LNG

J

Cumulative Impacts

J

Cumulative Impacts

Santos | PETRONAS

Report

GLNG EIS Supplement

Cumulative Impact Assessment

NOVEMBER 2009

Prepared for

Santos

32 Turbot Street
Brisbane Qld 4000

42626440

URS

Project Manager:

Jim Barker
Associate Environmental Scientist

URS Australia Pty Ltd

Level 16, 240 Queen Street
Brisbane, QLD 4000
GPO Box 302, QLD 4001
Australia
T: 61 7 3243 2111
F: 61 7 3243 2199

Project Director:

Chris Pigott
Senior Principal

Date:	**November 2009**
Reference:	42626440/works/42626440_cia_9
Status:	Final

Document delivery

URS Australia provides this document in either printed format, electronic format or both. URS considers the printed version to be binding. The electronic format is provided for the client's convenience and URS requests that the client ensures the integrity of this electronic information is maintained. Storage of this electronic information should at a minimum comply with the requirements of the Commonwealth Electronic Transactions Act (ETA) 2000.

Where an electronic only version is provided to the client, a signed hard copy of this document is held on file by URS and a copy will be provided if requested.

URS

Table of Contents

Tables

Figures

Appendices

Abbreviations

Abbreviation	Description
AGL	AGL
APLNG	Australia Pacific Liquefied Natural Gas
AQIS	Australian Quarantine and Inspection Service
ASS	Acid Sulphate Soils
AW	Associated water
BG	British Gas Group
CAF	Construction Accommodation Facility
CG	Coordinator-General
CHMP	Cultural Heritage Management Plan
CICSDA	Callide Infrastructure Corridor State Development Area
CSG	Coal Seam Gas
CO_2	Carbon dioxide
dBA	Decibel
DERM	Department of Environment and Resource Management
DIP	Department of Infrastructure and Planning
DMPF	Dredge material placement facility
EIS	Environmental Impact Statement
EPP	Environmental Protection Policy
EPBC	*Environmental Protection & Biodiversity Conservation Act*
EVR	Endangered vulnerable or rare
FDA	Future Development Area
GLNG	Santos' Gladstone LNG Project
GPC	Gladstone Ports Corporation
GSDA	Gladstone State Development Area
IAS	Initial Advice Statement
L_{A90}	Noise level exceeded for 90% of the time under consideration
L_{AEQ}	Equivalent continuous noise level
LNG	Liquefied Natural Gas
ML	Megalitre (one million litres)
NO_x	Oxides of nitrogen
NO_2	Nitrogen dioxide
QCLNG	Queensland Curtis Liquefied Natural Gas
QGC	QGC Ltd
RFDA	Reasonably Foreseeable Development Area
SO_2	Sulphur dioxide
TAF	Temporary Accommodation Facilities
TAFE	Technical and Further Education
ToR	Terms of Reference
WBDD	Western Basin Dredging and Disposal

Executive Summary

The GLNG Environmental Impact Statement (EIS) addressed the cumulative impacts that could be expected from the construction and operation of the GLNG Project. Since that time a number of the projects included in the cumulative impact assessment have advanced, with further information becoming available and also a number of new projects having been announced. In addition, a number of comments were received during the public review of the EIS relating to cumulative impacts. As a consequence of this a further cumulative impact assessment has been undertaken for inclusion in the EIS Supplement.

The objective of the cumulative impact assessment is to assess the potential for impacts from the GLNG Project to have compounding or synergistic interactions with similar impacts from other projects proposed or under development within the sphere of influence of the GLNG Project.

In assessing the significance of potential cumulative impacts, the extent of compliance with established standards or guidelines was used where the impacts could be expressed quantitatively. Where the impacts were expressed qualitatively, the probability, duration, and magnitude/intensity of the impacts were considered as well as the sensitivity and value of the receiving environmental conditions. The relevance of the impact was then determined according to the following assessment matrix.

Assessment Matrix

Aspect	Relevance Factors		
	Low	Medium	High
Probability of Impact	1	2	3
Duration of Impact	1	2	3
Magnitude/intensity of Impact	1	2	3
Sensitivity of Receiving Environment	1	2	3

The resultant significance of the impact was determined by using professional judgement to select the most appropriate relevance factor for each aspect and summing the relevance factors. The resultant impact significance and consequence are summarised in the following table.

Impact Significance

Impact Significance	Sum of Relevance Factors	Consequence
Low	1-5	Negative impacts need to be managed by standard environmental management practices. Special approval conditions unlikely to be necessary. Monitoring to be part of general project monitoring program.
Medium	6-9	Mitigation measures likely to be necessary and specific management practices to be applied. Specific approval conditions are likely. Targeted monitoring program required.
High	10-12	Alternative actions should be considered and/or mitigation measures applied to demonstrate improvement. Specific approval conditions required. Targeted monitoring program necessary.

The cumulative assessment was undertaken for each of the major project components i.e. the CSG fields, the gas transmission pipeline, and the LNG facility and associated marine facilities. The projects within the sphere of influence of the GLNG Project which could cause a cumulative impact were included on the basis of the following criteria:

- Projects listed on the DIP website that are undergoing assessment under the *State Development and Public Works Organisation Act* for which an Initial Advice Statement (IAS) or an EIS are available; and
- Projects listed on the website of the Department of Environment and Resource Management (DERM) that are undergoing assessment under the *Environmental Protection Act for* which an IAS or an EIS are available.

The projects considered are as follows:

Projects Considered for Cumulative Impact Assessment

CSG Fields	Gas Transmission Pipeline	LNG Facility and Associated Marine Facilities
Queensland Curtis LNG Project	Queensland Curtis LNG Project	Queensland Curtis LNG Project
Australia Pacific LNG Project	Australia Pacific LNG Project	Australia Pacific LNG Project
Wandoan Coal Project	Shell Australia LNG Project	Shell Australia LNG Project
Spring Gully Power Station	Surat Gladstone Pipeline	Gladstone LNG (Fisherman's Landing)
Surat Basin Rail Project	Central Qld Gas Pipeline	Sun LNG Project
Nathan Dam Project	Gladstone/Fitzroy Pipeline	Wiggins Island Coal Terminal
	Surat Basin Rail Project	Gladstone Pacific Nickel Refinery
	Moura Link/ Aldoga Rail	Gladstone Steel Making Facility
	Dawson South Mine	Fisherman's Landing Port Expansion
	Boundary Hill Mine Extension	Western Basin Strategic Dredging and Disposal Plan
	Nathan Dam Project	Boyne Island Aluminium Smelter
	Wandoan Coal Project	Yarwun Alumina Refinery Expansion
	Spring Gully Power Station	Stuart Oil Shale Project[1]

[1] This project is not listed on either the DIP or the DERM websites but has been included due to its influence on the location of the GLNG gas transmission pipeline alignment and potentially the alignments of other gas pipelines to Curtis Island.

Using the methodology outlined above, the cumulative impact assessment was undertaken for each aspect of the environment. The cumulative impacts identified were generally low. This was mainly due to the environmental management strategies proposed to be implemented by the GLNG Project and many of the other projects considered or the geographical separation between the GLNG Project and the other projects assessed.

There are some cumulative impacts assessed as medium. These can be managed by the application of strict mitigation measures and targeted monitoring programs.

Two high cumulative impacts have been identified. One relates to impacts to the marine ecology of Port Curtis from the multiple dredging, pipeline and shipping operations proposed. The preferred means of minimising these impacts is for a coordinated approach to be undertaken to the pipeline construction and the dredging and dredge material placement activities. Implementation of the proposed Western Basin Strategic Dredging and Disposal Project would be an effective way to manage these impacts. The second high cumulative impact relates to the change in the visual character of the south-west corner of Curtis Island from a natural undisturbed landscape to a major industrial complex. While screening will have some mitigating effects, the major visual elements such as tanks and flares will remain visually dominant.

Summary of Cumulative Impacts

Aspect	CSG Field	Gas Transmission Pipeline	LNG Facility and Associated Marine Facilities
Land	Low	Medium	Medium
Terrestrial Ecology	Low	Medium	Medium
Aquatic Ecology	Medium	Low	Low
Marine Ecology	-	High	High
Surface Water	Low	Low	Low
Groundwater	Medium	Low	Low
Associated Water	Low	-	-
Air Quality	Low	Low	Low
Greenhouse Gas	-	-	Medium
Noise and Vibration	Low	Low	Low
Land Use	Medium	Low	Low
Social and Community	Medium	Low	Low-Medium
Traffic and Transport	Medium	Low-Medium	Medium
Solid Waste	Medium	Low	Low
Visual Amenity	Low	Low	High
Cultural Heritage	Low	Low	Low
Hazard and Risk	Low	Low	Medium

1

Introduction

1.1 Overview

The GLNG EIS addressed cumulative impacts that could be expected from the construction and operation of the GLNG Project and other projects identified within the sphere of influence of the GLNG Project. The cumulative impact assessment was based on the best information available at the time which was limited due to the development stages of other projects. Since then a number of those projects have released an EIS which has made a more detailed assessment of potential cumulative impacts possible. In addition, a number of comments were received during the public review of the EIS relating to cumulative impacts. As a consequence of this a further cumulative impact assessment has been undertaken for inclusion in the EIS Supplement.

1.2 Objective

The objective of the cumulative impact assessment is to assess the potential for impacts from the GLNG Project to have compounding or synergistic interactions with similar impacts from other projects proposed or under development within the sphere of influence of the GLNG Project.

It is a requirement of the Terms of Reference that the EIS is "*to provide a clear and concise summary of the cumulative impacts (i.e. the additional impacts on population, workforce, accommodation, housing, use of community infrastructure and services) ……….. and to provide a description of these cumulative impacts both in isolation and in combination with other known, existing or proposed project(s) (where details of such proposed projects have been provided to Santos by the DIP or are otherwise published), to the greatest extent practicable*."

1.3 Methodology

The methodology used to assess the project's cumulative impacts consisted of the following tasks:

- Identify the impacts of the stand-alone GLNG Project using existing baseline conditions which incorporate the impacts from all existing projects and activities in the project's sphere of influence. These impacts have been described in detail in the relevant sections of the EIS.
- Identify relevant projects with the sphere of influence of the GLNG Project that are either proposed or approved but not yet operational which could generate impacts that could potentially interact with similar impacts from the GLNG Project.
- Identify appropriate spatial boundaries for the analysis of cumulative impacts. Where potentially interacting projects are not located close enough for the relevant impacts to overlap, cumulative impacts are less likely. Where the projects elements are adjacent (e.g. on Curtis Island or along common user pipeline corridors) the cumulative impacts could be significant. The extent of the spatial boundaries will vary according to the nature of the impact being assessed.
- Identify appropriate temporal boundaries for the analysis of cumulative impacts. Where the schedules of potentially interacting projects do not overlap (primarily for construction activities), cumulative impacts are less likely. The extent of the temporal boundary will vary according to the nature of the impact being assessed.
- Assess the cumulative impacts for each project component i.e.:
  - CSG fields;
  - Gas transmission pipeline; and
  - LNG facility and associated infrastructure.

- Determine the significance of the cumulative impacts with respect to beneficial or detrimental effects.
- Develop suitable mitigation measures for the significant cumulative impacts.

In assessing the significance of potential cumulative impacts, the extent of compliance with established standards or guidelines was used where the impacts could be expressed quantitatively. Where the impacts were expressed qualitatively, the probability, duration, and magnitude/intensity of the impacts were considered as well as the sensitivity and value of the receiving environmental conditions. The significance of the impact was then determined on according to the assessment matrix given in Table 1.1.

Table 1-1 Assessment Matrix

Aspect	Relevance Factors		
	Low	Medium	High
Probability of Impact	1	2	3
Duration of Impact	1	2	3
Magnitude/Intensity of Impact	1	2	3
Sensitivity of Receiving Environment	1	2	3

The resultant significance of the impact was determined by using professional judgement to select the most appropriate relevance factor for each aspect and summing the relevance factors. The resultant impact significance and consequence are summarised in Table 1.2.

Table 1-2 Impact Significance

Impact Significance	Sum of Relevance Factors	Consequence
Low	1-5	Negative impacts need to be managed by standard environmental management practices. Special approval conditions unlikely to be necessary. Monitoring to be part of general project monitoring program.
Medium	6-9	Mitigation measures likely to be necessary and specific management practices to be applied. Specific approval conditions are likely. Targeted monitoring program required.
High	10-12	Alternative actions should be considered and/or mitigation measures applied to demonstrate improvement. Specific approval conditions required. Targeted monitoring program necessary.

