transport network were determined with reference to several guiding principles of sustainable transport development. The DSS at a transport planning level can be expressed in terms of environmental and user benefits (refer Table 2).

The overall DSS presented for the transport network in Table 2 are achieved through Sunshine Coast Council's road hierarchy, general roadworks design standards and standard road cross-sections for the various classes of road.

The target maximum volume / capacity ratios depicted in Table 2 have been set to ensure that road provision strikes a balance between the traffic volume on the road and the carrying capacity of the whole road network and delivers an acceptable level of service to the local community. When the forecast traffic volume surpasses the carrying capacity of the section of road, it is identified as a potential transport infrastructure project.

Table 2 - DSS for Sunshine Coast's Road Network

Environmental Benefit	**User Benefit**
Transport systems have been planned to minimise emissions that threaten public health, global climate, biodiversity and the integrity of essential ecological processes by; Ensuring roads are located in areas that are not considered environmentally sensitive; Ensuring that congestion and operating levels are such that fuel consumption and emission levels are minimised; Creating carriageways that can allow for multi-modal usage, such as public transport, buses and bikeways.	Sunshine Coast has an efficient, orderly and legible road network. Sunshine Coast's road system can cater for bikeways and buses if required. Roads have been planned to ensure required and sensible links are provided. Roads have been planned to discourage through traffic on local roads. Sunshine Coast's road system has been planned to ensure there is adequate capacity to meet community expectations on the higher order traffic carrying roads. Target maximum volume/capacity ratios are as follows. Rural / Urban State 0.7 0.75 Arterial 0.75 0.85 Sub-arterial 0.75 0.85 District Collector 0.8 N/A
Future population and employment are located in close proximity to each other and in areas that have access to a variety of transport options, thus providing opportunities to minimise journey to work trips and emission levels.	Residents have an opportunity to minimise journey to work times. Providing options for commuters reduces traffic congestion.

More detailed desired standards of service for the road transport network are stated in the following:

(a) Table 3 states the requirements for urban transport corridors;

(b) Table 4 states the design characteristics and requirements for rural transport corridors;

(c) Table 5 states the design characteristics and requirements for industrial transport corridors.

Table 3 - Urban transport corridors standards

Criteria		Arterial Roads			Sub-arterial Roads			District Streets	
		Highway / Motorway	Arterial Road	Arterial Main Street	Distributor	Controlled Distributor	Sub-Arterial Main Street	District Collector Street	District Main Street
Typical catchment (detached dwelling lots or equivalent)								300 to 1,000	
Minimum reserve width (metres) increase to accommodate utilities, public transport, WSUD etc, without reducing landscaping, pathways, signage etc.		40-100	40-60	39.4	29.6 (2 lane) 37 (4 lane)	24 (2 lane)	29.8	26.8 29.8 if median	24.8 27.8 if median
Design speed (km/h) minimum for roads		80-110	70	60	70	60	50		
Operating environment (km/h) speed appropriate for safety, amenity and convenience for the subject street								60	40
Maximum desirable volume / capacity ratio by location		0.75	0.85	0.85	0.85	0.85	0.85		
Maximum traffic volume (vehicles/day) * may increase to 10,000 if no direct vehicle access	per lane		9,000	9,000	9,000	9,000	9,000		
	per road							5,000 10,000 if median	5,000* 15,000 if median
General traffic lanes * operates as single moving lane for passing		2-6	2-4	2-4	2-4	2-4	2-4	2	2
Typical Intersection Performance	priority T (v/c)	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
	Roundabout (v/c)	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
	traffic signals	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
	grade separated	●							
Intersection treatments accommodate pedestrians and link cycle lanes and pathways	priority T		●	●	●	●	●	●	●
	priority 4-way								
	roundabout		●	●	●	●	●	●	●
	traffic signals		preferred	●	●	●	●	●	●
	grade separated	●	●						
Median		●	●	desirable	●	desirable	desirable	localised where required, if not entire street	
Minimum intersection spacing (metres) + 150 if constrained by existing development * same side, # opposite side		1.5-2km	0.5-1km	>150	300	300+	150	100* 80# 100 if median	100

Notes - this table applies to transport corridors within the Urban area as identified on Strategic Framework Map SFM 1 (Land use elements). The transport corridors are mapped on the 2031 Functional Transport Hierarchy (Figure 9.4.8A).

DTMR current guidelines or standards apply to planning and design of State-controlled roads.

DTMR approval is required where any additional access is sought or existing access is modified to a State-controlled road.

Table 4 - Rural transport corridors standards

Criteria		Arterial Roads		Sub-arterial Roads		District Streets	
		Highway / Motorway	Arterial Road	Distributor	Controlled Distributor	District Collector Street	Rural Residential District Collector Street
Minimum reserve width (metres) excluding any embankment		100	60	45	35	30	30
Design speed (km/h) minimum on roads, maximum on streets appropriate for safe environment and places		110	100	80	80	80	60
Maximum desirable volume / capacity ratio by location		0.7	0.75	0.75	0.75	0.8	
Maximum traffic volume (vehicles/day)		>40,000	20,000-40,000	<15,000	<15,000	1,000-5,000	5,000
Traffic lane width (metres)		volume driven	volume driven	3.5	3.5	3.3	3.3
Typical Intersection Performance	priority T (v/c)	0.8	0.8	0.8	0.8	0.8	0.8
	Roundabout (v/c)	0.85	0.85	0.85	0.85	0.85	0.85
	traffic signals	0.9		0.9	0.9	0.9	0.9
	grade separated	●					
Minimum intersection spacing (metres)		5 to 8km	>1000	300	300+	>100	100

Notes—Rural residential streets referred to in this table are those within the rural residential area as identified on Strategic Framework Map SFM 1 (Land use elements). All other roads and streets are located within the rural area as identified on Map SFM 1. The transport corridors are mapped on the 2031 Functional Transport Hierarchy (Figure 9.4.8A)

DTMR current guidelines or standards apply to planning and design of State-controlled roads.

DTMR approval is required where any additional access is sought or existing access is modified to a State-controlled road.

Table 5 - Industrial transport corridors standards

Criteria		Industrial Streets
		Collector Street
Minimum reserve width (metres)		25
Minimum overall carriageway width (metres)		15
Verge width (metres)		5
Design speed (km/h) to be appropriate for the speed environment		60
Maximum traffic volume (vehicles/day)		12,000
Number of moving lanes		2
Intersection treatments		priority T, roundabout, traffic signals
Median		no if expected to carry >7500 vehicles/day, increase reserve width and provide a raised median, minimum 4.5m wide, with U-turn facilities or other route choice options
Minimum intersection spacing (metres)	same side	100
	opposite side	150

6.0 Land Use and Demographics

6.1 Demographic Forecasts

Before forecasting travel demand, it is necessary to produce a reasonable set of demographic (eg population, employment and enrolments) forecasts for each of the traffic zones in Council's Transport model. This work was done in conjunction with the demographics projections required for the Local Government Infrastructure Plan (LGIP).

This work involved the following goals:

- Establish a 2011 "base" year
- Establish future year design horizons of 2016, 2021, 2026, 2031, 2036 and 2041

Figure 2 to Figure 6 show the process that was followed to establish demographic and landuse demands for transport modelling in the region.

Validation checks were applied during the process including but not limited to the following:

1. Demographic and employment totals were checked against key area summaries based on development area plans and previous modelling datasets;
2. General checks were performed to confirm that totals aggregate correctly (resident + visitor = pop, workers + dependants = total pop, age cohort total = total pop, total dwellings = aggregate of dwelling types);
3. Check occupancy per household (HH) is appropriate.

6.2 Data Sources

The following sources were used to estimate demographic and employment:

- Council's Sunshine Coast Travel Forecasting Model and previous versions of Council's Sunshine Coast Integrated Multi-Modal Model (SCIMMM);
- Australian Bureau of Statistics (ABS) census data from 2011;
- TMR's SEQ Base Case dataset and Council's population assessment projections;
- State Government distributions for age, sex, workers, dependants and household population;
- State Government student enrolment data for primary, secondary and Tertiary institutions;
- Private institution student enrolments from various sources;
- Sunshine Coast Council Priority Infrastructure Plan (PIP) lot level projections;
- Visitors from the Tourism Forecasting Committee;
- The Planning Scheme zoning maps;
- Development assessment plans.

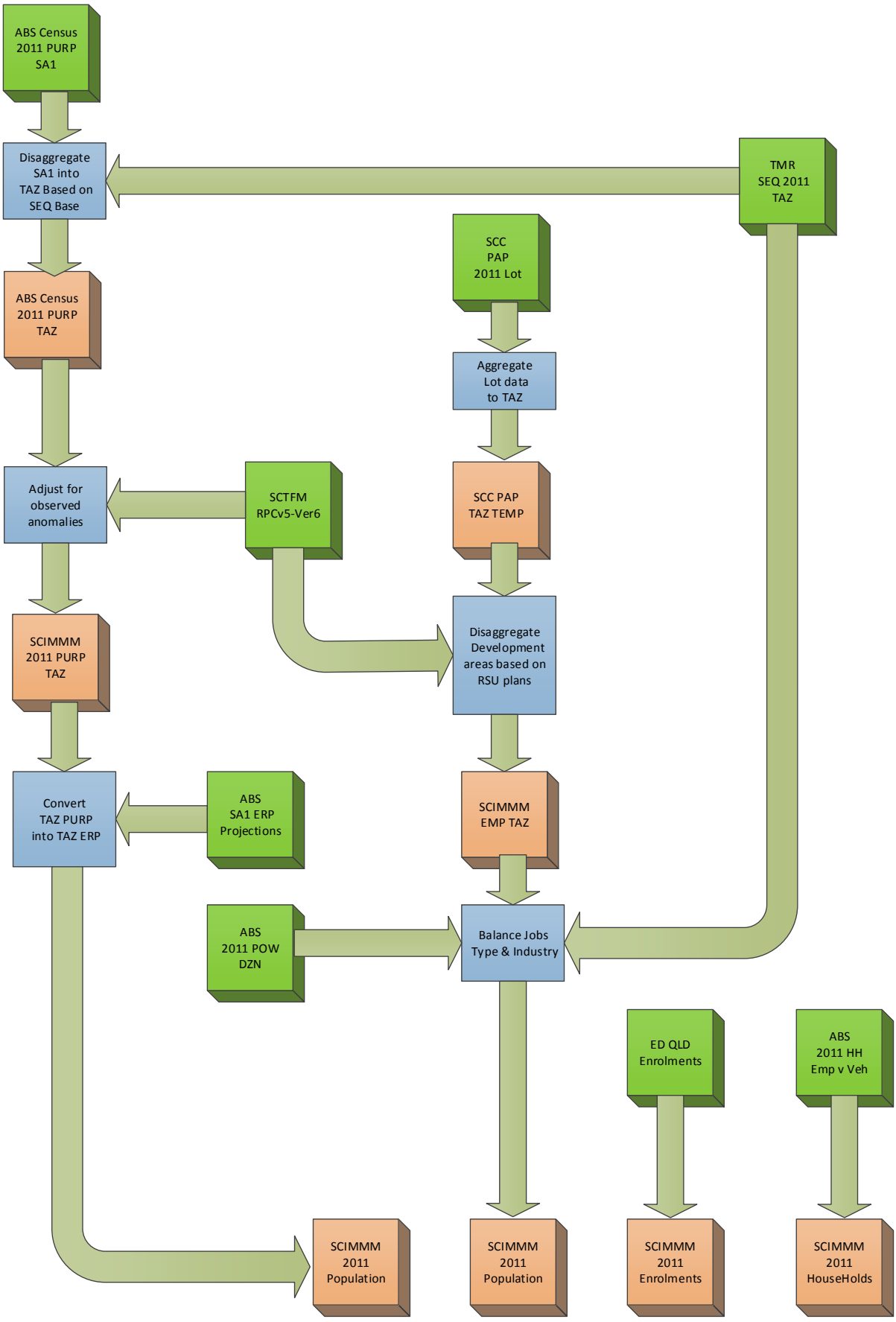

Figure 2 - 2011 Population, Employment and Education Figures

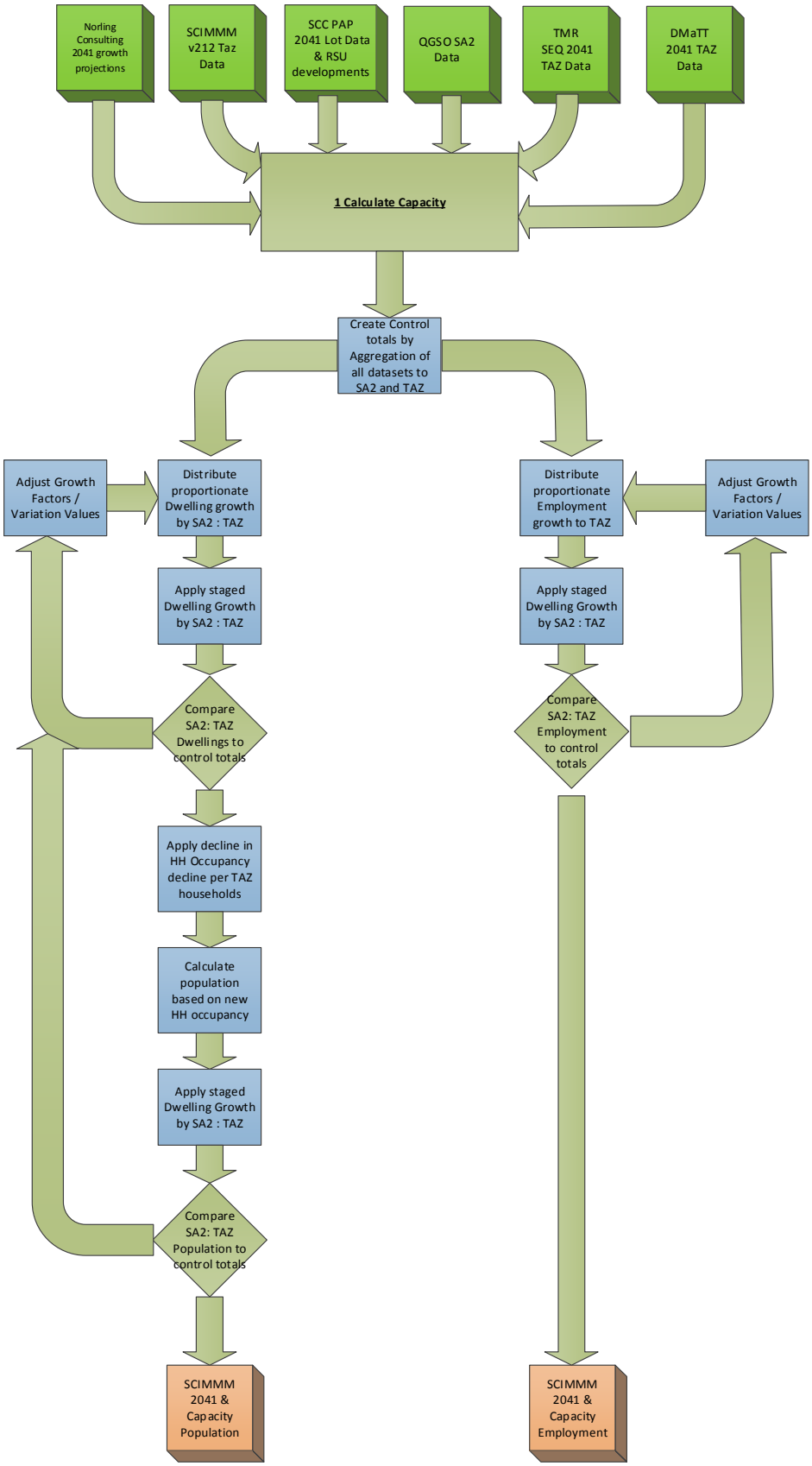
Norling Consulting 2041 growth projections
SCIMMM v212 Taz Data
SCC PAP 2041 Lot Data & RSU developments
QGSO SA2 Data
TMR SEQ 2041 TAZ Data
DMaTT 2041 TAZ Data
1 Calculate Capacity
Create Control totals by Aggregation of all datasets to SA2 and TAZ
Adjust Growth Factors / Variation Values
Distribute proportionate Dwelling growth by SA2 : TAZ
Apply staged Dwelling Growth by SA2 : TAZ
Compare SA2: TAZ Dwellings to control totals
Apply decline in HH Occupancy decline per TAZ households
Calculate population based on new HH occupancy
Apply staged Dwelling Growth by SA2 : TAZ
Compare SA2: TAZ Population to control totals
SCIMMM 2041 & Capacity Population
Distribute proportionate Employment growth to TAZ
Adjust Growth Factors / Variation Values
Apply staged Dwelling Growth by SA2 : TAZ
Compare SA2: TAZ Employment to control totals
SCIMMM 2041 & Capacity Employment