Relevant Projects

2.1 Selection Criteria

As discussed in Section 1.2, the EIS terms of reference require the cumulative impact assessment to consider projects where "*details of such proposed projects have been provided to Santos by the DIP or are otherwise published".* After further discussions and clarification with the Department of Infrastructure and Planning (DIP), it was agreed that relevant projects would include:

- Projects within the sphere of influence of the GLNG Project which are listed on the DIP website that are undergoing assessment under the *State Development and Public Works Organisation* (SDPWO) *Act* for which an Initial Advice Statement (IAS) or an Environmental Impact Statement (EIS) are available.
- Projects within the sphere of influence of the GLNG Project which are listed on the website of the Department of Environment and Resource Management (DERM) that are undergoing assessment under the *Environmental Protection* (EP) *Act for* which an Initial Advice Statement (IAS) or an Environmental Impact Statement (EIS) are available

2.2 Projects Relevant to the CSG Fields

Based on the criteria listed in Section 2.1, the projects included in the cumulative impact assessment for the CSG fields are listed in Table 2.1.

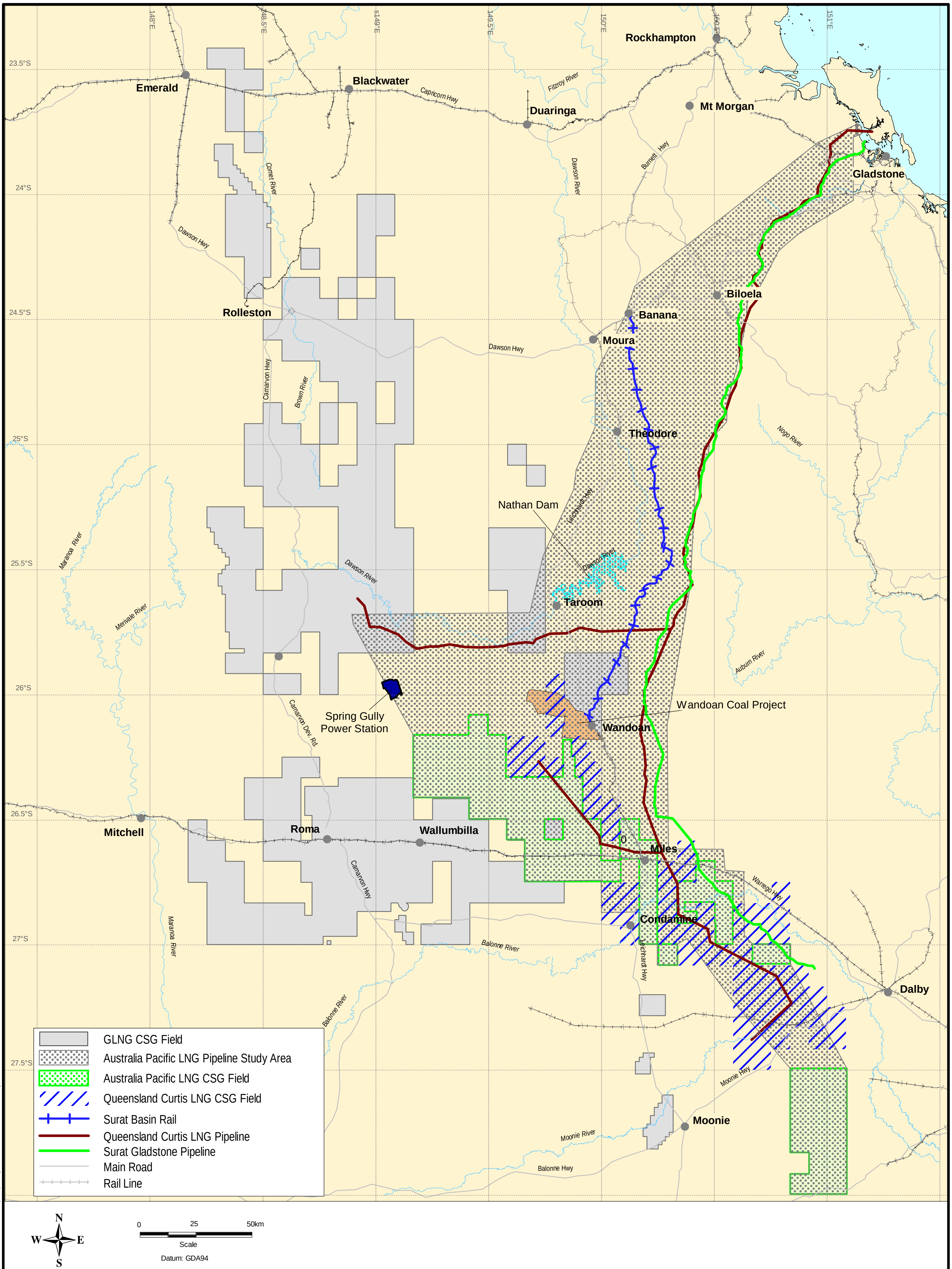
Table 2-1 Projects Relevant to the CSG Fields

Project - Proponent	Description	Location	Project Status	Relationship to GLNG Project
Queensland Curtis LNG Project – operated by QGC, a BG group company	As part of an integrated LNG Project, QGC's existing CSG fields in the Surat Basin will be expanded. This will include the ultimate development of 6,000 wells and will employ up to 2,100 construction and operational workers.	The CSG fields cover an area of 468,700 ha located between Moonie, Wandoan, Condamine, and Chinchilla.	EIS has been released for public comment.	Located approx. 50 - 100 km east of GLNG fields. Will have overlapping development schedule with LNG production scheduled for 2014.
Australia Pacific LNG Project – Origin Energy and Conoco Phillips	As part of an integrated LNG Project, Origin Energy's existing Walloons CSG field in the Surat Basin will be expanded. This will include the ultimate development of 10,000 wells and will employ up to 1,350 construction and operational workers.	The CSG fields cover and area of 370,000 ha located between Wallumbilla and Millmerran.	IAS has been released and EIS is in preparation.	Located to the east of GLNG fields. Will have overlapping development schedule with LNG production scheduled for 2014.
Wandoan Coal Project – Xstrata Coal	Proposed open cut coal mine with a capacity of 30 million tonnes per annum. It will cover an area of 11,000 ha. Construction is due to commence in 2010 (1,375 workforce) and operations start in 2012 (844 workforce).	Located 5 km west of Wandoan.	EIS has been released for public comment.	Adjacent the Scotia Future Development Area. Construction will overlap with the GLNG development schedule for the Reasonably Foreseeable Development Area.
Spring Gully Power Station – Origin Energy	Proposed 1,000 MW gas-fired power station. Construction has been delayed and a proposed start date is unknown.	Spring Gully 80 km north east of Roma.	EIS completed and project has been approved.	Located close to GLNG CSG fields and depending on the schedule its construction may overlap

2 Relevant Projects

Project - Proponent	Description	Location	Project Status	Relationship to GLNG Project
	Construction workforce of 400.			with the GLNG field development.
Surat Basin Rail – Surat Basin Rail Joint Venture	Proposed 210 km long railway line from Wandoan to Banana. Construction scheduled for 2009 -2012 with a construction workforce of 1,000.	Wandoan to Banana.	EIS Supplement being prepared.	Overlaps the Scotia Future Development Area. Construction will overlap with the GLNG development schedule for the Reasonably Foreseeable Development Area.
Nathan Dam – SunWater	The proposed dam will have a full capacity of 880,000 ML and a yield of 70,000 ML/year. There will be a distribution pipeline from the dam to Dalby. Construction is planned for 2012-2013 with a workforce of 200.	On the Dawson River 35 km north east of Taroom.	IAS has been released and EIS is in preparation.	Part of the Future Development Area is located just upstream of the dam and the dam's construction will overlap with the GLNG CSG development phase.

The locations of these projects are shown on Figure 2.1.



Source: This map may contain data which is sourced and Copyright. Refer to Section 18.2 of the EIS for Ownership and Copyright.

Client	Project	Title
LNG / URS	GLADSTONE LNG PROJECT ENVIRONMENTAL IMPACT STATEMENT SUPPLEMENT CUMULATIVE IMPACTS	**CUMULATIVE IMPACT PROJECTS CSG FIELDS**
	Drawn: VH · Approved: JB · Date: 12-10-2009	Figure: **2.1** · Rev:B
	Job No: **4262 6440** /6220 · File No: 42626440-g-2007b.wor	A4

2.3 Projects Relevant to the Gas Transmission Pipeline

Based on the criteria listed in Section 2.1, the projects included in the cumulative impact assessment for the gas transmission pipeline are listed in Table 2-2.

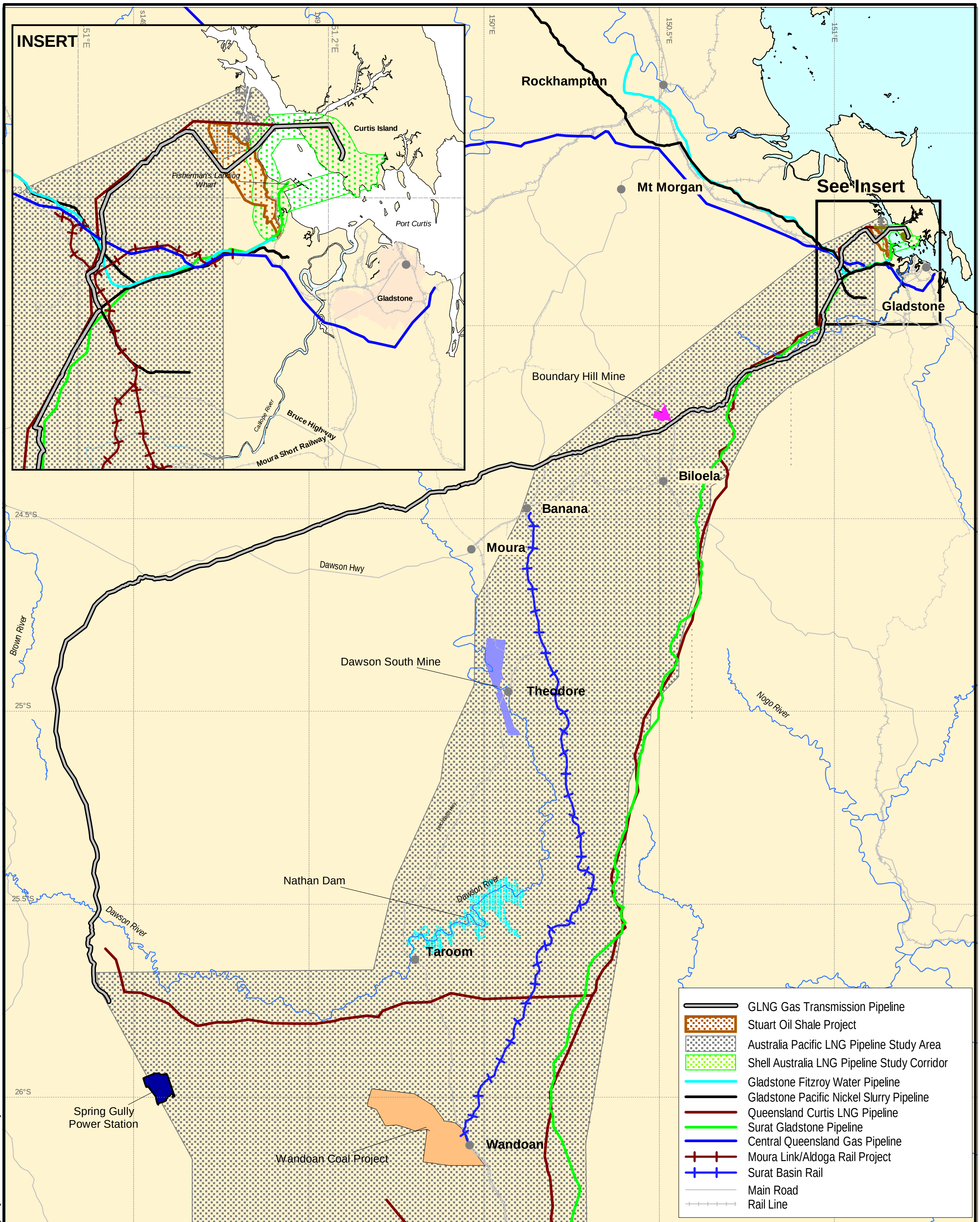
Table 2-2 Projects Relevant to the Gas Transmission Pipeline

Project - Proponent	Description	Location	Project Status	Relationship to GLNG Project
Queensland Curtis LNG Project – BG Group and QGC Ltd	As part of an integrated LNG Project, a 380 km long pipeline will be constructed from the CSG fields to Gladstone. Construction is due to commence in 2011 and will involve a workforce of 500.	QGC's gas field in the Surat Basin to the Curtis Island LNG facility.	EIS has been released for public comment.	Generally located 50-100 km east of GLNG pipeline except for the last 80-100 km into Gladstone where the alignments will be adjacent. Will have overlapping construction schedule.
Australia Pacific LNG Project – Origin Energy and Conoco Phillips	As part of an integrated LNG Project, a 400 km long pipeline will be constructed from the CSG fields to Gladstone. Construction is due to commence in 2011 and will involve a workforce of 400.	Wandoan to Gladstone.	IAS has been released and EIS is in preparation.	Located east of GLNG pipeline except for the last 80-100 km into Gladstone where the alignments will be adjacent. Will have overlapping construction schedule.
Shell Australia LNG Project - Shell Australia LNG Project	The project includes LNG facility on Curtis Island, a gas pipeline from the Gladstone City Gate, and dredging of Port Curtis. The project is expected to produce up to 16 million tonnes per annum. Construction expected 2011-2014.	LNG facility on Curtis Island and a gas pipeline from the Gladstone City Gate to the facility.	IAS and ToR released. EIS in preparation.	Located adjacent to the GLNG site on Curtis Island. Will have overlapping development schedule with LNG production scheduled for 2014. May use part of the GLNG shipping channel.
Surat Gladstone Pipeline – Arrow Energy	Proposed buried 470 km long gas transmission pipeline which will deliver coal seam gas from the Surat Basin to a proposed liquefied natural gas (LNG) plant at Fisherman's Landing. Construction is planned for 2010-2011,	Surat Basin near Dalby to Fisherman's Landing, Gladstone.	EIS has been advertised.	Separate alignment from the GLNG pipeline except for the last 80-100 km into Gladstone where the alignments will be adjacent. Will have overlapping construction schedule.
Central Queensland Gas Pipeline – AGL and Arrow	Proposed 440 km long pipeline from Moranbah to Gladstone.	Moranbah to Gladstone.	EIS completed and project approved.	May cross the GLNG pipeline alignment near Gladstone.
Gladstone/Fitzroy Pipeline – Gladstone Area Water Board	Proposed 115 km long pipeline from Rockhampton to Gladstone. No current construction date as it will depend on either a drought or increased demand.	Rockhampton to Yarwun north of Gladstone.	EIS and EIS Supplement completed.	May cross the GLNG pipeline alignment near Gladstone.
Surat Basin Rail – Surat basin Rail Joint Venture	Proposed 210 km long railway line from Wandoan to Banana. Construction scheduled for 2009 -2012 with a construction workforce of 1,000.	Wandoan to Banana.	EIS Supplement being prepared.	Will terminate near the GLNG pipeline. Construction will overlap with the GLNG construction.

2 Relevant Projects

Project - Proponent	Description	Location	Project Status	Relationship to GLNG Project
Moura Link/ Aldoga Rail – Queensland Rail	Proposed rail upgrading and expansion to the west of the Gladstone State Development Area.	Moura Short Line to the North Coast Line at Aldoga.	EIS has been advertised.	May cross the GLNG pipeline alignment west of Gladstone. The project timing is not clear but there may be overlap in construction periods of the rail and pipeline.
Boundary Hill Mine Extension - Anglo Coal (Callide Management)	Proposed expansion of the Boundary Hill open cut coal mine. The project will increase the existing mine life by 15 years.	20 km north of Biloela.	EIS is being prepared.	Pipeline corridor crosses mining lease.
Dawson South Mine – Anglo Coal	Proposed expansion of the Dawson Coal Mine.	East of Moura.	EIS approved.	Pipeline to be diverted around mine. May be an overlap of construction periods.
Wandoan Coal Project – Xstrata Coal	Proposed open cut coal mine with a capacity of 30 million tonnes per annum. It will cover an area of 11,000 ha. Construction is due to commence in 2010 (1,375 workforce) and operations start in 2012 (844 workforce).	Located 5 km west of Wandoan.	EIS has been released for public comment.	Construction phase may overlap with GLNG pipeline construction.
Nathan Dam – SunWater	The proposed dam will have a full capacity of 880,000 ML and a yield of 70,000 ML/year. There will be a distribution pipeline from the dam to Dalby. Construction is planned for 2012-2013 with a workforce of 200.	On the Dawson River 35 km north east of Taroom,	IAS has been released and EIS is in preparation.	Construction phase may overlap with GLNG pipeline construction.
Spring Gully Power Station – Origin Energy	Proposed 1,000 MW gas-fired power station. Construction has been delayed and a proposed start date is unknown. Construction workforce of 400.	Spring Gully 80 km north east of Roma.	EIS completed and project has been approved.	Depending on the schedule its construction may overlap with the GLNG construction.
Stuart Oil Shale Project - QER	QER is currently examining a proposal for the construction of a small-scale technology demonstration plant (TDP) at the Stuart site. It holds mining leases in the area.	Near Fisherman's Landing	No EIS or approval process has started.	The proposed QER mining area crosses the proposed alignment of the GLNG pipeline.

The locations of these projects are shown on Figure 2.2.



Scale 1:1 500 000 (A4)

Datum: GDA94

Source: This map may contain data which is sourced and Copyright. Refer to Section 18.2 of the EIS for Ownership and Copyright.

Client	Project	Title
LNG / URS	GLADSTONE LNG PROJECT ENVIRONMENTAL IMPACT STATEMENT SUPPLEMENT CUMULATIVE IMPACTS	**CUMULATIVE IMPACT PROJECTS** **GAS TRANSMISSION PIPELINE**

Drawn: VH	Approved: JB	Date: 17-11-2009	Figure: **2.2**	Rev:D
Job No: **4262 6440** /6220	File No: 42626440-g-2008d.wor			A4

2.4 Projects Relevant to the LNG Facility and Associated Infrastructure

Based on the criteria listed in Section 2.1, the projects included in the cumulative impact assessment for the LNG facility and associated infrastructure are listed in Table 2-3.

Table 2-3 Projects Relevant to the LNG facility and Associated Infrastructure

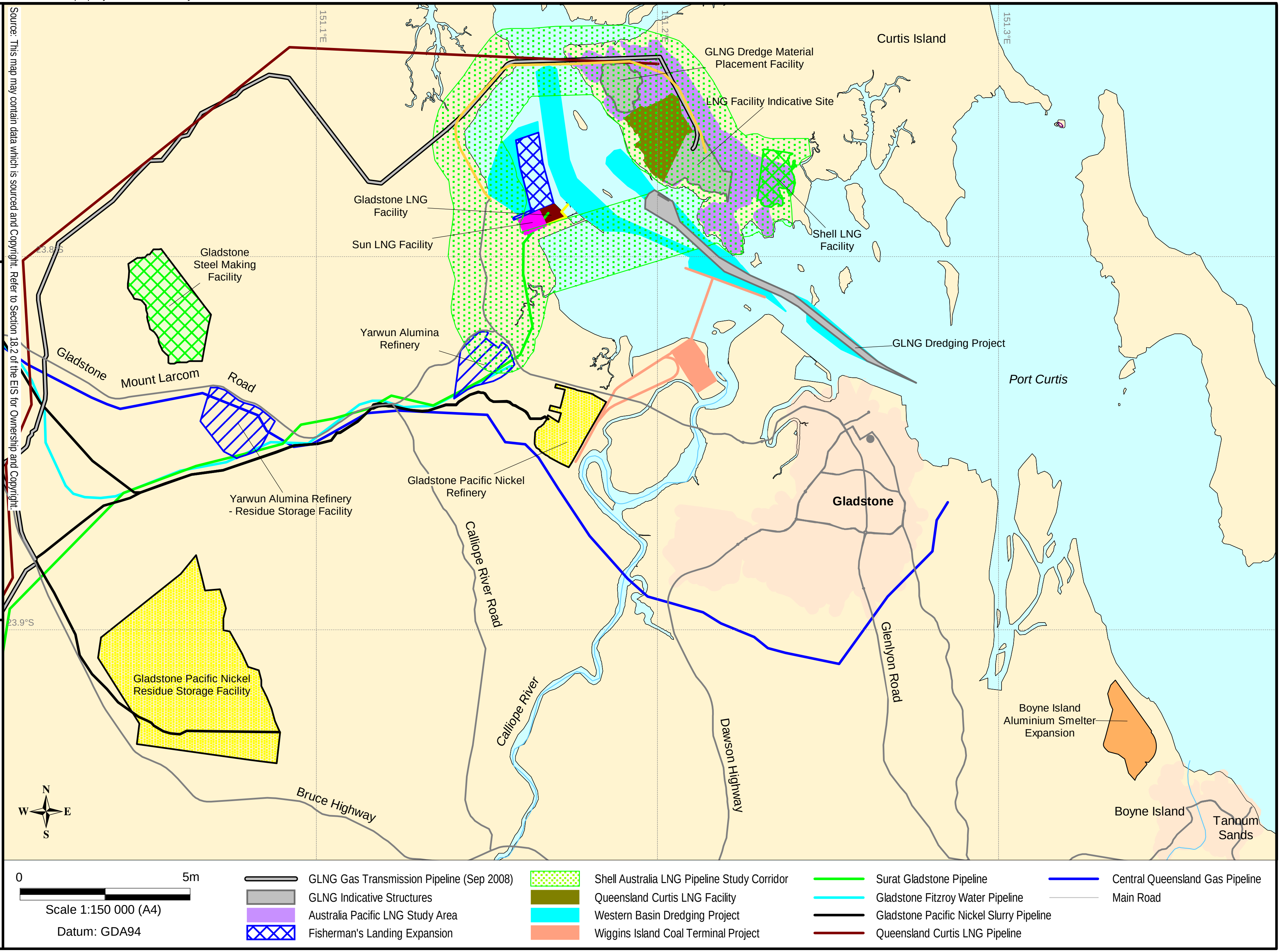
Project - Proponent	Description	Location	Project Status	Relationship to GLNG Project
Queensland Curtis LNG Project – BG Group and QGC Ltd	LNG facility on Curtis Island, comprising three liquefied natural gas trains of total capacity up to 12 million tonnes per annum (Mtpa). Also includes a marine jetty containing LNG loading facilities and berths.	Curtis Island.	EIS has been released for public comment.	Located adjacent to the GLNG site on Curtis Island. Will have overlapping development schedule with the GLNG Project's production scheduled for 2014. Will use part of the GLNG shipping channel for ship access.
Australia Pacific LNG Project – Origin Energy and Conoco Phillips	LNG facility on Curtis Island comprising three LNG trains with a total capacity of 16 Mtpa. Also includes a marine jetty containing LNG loading facilities and berths.	Curtis Island.	IAS has been released and EIS is in preparation.	Project site on Curtis Island yet to be confirmed. Will have overlapping development schedule with the GLNG Project's production scheduled for 2014. May use part of the GLNG shipping channel.
Shell Australia LNG Project - Shell Australia LNG Project	The project includes LNG facility on Curtis Island, a gas pipeline from the Gladstone City Gate, and dredging of Port Curtis. The project is expected to produce up to 16 Mtpa. Construction expected 2011-2014.	LNG facility on Curtis Island and a gas pipeline from the Gladstone City Gate to the facility.	IAS and ToR released. EIS in preparation.	Located adjacent to the GLNG site on Curtis Island. Will have overlapping development schedule with GLNG production scheduled for 2014. May use part of the GLNG shipping channel.
Gladstone LNG (Fisherman's Landing) – Gladstone LNG	Proposed mid-scale LNG facility. The project has an expected life of 25 years and the first stage would produce up to 1.5 Mtpa. Construction planned for 2010-2011.	Fisherman's Landing Wharf north of Gladstone.	EIS approved.	May be overlap of the construction phase with that of GLNG.
Sun LNG - Sojitz Corporation and Sunshine Gas	Proposed LNG facility at Fisherman's Landing with a capacity of 1 Mtpa. Also includes a wharf, loading facilities to export LNG, 5 km gas pipeline to deliver natural gas from the Gladstone City Gas Gate to the plant, and associated infrastructure.	Fisherman's Landing Wharf north of Gladstone.	IAS and ToR released. EIS in preparation.	May be overlap of the construction phase with that of GLNG.
Wiggins Island Coal Terminal - Central Queensland	Proposed coal terminal with an initial capacity of 25 million tonnes per annum and an upgrade capability to a nominal	Port of Gladstone.	EIS has been approved.	May be overlap of the construction phase with that of GLNG. Dredging period may coincide with

2 Relevant Projects

Project - Proponent	Description	Location	Project Status	Relationship to GLNG Project
Ports Authority and Queensland Rail	70 million tonnes per annum in later stages. Completion is expected in late 2012.			that for GLNG,
Gladstone Pacific Nickel Refinery - Gladstone Pacific Nickel	Proposed nickel/cobalt refinery. Ore will be pumped as a slurry from a mine near Marlborough and imported from the south-west Pacific region. Residue from the refinery will be pumped to a residue storage facility located at Aldoga. Project is currently on hold and timing is uncertain.	The refinery is located Gladstone in the Gladstone State Development Area.	EIS has been approved.	May be overlap of the construction phase with that of GLNG. The slurry pipeline will cross the alignment of the GLNG gas transmission pipeline.
Gladstone Steel Making Facility - Boulder Steel Limited	Proposed integrated steel making plant producing pig iron billets and blooms. Construction expected 2011-2013.	Aldoga Precinct of the Gladstone State Development Area.	IAS and ToR released. EIS in preparation.	May be overlap of the construction phase with that of GLNG.
Fisherman's Landing Port Expansion - Gladstone Ports Corporation	Proposed expansion of the existing port facility at Fisherman's Landing, by reclaiming 153 ha of land to provide future wharves for transport, storage and loading and unloading facilities. Timing is unknown.	10 km north of Gladstone.	EIS has been released for public comment.	May be overlap of the construction phase with that of GLNG.
Port of Gladstone Western Basin Strategic Dredging and Disposal (WBDD) Project - Gladstone Ports Corporation	Proposed dredging associated with the deepening and widening of existing channels and swing basins and the creation of new channels, swing basins and berth pockets. Dredged material will be placed into reclamation areas to create a land reserve to be used to service new port facilities. Construction could begin 2010-1011.	North of Fisherman's Landing,	EIS has been released for public comment	May be overlap of the construction phase with that of GLNG. Stage 1A of the WBDD Project includes the dredging and disposal required for the GLNG Project. If WBDD is approved, the dredging and material disposal for the GLNG Project may be undertaken as part of Stage 1A of the WBDD Project. This would avoid the need to develop the DMPF at Laird Point.
Boyne Island Aluminium Smelter Extension – Rio Tinto	Proposed extension of the three potlines increasing the smelters annual capacity to 733,000 tonnes of aluminium product. Deferred until market conditions improve.	12 km south-east of Gladstone.	EIS approved in 2003.	May be overlap of the construction phase with that of GLNG.
Yarwun Alumina Refinery Expansion – Rio Tinto Alcan	Expansion of the Yarwun alumina refinery. The expansion will more than double annual production.	10 km north-west of Gladstone,	EIS approved. Project under construction.	Most of the construction likely to be completed before GLNG construction commences.