Figure 3 - 2041 Demographic Forecast Stage 1

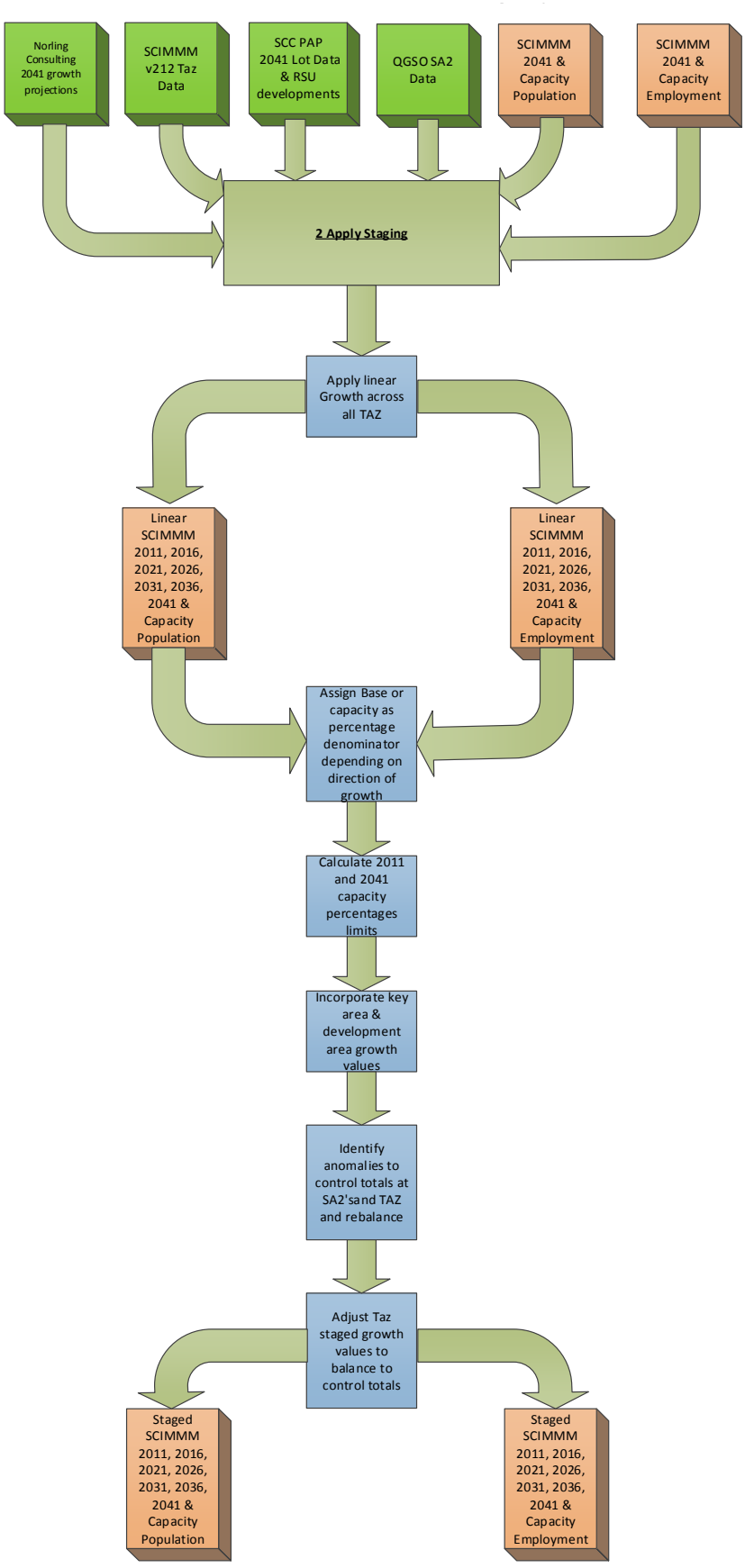

Figure 4 - 2041 Demographic Forecast Stage 2

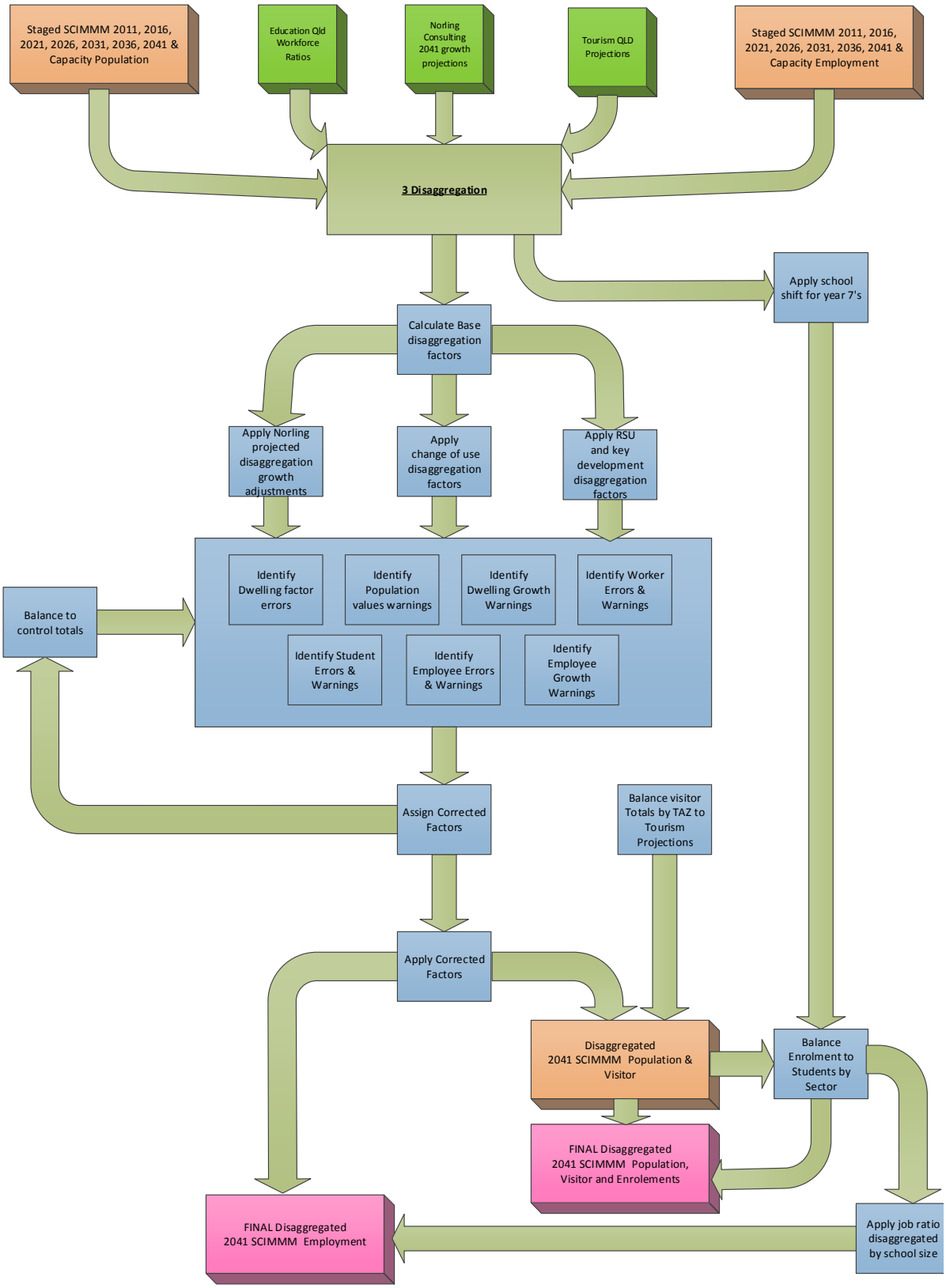

Figure 5 - Demographic Forecast Stage 3

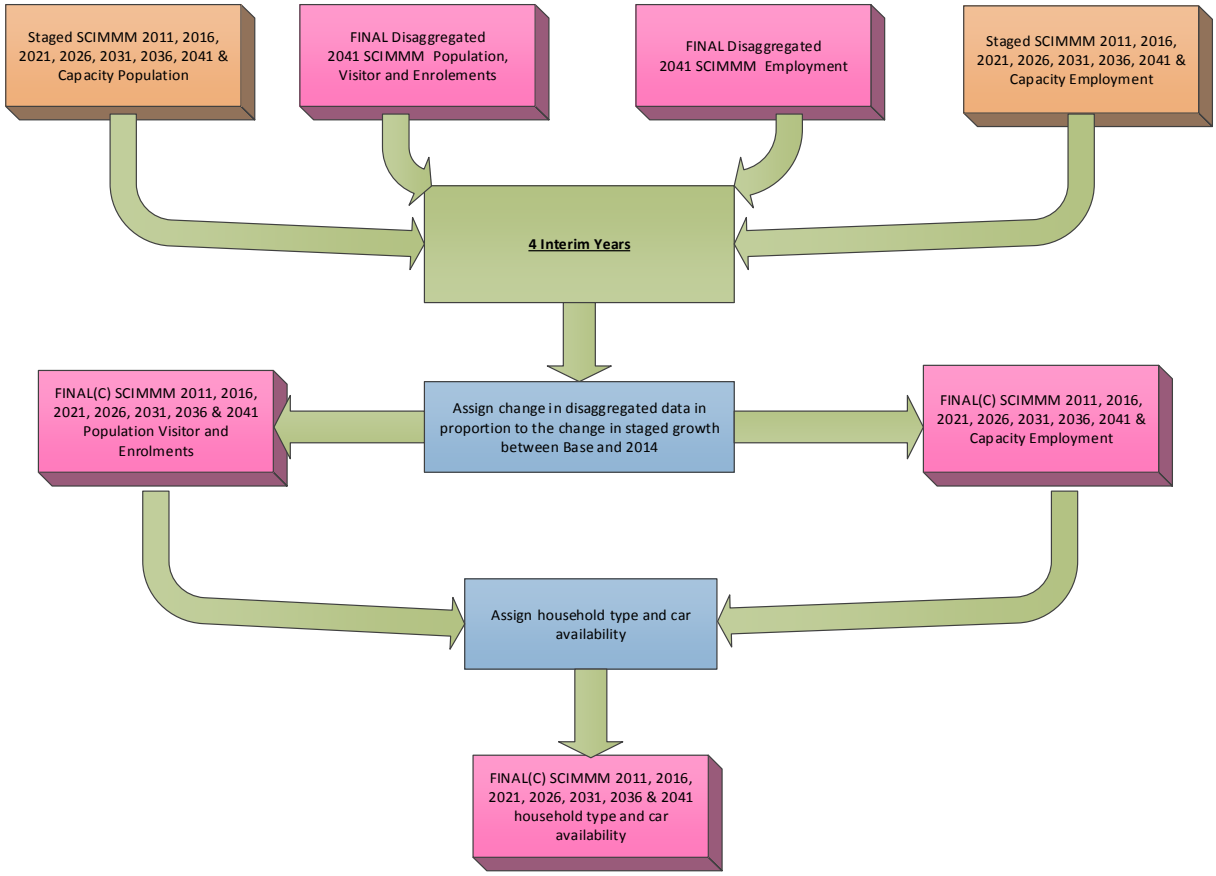

Figure 6 - Demographic Forecast Stage 4

6.3 Statistical Area Boundaries

The following boundaries apply to modelled area that includes the Sunshine Coast Council and the Noosa Council:

- 32 SA2's;
- 69 household travel zones;
- 795 SA1's;
- 1230 traffic zones; and
- 5059 mesh blocks.

Traffic zones for the SCIMMMv213 are based on aggregations of the 2011 ABS mesh blocks. It is a feature of the SCIMMM that it has been developed and calibrated using a fine-grained traffic zone system. This zoning system significantly improves the performance of the model in providing traffic projections on the lower order road network that characterises the bulk of the Sunshine Coast roads of interest. Mesh blocks were aggregated to reflect areas of future development, to overcome irregular shapes, to reflect physical barriers, and to reflect variations in land use.

6.4 Population

Demographic data is based on the Australian Bureau of Statistics (ABS) 2011 Census. Demographic Data was disaggregated from ABS SA1 zones to SCIMMM zones based on Transport and Main Road's (TMR's) SEQ Base Case dataset proportions. Demographic ABS 2011 Census Place of Usual Residents (PURP) data was adjusted to Estimated Resident Population (ERP) based on ABS projections.

Population figures contained in Council's planning assumptions were used as the basis for population projections. Data was provided at lot level and was aggregated, based on the transport model zoning system, to provide zonal level estimates of population.

The proportion of population within each of the following categories was estimated for each traffic zone:

1. baby (0-5years);
2. school age (6-17years);
3. tertiary students;
4. full-time workers;
5. part-time workers;
6. domestic / home duties;
7. unemployed; and
8. retirement age (66+years).

Historical ABS data was used as the basis for splitting population into the nominated categories. Estimates were calculated for future years were extrapolated using the trends observed in the ABS data, but bounded by the upper/lower proportions observed in the historical ABS data. If there was a clear and consistent trend, it was followed, within the observed upper and lower limits. If there was no obvious trend, the average observed proportion was adopted. More specifically, the following steps were completed:

- Data was adjusted to Office of Economic and Statistical Research (OESR) 2031 projections by 2011 SA2 areas;
- Tourist volumes were proportional increased by Zone based on Tourism Forecasting Committee, Forecast 2012 Issue 1 - regional forecast tables;
- Age cohorts by SCIMMM zone were then adjusted by OESR age projections by the 2006 Statistical Local Areas (SLAs);
- Worker ratios were kept proportional to 2011 values for infill areas and adjusted for growth development areas based on development plans (Caloundra South, etc).

6.5 Employment

Employment data is based on the TMR's SEQ Base Case dataset and Council's population Assessment projections.

Consistent with the transport model structure, employment estimates were split into white collar and blue collar categories for the 5 employment types of retail, office, service, industrial and other categories. Table 6 and Table 7 summarise the modelled job types and White and blue collar definitions.

Employment data was balanced across Census 2011 SA2 and based on journey to work Destination Zones (DZN) then proportioned across SCIMMM zones.

Education employment was obtained from the QLD Education department and checked against industry standards to calculate factor relationships.

Table 6 - Modelled Job Types

Model Demographic Inputs (5 Categories)	ABS ANZSIC 2006 (19 Divisions)
Industry Jobs	Manufacturing Construction Transport, Postal and Warehousing Information, Media and Telecommunications
Retails Jobs	Wholesale Trade Retail Trade
Professional Jobs	Financial and Insurance Services Rental, Hiring and Real Estate Services Professional, Scientific and Technical Services Administrative and Support Services Public Administration and Safety
Service Jobs	Accommodation and Food Services Education and Training Health Care and Social Assistance Arts and Recreation Services Other Services
Other Jobs	Agriculture, Forestry and Fishing Mining Electricity, Gas and Waste Water Services

Table 7 - White and Blue Collar Definitions

Model Demographic Input Category	ANZSCO 2006 Category
White Collar	Managers
	Professionals
	Community and Personal Service Workers
	Clerical and Administrative Workers
	Sales Workers
Blue Collar	Technicians and Trades Workers
	Machinery Operators and Drivers
	Labourers

6.6 Enrolments

Primary and secondary school enrolments for existing schools within the region were obtained from the Queensland Department of Education website. Tertiary enrolments were sourced from the relevant tertiary institutions. The locations of the education sites were geocoded into a MapInfo (GIS) layer and were then allocated to the appropriate model zones.

Future primary and secondary school enrolments were estimated based on the growth in school-aged children within:

- 3km of a primary school; and
- 9km of a secondary school.

Certain individual school forecasts were capped to ensure that the resulting projections did not imply the development of unrealistically large schools.

Enrolments for zones containing schools not present in 2011 were adopted based on the enrolment forecasts in the existing model.

Estimates of future tertiary enrolments were derived by applying the current ratio of tertiary enrolments to population.

Education enrolments were adjusted to account for the shift of year 7 students from primary school to high school campuses.

7.0 Sunshine Coast Integrated Multi-Modal Model (SCIMMM)

SCIMMMv2.13 was used to establish transport demand at the various cohort years and to establish road network deficiencies for consideration during road network planning.

SCIMMMv1.2.1 was jointly created by Council and the Department of Transport and Main Roads. Council has stewardship of SCIMMM and, since its initial creation, has maintained and enhanced the model.

The following is a summary of some of the key elements of SCIMMM. More detail on SCIMMM is contained in SCIMMM Development Report's v121 and v200.

The SCIMMM model approach is an extension of a traditional four stage multi-modal transport model, which includes trip generation, trip distribution, mode choice (i.e. choice between car, public transport and active transport), and highway and public transport assignment models:

- trip generation – determining the number of trips originating from and travelling to each zone;
- trip distribution – determining the distribution of trips between each pair of origins and destinations;
- mode choice – apportioning trips between available modes (road and public transport); and
- assignment – allocating trips to available road and public transport routes.

In addition to these four main steps, there are a number of sub-models that provide further inputs to the process. For example, a car ownership model is used to estimate the levels of household car availability, which in turn is used in the generation stage.

Figure 7 summarises SCIMMM's model structure. Table 8 - SCIMM Principal FeaturesTable 8 shows SCIMMM's principal features.

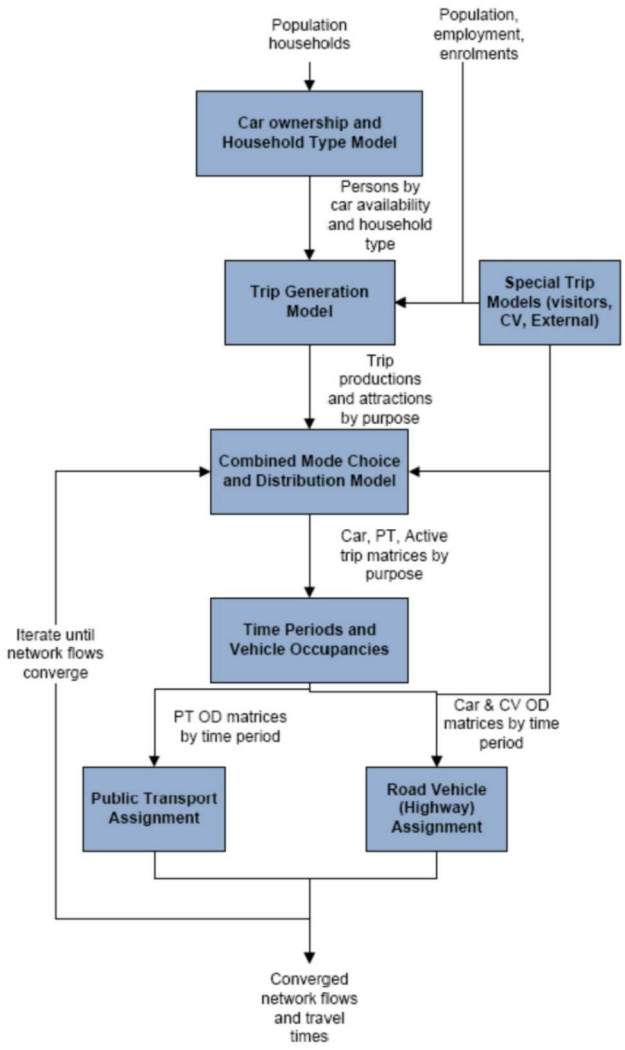

Figure 7 - SCIMMM Structure

Table 8 - SCIMM Principal Features

Principal Feature	Description	
Version	SCIMMM v1.2.1	
Software	Emme v4.0.4	
Coverage	Sunshine Coast Council & Noosa Council areas	
Transport zones	1257 total zones with 1246 internal zones and 11 external zones	
Model years	2011, 2016, 2021, 2026, 2031, 2036, 2041	
Time periods	AM peak period (7:00 AM to 9:00 AM) Interpeak period (9:00 AM to 4:00 PM) PM peak period (4:00 PM to 6:00 PM) Offpeak period (6:00 PM to 7:00 AM)	
Trip Purpose	Home Based Work Blue (HBWB) Home Based Work White (HBWW) Home Based Education (HBE) Home Based Shopping (HBS) Home Based Other (HBO) Work Non-Home Based (WNHB) Shopping Non-Home Based (SNHB) Other Non-Home Based (ONHB) Visitor Home-Based (VHB) Visitor Non-Home-Based (VNHB)	
Travel mode	Walk Cycle Car – resident Car - visitor School bus Bus Express bus	Ferry Rail Light rail Truck Public transport modes have walk, park and ride and kiss and ride as access modes
Form of distribution-mode choice models	HBWB - simultaneous HBWW - simultaneous HBE – pre-distribution HBS – pre-distribution HBO – pre-distribution WNHB- simultaneous SNHB- simultaneous ONHB – pre-distribution	
Transportation networks	Approximately 2,300 nodes and 8,000 links in the 2011 base year model consisting of: Highways, Motorways, Regional Arterials, Arterials, Sub-Arterials, Collectors and Minor roads Rail, bus and walk/cycle links	
Trip Assignment	Path-based multiclass capacity constrained equilibrium assignment for the road network Multipath assignment for public transport users based on the probability of use of alternative PT routes	
Model calibration/validation	Calibration against 2011 weighted travel survey data (SEQTS) for travel behaviour parameters Sensitivity testing of significant parameters Validation against traffic count screenlines, travel times and public transport ticketing data for the base year model	

7.1 Auto (Car) Demand

Demand is necessary for network planning and also for inclusion in the State Government's Schedule of Works (SOW) calculations.

The transport network is an open network that can be used by external users, as well as existing and future development within the region. Development within the region occurs within and outside area areas covered by Infrastructure Agreements (IA's) that may not be subject to infrastructure charges.

Further, SCIMMM is jointly owned by DTMR and also contains the Noosa Council area that was part of the Sunshine Coast Council during development of SCIMMM. Noosa Council area remains part of SCIMMM's modelled area post its 2014 de-amalgamation with Sunshine Coast Council due to TMR's joint ownership of SCIMMM.

The SOW provides the opportunity to specify network cost and demand for different geographical areas of the region based on their usage of the trunk road network (i.e. travel patterns in the forecast year). It is important when dividing the region into these areas that their boundaries make use of defined infrastructure agreement (IA) areas where either both the demand from the IA area and cost of infrastructure provided through the IA can be included or both excluded from the SOW calculations.

For the above reasons, demands on the road system have been summarised into various categories or demand catchments. Figure 8 summarises these categories.

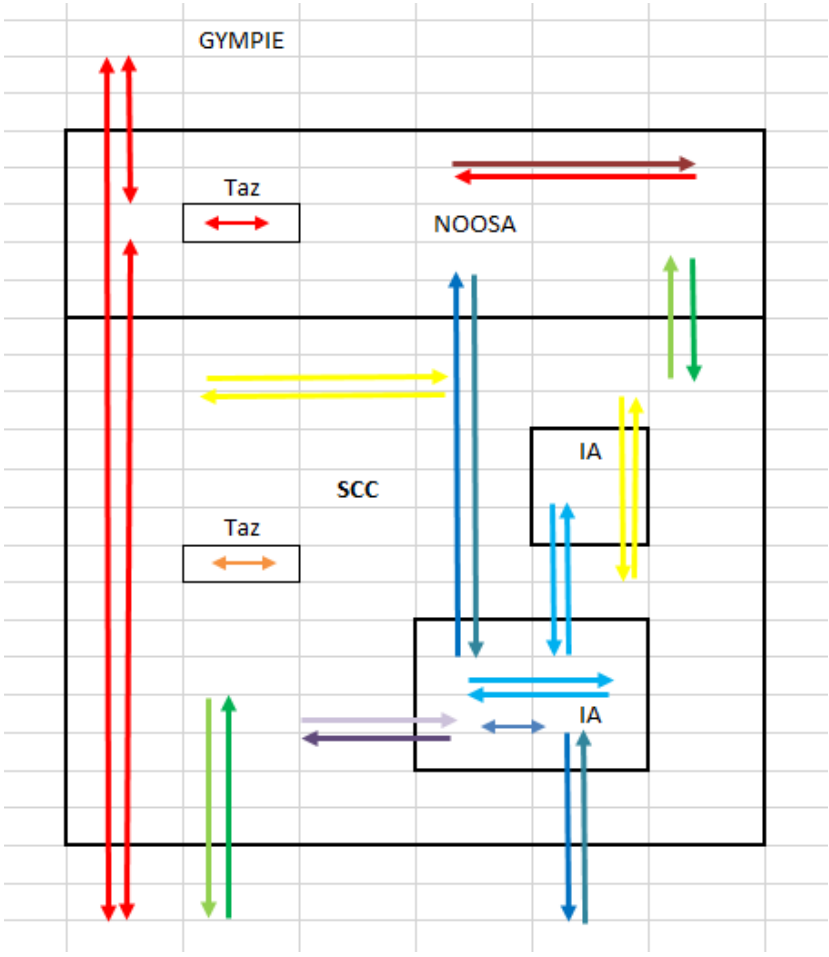

Figure 8 - Trip Distribution

Demand for inclusion in the SOW have been established through the following:

- Where a trip is internal to the Sunshine Coast area (yellow), the entire demand is included;
- Where a trip is within or between IA areas, demand is excluded. This is because the cost of infrastructure provided through IA's is also excluded;
- Where a trip is wholly within Noosa Council and external to the Sunshine Coast area demand is excluded. This is because trips external to the Sunshine Coast area do not use Sunshine Coast Council roads;
- Where a trip a trip is between external areas through the Sunshine Coast area, demand is excluded. This is because trips between externals will use federal and state roads rather than Council roads;
- Where a trip is made between the Sunshine Coast area and an IA area or an external area 50% of the demand is included. This is because the cost of infrastructure provided through IA's is also excluded and therefore those trips ends associate with an IA area must also be excluded;
- Trips within a Sunshine Coast zone are excluded as they are very short and should mostly be assigned to active modes;
- The methodology accounts for linked trips to avoid double dipping.

At this point, some clarification of terms is helpful. In transport modelling terms, each time someone travels from a specific origin to a specific destination they have made a trip. Thus, if someone travels from home to work and back, but drops their children at school on the way to work, they have made three trips (Home-School, School-Work, Work–Home). Two of these trips are Home Based Trips (HB) and one is Non-Home-Based (NHB).

Table 9 summarises the daily demand in private automobile trips coming from the various trip categories. From the data, it can be seen that the majority of new trips in the region are forecast to come from growth areas like Caloundra South Priority Development Area (PDA) and Maroochydore PDA.

The total SOW trips are the trips that have been used in the State Governments Schedule of Works spreadsheet calculation.