The locations of these projects are shown on Figure 2.3.

This drawing is subject to COPYRIGHT. It remains the property of URS Australia Pty Ltd.



URS

Client: LNG

Project: GLADSTONE LNG PROJECT ENVIRONMENTAL IMPACT STATEMENT SUPPLEMENT CUMULATIVE IMPACTS

Title: CUMULATIVE IMPACT PROJECT LNG FACILITY

Drawn: VH | Approved: JB | Date: 27-10-2009

Job No: 4262 6440 /6220 | File No: 42626440-g-2009c.wor

Figure: 2.3 | Rev: C | A4

Gas Field Cumulative Impacts

3.1 Overview

Table 2.1 summarises the projects currently planned within the potential sphere of influence of the GLNG Project's CSG field development activities. Most of these projects are located to the east of the GLNG gas fields but two of the projects are in close proximity to the GLNG fields (Spring Gully Power Station and the Wandoan Coal Project). While there is limited geographical overlapping, there could be temporal overlapping as most of the proposed projects are planned to be developed over the same time period. The locations of these projects are shown on Figure 2.1.

The potential environmental values that could be affected by cumulative impacts generated by the spatial or temporal overlapping of the GLNG Project and the projects listed in Table 2.1 are summarised in Table 3.1.

Table 3-1 Potential Cumulative Impacts – CSG Fields

Project	Environmental Value													
	Land	Nature Conservation	Surface Water	Groundwater	Associated Water	Air Quality	Noise	Land Use	Social & Community	Transportation	Solid Waste	Visual Amenity	Cultural Heritage	Hazard and Risk
Queensland Curtis LNG Project		●	●	●	●	●			●	●	●	●		●
Australia Pacific LNG Project		●	●	●	●	●			●	●	●	●		●
Wandoan Coal Project	●	●		●		●	●	●	●	●	●	●	●	
Spring Gully Power Station						●			●	●	●	●	●	
Surat Basin Rail Project									●	●	●			
Nathan Dam Project		●	●	●					●	●	●			

The cumulative impact assessment has assumed that the timing of the construction activities of all of the above projects will coincide. This may not be the case as some projects may be deferred or some may even be cancelled. However a conservative approach was taken by taking them all into consideration.

The nature and extent of the potential cumulative impacts are summarised in the following sections. In some cases more detail is provided in other reports or attachments and in such cases a cross reference is provided. The assessment of the significance of the impact is based on the methodology described in Section 1.3.

3.2 Land

The Reasonably Foreseeable Development Area (RFDA) outlined in the EIS will be developed only by Santos as operator and there will be no development by other CSG producers in the RFD tenements. However, as there are some tenements within the Future Development Area (FDA) which are currently operated by other companies, it is possible that the operators of those tenements may develop the CSG fields within the FDA on a scale beyond that contemplated by Santos as outlined in the EIS. This could result in there being more CSG development in the FDA than that for the GLNG Project alone.

The other CSG projects listed in Table 3.1 are generally located 50 - 100 km to the east of the GLNG fields. At that distance there will be no or limited overlap of impacts to land. The Spring Gully Power Station Project is located approximately 25 km south of the RFDA and has only a small footprint (20 ha). Hence it will have no overlapping land impacts. The FDA near Wandoan has a small overlap with one of the mining leases proposed to be developed by the Wandoan Coal Project. The mining project will have a greater impact on land values than CSG development due to the more extensive clearing and rehabilitation required. The Nathan Dam inundated area is close to part of the FDA near Taroom but does not overlap it. The erosion control measures to be implemented as part of the CSG field development will minimise the risk of any downstream impacts on the dam.

In general, the impacts from the various projects to land values will be localised and limited to within the project footprints. The potential for cumulative impacts is limited, particularly given the significant separation between the various projects.

It is expected that the other development projects will include some or all of the proposed mitigation measures in relation to land impacts proposed for the GLNG Project. By utilising these mitigation measures, it is anticipated that there will be a minimal cumulative impact on the surrounding environment.

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact on land is assessed as low.

3.3 Nature Conservation

3.3.1 Terrestrial Ecology

The nature and extent of the impacts on terrestrial ecology from the various CSG projects are expected to be similar given the similar way the gas fields will be developed. Clearing will be required for well and infrastructure development but for all projects there will be some flexibility in the selection of development sites and there will be potential to avoid areas of high ecological value.

The areas of disturbance for each of the CSG projects will vary. The GLNG disturbance footprint is 2,500 ha for the proposed 2,650 wells. The proposed disturbance footprint for the Queensland Curtis LNG Project is 13,500 ha (6,000 wells). The footprint for the Australia Pacific LNG Project (10,000 wells) is not known but is likely to be similar or larger than that for the Queensland Curtis Project.

All of the CSG projects are located in the Brigalow Belt Bioregion. The majority of the development required for both the GLNG Project and the Queensland Curtis LNG Project will occur in already cleared areas or in areas of remnant vegetation which have a Regional Ecosystem status of “Not of

Concern”. The status of the areas to be cleared for the Australia Pacific LNG Project will not be known until their EIS has been released (expected at the end of 2009).

The gas field development will, however, result in disturbance to some small areas of a number of ecological communities that have been listed under either Queensland or Commonwealth legislation as being of environmental value. In the worst case scenario (no multiple-well drill pads), the GLNG Project could potentially affect the Brigalow (52 ha), Semi-evergreen Vine Thicket (69 ha), and Bluegrass (8 ha) communities. However, the more likely scenario is that a much smaller area (possibly only 26 ha) of these communities will be affected. The Queensland Curtis LNG Project will affect Brigalow (30 ha) and Semi-evergreen Vine Thicket (6 ha). Both projects have committed to offsetting all of the listed regional ecosystems to be disturbed.

The cumulative impacts from the clearing associated with the CSG projects will be mitigated by minimising the areas involved, the proposed offsetting strategies, and the significant separation between the project areas (generally 50 - 100 km).

The non-CSG projects will affect similar ecosystems. The Wandoan Coal Project will result in the clearing of remnant Brigalow (35 ha), and remnant Brigalow and Poplar box Open Forest (72 ha). The Surat Basin Rail Project will result in the clearing of Brigalow (1 ha) and Semi-evergreen Vine Thicket (7 ha). There is no remnant vegetation on the Spring Gully Power Station site and it has low ecological value.

The cumulative impact to the EPBC-listed Brigalow communities from these projects is the clearing of 118 ha, which represents 0.03 % of these communities within the bioregion (Brigalow Belt Bioregion). The cumulative impact to the EPBC-listed communities of Semi-evergreen Vine Thicket is the clearing of 99 ha which represents 0.16 % of these communities within the bioregion.

The GLNG EIS has identified 21 flora species of conservation significance while the Queensland Curtis LNG EIS identified 33 endangered, vulnerable or rare (EVR) flora species that have preferred habitat within their gas field. There is significant overlap in species between the two projects. The Wandoan Coal Project EIS reported only one threatened flora species (*Homopholis belsonii*), which was also found at both CSG project sites. This species is also one of the five threatened flora species to be impacted by the Surat Rail Project. The other four are also in the lists of potentially impacted species from the CSG projects. Both CSG projects have committed to field scouting activities prior to selecting the locations for wells and infrastructure to avoid wherever possible flora species of conservation significance.

Based on the assessment methodology given in Section 1.3, the overall cumulative impact on terrestrial flora is assessed as medium.

The GLNG EIS identified 14 threatened fauna species within the gas fields while nine were identified in the Queensland Curtis EIS. However none of the species were common to both project sites. The Wandoan Coal Project EIS indicated that four threatened species were recorded, one of which (*Chalinolobus picatus*) was also recorded in the GLNG CSG field. The general lack of common species across the various project areas indicates that cumulative impacts are not likely to be significant. However, it should be noted that a number of other threatened fauna species have been predicted to occur in each of the project areas and some of these species are common to multiple project areas.

While the additional projects will increase the extent of potential disturbance of terrestrial ecological over a larger area, the significance of the overall cumulative impact of terrestrial fauna is assessed as low.

3.3.2 Aquatic Ecology

Threatened aquatic values identified in the GLNG CSG fields included the Murray River Cod, the Fitzroy River Turtle and mound spring communities. The Murray River Cod and the Fitzroy River Turtle were also identified as potentially affected by the Queensland Curtis LNG Project. The EISs for the Wandoan Coal Project and the Surat Basin Rail Project did not identify any significant aquatic ecology impacts.

Management strategies proposed by both CSG projects to minimise disturbance to aquatic habitats include locating wells away from riparian and mound spring areas, minimising disturbance from infrastructure crossings, control of runoff from disturbed areas, and rehabilitation of disturbed areas.

Both the GLNG and the Queensland Curtis CSG fields are located in the Dawson River catchment (habitat of the Fitzroy River Turtle) and the Murray-Darling Basin in the south (habitat of the Murray River Cod). These species are also likely to be affected by the proposed Nathan Dam. Because of this interconnection, the potential for cumulative aquatic impact is increased. While the proposed mitigation and rehabilitation will help minimise the cumulative impacts, based on the assessment protocol described in Section 1.3, the significance of the cumulative impact on aquatic ecology is medium.

3.4 Surface Water

Given the mitigation measures proposed, development of the GLNG CSG field is not expected to have any significant surface water impacts. Furthermore, the option of discharging treated associated water to perennial watercourses (or spring flow locations) at relatively low discharge rates, should not substantially impact upon stream water quality or geomorphology. Similarly, the Queensland Curtis EIS indicates that its management strategies will be such that the project will also not have any significant surface water impacts. It can be anticipated that the Australian Pacific LNG Project will adopt a similar approach to associated water management.

The EISs for both the Wandoan Coal Project and the Surat Basin Rail Project both indicated that they will not significantly affect downstream water quality. The Spring Gully Power Station will not have any significant surface water discharge as cooling water blowdown will be evaporated. While the Nathan Dam itself will have significant surface water impacts, it will be downstream of the GLNG CSG fields and will not affect surface water within the fields. The dam however will receive any treated associated water that is discharged into the Dawson River, which could assist in augmenting the dam's water supply. Due to the significance of the dam's impacts on surface water, the marginal effect of any minimal impacts from the CSG field development will be minor.

Given the commitments made from the various projects regarding surface water management, based on the assessment protocol described in Section 1.3, the significance of the cumulative impact on surface water is low.

3.5 Groundwater

The removal of associated water from the production wells has the potential to impact on existing groundwater resources, including the reduction in groundwater pressures and inter-aquifer transfers with a possible lowering of the groundwater table. The areal extent of any drawdown effect will be limited to the immediate vicinity of the CSG fields. There will be no overlap with the Queensland Curtis CSG fields which will be 50 - 100 km away.

The EISs for both CSG projects indicate that the groundwater impacts will not be significant and those that may occur will be limited to the immediate locality of each project site. Both projects are proposing mitigation and monitoring strategies to minimise any impacts. The potential effects of the Australia Pacific LNG Project are unknown at this point in time.

Current CSG activities adjacent to the GLNG fields producing gas for the domestic market have been included in the groundwater modelling undertaken for the EIS to ensure that their impacts have been allowed for.

The EIS for the Wandoan Coal Project predicts that there will be negligible groundwater impacts from the project outside the immediate footprint of the mine. The Surat Basin Rail Project and the Spring Gully Power Station will have no significant groundwater impacts.

Possible cumulative impacts associated with additional CSG development projects will be an increase in the areal extent of groundwater resources affected. However, given the significant separation between the two proposed projects no interaction is expected.

The proximity of the proposed Nathan Dam to the FDA will require further assessment of the potential for any interconnectedness of the underlying aquifers. As the Nathan Dam EIS is not yet available, this potential impact cannot be assessed.