Table 9 - Auto Matrices by Trip Distribution

Distribution	Daily Auto Trips					
	2016	2021	2026	2031	2036	2041
SCC Internal	747,038	759,481	771,925	784,368	777,694	771,020
SCC Intrazonal	17,455	17,697	17,940	18,183	18,078	17,973
SCC External (SOW=50%)	121,264	131,698	142,132	152,566	149,944	147,321
SCC IA (SOW=50%)	80,056	130,370	180,684	230,997	247,151	263,305
IA Other	13,588	45,309	77,029	108,750	139,228	169,706
External/ External	162,210	167,180	172,151	177,122	220,213	263,305
Total Private Auto Trips	1,141,610	1,251,735	1,361,861	1,471,987	1,552,308	1,632,631
Total SOW Trips	**865,152**	**908,212**	**951,273**	**994,333**	**994,320**	**994,307**

7.2 Spatial Distribution of Trips in Region and Jobs containment

Figure 9 and Figure 10 use dot density to show that spatial distribution of trips by all modes in the region for 2016 and 2031 respectively.

Appendix A shows the 2016 jobs containments and external travel in the region. As expected, greatest jobs containment occurs in the centre of the region and most external trips are to the south of the region.

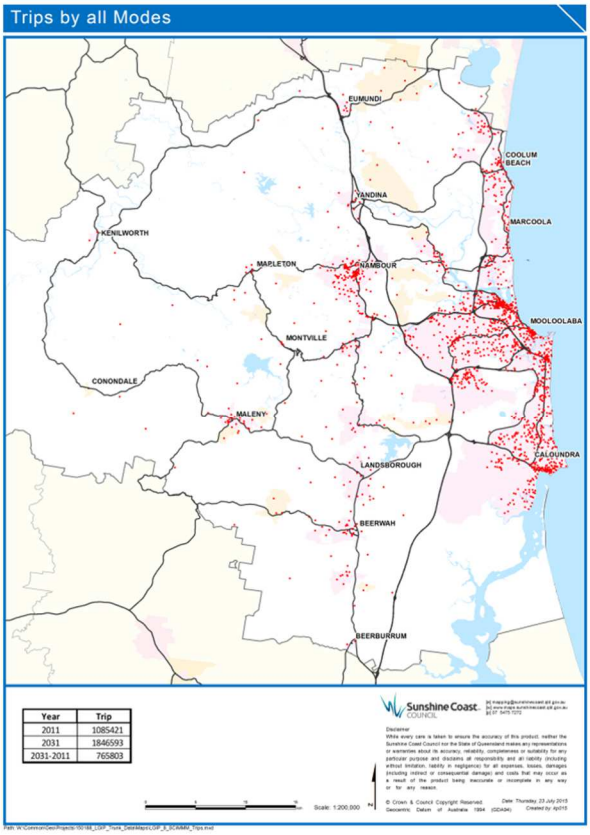

Figure 9 - Spatial Distribution of Trips 2016

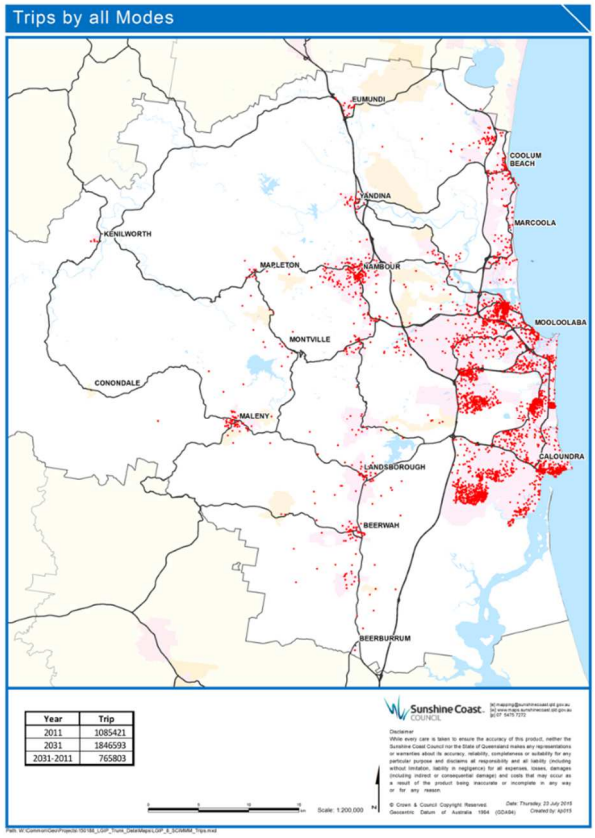

Figure 10 - Spatial Distribution of Trips 2031

7.3 2031 Daily Road Link Flows

Figure 11 and Figure 12 show the 2031 forecast traffic volumes for the Sunshine Coast Council area and the enterprise corridor respectively. The most heavily trafficked Federal/State and Council roads are summarised in Table 10 together with their 2016 and 2031 volumes.

SCIMMMv2.13 predicts that the network will be carrying about 1.6 million car trips per day in 2041 which is a 43% increase from 2016 or above 1.7% linear growth in car trips each year.

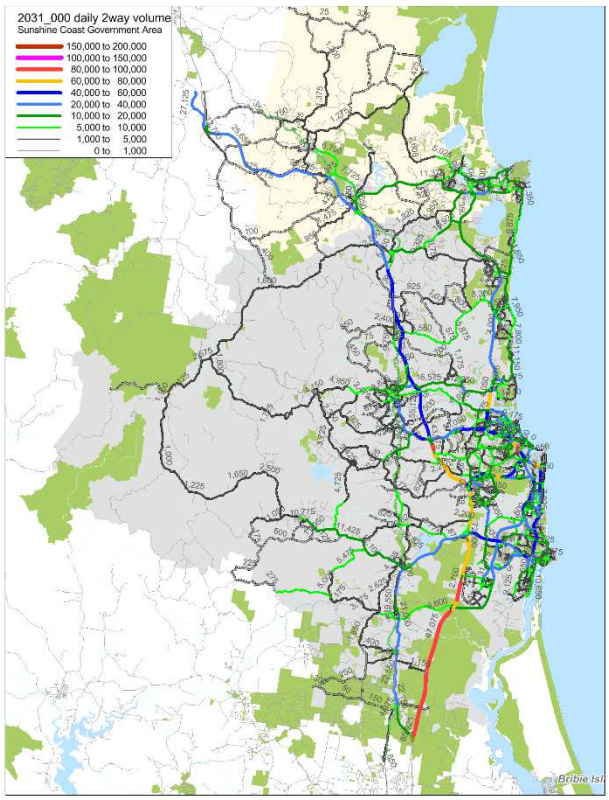

Figure 11 - 2031 Daily Volumes (SCC)

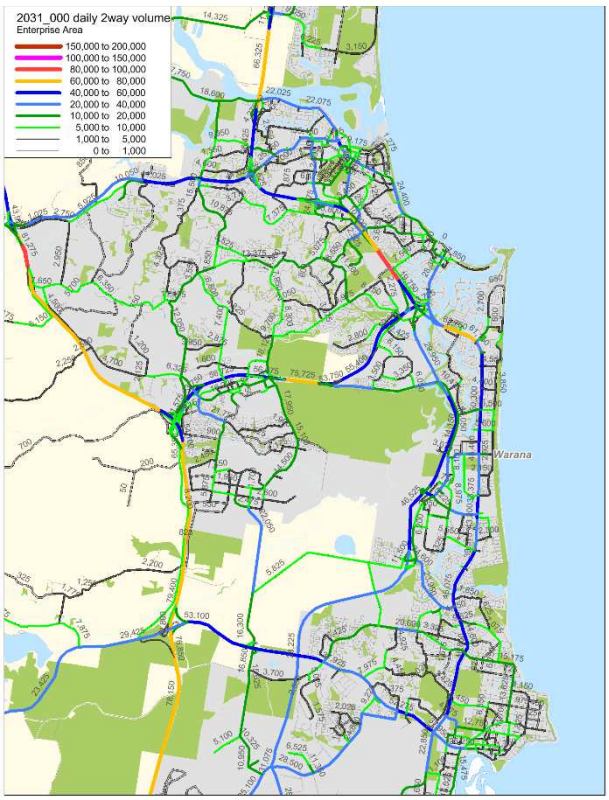

Figure 12 - 2031 Daily Volumes (Enterprise Corridor)

Table 10 – 2016 Heavily trafficked roads (24hr – 2Way)

TMR		2016	2041
	Bruce Hwy	30,000 to 72,000	50,000 to 120,000
	Sunshine Motorway (Nicklin Way to Maroochydore Rd)	45,000 to 67,000	60,000 to 120,000
	Nicklin Way (Main Dr to Sunshine motorway)	50,000 to 58,000	50,000 to 75,000
	Caloundra Rd (Bruce Hwy to Caloundra Mooloolaba Rd)	50,000 to 53,000	50,000 to 55,000
	Sunshine Motorway (Bruce Hwy to Nicklin Way)	40,000 to 53,000	40,000 to 82,000
	Sunshine Motorway (Maroochydore Rd to David Low Way)	45,000 to 51,000	45,000 72,000
	Caloundra Rd (Caloundra Mooloolaba Rd to Nicklin Way)	30,000 to 42,000	30,000 to 52,000
	Nicklin Way (Caloundra Rd to Main Dr)	30,000 to 42,000	25,000 to 55,000
	Maroochydore Rd (Bruce Hwy to Sunshine Motorway)	16,000 to 37,000	17,000 to 38,000
	Nambour Connection Rd (Bruce Hwy to Woombye Rd)	37,000	44,000
SCC			
	Maroochydore Blvd (Sunshine Motorway to Plaza Pde)	24,000 to 35,000	34,000 to 47,000
	Sippy Downs Dr (University Way and Sunshine Motorway)	28,000	45,000
	Sugar Rd (Buderim Ave to Maud St)	16,000 to 25,000	17,000 to 25,000
	University Way (Sippy Downs Dr to Chancellor Village Blvd)	23,000	32,000
	Main Dr (Kawana Way to Nicklin Way)	23,000	25,000
	Brisbane Rd (Sunshine Motorway to Tarcoola Ave)	20,000 to 22,000	30,000 to 35,000
	Point Cartwright Dr (Nicklin Way to Orana St)	22,000	21,000
	Arundell Ave (Lamington Tce to Carter Rd)	19,000	28,000
	Evan's St (Plaza Pde to Maroochydore Rd)	18,000	25,000 to 32,000
	Jones Rd (Pittards Rd to Maroochydore Rd)	17,000	21,000
	Parklands Blvd (Meriden Way to Saffron Dr)	17,000	25,000
	Bellvista Blvd (Caloundra Rd to Dumbarton Dr)	17,000	6,000 to 15,000

7.4 Road Network Level of Service

Figure 13 and Figure 14 show the forecast level of service for the Sunshine Coast area and the enterprise area respectively. These figures show that the council controlled trunk roads typically perform well except for Brisbane Road, Sugar Road and Maroochy Boulevard at Dalton Drive.

To help inform network deficiencies at 2031, the 2031 forecast demands were assigned to the 2016 network.

Figure 15 and Figure 16 show that if the road network is not upgraded the performance of the network will significantly deteriorate with many State and Council trunk roads reaching LOS F or total failure.

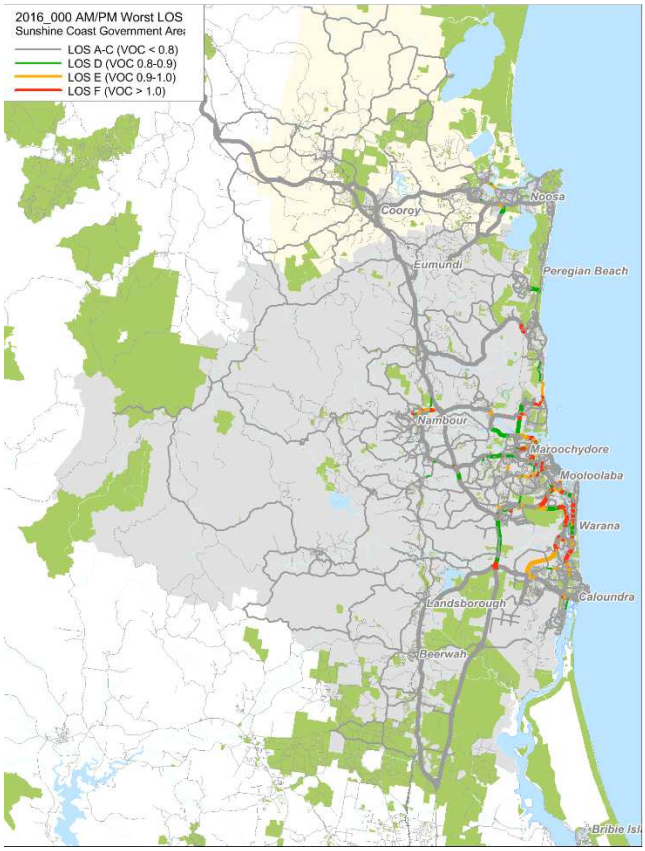

Figure 13 - 2016 Forecast LOS (SCC Area)

Figure 14 – 2016 Forecast LOS (Enterprise Corridor)

7.5 Programmed Upgrades to the State Road Network

The North Coast District of the Department of Transport and Main Roads was consulted about State and Federal road upgrades that were to be included in SCIMMM. Table 11 lists the projects and their timing that the Department advised were to be included in modelled future networks. Appendix B contains spatial representations of these State Road upgrades.

Similarly, the Department of Transport and Main Roads were consulted about the future public transport network to be modelled in SCIMMM. Figure 17 shows the 2016 bus routes modelled in SCIMM. Figure 18 and Figure 19 show the 2031 bus routes modelled in SCIMMM.

Table 12 summarises the modelled bus frequencies in minutes between the various services in 2016 and 2031.

Figure 15 - LOS 2031 demand on 2011 network (SCC Area)

Figure 16 - LOS 2031 demand on 2011 network (Enterprise Area)

Table 11 - Future State Controlled Road Upgrades

Primary Road Name	Secondary Road Details (from / to)	Description	Estimated timeframe
Bruce Highway	Sunshine Motorway	Sippy Downs Interchange upgrade	2016-2021
Sunshine Motorway	Nicklin Way	MRI	2021-2026
Bruce Highway	Caloundra Rd	Caloundra Rd Interchange stage 1	2026-2031
Sunshine Motorway		Perigean Springs Interchange	2026-2031
Caloundra / Mooloolaba Rd	Caloundra Rd to Sunshine Motorway	MMTC lane increase and Caloundra Rd interchange	2026-2031
Caloundra / Mooloolaba Rd	Caloundra Rd to Sunshine Motorway	MMTC lane increase and Kawana interchange	2031-2036
Maroochydore Rd	Pike St	Pike St interchange	2031-2036
Sunshine Motorway	Sippy Downs Drive	Sippy Downs interchange	2031-2036
Sunshine Motorway	Claymore Rd to Kawana Way	Sippy Downs Split Interchange	2031-2036
Bruce Highway	Caloundra Rd	Caloundra Rd Interchange complete	2031-2036
Bruce Highway	Caloundra Rd to Sunshine Motorway	Increase to 6 lanes	2031-2036
Bruce Highway	Maroochydore Rd	Bruce Hway / Maroochydore Rd interchange & Mons Upgrade	2031-2036
Bruce Highway		Caloundra Sth Interchange and lane upgrade	2031-2036
Caloundra St	Maleny St	Landsborough Station interchange	2031-2036
Nicklin Way	Caloundra Rd	Intersection upgrade	2031-2036
Nicklin Way	Arthur St	Arthur St Interchange	2031-2036

Table 12 - SCIMMM Bus Headways

	2016				2031			
Route	**AM**	**IP**	**PM**	**OP**	**AM**	**IP**	**PM**	**OP**
SC600	15	15	15	30	30	30	30	60
SC601	60	60	60	120	60	30	60	999
SC602	60	60	60	90	30	30	30	999
SC603	60	60	60	360	10	10	10	30
SC605	60	120	60	90	60	60	60	60
SC606	N/A	N/A	N/A	N/A	15	15	15	15
SC607	60	60	60	120	30	30	30	60
SC609	60	60	60	180	30	30	30	60
SC610	30	30	30	60	30	30	30	60
SC612	60	60	60	120	60	60	60	120
SC613	60	120	60	360	60	60	60	120
SC614	30	30	30	120	30	30	30	60
SC615	60	120	60	360	60	60	60	60
SC616	30	30	30	120	15	15	15	60
SC617	30	30	30	120	30	30	30	60
SC618	30	30	30	120	30	30	30	60
SC619	60	60	60	180	30	30	30	120
SC620	30	30	30	60	30	30	30	60
SC622	60	60	60	180	60	60	60	120
SC626	30	30	30	120	15	15	15	60
SC627	30	30	30	180	15	15	15	60
SC628	60	60	60	360	15	15	15	120
SC629	60	60	60	999	15	15	15	120
SC630	60	120	60	180	30	60	30	120
SC631	60	90	60	180	N/A	N/A	N/A	N/A
SC632	60	180	60	999	60	60	60	60
SC633	N/A	N/A	N/A	N/A	60	60	60	60
SC636	60	60	60	360	30	30	30	60
SC639	30	30	30	360	N/A	N/A	N/A	N/A
SC641	N/A	N/A	N/A	N/A	60	60	60	120
SC642	N/A	N/A	N/A	N/A	60	60	60	120
SC643	N/A	N/A	N/A	N/A	60	60	60	120
SC644	N/A	N/A	N/A	N/A	15	15	15	30
SC645	N/A	N/A	N/A	N/A	30	30	30	60
SC649	60	120	60	999	60	60	60	60
SC650	N/A	N/A	N/A	N/A	30	30	30	60
SC656	N/A	N/A	N/A	N/A	30	30	30	60
SC657	N/A	N/A	N/A	N/A	30	30	30	60
SC701	120	120	120	999	N/A	N/A	N/A	N/A
SC702	60	60	60	999	N/A	N/A	N/A	N/A