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact on groundwater is assessed as medium.

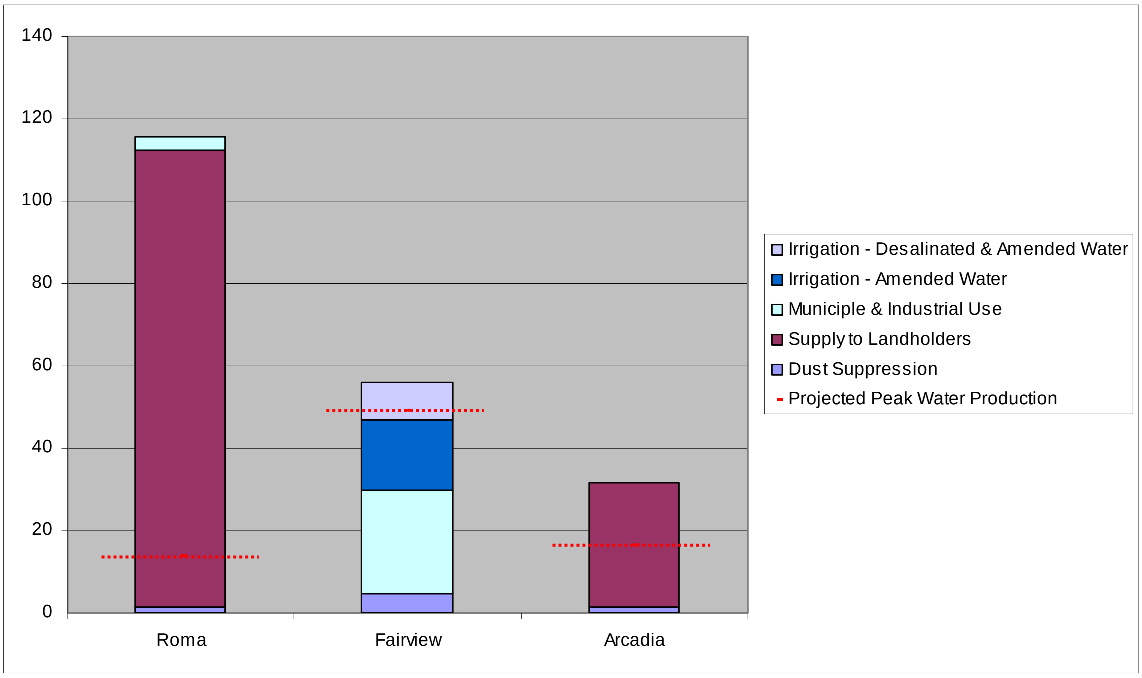
3.6 Associated Water

For the GLNG Project an associated water (AW) management strategy has been developed to consider a range of water management options which will be adapted according to the variations in quality and quantity of associated water produced from the CSG wells. The peak AW production will be approximately 80 ML/day. Separate strategies have been developed for the Roma, Fairview and Arcadia Valley fields with the AW management options consisting of (in order of preference) the following scenarios:

- Roma: dust suppression, supply of desalinated and/or amended water to local landholders, municipal use, industrial use, opportunistic projects, and as a measure of last resort, discharge of desalinated water to Bungil Creek.
- Fairview: dust suppression, industrial supply (via discharge of desalinated water to the Dawson River for downstream industrial users), irrigation of tree plantations using amended water and irrigation of forage crops using desalinated and amended water.
- Arcadia Valley: dust suppression, supply of desalinated or amended water to local landholders, opportunistic projects, and as a measure of last resort, discharge of desalinated water to Lake Nuga Nuga.

Figure 3.1 below compares the expected demand in ML/day for AW (amended and desalinated) against peak production of AW for each CSG field, and demonstrates that significant demand exists (in excess of the peak supply of AW).

Figure 3-1 Demand and Peak Production (ML/day) of AW for GLNG Project



As can be seen from Figure 3.1, while there is limited capacity in the Fairview and Arcadia areas to accept additional AW from other CSG projects in the region, there is significant capacity in the Roma area.

For the Queensland Curtis LNG Project the current estimates predict the total volume of AW to peak at approximately 180 ML/day, with average production in the order of 160 ML/day. The majority of the AW is saline and will require some treatment prior to beneficial use. The preferred option is for desalination of a proportion of the AW followed by concentration and evaporation of brine produced through the desalination process. In the short to medium term, evaporation ponds may be used. Longer term, the preferred set of beneficial use options include stock or domestic purposes, tree or crop irrigation, supply of water to mines, surface water discharge or reinjection.

The Queensland Curtis LNG CSG fields have been divided into three separate areas and the peak AW production rates for each area are as follows:

- Northern (centred around Wandoan) – 40 ML/day;
- Central (south of Miles) – 61 ML/day; and
- Southern (west of Dalby) – 110 ML/day.

The northern area of the Queensland Curtis CSG fields is more than 60 km away from the Fairview and Arcadia fields of the GLNG Project. At that distance there is unlikely to be any significant overlap in the AW demand areas. Furthermore the AW production rate from the Queensland Curtis northern area is the smallest (40 ML/day) of their three areas. Hence there should be no significant cumulative AW impact in this area.

The central area of the Queensland Curtis CSG fields is approximately 20 km away from the eastern extremity of the GLNG Roma field. At this distance there may be some overlap in AW demand areas. However, as can be seen from Figure 3.1, there is significant spare capacity for additional AW consumption in the Roma area. Hence, should there be a need; there is adequate capacity for some of the Queensland Curtis AW to be disposed of in the Roma area.

The southern area of the Queensland Curtis CSG fields is approximately 80 km from the GLNG Roma field and at that distance no significant overlap in the AW demand areas is expected.

No data are yet available on the AW production rates from the Australia Pacific LNG Project. Its CSG fields are adjacent to the eastern boundary of the GLNG Roma fields and hence there may be some overlap in demand areas. However as stated above, there is significant available demand in the Roma area even allowing for the GLNG Project, and hence there is likely to be capacity to accept at least some of the Australia Pacific Project's demand if necessary.

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact on associated water is assessed as low.

3.7 Air Quality

Existing air quality for criteria pollutants in the CSG fields is far lower than air quality guidelines due to the low level of industrial development in the area. To assess the cumulative impacts, background air quality levels have been obtained from Toowoomba, the closest DERM air quality monitoring site. This site is expected to be conservative compared to ambient air quality in the CSG fields, due to its location in a large urban centre.

A cumulative assessment was undertaken of all of the proposed GLNG CSG field compressors assuming background level of NO_2 from the Toowoomba site. The modelling results showed that the cumulative impact was well below the guidelines. Due to the large distances (many kilometres) between the field compressor stations to be operated by GLNG and the rapid decrease in ground level concentrations below the relevant standards (within several hundred metres of a compressor), the cumulative impacts from all the GLNG CSG field compressor stations will be low.

The modelling of airborne emissions from the Queensland Curtis Project's CSG operations indicated that their emissions will be below air quality limits. It showed that cumulative impacts on nitrogen dioxide levels from other existing and proposed projects in the region are not expected to exceed air quality limits. Given the large separation distances between the GLNG and Queensland Curtis and Australia Pacific gas fields (approx 50 - 100 km), the cumulative air quality impacts will be negligible.

Both the GLNG and Queensland Curtis CSG field developments will generate dust associated with the clearing and earthworks activities. Both projects have committed to implementing dust mitigation strategies. Given this, the dust impacts will be limited to within the vicinity of each disturbance area and there will be no dust interaction between the two project sites, except in the unlikely event of a regional dust storm.

Emissions from the gas-fired Spring Gully Power Station are not predicted to exceed air quality guidelines at the nearest sensitive receptors. Given this and its distance from the nearest CSG fields (~ 25 km), no cumulative air quality impacts are likely.

The Wandoan Coal EIS indicates that the mining operations may result in air quality exceedances (dust) at some sensitive receptors surrounding the mine. This may add to any dust generated by CSG field development activities that may be undertaken in the area surrounding the mine. However, the areal extent of any cumulative impact would be limited. The mine has committed to implement an extensive dust mitigation strategy to minimise such impacts.

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact on air quality is assessed as low.

3.8 Noise and Vibration

Modelling of noise from the GLNG CSG field wells and compressors shows that noise criteria will be met within 0.3 km and 3.4 km respectively. Where such equipment cannot be located further from noise sensitive land uses due to operational constraints, noise mitigation measures will be adopted to provide sufficient attenuation to meet noise criteria. The Queensland Curtis EIS indicates that buffer distances of 4 to 5 km will be required around their compressor stations.

Up to 12 compressor stations are proposed within the GLNG CSG fields. They will be spaced at distances much greater than 3.4 km apart. In addition, the gas wells will be 0.7 km to 1 km apart. Consequently there will be a low probability of there being any cumulative noise impacts from multiple activities within the gas fields.

The Queensland Curtis and Australia Pacific projects are 50 - 100 km or more from the GLNG CSG fields and hence there will be no cumulative noise impacts generated by these projects with the GLNG Project.

The Wandoan Coal Project EIS indicates that the project’s mining activities will potentially adversely affect existing noise levels at some sensitive receptors. If there are any CSG wells in the vicinity there may be some minor cumulative noise impacts.

Intermittent noise from trains operating on the Surat Basin Rail would have minimal cumulative noise impact from any nearby CSG wells.

The Spring Gully Power Station will be approximately 25 km from the nearest CSG field and at that distance there will be no cumulative noise impacts.

The Nathan Dam construction area will be over 40 km away from the nearest FDA and at that distance there will be no cumulative noise impacts.

Ensuring that compressor stations and well sites are remote from noise sensitive receptors and implementing noise mitigation measures will minimise any opportunities for cumulative noise impacts.

There are no significant sources of vibration from CSG field development activities and they will not contribute to cumulative vibration impacts.

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact on noise and vibration is assessed as low.

3.9 Land Use

Within the GLNG CSG fields the predominant land use is cattle grazing. Cropping, including irrigated and dryland cropping, occurs around more fertile areas. Similar land uses exist within the gas fields of the Queensland Curtis LNG and Australia Pacific LNG projects. Installation of CSG infrastructure in the project areas will not prevent the existing land uses from continuing. CSG facilities will be located and operated in a manner to minimise interference with existing land use practices. While there will be some changes required in particular situations, in general the existing land uses will remain. The main cumulative land use impact from the CSG projects will be an extension of the area of land in the region that is affected in this way.

The Wandoan Coal Project will result in a transformation of land use from rural to mining. This will be limited to within the mine footprint. This will not have any significant cumulative land use impact.

The footprint of the Spring Gully Power Station is small (20 ha) and hence will not contribute significantly to any cumulative changes to regional land use.

Any minor loss of agricultural land use due to restrictions from CSG field development activities will be negligible compared to that caused by the inundation from the Nathan Dam.

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact on land use is assessed as medium.

3.10 Social and Community

The GLNG CSG field workforce will peak at approximately 1,640. The majority of this workforce will be imported into the region and will be accommodated in temporary accommodation facilities which will be located at strategic locations throughout the CSG fields. The locally based workforce will continue to use their existing accommodation. There will be some increase in population in Roma due to activities associated with the Roma logistics hub and other project activities.

The other major CSG projects in the region (Queensland Curtis LNG and Australia Pacific LNG) are located east of Roma in the vicinity of Miles, Condamine and Dalby. These centres will experience the main social and community effects from these projects. The Queensland Curtis LNG Project expects to obtain approximately 20 % of its 2,100 workforce (420 workers) from the region (defined as extending from Toowoomba to Roma). Hence, while there may be a minor effect on Roma's workforce, the main cumulative effects from this project will be in the Dalby-Miles area and not Roma. A similar pattern can be expected from the Australia Pacific LNG Project.

While the social and community effects of the CSG projects will be spread throughout the region and not focused on any one particular community, the region as a whole will experience cumulative impacts on its social and community infrastructure. These impacts could include:

- Increased demand on the regional labour pool, potentially resulting in difficulty for existing employers in the region being able to attract or retain staff;
- A change in community perceptions and wellbeing as the economic structure of the region shifts from being based on rural industries to one based on oil and gas;
- Increased economic activity for regionally based businesses providing services that are required by the CSG industry; and
- Increase demand for accommodation and community services from imported workers who are not accommodated in the temporary accommodation facilities.

Santos proposes to mitigate the negative impacts by providing accommodation and recreational facilities for the imported workers, and to enhance the positive impacts by maximising opportunities for local businesses to provide goods and services to the operation. It is expected that the other CSG projects will commit to similar strategies which will assist in minimising cumulative impacts.

The Nathan Dam, Wandoan Coal and Surat Basin Rail projects are all centred around Wandoan and Taroom. Depending on the timing of their construction phases, these projects could add to the cumulative impacts listed above. However given their distance from Roma (100 km or more), they are more likely to be influenced by the Queensland Curtis and Australia Pacific LNG projects than the GLNG Project.