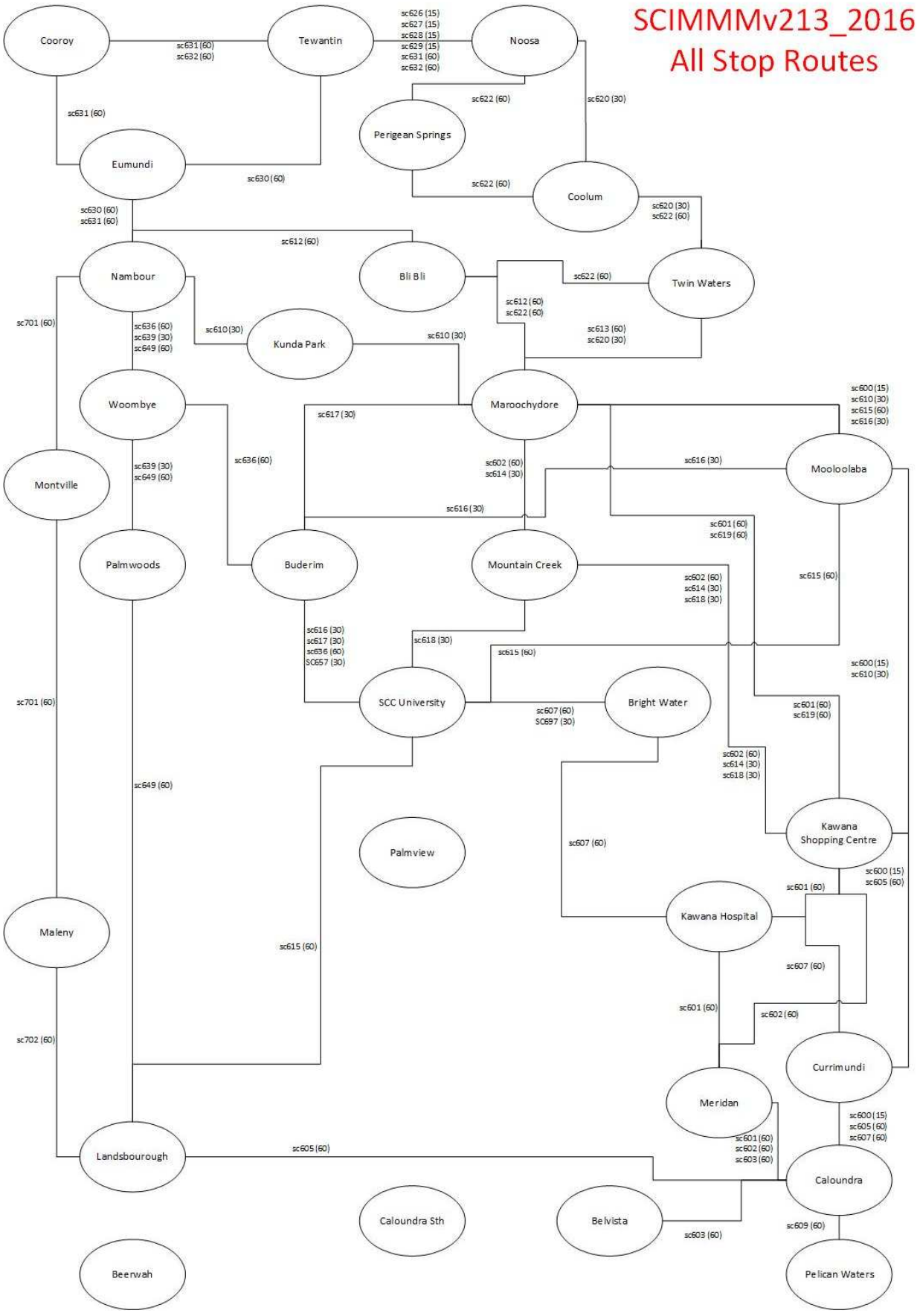

Figure 17 - 2016 Bus Routes

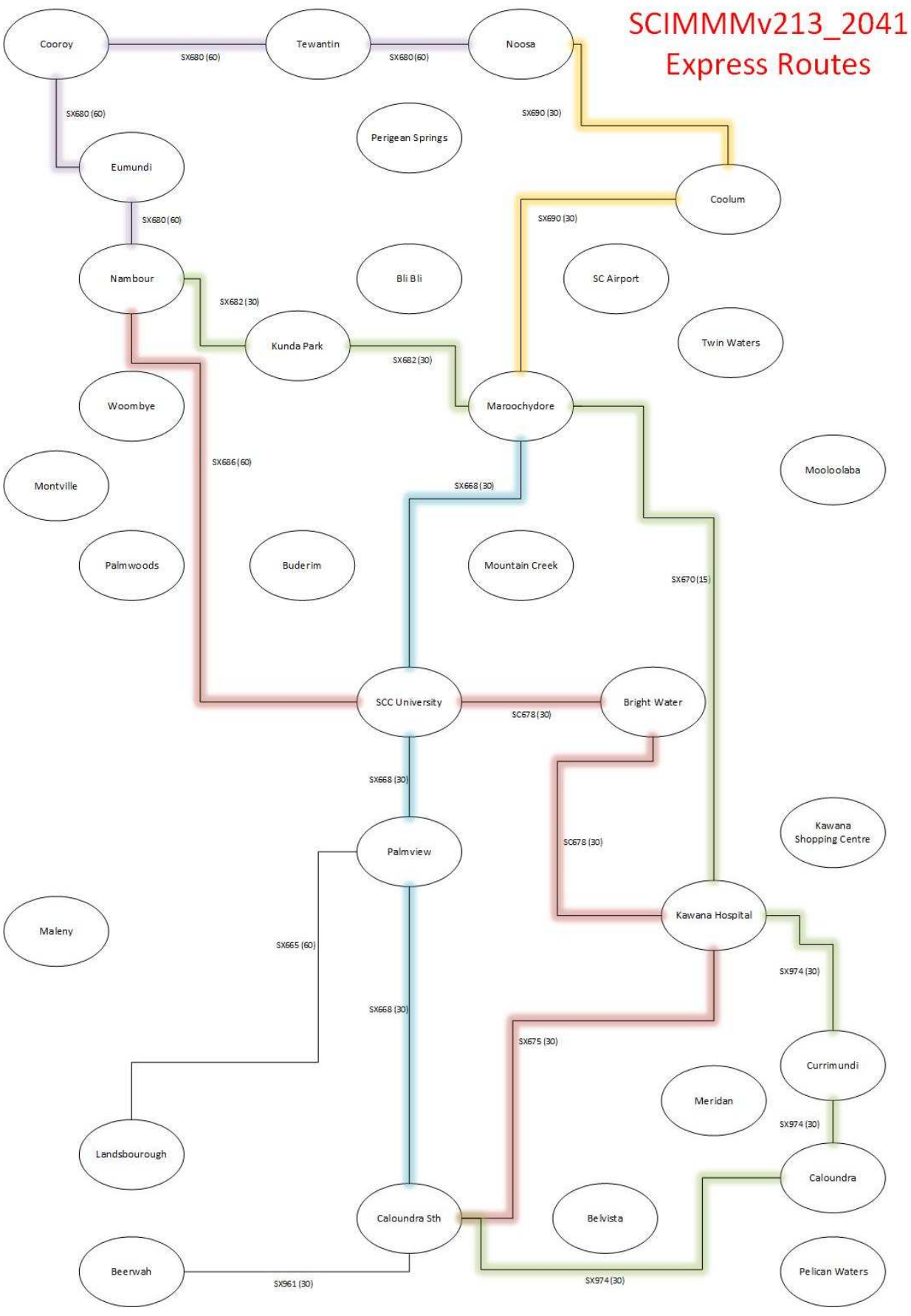

Figure 18 - 2031 Express Bus Routes

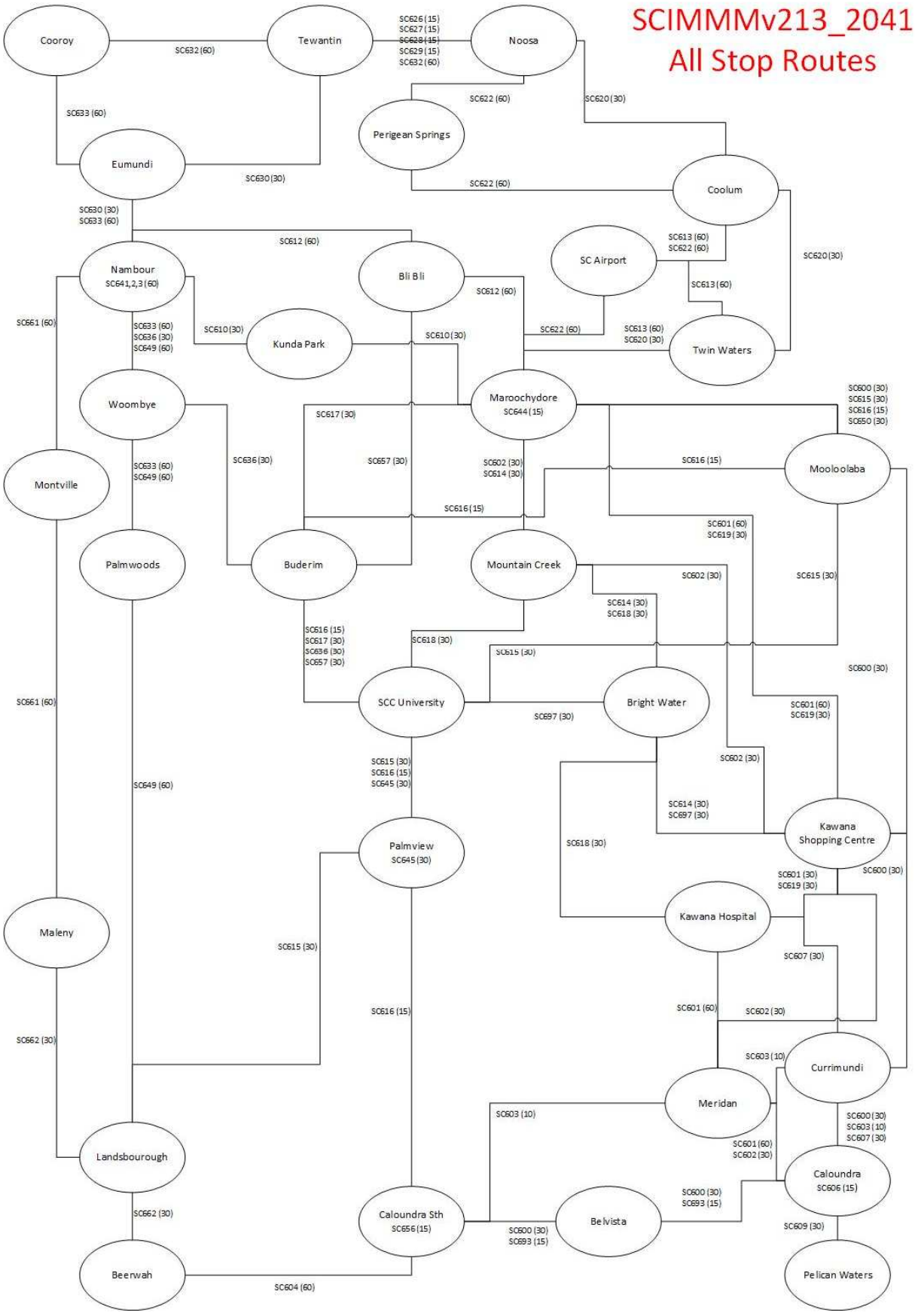

Figure 19 - 2031 All-Stop Bus Routes

8.0 Other Transport Models

To more accurately forecast trips on all of Council's trunk roads, there is need for a mesoscopic level model with greater network detail than can be efficiently accommodated in SCIMMM. This is due, in part, to the need to limit model run times associated with a complex 4 step model and to limit input data requirements for a model that is best suited to forecast trips on regional access restricted links typically controlled by the Department of Transport and Main Roads.

In 2011 Council commissioned the creation of an am peak period visum assignment model covering the whole of the council area to inform planning for local road infrastructure. This visum model has been progressively updated by Council and, in more recent times, the Department of Transport and Main Roads has assisted with model updates. This regional visum model is the source of modelled network for area, corridor and link sub models. Network coding enhancements to sub models are incorporated back into the regional model for use in future sub models.

The zoning system of the regional visum model is kept consistent with SCIMMM to assist with incorporating new SCIMMM trip matrices as they become available. Sub-models typically require smaller zones to more accurately model link and turn flows. Council applies a zone splitting process to split SCIMMM trip matrices to smaller zones. This can be lot level if required by link models but is mostly at an aggregated lot level that typically produces no more than one centroid connector per non-intersection node. The splitting process does not change the trip generation of each SCIMMM zone. It apportions the SCIMMM values to each existing or future. These values are then aggregated to the zoning system required by the sub model.

Council's visum area models are used, where required, to:

- Help inform road network deficiencies;
- Refine options for remedial projects;
- Provide traffic data for project prioritisation.

9.0 Project Prioritisation Model

Council uses a priority model to rank trunk road projects for consideration in Council's 15 year Trunk Transport Network (Roads) in the Local Government Infrastructure Plan (LGIP). The trunk road prioritisation model generally follows the framework set out in the Australian Transport Council's National Guidelines for Transport System Management in Australia (2nd edition, December 2006). The priority model uses Council transport models to forecast changes to vehicle speeds and kilometres travelled that would result from constructing individual trunk road projects.

As a wide range of initiatives need to be assessed, it is not cost efficient to undertake detailed Benfit Cost Analysis (BCA) for each. Consequently, rapid BCA has been undertaken to prioritise the initiatives, rather than determine whether each project should proceed. Rapid BCA has been undertaken using the broad framework in Austroads Guide to Project Evaluation Data series and the Austroads Benefit Cost Analysis Manual. Rapid BCA only takes into account the main monetised benefits and costs for each initiative. Benefits were estimated from total network Vehicle Kilometres Travelled (VKT) and Vehicle Hours Travelled (VHT) to establish travel time savings to users and savings in vehicle operating costs (VOC). Greatest benefits are achieved by projects with the greatest reduction in travel time and distance. These benefits can be divided by the likely cost of the project to calculate a project ranking.

Project costs were established from construction estimates including land costs. Project concepts and estimates are contained in separate reports.

The VKT and VHT outputs from the model are converted to benefits using standard parameters adopted from Austroads Guide to Project Evaluation Part 4: Project Evaluation Data (2012). Vehicle Operating Costs (VOC's) were derived for a two hour peak model using the formula below. Traffic model coefficients used to calculate vehicle operating costs are in Table 13.

$$c = A + \frac{B}{V} + C * V + D * V^2$$

Where

$$c = \textbf{vehicle operating cost}\ (\textbf{cents/km})$$
$$A, B, C, D = \textbf{model coefficents}\ (\textbf{Austroads Table 6.4})$$
$$V = \textbf{average link speed in km/h}$$

Table 13 - Model coefficients (Austroads Table 6.4)

Vehicle Type	A	B	C	D
Cars	-128.407 (-128.407)	6,404.01 (3,586.01)	2.3407 (2.3407)	-0.011343 (0.011343)
Light Commercial Vehicles (LCV)	-0.930 (-0.930)	4,431.03 (2,496.03)	0.5280 (0.5280)	-0.001436 (-0.001436)
High Commercial Vehicles (HCV) & Buses	-165.358 (-165.358)	15,907.05 (11,953.05)	3.8390 (3.8390)	-0.01642 (-0.01642)

Note: Parameter values are for VOC plus person-time cost (commercial, freight and private time), while values in brackets are estimated parameters for VOC plus freight-time-cost-only specifications. VOC plus freight time excludes all personal time (commercial and private). Freight time refers to the time value of the freight carried.

Only car coefficients for an urban environment are currently used as model outputs are in passenger car unit equivalents (PCU) which does not differentiate between light commercial vehicles (LCV) and heavy commercial vehicles (HCV). Also, VOCs are based on a two-hour peak period for all at-grade roads. While there is a section of freeway standard road (Nicklin Way), it has been ignored due to its relatively small length.

10.0 Programmed Upgrades to Council's Trunk Road Network

Council trunk road projects identified and prioritised as discussed in previous section of this report are listed in Table 14. The total value of road projects that are planned to meet the desired standards of service to 2031 is approximately $342 million including land. This is greater than Council's historical investment in trunk road projects. To ensure Council financial sustainability, this infrastructure is to be constructed over 20 years. About $16.2 million per year will be invested in Council's trunk roads for the next 10 years. This assumes land for some projects will be purchased ahead of the project and in some instances land will be purchased in the previous expenditure cohort. About $18 million per year will be invested in Council's trunk roads for the remaining 10 years.

Council will need to continually review its revenue in LGIP reserves to ensure development is occurring as forecast and that revenue is accumulating in reserves as expected. Where appropriate the LGIP and Council's capital works program will be amended to ensure an appropriate balance is achieved between collected revenue and the standards of service achieved on the transport network.

Those projects in Table 14 that have $0 value are being delivered by entities other than Council through Infrastructure Agreements. These project have been included in the table to all future trunk road upgrades in one single location.

Table 14 - LGIP Trunk Road Projects

Item ID	Primary Road Name	Secondary Road Details (from / to)	Description	Timing	Project ($1,000's)	Land ($1,000's)	Total Trunk ($1,000's)
R-06-001	Roys Road - Stage 1	Beerwah to Bruce Highway	Widening and Upgrade	2016-2021	$3,131	$500	$3,631
R-11-001A	Arundell Ave - Stage 1	Arundell St, Perwillowen & Carter Rd	Intersection Upgrade	2016-2021	$598	$0	$598
R-11-001B	Arundell Ave - Stage 2	Arundell St & Mill Lane	Intersection Upgrade	2016-2021	$884	$1,500	$2,384
R-18-003	Burke St	Blaxland St. to Pelican Waters Bvd	Two New Lanes	2016-2021	$5,000	$300	$5,300
R-20-001A	Creekside Blvd - Stage 1	Sycamore St	Intersection Upgrade	2016-2021	$271	$0	$271
R-20-001B	Creekside Blvd - Stage 2	Mimosa Cres and Lomandra Dr	Intersection Upgrade	2016-2021	$918	$0	$918
R-20-002A	Parklands Bvd Stage 1	Meridan Way to IRT Parklands	Upgrade to 4-lanes	2016-2021	$6,923	$900	$7,823
R-22-001	Sippy Downs Drive	Motorway Interchange to Siena	Upgrade to 4-lanes	2016-2021	$16,002	$500	$16,502
R-22-007	Stringybark Road	Sippy Downs Drive to A Street	Upgrade	2016-2021	$1,715	$0	$1,715
R-22-009	Claymore Rd - Stage 1	University Way to Dixon Rd	Intersection Upgrades	2016-2021	$0	$0	$0
R-23-001	Mons Rd Roundabout	Owen Ck Rd	New Roundabout	2016-2021	$2,588	$150	$2,738
R-25-004	Brisbane-Walan - Stage 3	Burnett St to Venning St	Walan Street Upgrade	2016-2021	$10,536	$3,000	$13,536
R-26-004	Plaza Parade Stage 1	Maroochy Boulevard to Maud Canal	Upgrade to 4-lanes	2016-2021	$1,642	$850	$2,492
R-26-007A	Maud St - Stage 1	Bungama St to Dalby St	Upgrade Works	2016-2021	$0	$0	$0
R-05-001	Johnston Road	Crittenden Rd to Steve Irwin Way	realign and seal	2021-2026	$2,783	$1,000	$3,783
R-19-003A	Queen St - Stage 1A	Bower St	Intersection Upgrade	2021-2026	$1,035	$150	$1,185
R-19-005	Arthur St	Arthur St / Bowman Rd.	Intersection Upgrade	2021-2026	$1,113	$0	$1,113
R-19-007	Oval Ave. and Gosling St	Gosling St. - Third Ave.	Two additional lanes	2021-2026	$15,967	$6,300	$22,267
R-19-014	Bunnings Link	Caloundra Rd to Bellvista Blvd.	Road link improvements	2021-2026	$0	$0	$0
R-19-015	Gosling Street	Gosling St, Bowman Rd & Omrah Av	Gosling Street Extension	2021-2026	$3,479	$1,100	$4,579
R-19-015A	Third Avenue Extension	Contribution to State Government	Third Av - Nicklin Way	2021-2026	$4,216	$0	$4,216
R-20-001E	Creekside Bvd	Saffron Drive	Intersection Upgrade	2021-2026	$3,479	$50	$3,529
R-20-005	Bellvista Blvd.	Caloundra Rd. to East-west Road	Upgrade to 4 lanes	2021-2026	$0	$0	$0
R-20-006	Racecourse Rd Extension	Racecourse Rd to Caloundra South	Caloundra South	2021-2026	$0	$0	$0
R-22-006	Power Road - Stage 1	Goshawk Boulevard to Dixon Road	Widening & Intersections	2021-2026	$3,275	$250	$3,525
R-22-012	Sippy Downs Drive	Claymore Road	Dual right turns into Claymore Rd	2021-2026	$696	$0	$696
R-22-015	Pignata Road Link	Pignata Road to Palmview Link	New link from Palmview – Condition of Palmview	2021-2026	$0	$0	$0
R-24-001	Sunshine Cove Way	Wises Road	Sunshine Cove Way extension to Wises Road (Development Condition)	2021-2026	$0	$0	$0
R-25-005A	Brisbane-Walan - Stage 1	Mayes Canal - Walan Street	Upgrade to 4 lanes including Mayes Canal Bridge	2021-2026	$11,549	$11,000	$22,549
R-25-005B	Brisbane-Walan - Stage 2	Tuckers Creek - Mayes Canal	Upgrade to 4-lanes	2021-2026	$7,027	$7,000	$14,027
R-25-006	River Esplanade	Hancock Street	Intersection Upgrade	2021-2026	$669	$0	$669
R-26-002	Sugar Road	Wises Road	Intersection Upgrade	2021-2026	$5,954	$0	$5,954
R-26-005	Plaza Parade - Stage 2	Maud Canal to Aerodrome Rd	Upgrade to 4-lanes	2021-2026	$2,992	$500	$3,492
R-26-010	Maud Street - Stage 2	Maud St, Dalton Dr & Sugar Rd	Intersection Upgrade	2021-2026	$1,392	$0	$1,392
R-26-015	Maroochy Boulevard	Dalton Drive	Intersection Upgrade	2021-2026	$1,113	$0	$1,113
R-26-016	Primary School Court	Primary School Crt to Pikki Street	New link	2021-2026	$417	$1,000	$1,417
R-26-017	Dalton Drive	First Avenue extension	Signalise intersection	2021-2026	$0	$0	$0
R-00-001	University Way	Springhill & Scholars Drive	Intersection Upgrade	2026-2031	$0	$0	$0

R-11-002A	Windsor Road	Missing Link	Missing Link	2026-2031	$2,904	$0	$2,904
R-18-001A	Baldwin Street - Stage 1	Bowman Road & North Street	Intersection Upgrade	2026-2031	$591	$0	$591
R-19-015B	Industrial Av Extension	Missing Link	Industrial Av - Sugarbag Rd	2026-2031	$6,958	$0	$6,958
R-20-002B	Parklands Bvd Stage 2	IRT Parklands to Saffron Drive	Widen to four traffic lanes	2026-2031	$6,534	$10	$6,544
R-22-004	Sippy Downs Drive	Stringybark Rd to Power Rd	Upgrade from 3 to 4 lanes	2026-2031	$2,998	$0	$2,998
R-22-005	Power Road - Stage 2	Sippy Downs Dr to Goshawk Bvd	New Overpass	2026-2031	$13,068	$1,000	$14,068
R-22-008	Goshawk Blvd Extension	Stringybark Road to Power Road	new link	2026-2031	$4,116	$0	$4,116
R-22-010	Meads Rd	Rainforest Sanctuary Dr to Meads Rd	Missing Link	2026-2031	$3,479	$50	$3,529
R-22-011	University Way	Chancellor Village Bvd	Extend Right Turn Bay	2026-2031	$0	$0	$0
R-22-013	Southern Road Link	Palmview to Caloundra Rd	New link from Palmview to Caloundra Rd - Palmview IA	2026-2031	$0	$0	$0
R-26-001	Maroochy CD Road	Sugar Rd. to Dalton Dr	New Road Link	2026-2031	$13,794	$8,700	$22,494
R-26-007B	Maud Street - Stage 4	Dalby Street to Bungama St	Upgrade to 4-Lane	2026-2031	$6,958	$6,000	$12,958
R-26-007C	Maud Street - Stage 5	Link upgrades & Capacity improvements (4 Lane Upgrade)	Dalton Drive - Dalby Street	2026-2031	$9,741	$4,000	$13,741
R-26-008	Sugar Road	Maud St. to Wises Rd.	Intersection Upgrades	2026-2031	$2,783	$2,000	$4,783
R-26-011	Maud Street - Stage 3	Maud Street & Comstar Avenue	Intersection Upgrade	2026-2031	$3,130	$1,200	$4,330
R-02-005	Maleny Bridge	Obi Obi Creek Crossing	Obi Ln to Obi Ln South Connection	2031-2036	$8,349	$2,000	$10,349
R-11-001C	Arundell Avenue - Stage 3	Link upgrades & Capacity improvements	Intersection Upgrades	2031-2036	$21,318	$2,500	$23,818
R-18-001B	Baldwin Street - Stage 2	Bowman Road & North Street	Upgrade to 4-lanes	2031-2036	$2,783	$2,000	$4,783
R-18-006A	Pelican Waters Blvd	Caloundra Road to Burke Street	Duplication	2031-2036	$7,278	$0	$7,278
R-19-001	Nicklin Way	Ramps to Queen St. and Sugarbag Rd	Single lane ramps	2031-2036	$11,828	$100	$11,928
R-19-002	Queen St - Stage 3	Nicklin Way (off ramp) to Ulm St.	Add two traffic lanes	2031-2036	$7,260	$250	$7,510
R-19-003C	Queen Street - Stage 2	Ulm Street	Intersection Upgrade	2031-2036	$1,238	$0	$1,238
R-19-004	Ulm Street Stage 1	Queen St - Bowman Rd Connection	New Link	2031-2036	$4,870	$3,000	$7,870
R-19-006	West Tce.	Bowman Rd to Oval Ave	Two additional lanes	2031-2036	$2,226	$0	$2,226
R-20-001C	Creekside Blvd - Stage 3	Sycamore St to Currimundi Creek	Widen to four traffic lanes	2031-2036	$1,670	$1,700	$3,370
R-20-001D	Creekside Blvd - Stage 4	Currimundi Creek Bridge	Bridge Duplication	2031-2036	$4,522	$0	$4,522
R-22-014	Springhill Drive Link	Palmview to Springhill Dr	New link from Palmview to Sprinhill Dr - Palmview IA	2031-2036	$0	$0	$0
R-28-001	South Coolum Road Link	South Coolum Rd. - Suncoast Beach Dr.	Missing Link	2031-2036	$28,985	$0	$28,985
				TOTALS:	**$296,745**	**$70,560**	**$367,305**

11.0 Conclusion

Transport network planning and analysis for the Sunshine Coast has been completed in accordance with the Sustainable Planning Act and the associated statutory guidelines.

SCIMMMv2.13 has been used to forecast demand and to identify parts of the network that may require remedial works to meet the desired standards of service nominated in this report. Where appropriate, remedial projects were refined with more detailed local area models and micro simulation.

The total value of road projects that are planned to meet the desired standards of service to 2031 is approximately $367 million including land. This is proposed to be delivered over 20 years. About $20 million per year will be invested in Council's trunk roads for the remaining 15 years. This assumes land for some projects will be purchased ahead of the project and in some instances land will be purchased in the previous expenditure cohort.

Council will continually review its revenue in LGIP reserves and expenditures. Where appropriate the LGIP and Council's capital works program will be amended to ensure an appropriate balance is achieved between collected revenue and the standards of service achieved on the transport network.

12.0 Glossary of Key Terms and Abbreviations

12.1 Abbreviations and Acronyms

Table 15 - Explanation of Abbreviations / Acronyms

Acronym	Explanation
CCD	Census Collector District – the smallest area for which census data is reported.
CPI	Consumer Price Index
CV	Commercial Vehicle – when used as a Trip Purpose includes CVM and CVH
CVH	Commercial Vehicles – Heavy (A CV Trip Purpose) – All trips made by heavy commercial vehicles
CVM	Commercial Vehicles – Medium (A CV Trip Purpose) – All trips made by medium sized commercial vehicles
GFA	Gross Floor Area - The floor area of space on all floors measured from the exterior faces of exterior walls. "Gross floor area" does not include covered walkways, open roofed-over areas, exterior terraces or steps, roof overhangs, parking garages.
GST	Goods and Services Tax
HB	Home Based (A grouping or Trip Purposes) - includes HBW, HBE, HBS, HBO
HBE	Home Based Education (A HB Trip Purpose) – Trips where the primary purpose is educational, and either the origin or the destination is the home.
HBO	Home Based Other (A HB Trip Purpose) – Trips where the primary purpose is not work, education or shopping related, and either the origin or the destination is the home. This can include recreation, personal business, dropping someone somewhere etc.
HBS	Home Based Shopping (A HB Trip Purpose) – Trips where the primary purpose is for shopping, and either the origin or the destination is the home.
HBW	Home Based Work (A HB Trip Purpose) – Trips where the primary purpose is work related and either the origin or destination is home.
IPA	Integrated Planning Act 1997
LGIP	Local Government Infrastructure Plan
NHB	Non Home Based (A grouping of Trip Purposes) – includes WBW,WBO, SBO,OBO
OBO	Other Based Other (A NHB Trip Purpose) – All other trips where neither the origin nor destination is the home, the workplace or a shopping location.
OESR	Office of Economic and Statistical Research
PIFU	The Planning Information and Forecasting Unit (a unit in the Queensland Department of Local Government and Planning). Provides population forecasts.
QGSO	Queensland Government Statistical Office
RBCI	ABS Road and Bridge Construction Index
SBO	Shopping Based Other (A NHB Trip Purpose) – Trips to or from a shopping location that do not involve either the home or the workplace.

Acronym	Explanation
SOW	Schedule of Works model created by the State Government and provide to Council to assist with preparation of the LGIP.
SPA	Sustainable Planning Act
VPD	Vehicles per Day – A measure of the traffic on a road
VPH	Vehicles per Hour – A measure of the traffic on a road
WBO	Work Based Other (A NHB Trip Purpose) – Trips where the primary purpose is not work related, but either the origin or the destination is the workplace (with neither end at the home)
WBW	Work Based Work (A NHB Trip Purpose) – Trips where the primary purpose is work related, and either the origin or the destination is the workplace (with neither end at the home)

12.2 Key Terms

Table 16 - Explanation of Key Terms

Key Term	Explanation
Interzonal trip	A trip made from a zone to another, different zone.
Intrazonal trip	A trip made entirely within a zone. Due to the fact that all trips are assumed to start and end at zone centroids, intrazonal trips will generally cause no traffic on any transport model links. The model treats these trips as though they start and end at the same point.
Traffic Zone	The smallest spatial area that is analysed in a transport model.
Vehicle Trip	A single trip of a vehicle from a particular origin to a particular destination for a particular purpose. A single journey may have more than one trip if the purpose changes. For example, if I drive to work but drop by child at school on the way, then I have made two trips, one from Home to the School and one from the School to Work. These are each one-way trips. Presumably I will also return home from work and make one (or more) trips.
Vehicle Trip End	Each Vehicle Trip (see above) has two trip ends – one at the origin and one at the destination.
Zone Centroid	For the purposes of modelling, all of the trips that start or end in a zone are assumed to start or end at a single point – the zone centroid.

13.0 References

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SCRC (2014) “Sunshine Coast Planning Scheme 9.4.8 Transport and parking code”, www.sunshinecoast.qld.gov.au, Updated 15 August 2015

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Queensland Department of Main Roads (2000) “Road Planning and Design Manual – November 2000”, Queensland Government, Brisbane

Queensland Government (2009) “Sustainable Planning Act 2009”, Queensland Government, Brisbane

Appendix A - Jobs Containment 2016

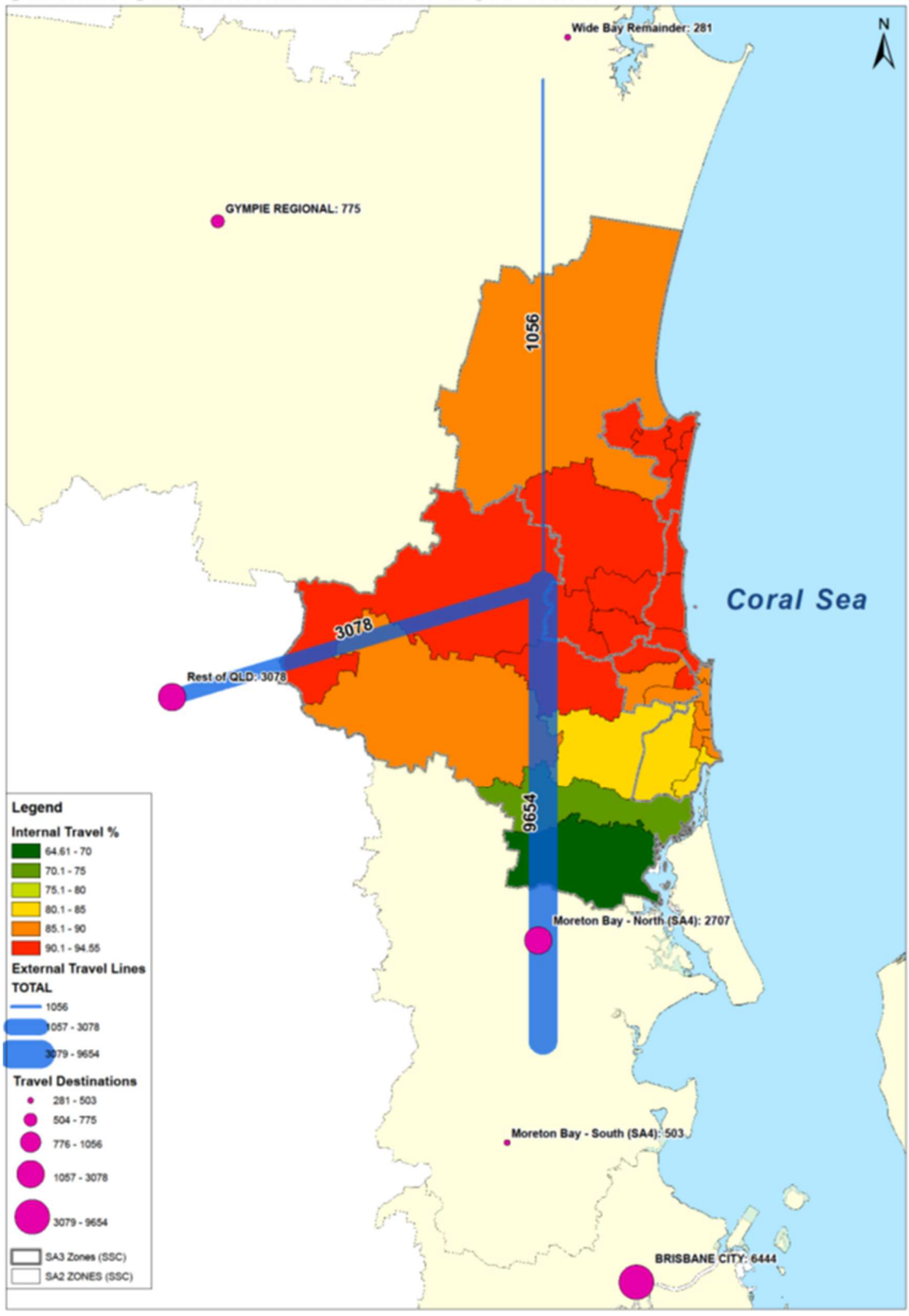

Figure A**Error! No text of specified style in document.**1 - Jobs Containment 2016

Appendix B – Modelled Road networks 2021 to 2031

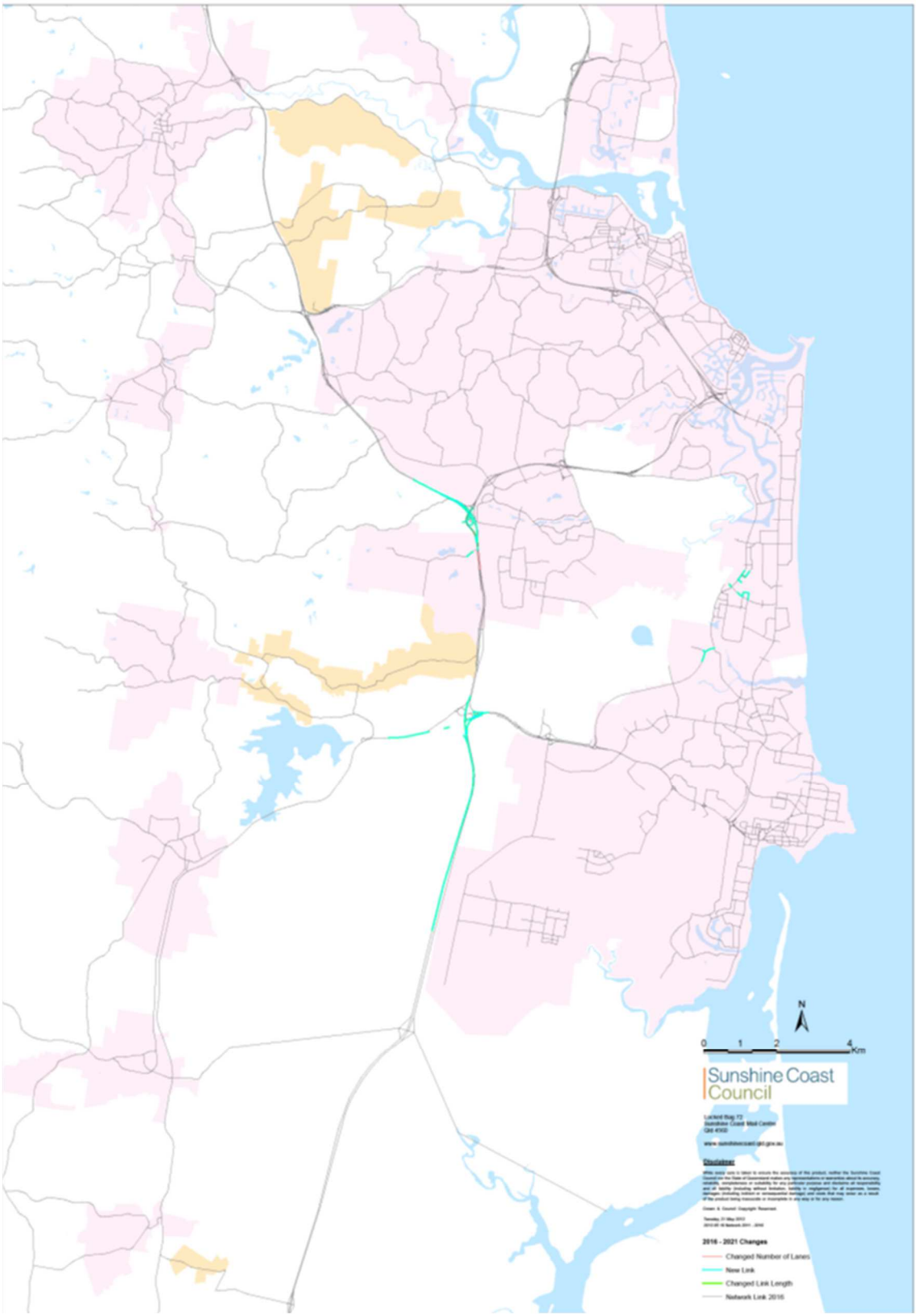

Figure B1 - 2021 Transport Network

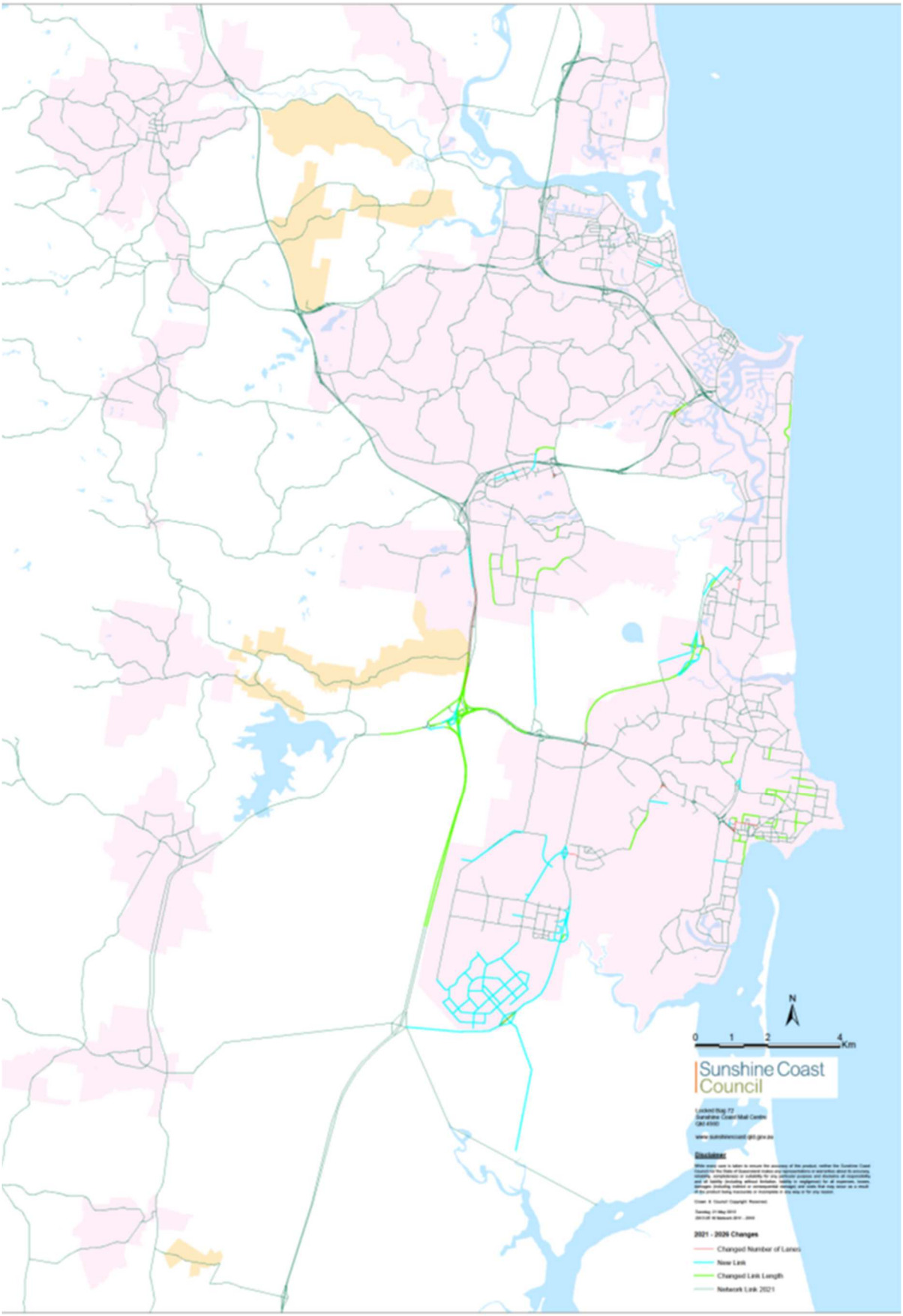

Figure B2 - 2026 Network

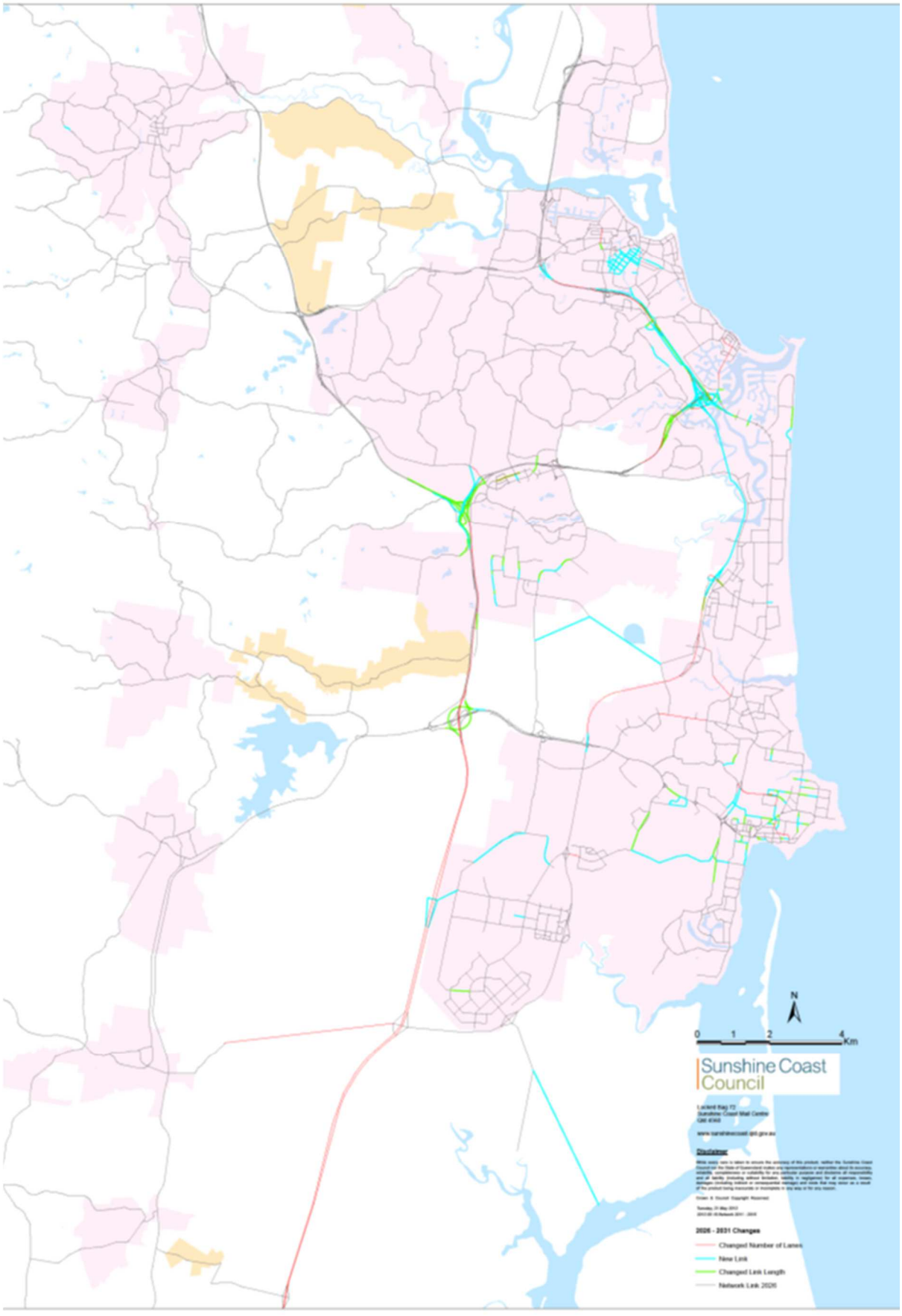

Figure B3 - 2031 Network

Appendix C - Worksheets for Road Cost Estimates

Unit rate to construct Major Arterial - 6 Lane

Item No.	Comment	Units	Quantity	Rate	Total
	Major Arterial (including lighting and basic earthworks) - 6 lane	m	5000.0		
	Parameters				
	No. Lanes		6.0		
	Formation width, m		40.0		
	Lane width, m		3.5		
	Outer sealed shoulder width, m		3.0		
	Inner sealed shoulder width, m		0.5		
	Median width, m		4.0		
	Surface depth, mm		75.0		
	Pavement depth, mm		750.0		
	Assumed CBR		5.0		
	Assumed average cut/fill, m		1.0		
	Preparation and bulk earthworks				
	Volume of excavated soil, m^3		200000.0		
1.2	Formation including vegetation clearing, bulk cut and fill, trimming to grade and compaction of the sub-base	m3	200000.0	28.1	$5,629,265
	Pavement construction				
	Pavement total width		37.0		
2.1	Sub-base	m3	83250.0	90.0	$7,493,869
2.2	Base	m3	55500.0	104.1	$5,779,425
	Surface				
3.1	AC Surface	m3	10500.0	548.5	$5,758,761
	Signage and markings				
4.1	Markings	LS	1.0	154097.6	$154,098
4.2	RRPMs	LS	1.0	86089.2	$86,089
4.3	General regulatory signs	LS	1.0	1797.8	$1,798
4.4	Map signs	LS	1.0	15409.8	$15,410
	Road drainage				
6.1	Kerb and channel	m	20000.0	43.8	$876,750
6.2	Gully pits including lintel and stormwater lead but excluding stormwater pipe.	No.	83.0	6169.8	$512,097
	Lighting				
7.1	Street lighting	No.	167.0	6027.5	$1,006,598
	Topsoiling/grassing Includes reinstatement of grassed areas but does not include full landscaping				
8.1	Topsoil	m3	150.0	56.2	$8,437
8.2	Hydroseeding	Ha	1.2	3287.4	$3,945
	Unit rate to construct Major Arterial - 6 Lane, $/5,000m				$27,326,541
	Unit rate to construct Major Arterial - 6 Lane, $/m				$5,465