Roma will be the focus of the Spring Gully Power Station should its construction proceed. While construction workers will be accommodated at an on-site construction accommodation facility on a fly-in/fly-out basis, there will be use made of short-term accommodation facilities in Roma for project suppliers and visitors. The operational workforce of 29 is expected to be accommodated in Roma. Roma will also be the main source for locally based businesses supplying goods and services to the power station.

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact on social and community infrastructure is assessed as medium.

3.11 Traffic and Transport

Access to the GLNG CSG fields is anticipated to be primarily from the Warrego Highway and the Carnarvon Highway. Because the CSG fields encompass such a large area of land and stretch for a long distance along both the Warrego Highway and the Carnarvon Highway, it is not known exactly where access roads will be required.

As field development activities progress and well sites and worker accommodation facility locations are determined, appropriate access to the state-controlled road system will be sought. This is to ensure both safe and efficient access to the CSG fields. Intersection turning treatments will be determined based on the size of worker accommodations and construction depots accessed via the roads chosen.

The primary access to the proposed Fairview CSG fields and worker accommodations is anticipated to be from the Carnarvon Highway, via Fairview Road and Injune-Taroom Road. The primary access to the proposed Arcadia CSG fields and construction depot will be from the Carnarvon Highway via Mulcahy’s Road and Arcadia Valley Road. For the Roma field it will be the Warrego and Carnarvon Highways.

Traffic capacity impacts to the road network from proposed CSG field development activities are not expected to be significant because of the relatively low levels of traffic generated over a relatively large area. Additionally, the existing traffic volumes on most roads in the vicinity of the CSG fields are at such low levels that the roads operate with significant spare capacity and the proposed field development traffic will not trigger capacity upgrades.

Most of the roads to be affected by the Queensland Curtis CSG development are well to the east of the GLNG CSG fields. They include the Warrego Highway, Leichhardt Highway, Moonie Highway, Surat Development Road, Dalby-Kogan Road, Kogan-Condamine Road, Jackson-Wandoan Road and Dalby-Jandowae Road. Of these, only the Warrego Highway will be affected by traffic from the GLNG CSG field development activities. Most of the Australia Pacific CSG fields are also in the same area as the Queensland Curtis fields and are unlikely to affect many of the roads that are of relevance to the GLNG Project. Consequently, cumulative impacts will result in more roads being affected throughout the region by CSG development activities. However, not many of the individual roads to be affected by the GLNG Project will be affected by the other projects. The exception to this will be the Warrego Highway. The cumulative impacts on the Warrego Highway are summarised in Table 3.2.

Table 3.2 Cumulative Impacts on Warrego Highway

Section	Daily Traffic Volumes			Cumulative Impact (%)
	Existing	GLNG	QCLNG	
Toowoomba-Dalby	4,500-17,500	40-70	350	2-9
Dalby-Miles	2,100-6,500	40-70	510	9-28
Miles-Roma	1,200-3,000	40-160	510	22-56

Both the GLNG and Queensland Curtis LNG projects have committed to a range of mitigation measures to reduce the impacts of their projects on the road network. In addition, both projects have identified the roads to be affected and have committed to negotiating a suitable contribution package. A similar approach is expected from the other projects proposed for the area. In this way any cumulative impacts will be mitigated.

Further details on the cumulative traffic impacts are provided in Appendix A.

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact on traffic and transport from the CSG field development is assessed as medium.

3.12 Solid Waste

The GLNG CSG field development will generate a variety of solid wastes, many of which will be reused or recycled. However there will also be selected wastes that will be disposed of in local landfills or licensed waste management facilities. The Queensland Curtis EIS indicates that their waste management practices will be similar and the same can be expected from the Australia Pacific Project.

Some of the landfills and waste management facilities will be operated by local councils. The GLNG gas fields are located in the Maranoa, Western Downs, Banana, and Central Highlands regional council areas. The Queensland Curtis gas fields are in the Toowoomba, Western Downs, Maranoa and Banana regional council areas. Given this overlap, there could be demands from both projects on the facilities of the Maranoa, Western Downs and Banana regional councils. A similar demand may also come from the Australia Pacific Project.

Santos will minimise the volumes of solid wastes to go to the regional council facilities and will work closely the councils to ensure that adequate capacity is available. Alternative waste management facilities will be used if necessary.

The Wandoan Coal Project is currently considering the development of a new multi-user, municipal waste and recycling facility at a suitable location adjacent to the mine site for disposal of general and domestic waste. They are in discussions with Dalby Regional Council in order to provide a long term solution to waste disposal in the Wandoan area. Such a facility may also be able to take some of the waste from the CSG field developments.

Additional demand can also be expected from the Spring Gully Power Station (Maranoa Regional Council), the Surat Basin Rail (Western Downs and Banana regional councils), and the Nathan Dam (Banana Regional Council).

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact on visual amenity is assessed as medium.

3.13 Visual Amenity

CSG field development activities will create both temporary and longer term changes to the visual landscape character of the areas in which they are located. These changes will be most noticeable in near-field views and in views from public roads. Both the GLNG and the Queensland Curtis projects will have similar visual impacts.

Given the generally undulating and vegetated character of the CSG fields, visual impacts are generally apparent only in the near and mid fields. Far field views are generally limited. Hence given the 50 - 100 km separation between the two projects, there will be no significant cumulative visual impacts. One exception to this could be views from the air where the combined visual effect of the two projects will cover a much larger area than just the GLNG CSG fields.

The visual assessment in the Wandoan Coal Project EIS determined that while infrastructure elements are of a large scale they will not project significantly outside of the project areas. However, the creation of the various mine pits will create visual change and high visual effects on some immediate surrounding areas. Any CSG well development or compressor station development within the view shed would increase the cumulative visual impacts of the area.

The Spring Gully Power Station will be visually dominant in its local view shed but given its distance from the nearest GLNG CSG field, there will be no significant cumulative impact.

In a regional context the visual impact of the Surat Rail Project will be small with no significant cumulative impact.

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact on visual amenity is assessed as low.

3.14 Cultural Heritage

3.14.1 Non-indigenous Cultural Heritage

The GLNG EIS has identified a number of non-indigenous cultural heritage sites within the GLNG CSG fields. Cumulative impacts for such sites are unlikely as they will not be affected by projects remote from the site itself. The possible exception to this could be sites that cross large geographic areas such as railway and telegraph lines. This could include the following sites in the GLNG CSG fields:

- HAS-10 (Injune to Roma Rail line); and
- HAS-11; HAS-19; HAS 27 and HAS 28 (telegraph lines).

However these sites will not be affected by any of the other projects listed in Table 3.1 as they are located significant distances from the GLNG CSG fields.

Santos will develop the CSG fields in accordance with the management procedures committed to in the EIS. There will be no other development by other petroleum producers in the tenements described in the RFDA CSG fields.

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact on non-indigenous cultural heritage is assessed as low.

3.14.2 Indigenous Cultural Heritage

Management of indigenous cultural heritage significance and impacts for the GLNG Project will be by the Cultural Heritage Management Plan (CHMP) process. Protection, management and mitigation measures will be agreed after cultural heritage surveys are complete, and will then be incorporated into the Santos Cultural Heritage Management System.

The CHMPs allow for cultural heritage surveys to be carried out on an ‘as required’ basis throughout the project duration as development plans for the various CSG fields are prepared. In each case these will result in management planning that can be incorporated into the Santos Environment Health and Safety Management System.

The CHMPs will deal with the cultural heritage issues particular to the specific project locations under consideration. This will not affect or be affected by any of the other projects listed in Table 3.1 as they are located significant distances from the GLNG fields.

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact on indigenous cultural heritage is assessed as low.

3.15 Hazard and Risk

Hazards associated with CSG field operations can include the following:

- Underground pipe rupture of a pipeline in the gathering system;
- Pipe rupture at compressor or inspection stations;
- Blow-out of gas at a well head and subsequent fire;
- Gas leak from pipeline Infrastructure; and
- Accommodation fire involving combustible construction, LPG or diesel.

Comprehensive mitigation measures and controls will be implemented to minimise the risk of these hazardous scenarios occurring. A qualitative assessment has shown the areas affected by such events are limited to the immediate vicinity of the source.

The other CSG projects in the region are generally located 50 km or more from the GLNG CSG field operations. At this distance no cumulative risk impacts can be expected.

One potential cumulative impact may arise if two projects both had emergency situations at the same time. In that case the limited emergency services available in the region may be stretched. However Santos will have its own emergency response facilities available to respond to their situations.

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact on risk is assessed as low.

Gas Transmission Pipeline Cumulative Impacts

4.1 Overview

Table 2.2 summarises the projects currently planned within the potential sphere of influence of the GLNG Project's gas transmission pipeline. Many of the other pipeline projects in the region are generally located at significant distances from the GLNG gas transmission pipeline route but most of them come together as they approach Gladstone where there is potential cumulative impact. While there is limited geographical overlapping, there could be substantial temporal overlapping as a number of the proposed projects are planned to be developed over the same time period.

The projects that could generate cumulative impacts and the environmental values that could be affected by the spatial or temporal overlapping of the GLNG gas transmission pipeline are listed in Table 4-1.

Table 4-1 Potential Cumulative Impacts – Gas Transmission Pipeline

Project	Environmental Value												
	Land	Nature Conservation	Surface Water	Groundwater	Air Quality	Noise	Land Use	Social & Community	Traffic & Transport	Solid Waste	Visual Amenity	Cultural Heritage	Hazard and Risk
Queensland Curtis LNG Project	●	●	●		●	●	●	●	●	●	●	●	●
Australia Pacific LNG Project	●	●	●		●	●	●	●	●	●	●	●	●
Shell Australia LNG Project	●	●	●		●	●	●	●	●	●	●	●	●
Surat Gladstone Pipeline	●	●	●		●	●	●	●	●	●	●	●	●
Central Qld Gas Pipeline	●		●		●	●				●	●	●	●
Gladstone/Fitzroy Pipeline	●		●		●	●				●	●	●	
Surat Basin Rail Project								●	●	●		●	
Moura Link/ Aldoga Rail	●		●		●	●			●	●	●	●	
Dawson South Mine								●				●	
Boundary Hill Mine Extension	●				●	●	●	●			●	●	
Nathan Dam Project								●				●	
Wandoan Coal Project								●				●	
Spring Gully Power Station				●	●			●					
Stuart Oil Shale Project							●						

The locations of the above-listed projects are shown on Figure 2.2.

The cumulative impact assessment has assumed that the timing of the construction activities of all of the above projects will coincide. This may not be the case as some projects may be deferred or some may even be cancelled. However a conservative approach was taken by taking them all into consideration.

The nature and extent of the potential cumulative impacts are summarised in the following sections. In some cases more detail is provided in other reports or attachments and in such cases a cross reference is provided. The assessment of the significance of the impacts is based on the methodology described in Section 1.3.

4.2 Land

All of the projects listed in Table 4.1 are over 100 km or more away from the upstream sections of the GLNG gas transmission pipeline. The one exception to this is the Spring Gully Power Station, which is approximately 25 km east of the pipeline's alignment. However even at this distance there will be no cumulative land impacts.

The downstream end of most of the pipeline projects listed in Table 4.1 will be in close proximity to the downstream sections of the GLNG gas transmission pipeline. This will occur generally within the vicinity of Biloela to Gladstone. It is expected that the gas transmission pipelines for the GLNG, Queensland Curtis and Australia Pacific Projects as well as the Surat Gladstone Pipeline will all use the same or nearby corridors for the area west of the Bruce Highway. East of the Bruce Highway through the Gladstone State Development Area (GSDA) the gas transmission pipelines are all heading towards Curtis Island (except the Surat Gladstone Pipeline, which will terminate at Fisherman's Landing) and are likely to be adjacent to each other. The pipelines coming from the north (Central Queensland Pipeline and Gladstone/Fitzroy Pipeline) will also cross the gas pipelines in the GSDA.

In October 2009, the Queensland Government established the Callide Infrastructure Corridor State Development Area (CICSDA) and associated Development Scheme. The CICSDA extends from the Calliope Range to the Bruce Highway and has been established to provide a corridor for the multiple gas transmission pipelines approaching Gladstone from the west and to avoid multiple pipeline corridors crossing the area and thereby minimising disturbance to landholders. Its objectives include the protection of the corridor from land uses incompatible with pipeline development and to ensure that the proposed pipelines do not consume land unnecessarily or compromise future land use. Although it is Santos' preference to utilise the CICSDA corridor, this is dependent on the government's resumption of the underlying land interest and negotiation of access terms and conditions.

Co-locating multiple pipelines within the CICSDA and the GSDA could lead to cumulative impacts on land values with respect to soil disturbance, erosion, drainage, contaminated land, topsoil management and management of acid sulphate soils. Management plans have been prepared by the GLNG Project to minimise such impacts and it is expected that similar plans will be implemented by the other pipeline projects. Use of the CICSDA will ensure that such cumulative impacts are generally restricted to a defined area within the corridor and are not more widely dispersed throughout the region where the pipeline alignments coincide.

The GLNG gas transmission pipeline will be located adjacent to the Boundary Hill Mine Extension Project. The mine will have a greater impact on land resource values than the pipeline due to the more extensive clearing and rehabilitation required. The cumulative impacts on land values from both projects will be negligible due to the comparatively small area of clearing required for the gas transmission pipeline in the vicinity of the mine.

The Moura Link Aldoga Rail Project includes a rail line running along the western side of the GSDA on the eastern side of the Bruce Highway. This rail line may cross the alignment of the GLNG gas transmission pipeline and possibly that of some of the other proposed gas pipelines. The relatively small area of overlap with these projects and the environmental management plans proposed to be implemented with respect to with soil disturbance, erosion, drainage, contaminated land, and topsoil management will ensure that any potential for cumulative impacts to occur will be minimised.

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact on land is assessed as low.

4.3 Nature Conservation

4.3.1 Terrestrial Ecology

As discussed in Section 4.2, all of the projects listed in Table 4.1 are over 100 km or more away from the upstream sections of the gas transmission pipeline. The one exception to this is the Spring Gully Power Station which is approximately 25 km east of the gas transmission pipeline's alignment. Given the lack of nature conservation values on the proposed power station site there will be no cumulative nature conservation impacts from the GLNG gas transmission pipeline.

The downstream end of most of the pipeline projects listed in Table 4.1 will be in close proximity to the downstream sections of the GLNG gas transmission pipeline. This will occur generally within the vicinity of Biloela to Gladstone. It is expected that the pipelines for the GLNG, Queensland Curtis and Australia Pacific projects as well as the Surat Gladstone Pipeline will all use the same or nearby corridors for the area west of the Bruce Highway (CICSDA). East of the Bruce Highway through the GSDA the gas pipelines head towards Curtis Island (except the Surat Gladstone Pipeline, which will terminate at Fisherman's Landing) and are likely to be adjacent to each other. The pipelines coming from the north (Central Queensland Pipeline and Gladstone/Fitzroy Pipeline) will also cross the gas pipelines in the GSDA.

Co-locating multiple pipelines within the CICSDA and the GSDA could lead to cumulative impacts on nature conservation values. Management plans have been prepared by the GLNG Project to minimise such impacts and it is expected that similar plans will be implemented by the other pipeline projects. Use of the CICSDA will ensure that such cumulative impacts are generally restricted to a defined area within the corridor and are not more widely dispersed throughout the region where the pipeline alignments coincide.

The remnant vegetation present within the GLNG gas transmission pipeline corridor is largely restricted to the range crossings of the Calliope Range, Callide Range, Dawson Range, Expedition Range and Carnarvon Range. Of these the Calliope and Callide Ranges will be most susceptible to cumulative impacts as these are the areas where the multiple pipelines will begin to coincide. Flora species of conservation value in these areas include the *Cycas megacarpa* which was recorded from three locations within the Callide and Calliope Ranges and *Acacia pedleyi* which was identified within the Callide Range.

The EIS for the Queensland Curtis LNG Project has identified three EVR flora species with potential for cumulative impacts along their pipeline corridor. These are *Cycas megacarpa*, *Micromyrtus patula* and *Philotheca sporadica*. Of these, only *Cycas megacarpa* has been recorded in the GLNG gas transmission pipeline corridor.

Management plans have been prepared by the GLNG Project to minimise impacts to conservation values and it is expected that similar plans will be implemented by the other pipeline projects. This includes the avoidance or translocation of individual specimens of EVR species such as *Cycas megacarpa.* Use of the CICSDA will ensure that cumulative impacts due to clearing of remnant vegetation will be generally restricted to a defined area within the corridor and will not be more widely dispersed throughout the region where the pipeline alignments coincide.

Remnant vegetation of conservation significance is also located along the riparian areas of major watercourses. This includes the Dawson and Calliope Rivers at the eastern end of the gas transmission pipeline corridor where there is potential for cumulative impacts from the other gas pipeline projects. To avoid cumulative impacts in these areas, the GLNG Project will consider the use of horizontal directional drilling (HDD) where practicable, taking into account environmental, engineering, logistical and geotechnical issues and advice from the drilling operator.

There is also potential for cumulative impacts in coastal areas near Port Curtis as marine plants are protected under the *Queensland Fisheries Act 1994*. This includes the mangrove and saltmarsh communities as well as *Melaleuca* species (paper barks) and *Casuarina* species (she-oaks) occurring within the GLNG gas transmission pipeline corridor. Pipelines from the other projects on Curtis Island (Queensland Curtis LNG and Australia Pacific LNG) are also likely to result in the clearing of some of these communities.

The EIS for the Queensland Curtis LNG Project has identified the potential for cumulative impacts to EVR fauna species with highly restricted distributions. These include the Northern Quoll and the Large-eared Pied Bat. The Queensland Curtis EIS states that such species and their habitats have been largely avoided. The GLNG EIS notes that habitat for the Northern Quoll is unlikely to be present along the gas transmission pipeline corridor given the disturbed nature of most habitats surveyed. However it does note that the GLNG gas transmission pipeline may traverse suitable habitat for the large-eared pied bat and hence there is potential for some cumulative impacts to occur to the habitat of this species.

Given the distance between (or limited crossing of) the GLNG gas transmission pipeline and the other projects (non LNG projects) listed in Table 4.1 no significant cumulative impacts are expected from the non-LNG projects.

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact on terrestrial ecology is assessed as medium.

4.3.2 Aquatic Ecology

The gas transmission pipelines for the GLNG, Queensland Curtis LNG, Australia Pacific LNG and Surat Gladstone Pipeline projects are located in the Dawson River catchment (habitat of the Fitzroy River Turtle) and the Murray-Darling Basin in the south (habitat of the Murray River Cod). These threatened species are also likely to be affected by the proposed Nathan Dam. The other projects listed in Table 4.1 are also located in either the Dawson or Murray-Darling catchments. Because of this interconnection, there is some potential for cumulative aquatic impacts to occur.

For the Dawson River crossing, the GLNG Project is considering the use of HDD techniques. This would ensure that there will be no significant impact to its aquatic ecology values. For other watercourse crossings, management strategies specifically designed to minimise environmental impact to the aquatic and riverine environments will be implemented. The other gas pipeline projects are proposing similar strategies to manage watercourse crossings.

The non-LNG projects within the river catchments will involve land clearing and disturbance but are generally located significant distances from the main watercourses. It can be assumed that with appropriate development approvals and environmental conditions there will be no unacceptable downstream impacts from these projects that are likely to impact on the aquatic values of the river systems.

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact on aquatic ecology is assessed as low.

4.3.3 Marine Ecology

The gas transmission pipelines for the four LNG projects on Curtis Island are all expected to cross Port Curtis between Friend Point and Laird Point.

The cumulative impact assessment on marine values is addressed in Section 5.6.

4.4 Surface Water

The greatest risk of surface water impacts from the gas transmission pipelines is in the vicinity of watercourse crossings where bank disturbance, bed erosion, or disturbance to fringing vegetation could lead to long term degradation. The GLNG Project will be implementing specific controls at all watercourse crossings to ensure that such risks are minimised. The other pipeline projects are proposing similar environmental management strategies.

The pipelines will require the disposal of hydrotest water during their commissioning stages. To prevent any potential surface water impacts from this, the GLNG Project will be disposing of hydrotest water in accordance with the relevant approval conditions and commensurate with its water quality characteristics. Strategies could include reuse, discharge to land (avoiding runoff), evaporation or disposal by a regulated waste collector. The other pipeline projects will also need to dispose of their hydrotest water and similar disposal strategies are proposed. Given the once-off nature of this operation, the relatively small quantities of water involved, and the geographical and temporal differences between the projects, the potential cumulative impacts from this operation will be low.

The gas pipelines may be in close proximity to each other in the CICSDA and GSDA. In this instance there may be potential for cumulative impacts on surface water to occur as the same downstream environment will be potentially affected by each of the pipelines as they are constructed during what is likely to be a staggered period. Runoff management and erosion controls will be implemented to minimise these risks.

Accommodation facilities for the pipeline construction will include sewage treatment facilities, which will require the disposal of treated effluent. The GLNG Project will dispose of the effluent by irrigation with the sludge disposed of at a local licensed facility. The irrigation will be managed to ensure there is no surface runoff. Wet weather storage facilities will be provided with offsite transfer to a local authority facility if necessary. Provided that the construction accommodation facilities from the other listed projects are separated in time and space there should be no cumulative impacts from the irrigation disposal. However there is potential for cumulative impacts on local authority treatment facilities if wet weather disposal is required in the same area at the same time. The significance of the impact will depend on the extent of any time/space overlap and the capacity of the local authority facilities. Local authorities where such impacts could occur include the Banana and Gladstone regional councils.

The other projects listed in Table 4.1 will result in land disturbance with potential erosion and downstream water quality impacts. Environmental management strategies can be implemented for these projects to ensure that unacceptable downstream environmental impacts do not occur. These projects are generally well separated so that should there be any localised downstream effects, the potential for cumulative impacts over such a wide area would be minor.

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact on surface water is assessed as low.

4.5 Groundwater

The GLNG gas transmission pipeline will not result in any significant groundwater impacts. Risk of contamination due to seepage from fuel or equipment storage areas will be managed by standard environmental best practice. Similar strategies are expected to be adopted by the other pipeline projects.

Any potential groundwater impacts from the two mining projects listed in Table 4.1 would be limited to the immediate vicinity of the mine sites and no cumulative impacts due to the GLNG Project are expected.

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact on groundwater is assessed as low.

4.6 Air Quality

Air emissions during construction of the GLNG gas transmission pipeline will be primarily dust, with some minor sources of combustion pollutants such as nitrogen oxides due to the operation of diesel and petrol vehicles and machinery. The impacts of construction activities on air quality will be managed through implementing best practice procedures to reduce air emissions as part of the project's environmental management plan. Dust effects are likely to be limited to the immediate vicinity of the gas transmission pipeline corridor. The other pipeline projects are expected to use similar dust mitigation strategies.

Cumulative impacts are most likely to occur where the pipeline corridors converge in the CICSDA and GSDA. However unless two pipeline projects are under construction at the same time, the cumulative impact is likely to be limited to an extension of the time during which dust impacts may occur rather than an increase in the level of impact.

There may be potential for cumulative dust impacts in the GSDA if the construction of any of the other projects that pass through that area (Central Queensland Gas Pipeline, Gladstone/Fitzroy Pipeline, or Moura Link/Aldoga Rail) occurs as the same time as that for the GLNG gas transmission pipeline.

The Spring Gully Power Station will emit oxides of nitrogen from the combustion of gas. Modelling undertaken for the EIS showed that ground level concentrations at the nearest sensitive receptors surrounding the power station will not exceed DERM guidelines. Air quality issues from the construction of the GLNG gas transmission pipeline will be related to dust, not oxides of nitrogen. Hence no significant off-site cumulative air quality impacts from the power station can be expected.

The other projects listed in Table 4.1 are spread over a large area and beyond the distance at which any cumulative dust impacts can be expected to occur.

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact on air quality is assessed as low.

4.7 Noise and Vibration

Noise sources during construction of the GLNG gas transmission pipeline will be primarily from the construction equipment and earthworks activities. In particularly rocky areas some blasting may be required. Modelling presented in the EIS indicates that noise impacts may occur up to 500 m from the construction activities. The EIS outlines mitigation measures to be implemented to minimise noise impacts from the construction activities. The other pipeline projects are expected to use similar noise mitigation strategies.

Cumulative noise impacts were inherently assessed through use of the background creep and planning noise level criteria to quantify the 500 m offset distance referred to above. This criterion takes into account the existing ambient noise levels associated with existing industry and road/railway traffic and a comparison with recommended ambient noise levels for various land use types.

Cumulative impacts are most likely to occur where the pipeline corridors converge in the CICSDA and GSDA. However unless two pipeline projects are under construction at the same time, the cumulative impact is likely to be limited to an extension of the time during which noise impacts may occur rather than an increase in the level of impact.

There may be potential for cumulative noise impacts in the GSDA if the construction of any of the other projects that pass through that area (Central Queensland Gas Pipeline, Gladstone/Fitzroy Pipeline, or Moura Link/Aldoga Rail) occurs as the same time as that for the GLNG gas transmission pipeline.

The other projects listed in Table 4.1 are spread over a large area and beyond the distance at which any cumulative noise impacts can be expected to occur.

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact on noise is assessed as low.

4.8 Land Use

The main potential land use impact of the GLNG gas transmission pipeline will occur when agricultural and grazing activities will be temporarily restricted within the construction corridor. However, land use can generally recommence following construction, with landholders retaining full access and use of the surface area above the pipeline subject to some restriction to preclude activities that will threaten pipeline integrity. Santos will discuss with land owners options to minimise land use disturbance on individual properties prior to construction commencing. It expected that the other CSG pipeline projects will adopt similar measures.