Unit rate to construct Divided Arterial - 2 Lane

Item No.	Comment	Unit	Quantity	Rate	Total
	Divided Arterial (including lighting and basic earthworks) - 2 lane	m	5000.0		
	Parameters				
	No. Lanes		2.0		
	Formation width, m		30.0		
	Lane width, m		3.5		
	Outer sealed shoulder width, m		3.0		
	Inner sealed shoulder width, m		0.5		
	Median width, m		4.0		
	Surface depth, mm		75.0		
	Pavement depth, mm		600.0		
	Assumed CBR		5.0		
	Assumed average cut/fill, m		1.0		
	Preparation and bulk earthworks				
	Volume of excavated soil, m^3		150000.0		
1.2	Formation including vegetation clearing, bulk cut and fill, trimming to grade and compaction of the sub-base	m3	150000.0	28.1	$4,221,949
	Pavement construction				
	Pavement total width		21.2		
		m3	31800.0	90.0	$2,862,523
2.1	Sub-base				
		m3	31800.0	104.1	$3,311,454
2.2	Base				
	Surface				
3.1	AC Surface	m3	5250.0	548.5	$2,879,381
	Signage and markings				
4.1	Markings	LS	1.0	77048.8	$77,049
4.2	RRPMs	LS	1.0	25272.0	$25,272
4.3	General regulatory signs	LS	1.0	35956.1	$35,956
4.4	Map signs	LS	1.0	5136.6	$5,137
	Road drainage				
6.1	Kerb and channel	m	19520.0	43.8	$855,708
6.2	Gully pits including lintel and stormwater lead but excluding stormwater pipe.	No.	83.0	6169.8	$512,097
	Lighting				
7.1	Street lighting	No.	167.0	6027.5	$1,006,598
	Topsoiling/grassing				
	Includes reinstatement of grassed areas but does not include full landscaping				
8.1	Topsoil	m3	440.0	56.2	$24,748
8.2	Hydroseeding	Ha	3.5	3287.4	$11,572
	Unit rate to construct Divided Arterial - 2 Lane, $/5,000m				$15,829,442
	Unit rate to construct Divided Arterial - 2 Lane, $/m				$3,166

Unit rate to construct Divided Arterial - 4 Lane

Item No.	Comment	Unit	Quantity	Rate	Total
	Divided Arterial (including lighting and basic earthworks) - 4 lane	m	5000.0		
	Parameters				
	No. Lanes		4.0		
	Formation width, m		40.0		
	Lane width, m		3.5		
	Outer sealed shoulder width, m		3.0		
	Inner sealed shoulder width, m		0.5		
	Median width, m		4.0		
	Surface depth, mm		75.0		
	Pavement depth, mm		600.0		
	Assumed CBR		5.0		
	Assumed average cut/fill, m		1.0		
	Preparation and bulk earthworks				
	Volume of excavated soil, m^3		200000.0		
1.2	Formation including vegetation clearing, bulk cut and fill, trimming to grade and compaction of the sub-base	m3	200000.0	28.1	$5,629,265
	Pavement construction				
	Pavement total width		28.2		
2.1	Sub-base	m3	42300.0	90.0	$3,807,695
2.2	Base	m3	42300.0	104.1	$4,404,859
	Surface				
3.1	AC Surface	m3	7875.0	548.5	$4,319,071
	Signage and markings				
4.1	Markings	LS	1.0	154097.6	$154,098
4.2	RRPMs	LS	1.0	50544.0	$50,544
4.3	General regulatory signs	LS	1.0	35956.1	$35,956
4.4	Map signs	LS	1.0	5136.6	$5,137
	Road drainage				
6.1	Kerb and channel	m	19520.0	43.8	$855,708
6.2	Gully pits including lintel and stormwater lead but excluding stormwater pipe.	No.	83.0	6169.8	$512,097
	Lighting				
7.1	Street lighting	No.	167.0	6027.5	$1,006,598
	Topsoiling/grassing				
	Includes reinstatement of grassed areas but does not include full landscaping				
8.1	Topsoil	m3	590.0	56.2	$33,185
8.2	Hydroseeding	Ha	4.7	3287.4	$15,517
	Unit rate to construct Divided Arterial - 4 Lane, $/5,000m				$20,829,729
	Unit rate to construct Divided Arterial - 4 Lane, $/m				$4,166

Unit rate to construct Arterial - 2 Lane

Item No.	Comment	Unit	Quantity	Rate	Total
	Arterial (including lighting and basic earthworks) - 2 lane	m	5000.0		
	Assume painted median strip only				
	Parameters				
	No. Lanes		2.0		
	Formation width, m		30.0		
	Lane width, m		3.5		
	Outer sealed shoulder width, m		3.0		
	Inner sealed shoulder width, m		0.0		
	Median width, m		3.0		
	Surface depth, mm		75.0		
	Pavement depth, mm		600.0		
	Assumed CBR		5.0		
	Assumed average cut/fill, m		1.0		
	Preparation and bulk earthworks				
	Volume of excavated soil, m^3		150000.0		
1.2	Formation including vegetation clearing, bulk cut and fill, trimming to grade and compaction of the sub-base	m3	150000.0	28.1	$4,221,949
	Pavement construction				
	Pavement total width		22.6		
2.1	Sub-base	m3	33900.0	90.0	$3,051,557
2.2	Base	m3	33900.0	104.1	$3,530,135
	Surface				
3.1	AC Surface	m3	4875.0	548.5	$2,673,710
	Signage and markings				
4.1	Markings	LS	1.0	87322.0	$87,322
4.2	RRPMs	LS	1.0	25272.0	$25,272
4.3	General regulatory signs	LS	1.0	23970.7	$23,971
4.4	Map signs	LS	1.0	5136.6	$5,137
	Road drainage				
6.1	Kerb and channel	m	9760.0	43.8	$427,854
6.2	Gully pits including lintel and stormwater lead but excluding stormwater pipe.	No.	83.0	6169.8	$512,097
	Lighting				
7.1	Street lighting	No.	167.0	6027.5	$1,006,598
	Topsoiling/grassing				
	Includes reinstatement of grassed areas but does not include full landscaping				
8.1	Topsoil	m3	2380.0	56.2	$133,865
8.2	Hydroseeding/grassing	m2	23800.0	3.3	$78,240
	Unit rate to construct Arterial - 2 Lane, $/5,000m				$15,777,707
	Unit rate to construct Arterial - 2 Lane, $/m				$3,156

Unit rate to construct Arterial - 4 Lane

Item No.	Comment	Unit	Quantity	Rate	Total
	Arterial (including lighting and basic earthworks) - 4 lane	m	5000.0		
	Assume painted median strip only				
	Parameters				
	No. Lanes		4.0		
	Formation width, m		30.0		
	Lane width, m		3.5		
	Outer sealed shoulder width, m		3.0		
	Inner sealed shoulder width, m		0.0		
	Median width, m		3.0		
	Surface depth, mm		75.0		
	Pavement depth, mm		600.0		
	Assumed CBR		5.0		
	Assumed average cut/fill, m		1.0		
	Preparation and bulk earthworks				
	Volume of excavated soil, m^3		150000.0		
1.2	Formation including vegetation clearing, bulk cut and fill, trimming to grade and compaction of the sub-base	m3	150000.0	28.1	$4,221,949
	Pavement construction				
	Pavement total width		29.6		
2.1	Sub-base	m3	44400.0	90.0	$3,996,730
2.2	Base	m3	44400.0	104.1	$4,623,540
	Surface				
3.1	AC Surface	m3	7500.0	548.5	$4,113,401
	Signage and markings				
4.1	Markings	LS	1.0	138687.8	$138,688
4.2	RRPMs	LS	1.0	50544.0	$50,544
4.3	General regulatory signs	LS	1.0	23970.7	$23,971
4.4	Map signs	LS	1.0	5136.6	$5,137
	Road drainage				
6.1	Kerb and channel	m	9760.0	43.8	$427,854
6.2	Gully pits including lintel and stormwater lead but excluding stormwater pipe.	No.	83.0	6169.8	$512,097
	Lighting				
7.1	Street lighting	No.	167.0	6027.5	$1,006,598
	Topsoiling/grassing				
	Includes reinstatement of grassed areas but does not include full landscaping				
8.1	Topsoil	m3	2380.0	56.2	$133,865
8.2	Hydroseeding/grassing	m2	23800.0	3.3	$78,240
	Unit rate to construct Arterial - 4 Lane, $/5,000m				$19,332,612
	Unit rate to construct Arterial - 4 Lane, $/m				$3,867

Unit rate to construct Divided Sub-Arterial - 2 Lane

Item No.	Comment	Unit	Quantity	Rate	Total
	Divided Sub-Arterial (including lighting and basic earthworks) - 2 lane	m	5000.0		
	Parameters				
	No. Lanes		2.0		
	Formation width, m		28.0		
	Lane width, m		3.5		
	Outer sealed shoulder width, m		3.0		
	Inner sealed shoulder width, m		0.5		
	Median width, m		4.0		
	Surface depth, mm		50.0		
	Pavement depth, mm		550.0		
	Assumed CBR		5.0		
	Assumed average cut/fill, m		1.0		
	Preparation and bulk earthworks				
	Volume of excavated soil, m^3		140000.0		
1.2	Formation including vegetation clearing, bulk cut and fill, trimming to grade and compaction of the sub-base	m3	140000.0	28.1	$3,940,485
	Pavement construction				
	Pavement total width		20.6		
2.1	Sub-base	m3	25750.0	90.0	$2,317,923
2.2	Base	m3	30900.0	104.1	$3,217,734
	Surface				
3.1	AC Surface	m3	3500.0	548.5	$1,919,587
	Signage and markings				
4.1	Markings	LS	1.0	77048.8	$77,049
4.2	RRPMs	LS	1.0	25272.0	$25,272
4.3	General regulatory signs	LS	1.0	35956.1	$35,956
4.4	Map signs	LS	1.0	5136.6	$5,137
	Road drainage				
6.1	Kerb and channel	m	19520.0	43.8	$855,708
6.2	Gully pits including lintel and stormwater lead but excluding stormwater pipe.	No.	83.0	6169.8	$512,097
	Lighting				
7.1	Street lighting	No.	167.0	6027.5	$1,006,598
	Topsoiling/grassing				
	Includes reinstatement of grassed areas but does not include full landscaping				
8.1	Topsoil	m3	2856.0	56.2	$160,637
8.2	Hydroseeding/grassing	m2	28560.0	3.3	$93,889
	Unit rate to construct Divided Sub-Arterial - 2 Lane, $/5,000m				$14,168,072
	Unit rate to construct Divided Sub-Arterial - 2 Lane, $/m				$2,834

Unit rate to construct Divided Sub-Arterial - 4 Lane

Item No.	Comment	Unit	Quantity	Rate	Total
	Divided Sub-Arterial (including lighting and basic earthworks) - 4 lane	m	5000.0		
	Parameters				
	No. Lanes		4.0		
	Formation width, m		35.0		
	Lane width, m		3.5		
	Outer sealed shoulder width, m		3.0		
	Inner sealed shoulder width, m		0.5		
	Median width, m		4.0		
	Surface depth, mm		50.0		
	Pavement depth, mm		550.0		
	Assumed CBR		5.0		
	Assumed average cut/fill, m		1.0		
	Preparation and bulk earthworks				
	Volume of excavated soil, m^3		175000.0		
1.2	Formation including vegetation clearing, bulk cut and fill, trimming to grade and compaction of the sub-base	m3	175000.0	28.1	$4,925,607
	Pavement construction				
	Pavement total width		27.6		
2.1	Sub-base	m3	34500.0	90.0	$3,105,567
2.2	Base	m3	41400.0	104.1	$4,311,139
	Surface				
3.1	AC Surface	m3	5250.0	548.5	$2,879,381
	Signage and markings				
4.1	Markings	LS	1.0	154097.6	$154,098
4.2	RRPMs	LS	1.0	50544.0	$50,544
4.3	General regulatory signs	LS	1.0	35956.1	$35,956
4.4	Map signs	LS	1.0	5136.6	$5,137
	Road drainage				
6.1	Kerb and channel	m	19520.0	43.8	$855,708
6.2	Gully pits including lintel and stormwater lead but excluding stormwater pipe.	No.	83.0	6169.8	$512,097
	Lighting				
7.1	Street lighting	No.	167.0	6027.5	$1,006,598
	Topsoiling/grassing				
	Includes reinstatement of grassed areas but does not include full landscaping				
8.1	Topsoil	m3	2856.0	56.2	$160,637
8.2	Hydroseeding/grassing	m2	28560.0	3.3	$93,889
	Unit rate to construct Divided Sub-Arterial - 4 Lane, $/5,000m				$18,096,356
	Unit rate to construct Divided Sub-Arterial - 4 Lane, $/m				$3,619

Unit rate to construct Sub-Arterial - 2 Lane

Item No.	Comment	Unit	Quantity	Rate	Total
	Arterial (including lighting and basic earthworks) - 2 lane	m	5000.0		
	Assume painted median strip only				
	Parameters				
	No. Lanes		2.0		
	Formation width, m		26.0		
	Lane width, m		3.5		
	Outer sealed shoulder width, m		3.0		
	Inner sealed shoulder width, m		0.0		
	Median width, m		3.0		
	Surface depth, mm		50.0		
	Pavement depth, mm		550.0		
	Assumed CBR		5.0		
	Assumed average cut/fill, m		1.0		
	Preparation and bulk earthworks				
	Volume of excavated soil, m^3		130000.0		
1.2	Formation including vegetation clearing, bulk cut and fill, trimming to grade and compaction of the sub-base	m3	130000.0	28.1	$3,659,022
	Pavement construction				
	Pavement total width		22.3		
2.1	Sub-base	m3	27875.0	90.0	$2,509,208
2.2	Base	m3	33450.0	104.1	$3,483,275
	Surface				
3.1	AC Surface	m3	3250.0	548.5	$1,782,474
	Signage and markings				
4.1	Markings	LS	1.0	87322.0	$87,322
4.2	RRPMs	LS	1.0	25272.0	$25,272
4.3	General regulatory signs	LS	1.0	23970.7	$23,971
4.4	Map signs	LS	1.0	5136.6	$5,137
	Road drainage				
6.1	Kerb and channel	m	9760.0	43.8	$427,854
6.2	Gully pits including lintel and stormwater lead but excluding stormwater pipe.	No.	83.0	6169.8	$512,097
	Lighting				
7.1	Street lighting	No.	167.0	6027.5	$1,006,598
	Topsoiling/grassing				
	Includes reinstatement of grassed areas but does not include full landscaping				
8.1	Topsoil	m3	2380.0	56.2	$133,865
8.2	Hydroseeding/grassing	m2	23800.0	3.3	$78,240
	Unit rate to construct Sub-Arterial - 2 Lane, $/5,000m				$13,734,334
	Unit rate to construct Sub-Arterial - 2 Lane, $/m				$2,747

Unit rate to construct Sub-Arterial - 4 Lane

Item No.	Comment	Unit	Quantity	Rate	Total
	Arterial (including lighting and basic earthworks) - 4 lane	m	5000.0		
	Assume painted median strip only				
	Parameters				
	No. Lanes		4.0		
	Formation width, m		33.0		
	Lane width, m		3.5		
	Outer sealed shoulder width, m		3.0		
	Inner sealed shoulder width, m		0.0		
	Median width, m		3.0		
	Surface depth, mm		50.0		
	Pavement depth, mm		550.0		
	Assumed CBR		5.0		
	Assumed average cut/fill, m		1.0		
	Preparation and bulk earthworks				
	Volume of excavated soil, m^3		165000.0		
1.2	Formation including vegetation clearing, bulk cut and fill, trimming to grade and compaction of the sub-base	m3	165000.0	28.1	$4,644,144
	Pavement construction				
	Pavement total width		29.3		
2.1	Sub-base	m3	36625.0	90.0	$3,296,852
2.2	Base	m3	43950.0	104.1	$4,576,680
	Surface				
3.1	AC Surface	m3	5000.0	548.5	$2,742,267
	Signage and markings				
4.1	Markings	LS	1.0	138687.8	$138,688
4.2	RRPMs	LS	1.0	50544.0	$50,544
4.3	General regulatory signs	LS	1.0	23970.7	$23,971
4.4	Map signs	LS	1.0	5136.6	$5,137
	Road drainage				
6.1	Kerb and channel	m	9760.0	43.8	$427,854
6.2	Gully pits including lintel and stormwater lead but excluding stormwater pipe.	No.	83.0	6169.8	$512,097
	Lighting				
7.1	Street lighting	No.	167.0	6027.5	$1,006,598
	Topsoiling/grassing				
	Includes reinstatement of grassed areas but does not include full landscaping				
8.1	Topsoil	m3	2380.0	56.2	$133,865
8.2	Hydroseeding/grassing	m2	23800.0	3.3	$78,240
	Unit rate to construct Sub-Arterial - 4 Lane, $/5,000m				$17,636,936
	Unit rate to construct Sub-Arterial - 4 Lane, $/m				$3,527

Unit rate to construct Divided District Collector

Item No.	Comment	Unit	Quantity	Rate	Total
	Divided district collector (including lighting and basic earthworks) Includes allowance for on-road parking. Excludes footpaths.	m	5000.0		
	Parameters				
	No. Lanes		2.0		
	Formation width, m		24.0		
	Lane width, m		3.5		
	Outer sealed shoulder/parking width, m		2.9		
	Inner sealed shoulder width, m		0.5		
	Median width, m		1.5		
	Surface depth, mm		50.0		
	Pavement depth, mm		450.0		
	Assumed CBR		5.0		
	Assumed average cut/fill, m		1.0		
	Preparation and bulk earthworks				
	Volume of excavated soil, m^3		120000.0		
1.2	Formation including vegetation clearing, bulk cut and fill, trimming to grade and compaction of the sub-base	m3	120000.0	28.1	$3,377,559
	Pavement construction				
	Pavement total width		19.2		
2.1	Sub-base	m3	14400.0	90.0	$1,296,237
2.2	Base	m3	28800.0	104.1	$2,999,053
	Surface				
3.1	AC Surface	m3	3450.0	548.5	$1,892,164
	Signage and markings				
4.1	Markings	LS	1.0	38524.4	$38,524
4.2	RRPMs	LS	1.0	12636.0	$12,636
4.3	General regulatory signs	LS	1.0	23970.7	$23,971
	Road drainage				
5.1	Kerb and channel	m	19520.0	42.9	$837,774
5.2	Gully pits including lintel and stormwater lead but excluding stormwater pipe.	No.	83.0	6169.8	$512,097
	Median				
6.1	Median island infill	m2	4392.0	109.4	$480,653
	Lighting				
7.1	Street lighting	No.	83.0	6027.5	$500,285
	Topsoiling/grassing Includes reinstatement of grassed areas but does not include full landscaping				
8.1	Topsoil	m3	2023.0	56.2	$113,785
8.2	Hydroseeding/grassing	m2	40460.0	3.3	$133,009
	Unit rate to construct Divided District Collector, $/5,000m				$12,217,747
	Unit rate to construct Divided District Collector, $/m2				$177

Unit rate to construct District Collector

Item No.	Comment	Unit	Quantity	Rate	Total
	District collector (including lighting and basic earthworks) Includes allowance for on-road parking. Excludes footpaths.	m	5000.0		
	Parameters				
	No. Lanes		2.0		
	Formation width, m		21.0		
	Lane width, m		3.5		
	Outer sealed shoulder/parking width, m		2.9		
	Inner sealed shoulder width, m		0.0		
	Median width, m		0.0		
	Surface depth, mm		50.0		
	Pavement depth, mm		450.0		
	Assumed CBR		5.0		
	Assumed average cut/fill, m		1.0		
	Preparation and bulk earthworks				
	Volume of excavated soil, m^3		105000.0		
1.2	Formation including vegetation clearing, bulk cut and fill, trimming to grade and compaction of the sub-base	m3	105000.0	28.1	$2,955,364
	Pavement construction				
	Pavement total width		15.5		
2.1	Sub-base	m3	11625.0	90.0	$1,046,441
2.2	Base	m3	23250.0	104.1	$2,421,111
	Surface				
3.1	AC Surface	m3	3200.0	548.5	$1,755,051
	Signage and markings				
4.1	Markings	LS	1.0	38524.4	$38,524
4.2	RRPMs	LS	1.0	12636.0	$12,636
4.3	General regulatory signs	LS	1.0	23970.7	$23,971
4.4	Map signs	LS	1.0	5136.6	$5,137
	Road drainage				
6.1	Kerb and channel	m	9760.0	42.9	$418,887
6.2	Gully pits including lintel and stormwater lead but excluding stormwater pipe.	No.	83.0	6169.8	$512,097
	Lighting				
7.1	Street lighting	No.	83.0	6027.5	$500,285
	Topsoiling/grassing Includes reinstatement of grassed areas but does not include full landscaping				
8.1	Topsoil	m3	1011.5	56.2	$56,892
8.2	Hydroseeding/grassing	m2	20230.0	3.3	$66,504
	Unit rate to construct District Collector, $/5,000m				$9,812,900
	Unit rate to construct District Collector, $/m2				$153

Unit Rate to Construct Single Lane Roundabout

Item No.	Comment	Unit	Quantity/Value	Rate	Total
	Replace typical Single Lane roundabout Note: Rate is for the roundabout island and construction of the road and surfacing around the circumference of the roundabout only. Does not include construction of side roads, islands on side roads or lighting. Assumes landscaped/grassed central island and no drive over sections as this is the typical configuration of most roundabouts within the region.				
	Parameters				
	Outside diameter of island, m		10.0		
	Outside diameter of paved area, m		26.0		
	Lane width, m		8.0		
	Number of lanes, No.		1.0		
	Calculations				
	Area of island, m2		78.5		
	Paved Area, m2		452.4		
	Circumference of island, m		31.4		
	Preparation and earthworks				
	Volume of excavated soil, m^3		244.3		
	Production m2/hr. - trim soil		7.5		
	Production m^3/hr. - existing surface		5.0		
1.1	Excavator	hr.	59.3	64.2	$3,809
1.2	Truck	hr.	59.3	56.3	$3,343
1.3	Labour	hr.	118.7	46.3	$5,494
	Spoil				
	Volume of spoil, m^3		232.5		
2.1	Clean fill tip fees, tonnes	tonne	418.5	9.0	$3,767
	Fill				
	Gravel fill, m3		217.1		
3.1	Supply gravel bedding, tonnes	tonne	390.9	24.0	$9,377
3.2	Trim, spread and compact	hr.	43.4	79.0	$3,431
3.3	Truck	hr.	43.4	56.3	$2,447
3.4	Plant	hr.	43.4	79.0	$3,431
3.5	Compaction	hr.	43.4	118.0	$5,125
3.6	Labour	mhr	86.9	46.3	$4,022
4.1	Lay semi mountable kerb	m	31.4	34.0	$1,067
4.2	Lay 50mm asphalt to widened sections	m3	452.4	17.0	$7,671
	Landscaping island				
5.1	Topsoil	m3	7.9	54.8	$430
5.2	Landscaping	m2	78.5	7.5	$589
5.3	Mulch	m3	7.9	55.0	$432
5.4	Truck	hr.	4.0	56.3	$225
5.5	Plant	hr.	4.0	79.0	$316
5.6	Labour	mhr	8.0	46.3	$370
	Signage and markings				
6.1	Lineal markings	Ls	1.0	700.0	$700
6.3	Signs	LS	1.0	450.0	$450
	Unit Rate to construct Single Lane roundabout, $/each				$56,500

Unit Rate to Construct 2-lane Roundabout

Item No.	Comment	Unit	Quantity/Value	Rate	Total
	Replace typical 2-lane roundabout Note: Rate is for the roundabout island and construction of the road and surfacing around the circumference of the roundabout only. Does not include construction of side roads, islands on side roads or lighting. Assumes landscaped/grassed central island and no drive over sections as this is the typical configuration of most roundabouts within the region.				
	Parameters				
	Outside diameter of island, m		20.0		
	Outside diameter of paved area, m		42.0		
	Average lane width (including clearances and offsets), m		5.5		
	Number of lanes, No.		2.0		
	Calculations				
	Area of island, m2		314.2		
	Paved Area, m2		1071.3		
	Circumference of island, m		62.8		
	Preparation and earthworks				
	Volume of excavated soil, m^3		578.5		
	Production m2/hr. - trim soil		7.5		
	Production m^3/hr. - existing surface		5.0		
1.1	Excavator	hr.	157.6	64.2	$10,117
1.2	Truck	hr.	157.6	56.3	$8,878
1.3	Labour	hr.	315.2	46.3	$14,593
	Volume of spoil, m^3		531.4		
2.1	Clean fill tip fees, tonnes	tonne	956.5	9.0	$8,608
	Fill				
	Gravel fill, m3		514.2		
3.1	Supply gravel bedding, tonnes	tonne	925.6	24.0	$22,205
3.2	Trim, spread and compact	hr.	102.8	79.0	$8,125
3.3	Truck	hr.	102.8	56.3	$5,794
3.4	Plant	hr.	102.8	79.0	$8,125
3.5	Compaction	hr.	102.8	118.0	$12,135
3.6	Labour	mhr	205.7	46.3	$9,523
	Island kerb and road surfacing				
4.1	Lay semi mountable kerb	m	62.8	34.0	$2,134
4.2	Lay 50mm asphalt to widened sections	m3	1071.3	17.0	$18,166
	Landscaping island				
5.1	Topsoil	m3	31.4	54.8	$1,720
5.2	Landscaping	m2	314.2	7.5	$2,356
5.3	Mulch	m3	31.4	55.0	$1,728
5.4	Truck	hr.	6.3	56.3	$354
5.5	Plant	hr.	6.3	79.0	$496
5.6	Labour	mhr	12.6	46.3	$582
	Signage and markings				
6.1	Lineal markings	Ls	1.0	900.0	$900
6.3	Signs	LS	1.0	450.0	$450
	Unit Rate to construct 2-lane roundabout, $/each				**$137,000**

Unit rate for intersection upgrade - 4-way Intersection (Base Cost)

Item No.	Comment	Unit	Quantity/Value	Rate	Total
	Intersections upgraded with road project (including lighting and basis earthworks) - 4-way intersection Assumes complete reconstruction of intersection, including splitter islands, medians, markings, adjacent footpaths, lighting and signage for a typical intersection layout. Allows for part replacement of existing pavement base materials. Does not allow for widening of existing carriageway, provision of additional lanes or land acquisition. The extent of work includes up to 30m of each road leg.				
	Parameters				
	Road legs, No.		4.0		
	Average number of exit lanes on right turn legs, No.		2.0		
	Width of exit lanes, m		3.0		
	Width of entry lanes, m		3.7		
	Width of medians, m		1.0		
	Variables				
	Total area of intersection to be upgraded, m2		1327.8		
	Total length of kerb to be reconstructed, m		278.8		
	Total area of island to be constructed, m2		20.0		
	Total area of footpath to be reconstructed, m2		234.8		
	Number of road signs to be replaced, No.		12.0		
	Length of lineal markings, m		463.0		
	Area of hatching, m2		110.0		
	Number of road symbols, No.		16.0		
	Area of road surface, m2		1307.8		
	Earthworks				
	Volume of excavated soil, m^3		328.7		
	Volume of excavated footpaths and island infill material, m^3		25.5		
	Volume of road surface material, m^3		65.4		
	Length of kerb to be removed, m		278.8		
	Production m3/hr. - trim soil		10.0		
	Production m^3/hr. - existing surface		5.0		
	Sawcut	m	60.0	2.8	$168
1.1	Excavator	hr.	51.0	64.2	$3,277
1.2	Truck	hr.	51.0	76.7	$3,912
1.3	Labour	hr.	102.1	46.3	$4,726
	Spoil				
	Excavated soil and base material, t		591.6		
	Existing kerb material, t		28.1		
	Existing footpaths and infill material, t		63.7		
2.1	Clean fill tip fees, tonnes	tonne	532.4	9.0	$4,792
2.2	Mixed waste tip fees, tonnes	tonne	77.5	148.5	$11,512
2.3	Clean concrete and brick tip fees, tonnes	tonne	73.4	40.0	$2,938
	Preparation and fill				
	Basecourse fill material, m3		307.4		
3.1	Supply base layer, tonnes	tonne	553.3	24.9	$13,799
3.2	Supply base material for footpaths, tonnes	tonne	42.3	24.0	$1,014
3.3	Supply sand bedding for footpaths, tonnes	tonne	16.4	22.4	$369
3.4	Trim, spread and compact	hr.	153.0	79.0	$12,087
3.5	Compaction	hr.	153.0	8.4	$1,285
3.6	Labour	mhr	306.0	46.3	$14,167
	Construct kerb				
4.1	Construct semi mountable type kerb	m	44.0	34.0	$1,495

4.2	Construct barrier type kerb and channel	m	234.8	30.6	$7,187
	Footpaths and Island Infill				
5.1	Lay footpaths	m2	234.8	40.1	$9,413
5.2	Lay infill	m2	11.3	55.4	$624
	Road surface				
6.1	Lay 50mm asphalt surface	m2	1307.8	17.0	$22,176
	Road marking				
7.1	Linemarking establishment	LS	1.0	500.0	$500
7.2	100mm wide line marking	m	463.0	2.5	$1,158
7.3	300mm wide line marking	m	16.0	7.5	$120
7.4	Hatching	m2	110.0	12.5	$1,375
7.5	Road symbols	No.	16.0	55.0	$880
	Signs including supply and installation of sockets and posts				
8.1	Install new signs including posts and sockets	No.	12.0	350.0	$4,200
	Intersection lighting				
9.1	Street lights	No.	6.0	3600.0	$21,600
	Reinstatement to adjacent areas				
10.1	Allowance for reinstatement of adjacent areas	m2	58.7	5.0	$294
	Unit rate for intersection upgrade - 4-way Intersection (Base Coast), $				$145,100

Unit Rate for Traffic Lights - 4-way intersection

Item No.	Comment	Unit	Quantity/Value	Rate	Total
	Construct traffic signals at 4-way intersection	Each	1.0		
DL001	Supply and installation of vehicle detector loops for traffic signals	No.	14.0	1296.0	$18,144
DP001	Supply and installation of conduit in existing road/footway	m	750.0	103.7	$77,760
DP002	Supply and installation of electrical pit and construct pit surround	No.	17.0	1682.2	$28,598
EC001	Supply, installation, jointing and termination of traffic signal cable	m	835.0	48.1	$40,122
EC002	Supply, installation, jointing and termination of loop detector cable	m	1780.0	19.1	$33,927
MC000	Supply and installation of mains connection including cable	No.	1.0	3278.1	$3,278
PB001	Supply and installation of pedestrian push button, audio-tactile	No.	7.0	1387.5	$9,712
SC000	Supply, installation, programming, commissioning and testing new traffic signal controller equipment and software	No.	1.0	37691.0	$37,691
SL001	Supply and installation of ground mounted traffic signal lantern, 3 aspect, 200 mm aspect diameter, and single target board	No.	9.0	1905.9	$17,153
SL002	Supply and installation of ground mounted traffic signal lantern, 3 aspect, 3 arrow aspect, 200 mm aspect diameter, and double target board	No.	5.0	2668.2	$13,341
SL003	Supply and installation of ground mounted traffic signal lantern, 4 aspect incl. 1 green arrow, 200 mm aspect diameter, and single target board	No.	1.0	2414.1	$2,414
PL000	Supply and installation of pedestrian lantern	No.	7.0	1082.5	$7,578
SP001	Supply of traffic signal post, 3.1-4.1 metres long, without hinged baseplate, including footing	No.	12.0	1799.1	$21,589
SP002	Supply and installation of mast arm with outreach arm, including footing	No.	2.0	4346.8	$8,694
	Unit Rate for Traffic Lights - 4-way intersection, $				$320,000
	Unit rate for intersection upgrade - 4-way Intersection (Base Cost), $				$145,100
	Combined Total:				$465,100

Unit rate for intersection upgrade - T Intersection (Base Cost) / Non Signalised Intersection

Item No.	Comment	Unit	Quantity/Value	Rate	Total
	Intersections upgraded with road project (including lighting and basis earthworks) - T intersection Assumes complete reconstruction of intersection, including splitter islands, medians, markings, adjacent footpaths, lighting and signage for a typical intersection layout. Allows for part replacement of existing pavement base materials. Does not allow for widening of existing carriageway, provision of additional lanes or land acquisition. The extend of work includes up to 30m of each road leg.				
	Parameters				
	Road legs, No.		3.0		
	Average number of exit lanes on right turn legs, No.		2.0		
	Width of exit lanes, m		3.0		
	Width of entry lanes, m		3.7		
	Width of medians, m		1.0		
	Variables				
	Total area of intersection to be upgraded, m2		1006.8		
	Total length of kerb to be reconstructed, m		234.7		
	Total area of island to be constructed, m2		33.0		
	Total area of footpath to be reconstructed, m2		225.7		
	Number of road signs to be replaced, No.		6.0		
	Length of lineal markings, m		348.0		
	Area of hatching, m2		78.0		
	Number of road symbols, No.		6.0		
	Area of road surface, m2		973.8		
	Earthworks				
	Volume of excavated soil, m^3		258.7		
	Volume of excavated footpaths and island infill material, m^3		25.9		
	Volume of road surface material, m^3		48.7		
	Length of kerb to be removed, m		234.7		
	Production m3/hr. - trim soil		10.0		
	Production m^3/hr. - existing surface		5.0		
	Sawcut	m	45.0	2.8	$126
1.1	Excavator	hr.	40.8	64.2	$2,618
1.2	Truck	hr.	40.8	76.7	$3,126
1.3	Labour	hr.	81.6	46.3	$3,776
	Spoil				
	Excavated soil and base material, t		465.6		
	Existing kerb material, t		23.7		
	Existing footpaths and infill material, t		64.7		
2.1	Clean fill tip fees, tonnes	tonne	419.1	9.0	$3,772
2.2	Mixed waste tip fees, tonnes	tonne	64.2	148.5	$9,538
2.3	Clean concrete and brick tip fees, tonnes	tonne	70.7	40.0	$2,827
	Preparation and fill				
	Basecourse fill material, m3		236.6		
3.1	Supply base layer, tonnes	tonne	425.8	24.9	$10,620
3.2	Supply base material for footpaths, tonnes	tonne	40.6	24.0	$975
3.3	Supply sand bedding for footpaths, tonnes	tonne	15.8	22.4	$355
3.4	Trim, spread and compact	hr.	120.6	79.0	$9,524
3.5	Compaction	hr.	120.6	8.4	$1,013

3.6	Labour	mhr	241.1	46.3	$11,164
	Construct kerb				
4.1	Construct semi mountable type kerb	m	46.6	34.0	$1,583
4.2	Construct barrier type kerb and channel	m	188.1	30.6	$5,758
	Footpaths and Island Infill				
5.1	Lay footpaths	m2	225.7	40.1	$9,049
5.2	Lay infill	m2	21.6	55.4	$1,197
	Road surface				
6.1	Lay 50mm asphalt surface	m2	973.8	17.0	$16,513
	Road marking				
7.1	Linemarking establishment	LS	1.0	500.0	$500
7.2	100mm wide line marking	m	348.0	2.5	$870
7.3	300mm wide line marking	m	8.0	7.5	$60
7.4	Hatching	m2	78.0	12.5	$975
7.5	Road symbols	No.	6.0	55.0	$330
	Signs including supply and installation of sockets and posts				
8.1	Install new signs including posts and sockets	No.	7.0	350.0	$2,450
	Intersection lighting				
9.1	Street lights	No.	4.0	3600.0	$14,400
	Reinstatement to adjacent areas				
10.1	Allowance for reinstatement of adjacent areas	m2	56.4	5.0	$282
	Unit rate for intersection upgrade - T Intersection(Base Cost) / Non Signalised Intersection , $				$113,400

Unit Rate for Traffic Lights - T-intersection

Item No.	Comment	Unit	Quantity/Value	Rate	Total
	Construct traffic signals at T-intersection	Each	1.0		
DL001	Supply and installation of vehicle detector loops for traffic signals	No.	12.0	1296.0	$15,552
DP001	Supply and installation of conduit in existing road/footway	m	675.0	103.7	$69,984
DP002	Supply and installation of electrical pit and construct pit surround	No.	15.0	1682.2	$25,233
EC001	Supply, installation, jointing and termination of traffic signal cable	m	750.0	48.1	$36,038
EC002	Supply, installation, jointing and termination of loop detector cable	m	1650.0	19.1	$31,449
MC000	Supply and installation of mains connection including cable	No.	1.0	3278.1	$3,278
PB001	Supply and installation of pedestrian push button, audio-tactile	No.	5.0	1387.5	$6,937
SC000	Supply, installation, programming, commissioning and testing new traffic signal controller equipment and software	No.	1.0	37691.0	$37,691
SL001	Supply and installation of ground mounted traffic signal lantern, 3 aspect, 200 mm aspect diameter, and single target board	No.	6.0	1905.9	$11,435
SL002	Supply and installation of ground mounted traffic signal lantern, 3 aspect, 3 arrow aspect, 200 mm aspect diameter, and double target board	No.	3.0	2668.2	$8,005
SL003	Supply and installation of ground mounted traffic signal lantern, 4 aspect incl. 1 green arrow, 200 mm aspect diameter, and single target board	No.	0.0	2414.1	$0
PL000	Supply and installation of pedestrian lantern	No.	5.0	1082.5	$5,413
SP001	Supply of traffic signal post, 3.1-4.1 metres long, without hinged baseplate, including footing	No.	9.0	1799.1	$16,192
SP002	Supply and installation of traffic signal mast arm with 5-6.5 metres outreach arm, including footing	No.	0.0	4346.8	$0
	Unit Rate for Traffic Lights - T-intersection, $				$267,200
	Unit rate for intersection upgrade - T Intersection (Base Cost), $				$113,400
	Total: T-Intersection, Signalised:				$380,600

Unit Rate to Construct Bridge Structure

Item No.	Comment	Unit	Quantity/Value	Rate	Total
	Construct single span single lane bridge 15m long x 5.2m wide	m2	78.0		
	Assume concrete bridge				
	Parameters				
	Length, metres		15.0		
	Width, metres		5.2		
	Deck thickness, metres		0.4		
	Beam depth, metres		0.0		
	Pier height (estimated average)), metres		2.0		
	Scour depth (estimated), metres		5.0		
	Spans, number		1.0		
	Excavation, Reinstatement & Roadworks				
	PROTECTIVE TREATMENTS				
3000.01	Rock protection	m3	40.0	512.5	$20,500
3000.02	Steel-wire gabion protection work (1.0m x 1.0m)	m3	0.0	363.7	$0
3000.03	Steel-wire mattress protection work, including star pickets (300mm thickness)	m2	0.0	109.1	$0
	EARTHWORKS				
	EARTHWORKS, PREPARATION				
3102.01	Bridge site preparation	m2	184.0	5.8	$1,073
3304.02	Supply and installation of geotextile to rock protection at bridge	m2	180.0	5.1	$924
	EARTHWORKS, EXCAVATION				
3201.01	Road excavation (bridge approach), all materials	m3	144.0	50.2	$7,233
3202.01	Excavation to clear waterways at bridge abutments, and dewatering	m3	52.0	123.3	$6,411
	EARTHWORKS, BACKFILL MRS11.04				
3501.02	Backfill with general backfill material to bridge abutments	m3	86.4	50.9	$4,401
	UNBOUND PAVEMENTS MRS11.05				
4103.01S	Base, unbound pavement	m3	57.6	64.4	$3,707
	ROAD FURNITURE				
	ROADSIDE STRUCTURES MRS11.14				
6161.01	Steel beam guardrail, w beam	m	104.0	209.3	$21,770
6175.01	Barrier end treatment	each	4.0	3350.0	$13,400
	DENSE GRADED ASPHALT PAVEMENTS/PREPARATION MRS11.30				
5401.01	Preparation of the existing surface	m2	104.0	26.0	$2,704
5404.01	Tack coat 0.2 litres/m2, residual bitumen between asphalt courses	m2	104.0	0.9	$94
	DENSE GRADED ASPHALT PAVEMENTS				
5503.01	Dense graded asphalt pavement, DG14 mix	m2	208.0	17.0	$3,527
	REINSTATEMENT				
5600.01	Reinstate adjacent areas including general allowance for topsoiling, grassing etc.	m2	164.0	21.7	$3,557
	Bridge Construction				
	CAST-IN-PLACE PILES				
6404.01	Steel pipe liners, supply on site 0.6 m dia	m	12.5	507.7	$6,347
6406.01	Handling and pitching of steel liners	each	2.5	5720.0	$14,300
6407.01	Driving steel liners	m	12.5	29.8	$372
6411.01	Excavation of liners	m3	3.0	865.0	$2,595
6421.01	Concrete Class 40 MPa/20 in abutment lined pile	m3	3.0	1230.0	$3,690
6425.01	Steel reinforcing bar in lined piles	tonne	0.8	4960.0	$3,968
	BRIDGE SUBSTRUCTURE				

6314.01	Concrete Class 50 MPa/20 in abutment headstock	m3	4.0	2050.0	$8,200
6314.02	Concrete Class 50 MPa/20 in pier headstock	m3	0.0	2050.0	$0
6314.02	Concrete Class 50 MPa/20 in wingwall	m3	7.0	2050.0	$14,350
6321.01	Steel reinforcing bar in abutment headstock	tonne	0.8	3416.0	$2,733
6321.01	Steel reinforcing bar in pier headstock	tonne	0.0	3416.0	$0
6321.02	Steel reinforcing bar in wingwall	tonne	1.4	3416.0	$4,782
	SUPPLY AND ERECTION OF PRESTRESSED CONCRETE DECK AND KERB UNITS				
7101.01	Prestressed concrete hollow deck units, supply on-site, 0.42m deep, 15m long	each	6.0	17092.0	$102,552
7121.01	Erection of prestressed hollow concrete deck units, 0.42m deep, 15m long	each	6.0	2582.0	$15,492
7101.01	Prestressed concrete T-beams, supply on-site, 0m deep, 15m long	each	0.0	0.0	$0
7121.01	Erection of prestressed concrete T-beams, 0m deep, 15m long	each	0.0	0.0	$0
7131.01	Holding-down bolts for deck units, 900 mm long	each	12.0	95.7	$1,148
	BRIDGE DECK				
7302.01	Concrete Class 50 MPa/20 in deck (topping slab)	m3	7.8	820.0	$6,396
7303.01	Concrete Class 50 MPa/20 in in-situ kerb	m3	0.0	3826.0	$0
7304.01	Concrete Class 50 MPa/20 in parapet and parapet terminal	m3	0.0	2340.3	$0
7306.01	Concrete Class 50 MPa/20 in relieving slab	m3	12.5	1162.0	$14,502
7311.01	Reinforcing steel in decks	tonne	0.9	3279.0	$2,951
7312.01	Reinforcing steel in medians, in-situ kerbs and parapets	tonne	0.0	4100.0	$0
7313.01	Reinforcing steel in relieving slabs	tonne	1.5	3279.0	$4,919
7331.01	Anchors for bridge handrail	each	16.0	250.0	$4,000
7332.01	Anchors for guardrail	LS	1.0	3350.0	$3,350
	MISCELLANEOUS CAST-IN ITEMS				
7341.01	Date plate	each	1.0	500.0	$500
7342.01	Permanent survey mark	each	1.0	1000.0	$1,000
	JOINTS AND FILLERS				
7351.01	Bridging strips, compressible fillers and isolation inserts	m	10.4	240.0	$2,496
7352.01	Joint sealants	m	10.4	62.7	$653
	SUPPLY AND ERECTION OF BRIDGE BARRIER				
	BRIDGE BARRIER, STEEL				
7402.01	Supply and fabrication of pedestrian balustrade, steel	m	0.0	336.1	$0
7405.01	Transport and erection of pedestrian balustrade, steel	m	0.0	included	-
	DECK WEARING SURFACE				
7603.01	Dense graded asphalt surfacing layer, DG 14 mm mix	tonne	6.6	135.7	$895
7603.02	Dense graded asphalt surfacing layer, DG 7 mm mix, to pedestrian footpath	tonne	0.0	135.7	$0
7606.01	Tack Coat, 0.2 litres/m2 residual bitumen	m2	78.0	0.9	$70
	Unit rate for construction of 78m2 bridge, $				$311,561
	Unite rate to construct bridge structure, $/m2				$3,994

			UPDATED JULY 2015 RATES (June 2016 Roads & Bridges PPI - Forecast)			
Asset type	*Asset type*	*Description*	*Direct Costs*	*On-costs (21%)*	*Total Construction Cost ($/unit)*	*Unit*
Motorway (including lighting and basic earthworks)	2 lane	Roads* - Motorway (including lighting and basic earthworks) - 2 lane	6,107	1,282	7,389	Per linear metre
	4 lane	Roads* - Motorway (including lighting and basic earthworks) - 4 lane	8,365	1,757	10,122	Per linear metre
	6 lane	Roads* - Motorway (including lighting and basic earthworks) - 6 lane	10,625	2,231	12,856	Per linear metre
	8 lane	Roads* - Motorway (including lighting and basic earthworks) - 8 lane	12,884	2,706	15,590	Per linear metre
Highway (including lighting and basic earthworks)	2 lane	Roads* - Highway (including lighting and basic earthworks) - 2 lane	3,915	822	4,737	Per linear metre
	4 lane	Roads* - Highway (including lighting and basic earthworks) - 4 lane	5,154	1,082	6,236	Per linear metre
	6 lane	Roads* - Highway (including lighting and basic earthworks) - 6 lane	6,393	1,343	7,736	Per linear metre
Major Arterial (including lighting and basic earthworks)	2 lane	Roads* - Major Arterial (including lighting and basic earthworks) - 2 lane	3,732	784	4,516	Per linear metre
	4 lane	Roads* - Major Arterial (including lighting and basic earthworks) - 4 lane	4,869	1,022	5,891	Per linear metre
	6 lane	Roads* - Major Arterial (including lighting and basic earthworks) - 6 lane	5,703	1,198	6,901	Per linear metre
Arterial road divided (including lighting and basic earthworks)	2 lane	Roads* - Arterial road divided (including lighting and basic earthworks) - 2 lane	3,304	694	3,998	Per linear metre
	4 lane	Roads* - Arterial road divided (including lighting and basic earthworks) - 4 lane	4,347	913	5,260	Per linear metre
Arterial road (including lighting and basic earthworks)	2 lane	Roads* - Arterial road (including lighting and basic earthworks) - 2 lane	3,293	692	3,985	Per linear metre
	4 lane	Roads* - Arterial road (including lighting and basic earthworks) - 4 lane	4,035	847	4,882	Per linear metre
Sub-Arterial road divided (including lighting and basic earthworks)	2 lane	Roads* - Sub-Arterial road divided (including lighting and basic earthworks) - 2 lane	2,957	621	3,578	Per linear metre
	4 lane	Roads* - Sub-Arterial road divided (including lighting and basic earthworks) - 4 lane	3,776	793	4,569	Per linear metre
Sub-Arterial road (including lighting and basic earthworks)	2 lane	Roads* - Sub-Arterial road (including lighting and basic earthworks) - 2 lane	2,866	602	3,468	Per linear metre
	4 lane	Roads* - Sub-Arterial road (including lighting and basic earthworks) - 4 lane	3,680	773	4,453	Per linear metre
District Collector divided		Roads* - District Collector divided	185	39	224	Per m2
District Collector		Roads* - District Collector	160	34	194	Per m2
Neighbourhood Collector		Roads* - Neighbourhood Collector	198	42	240	Per m2
Access streets		Roads* - Access streets	178	37	215	Per m2
Bridge structure		Roads* - Bridge structure	4,888	1,027	5,915	Per m2
Intersections upgraded with road project (including lighting and basis earthworks)	T intersection	Roads* - Intersections upgraded with road project (including lighting and basis earthworks) - T intersection	121,565	25,529	147,094	Per Intersection
	4-way intersection	Roads* - Intersections upgraded with road project (including lighting and basis earthworks) - 4-way intersection	155,548	32,665	188,213	Per Intersection
	Roundabout at T int	Roads* - Intersections upgraded with road project (including lighting and basis earthworks) - Roundabout at T int	159,514	33,498	193,012	Per Intersection
	Roundabout at 4-way int	Roads* - Intersections upgraded with road project (including lighting and basis earthworks) - Roundabout at 4-way int	193,603	40,657	234,260	Per Intersection
	Signals at t intersection	Roads* - Intersections upgraded with road project (including lighting and basis earthworks) - Signals at t intersection	416,258	87,414	503,672	Per Intersection
	Signals at 4-way intersection	Roads* - Intersections upgraded with road project (including lighting and basis earthworks) - Signals at 4-way intersection	515,204	108,193	623,397	Per Intersection
Roundabouts	Signal lane	Roads* - Roundabouts - Signal lane	60,568	12,719	73,287	Per Intersection
	Two lane	Roads* - Roundabouts - Two lane	146,864	30,841	177,705	Per Intersection
Traffic lights	T-intersection	Roads* - Traffic lights - T-intersection	286,439	60,152	346,591	Per Intersection
	4 way intersection	Roads* - Traffic lights - 4 way intersection	343,040	72,038	415,078	Per Intersection

Figure C4 - June 2016 Unit Rates

Appendix D - Existing Trunk Roads

Name	Hierarchy	Length (m)
Brisbane Road	Arterial	1,443
Dalton Drive	Arterial	1,341
Evans Street	Arterial	389
Lake Kawana Bvd	Arterial	1,448
Maroochy Boulevard	Arterial	1,529
Mooloolaba Esplanade	Arterial	326
Plaza Parade	Arterial	234
Sugar Road	Arterial	1,420
Venning Street	Arterial	210
Walan Street	Arterial	389
Wises Road	Arterial	1,303
Arterial Total		**10,032**
Anning Avenue	Sub-art	78
Arundell Avenue	Sub-art	547
Baldwin Street	Sub-art	620
Ball Street	Sub-art	310
Beerburrum Street	Sub-art	2,676
Bellvista Boulevard	Sub-art	1,684
Blaxland Street	Sub-art	270
Bowman Road	Sub-art	727
Broadmeadows Road	Sub-art	548
Buccleugh Street	Sub-art	668
Buderim Street	Sub-art	1,999
Bundilla Boulevard	Sub-art	1,174
Bunya Road	Sub-art	6,943
Burke Street	Sub-art	142
Caloundra Street	Sub-art	1,229
Caplick Way	Sub-art	701
Claymore Road	Sub-art	1,647
Commercial Road	Sub-art	977
Cooroy Street	Sub-art	528
Creekside Boulevard	Sub-art	1,789
Dixon Road	Sub-art	3,254
Elizabeth Street	Sub-art	404
Erang Street	Sub-art	447
Esp. Golden Beach	Sub-art	1,160
Fishermans Road	Sub-art	1,646
Frizzo Road	Sub-art	1,803
George Street	Sub-art	279
Gloucester Road	Sub-art	993
Golf Links Road	Sub-art	1,395

Name	Hierarchy	Length (m)
Goshawk Boulevard	Sub-art	203
Gosling Street	Sub-art	85
Honey Farm Road	Sub-art	3,590
Howard Street	Sub-art	1,131
Jones Road	Sub-art	1,673
Kalana Road	Sub-art	434
Karawatha Drive	Sub-art	4,238
Kawana Island Bvd	Sub-art	789
Landsborough Parade	Sub-art	1,928
Main Drive	Sub-art	741
Main Road	Sub-art	1,464
Maltman Street North	Sub-art	449
Maud Street	Sub-art	1,003
Memorial Drive	Sub-art	1,885
Meridan Way	Sub-art	1,814
Metier Linkway	Sub-art	212
Mons Road	Sub-art	4,395
Mooloolaba Road	Sub-art	257
Mountain View Road	Sub-art	6,280
Old Landsborough Rd	Sub-art	4,886
Old Maroochydore Rd	Sub-art	68
Orme Road	Sub-art	216
Oval Avenue	Sub-art	573
Owen Creek Road	Sub-art	895
Park Place	Sub-art	184
Parklands Boulevard	Sub-art	3,217
Pelican Waters Bvd	Sub-art	1,591
Peregian Springs Drive	Sub-art	785
Perwillowen Road	Sub-art	395
Petrie Creek Road	Sub-art	8,135
Plaza Parade	Sub-art	939
Prelude Drive	Sub-art	1,011
Queen Street	Sub-art	1,611
Racecourse Road	Sub-art	2,847
Rainforest Drive	Sub-art	1,610
Regent Street	Sub-art	641
Ridges Boulevard	Sub-art	1,098
Roys Road	Sub-art	4,997
Saffron Drive	Sub-art	1,068
Simpson Street	Sub-art	1,148
Sippy Downs Drive	Sub-art	3,201

Name	Hierarchy	Length (m)
South Coolum Road	Sub-art	2,486
Stark Lane	Sub-art	369
Starling Street	Sub-art	66
Stringybark Road	Sub-art	1,360
Suncoast Beach Drive	Sub-art	1,266
Tanawha Tourist Drive	Sub-art	4,135
University Way	Sub-art	1,896
West Terrace	Sub-art	258
Western Service Road	Sub-art	2,464
Western Service Road	Sub-art	3,636
William Street	Sub-art	561
Wilson Avenue	Sub-art	70
Windsor Road	Sub-art	1,682
Sub-art Total		**130,575**
Airport Drive	Dist. collect	571
Albatross Avenue	Dist. collect	711
Amarina Avenue	Dist. collect	1,379
Amaroo Street	Dist. collect	195
Anning Avenue	Dist. collect	878
Anzac Road	Dist. collect	410
Arthur Street	Dist. collect	45
Attenuata Drive	Dist. collect	955
Back Woombye Road	Dist. collect	465
Baden Powell Street	Dist. collect	406
Ballinger Road	Dist. collect	3,079
Balmoral Boulevard	Dist. collect	297
Barns Lane	Dist. collect	412
Beddington Road	Dist. collect	1,719
Beerburrum-Woodford Road	Dist. collect	9,692
Bellara Drive	Dist. collect	679
Bellflower Road	Dist. collect	1,513
Birtinya Boulevard	Dist. collect	1,804
Blackall Range Road	Dist. collect	7,175
Blackall Street	Dist. collect	729
Blaxland Road	Dist. collect	891
Blaxland Street	Dist. collect	257
Bledisloe Boulevard	Dist. collect	1,689
Boardwalk Boulevard	Dist. collect	841
Bowen Road	Dist. collect	1,888
Brightwater Boulevard	Dist. collect	2,905
Brockhurst Road	Dist. collect	314
Bruce Parade	Dist. collect	114
Burgess Street	Dist. collect	336
Burgess Street	Dist. collect	64

Name	Hierarchy	Length (m)
Burnside Road	Dist. collect	2,178
Camp Flat Road	Dist. collect	2,520
Canberra Terrace	Dist. collect	479
Carter Road	Dist. collect	1,471
Centenary Crescent	Dist. collect	697
Chevallum Road	Dist. collect	5,957
Citrus Road	Dist. collect	1,803
Coes Creek Road	Dist. collect	2,594
Cooloolabin Road	Dist. collect	3,461
Coonowrin Road	Dist. collect	3,678
Cotton Tree Parade	Dist. collect	181
Cribb Street	Dist. collect	607
Crittenden Road	Dist. collect	616
Dean Road	Dist. collect	1,911
Diddillibah Road	Dist. collect	2,668
Doonan Bridge Road	Dist. collect	48
Doonan Bridge Rd East	Dist. collect	2,275
Duhs Road	Dist. collect	1,236
Dulong Road	Dist. collect	5,942
Dumbarton Drive	Dist. collect	352
Duporth Avenue	Dist. collect	628
Edmund Street	Dist. collect	1,078
Eudlo Flats Road	Dist. collect	3,046
Eudlo School Road	Dist. collect	1,809
Eumundi Range Road	Dist. collect	5,369
Fairhill Road	Dist. collect	3,393
First Avenue	Dist. collect	314
Foley Road	Dist. collect	952
Foote Street	Dist. collect	161
Glenfields Boulevard	Dist. collect	1,532
Goonawarra Drive	Dist. collect	1,135
Gregory Street	Dist. collect	76
Gympie Street North	Dist. collect	1,031
Gympie Street South	Dist. collect	847
Hancock Street	Dist. collect	178
Henebery Road	Dist. collect	503
Henebery Road North	Dist. collect	445
Hobbs Road	Dist. collect	1,120
Hospital Road	Dist. collect	630
Hunchy Road	Dist. collect	4,914
Ilkley Road	Dist. collect	3,364
Image Flat Road	Dist. collect	4,188
Jenyor Street	Dist. collect	545
Johnston Road	Dist. collect	2,030
Jubilee Drive	Dist. collect	1,032

Name	Hierarchy	Length (m)
Kalana Road	Dist. collect	1,217
Kalowendha Avenue	Dist. collect	1,149
Kiel Mountain Road	Dist. collect	5,415
King Street	Dist. collect	678
Lady Musgrave Drive	Dist. collect	1,152
Lakehead Drive	Dist. collect	577
Landershute Road	Dist. collect	944
Latcham Drive	Dist. collect	378
Lefoes Road	Dist. collect	662
Lindsay Road	Dist. collect	3,886
Lomond Crescent	Dist. collect	665
Main Street	Dist. collect	962
Maltman Street South	Dist. collect	410
Maltman Sts Serv Lane	Dist. collect	210
Manatunga Parade	Dist. collect	532
Mary Street	Dist. collect	130
Mckenzie Road	Dist. collect	911
Memorial Drive	Dist. collect	1,316
Menary Road	Dist. collect	1,191
Menzies Drive	Dist. collect	57
Michael Street	Dist. collect	410
Mill Road	Dist. collect	975
Minchinton Street	Dist. collect	311
Molakai Drive	Dist. collect	617
Mons School Road	Dist. collect	3,301
Moreton Parade	Dist. collect	826
Mudjimba Beach Road	Dist. collect	1,706
Mudjimba Esplanade	Dist. collect	1,334
Murdering Creek Road	Dist. collect	742
Nelson Street	Dist. collect	929
Ninderry Road	Dist. collect	1,387
Nojoor Road	Dist. collect	1,263
North Arm-Yandina Ck Road	Dist. collect	1,488
North Buderim Bvd	Dist. collect	1,368
North Street	Dist. collect	355
Ocean Drive	Dist. collect	4,858
Okinja Road	Dist. collect	873
Old Coach Way	Dist. collect	1,331
Old Emu Mountain Rd	Dist. collect	3,097
Old Gympie Road	Dist. collect	21,793
Old Gympie Road	Dist. collect	1,156
Old Palmwoods Road	Dist. collect	2,418
Oloway Crescent	Dist. collect	379
Orsova Terrace	Dist. collect	267

Name	Hierarchy	Length (m)
Pacific Terrace	Dist. collect	579
Palm Drive	Dist. collect	1,039
Palmwoods School Rd	Dist. collect	962
Parklakes Drive	Dist. collect	936
Parkway Drive	Dist. collect	151
Parkyn Parade	Dist. collect	1,491
Parsons Knob Road	Dist. collect	135
Parsons Road	Dist. collect	1,763
Paskins Road	Dist. collect	444
Pelican Waters Bvd	Dist. collect	5,456
Peregian Springs Drive	Dist. collect	2,633
Perwillowen Road	Dist. collect	1,496
Philipps Road	Dist. collect	1,902
Pierce Avenue	Dist. collect	2,259
Pignata Road	Dist. collect	1,303
Pine Grove Road	Dist. collect	1,165
Pittards Road	Dist. collect	1,256
Point Cartwright Drive	Dist. collect	1,954
Price Street	Dist. collect	274
Quanda Road	Dist. collect	566
Queen Street	Dist. collect	711
Queen Street Serv Lne	Dist. collect	97
Railway Parade	Dist. collect	247
Rainforest Sanctuary Dr	Dist. collect	743
Razorback Road	Dist. collect	1,585
Reed Street	Dist. collect	143
Regatta Boulevard	Dist. collect	945
Reids Road	Dist. collect	868
Ridgeview Drive	Dist. collect	184
Rinaldi Street	Dist. collect	187
River Esplanade	Dist. collect	277
Roberts Road	Dist. collect	1,245
Roderick Street	Dist. collect	381
Rosebed Street	Dist. collect	194
Sahara Road	Dist. collect	4,188
School Road	Dist. collect	282
School Road	Dist. collect	821
Seagull Avenue	Dist. collect	278
Seaside Boulevard	Dist. collect	761
Second Avenue	Dist. collect	413
Sir Joseph Banks Drive	Dist. collect	188
Sixth Avenue	Dist. collect	767
Southern Drive	Dist. collect	454
Springhill Drive	Dist. collect	527

Name	Hierarchy	Length (m)
Steggalls Road	Dist. collect	1,273
Stornaway Avenue	Dist. collect	258
Stringybark Road	Dist. collect	1,070
Sugar Bag Road	Dist. collect	3,089
Sunrise Drive	Dist. collect	640
Sunrise Road	Dist. collect	4,058
Sunset Drive	Dist. collect	1,253
Sunshine Cove Way	Dist. collect	885
Syd Lingard Drive	Dist. collect	692
Taintons Road	Dist. collect	1,883
Talara Street	Dist. collect	756
Tanah Street West	Dist. collect	984
The Esplanade	Dist. collect	574
Toolga Street	Dist. collect	725
Tunnel Ridge Road	Dist. collect	5,029
University Way	Dist. collect	2,184
Vee Road	Dist. collect	648
Venning Street	Dist. collect	115
Verrierdale Road	Dist. collect	4,533
Village Way	Dist. collect	590
Wakefield Street	Dist. collect	567
Wappa Falls Road	Dist. collect	2,136
Warran Road	Dist. collect	1,620
Westminster Avenue	Dist. collect	1,441
Wilson Road	Dist. collect	6,449
Wirraway Street	Dist. collect	454
Wises Road	Dist. collect	1,664
Woodlands Boulevard	Dist. collect	690
Wrigley Street	Dist. collect	1,100
Wust Road	Dist. collect	1,981
Yarrock Street	Dist. collect	216
Zealey Road	Dist. collect	330
Bulcock Street	Dist. collect	1,133
King Street	Dist. collect	131
Ocean Street	Dist. collect	380
Dist. collect Total		**295,624**
Grand Total		**436,230**