During the consultation undertaken as part of the GLNG EIS preparation, some landholders expressed concern about having multiple easements within their property and suggested that this may have implications on their ability to subdivide their property into smaller lots. For the majority of the GLNG gas transmission pipeline corridor this will not be a concern with respect to the other CSG pipelines as they will be located to the east and south of the GLNG pipeline. However the various pipeline corridors will converge in the vicinity of the CICSDA and the GSDA. The planning provisions of the state development areas will result in the preferred land use in these areas changing from rural to pipelines or industrial development and the cumulative impacts on land use will be managed through the state development area development schemes.

Further west, the GLNG gas transmission pipeline will parallel the existing Queensland Gas Pipeline for much of its length. This could result in some properties having adjoining pipeline easements crossing them. Having the easements adjoining may reduce constraints on the future development or subdivision potential of the land compared to the easements being located in different parts of the same property.

The land use effects of the other projects listed in Table 4.1 are generally limited to the projects' footprints. These are well removed from the GLNG gas transmission pipeline.

One exception to this is the Boundary Hill mine extension where the pipeline corridor crosses part of the mining lease. Santos is in discussions with the lease holder (Anglo Coal) to ensure that the proposed mining operations are not unreasonably compromised by the presence of the gas transmission pipeline. Another exception is the Stuart Oil Shale project whose potential mining area includes the coastal strip of land north of Fisherman's Landing. The gas transmission pipeline route proposed in the EIS may have sterilised a significant amount of oil shale. The currently proposed route is further north and reduces the extent of resource sterilisation. Santos will discuss this issue further with QER.

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact on land use is assessed as low.

4.9 Social and Community

The construction workforce for the GLNG gas transmission pipeline will be accommodated in a series of temporary accommodation facilities (TAFs) located at strategic positions along the gas transmission pipeline route. All workers will be accommodated in the TAFs while on roster. When off roster they will return to their home residence. The TAFs will provide recreational, entertainment and first aid facilities so that there will be no need to rely on surrounding communities to provide food, accommodation, recreational, or shopping services. In this way there will be minimal impacts on local social and community facilities. Where appropriate, local businesses may be engaged to provide services to the TAFs.

This approach is common for pipeline construction projects and the same approach to worker accommodation and recreational requirements is expected from the other pipeline projects in the region. The non-pipeline projects considered in the cumulative impact assessment are generally remote from the GLNG gas transmission pipeline route and hence are unlikely to significantly affect the communities that are within the pipeline's sphere of influence. The one exception to this is the Boundary Hill Mine. However the mine's extension project is to be staffed by current Callide Mine employees and will not increase its workforce. Hence there will be no additional social or community impacts.

Santos' policy aim is to employ locals wherever possible. For the gas transmission pipeline's construction there may be opportunities for local employment for some components, like traffic controllers, plant equipment operators, and general labourers. The exact numbers and types of employment opportunities for people in the corridor region will be dependent on the selected contractor requirements and in-house capabilities. Santos will encourage the selected contractor to employ locally whenever possible. Other projects are expected to provide additional opportunities for the employment of local residents. This is likely to result in a temporary increase in employment for local residents across the region. The significance of this increase will depend on the extent of any overlap in the construction schedules of the various projects and their geographic distribution.

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact on social and community facilities is assessed as low.

4.10 Traffic and Transport

4.10.1 Cumulative Impacts in Gladstone

The base case for pipe delivery will be by ship to Gladstone (Calliope River site or RG Tanna Wharves) and then by truck to designated laydown areas along the gas transmission pipeline alignment. This will result in a significant increase in truck traffic through Gladstone (average of 134 truck trips per day for 6 months). To reduce the number of truck trips through Gladstone, Santos is considering two other options/alternatives including:

- Offloading the pipes at Port Alma and then trucking the pipe to the site; or
- Transport from Gladstone Port by rail.

Full details of the traffic impacts of the base case and the options are provided in Attachment C.

The cumulative traffic impacts in Gladstone for the GLNG Project have been assessed for the base case of trucking from Gladstone Port. This would generate the highest level of impact. The delivery of pipe by either rail or via Port Alma would have negligible cumulative impact on traffic in Gladstone.

The cumulative impact of the GLNG Project in Gladstone must also include traffic impacts from the LNG facility. The base case has assumed the construction of an access road and bridge connecting Landing Road to Curtis Island (available after construction of Train 1) as well as a dredge material placement facility at Laird Point. The impacts in Gladstone also include the effects of the trucking of pipe from the port through the city to the proposed alignment of the gas transmission pipeline.

The background traffic volumes used in the assessment include the traffic from the other industrial developments proposed for Gladstone (Table 5.1) as well as natural traffic growth. Details of this are given in Section 5.1.

The cumulative traffic impacts in Gladstone for the base case will result in additional traffic distributed across a number of Gladstone's major roads. To mitigate these impacts the following measures are proposed:

- The following intersections in Gladstone have been identified as needing to be upgraded.
  - Gladstone-Mt Larcom Road/Calliope River Road/Targinie Road;

  - Gladstone-Mt Larcom Road/Landing Road/Hanson Road;
  - Hanson Road/Red Rover Road intersection;
  - Hanson Road/Blain Drive/Alf O'Rourke Drive intersection;
  - Dawson Highway/Blain Drive/Herbertson Street;
  - Dawson Highway/Philip Street; and
  - Dawson Highway/Don Young Drive

- The following roads will need capacity upgrades. The GLNG Project will bring forward the timing of the upgrading from two to four lanes of the following sections of road:
  - Gladstone-Mount Larcom Road from Red Rover Road to Power Station (approximately 1.0 km) – bring forward 1.2 years from 2025 to 2042; and
  - Gladstone-Mount Larcom Road from Power Station to Reid Road (approximately 5.0 km) – bring forward 1.2 years from 2025 to 2024.
- There will be an increased requirement for pavement rehabilitation and road maintenance.

Santos will negotiate a suitable contribution package for these road works. The extent of any contribution to be made by Santos is a matter for discussion and resolution between Santos and relevantly each DTMR, local authorities and the Coordinator-General (depending on the status of the road network).

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact on traffic and transport in Gladstone is assessed as medium.

4.10.2 Cumulative Impacts along Gas Transmission Pipeline Corridor

Primary access to the gas transmission pipeline corridor will be gained from the major roads in close proximity to the corridor for the majority of its length, which include the Carnarvon Highway, Dawson Highway, Leichhardt Highway, Burnett Highway and the Bruce Highway. The existing local road network will be accessed from these roads to provide immediate access to the gas transmission pipeline corridor. Construction of the gas transmission pipeline is expected to be based around centralised worker accommodation facilities and construction depots, moving between multiple locations as construction proceeds along the proposed corridor.

The impacts of the proposed gas transmission pipeline construction will only be seen on the road network for approximately a two year period during late 2010 through to late 2012. Construction traffic will be concentrated in the vicinity of the main worker accommodation facilities and construction depots for approximately 15 months only. During this time, traffic will be split between two main accommodation facilities and one "satellite" accommodation facility. The road impacts will be seen in the form of additional construction related traffic and minor disruptions to roads due to the construction of the gas transmission pipeline across or under roads.

As described in Attachment C, roadway capacity and pavement impacts specifically attributed to the construction and operation of the proposed gas transmission pipeline are expected to be very low.

The construction of the western sections of the gas transmission pipeline will add heavy vehicle traffic to the road network that partially contributes to the need to bring forward the pavement rehabilitation program on the Carnarvon Highway and Dawson Highway. However the majority of the GLNG Project traffic creating this impact is related to the cumulative effect of traffic generated by the Santos CSG field development activities.

The other projects in the region that are listed in Table 4.1 are generally well east of the GLNG gas transmission pipeline. For example, most of the roads to be affected by the construction of the Queensland Curtis pipeline are outside of the sphere of influence of the GLNG Project. These roads include the Dalby-Kogan Road, Eidsvold-Theodore Road, Jackson-Wandoan Road, Kogan-Condamine Road, Roma-Taroom Road and the Surat Development Road.

However there is potential for cumulative impacts to occur where the pipeline routes converge in the CICSDA and the GSDA. The roads to be affected include the Bruce Highway, Dawson Highway and the Gladstone-Mt Larcom Road. The extent of this impact will depend on the timing overlap between the projects. Current indications are that overlap is likely.

Both the GLNG and Queensland Curtis projects have committed to a range of mitigation measures to reduce the impacts of their projects on the road network. In addition, both projects have identified the roads to be affected and have committed to negotiating a suitable contribution package. A similar approach is expected from the other projects proposed for the area. In this way any cumulative impacts will be mitigated.

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact on traffic and transport along the pipeline corridor is assessed as low.

4.11 Solid Waste

Solid waste volumes generated by the gas transmission pipeline's construction will be relatively small. Some of this waste will be reused or recycled but putrescible and non-recyclable waste will be disposed of at authorised local landfills or waste management facilities as agreed to by the local authority and in accordance with DERM waste management guidelines. Should there be any waste that is not accepted in local landfills, it will be collected by waste contractors and transported to an appropriate waste management facility. A similar situation is expected from the other non-mine projects listed in Table 4.1.

Local authorities along the route of the GLNG gas transmission pipeline include the Maranoa, Central Highlands, Banana, and Gladstone regional councils. The projects listed in Table 4.1 overlap in the Banana and Gladstone regional council areas, except for the Spring Gully Power Station which is located in the Maranoa Regional Council area. It is likely that most of these projects will be seeking to use the waste management facilities of these local authorities and hence cumulative impacts can be expected.

None of the EISs for the listed non-mine projects have indicated that they are likely to generate significant quantities of solid waste and all are committed to maximising opportunities for reuse and recycling. The significance of the cumulative impact will depend on the extent of spatial and temporal overlapping of the projects and on the capacity of the local authority waste management facilities to accept the projects' waste streams.

The listed mine projects will generate significant volumes of solid waste but these will be disposed of and rehabilitated on site in accordance with the mines' approval conditions. They will not impose any significant demands on local authority waste treatment facilities.

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact on waste management is assessed as low.

4.12 Visual Amenity

Construction of the GLNG gas transmission pipeline is expected to take 18 to 24 months. However, construction activities at any given location will generally be completed within several weeks, depending on terrain and weather conditions. Consequently, the visual impacts resulting from the gas transmission pipeline development will be relatively short term. The long term visible changes to the landscape will be limited to the gas transmission pipeline markers and access tracks. Similar impacts can be expected from the other proposed CSG pipeline projects.

West of the Callide Range the other pipelines are generally well separated from the GLNG gas transmission pipeline and hence there will be no cumulative visual impacts. Further east as the pipelines alignments begin to coincide there is greater opportunity for cumulative visual impacts. Should the pipelines be located within the CICSDA and GSDA, their visual impacts will be limited to one corridor and the cumulative impacts would be less than if each pipeline was constructed in a separate corridor. Should the construction activities for different pipelines be undertaken in the same area within the CICSDA at the same time, the intensity of the cumulative visual impact could increase. In the more likely situation of the construction schedules not coinciding, the cumulative impacts would be more an extension of the duration of the visual impact than the intensity.

There may be potential for cumulative visual impacts in the GSDA if the construction of any of the other projects that pass through that area (Central Queensland Gas Pipeline, Gladstone/Fitzroy Pipeline, or Moura Link/Aldoga Rail) occurs as the same time as that for the GLNG gas transmission pipeline.

The visual effects of the other projects listed in Table 4.1 are limited to the projects' view sheds. In the main these are well removed from the GLNG gas transmission pipeline. The only exception to this is the Boundary Hill mine extension where the pipeline corridor crosses part of the mining lease. However the visual impact of the gas transmission pipeline will be negligible compared to that of the open cut mine and hence there will be no significant cumulative impact.

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact on visual amenity is assessed as low.

4.13 Cultural Heritage

4.13.1 Non-indigenous Cultural Heritage

The GLNG EIS has identified a number of non-indigenous cultural heritage sites and sites of historical interest within and adjacent to the GLNG gas transmission pipeline corridor. One of the criteria adopted for the selection of the pipeline's final alignment within the corridor is to avoid all heritage and historical sites. The other linear projects listed in Table 4.1 have generally adopted similar route selection criteria. Adoption of this approach will minimise the potential for cumulative impacts on non-indigenous cultural heritage sites.

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact on non-indigenous cultural heritage is assessed as low.

4.13.2 Indigenous Cultural Heritage

Management of indigenous cultural heritage significance for the GLNG Project will be by the Cultural Heritage Management Plan (CHMP) process agreed with the relevant Aboriginal Party. As yet, this has not been finalised. Protection, management and mitigation measures will be agreed after cultural heritage surveys are complete, and will then be incorporated into the Santos cultural heritage management system.

The CHMPs will deal with the cultural heritage issues particular to the specific project locations under consideration. This will generally not affect or be affected by any of the other projects listed in Table 4.1 as they are located significant distances from the gas transmission pipeline. The exception will be where the pipelines converge in the CICSDA and GSDA. In these areas the surveys are likely to cover the same or adjacent areas.

Most of the other listed projects will also require a CHMP. These will need to be negotiated with the same Aboriginal Parties involved with the GLNG Project, including the Port Curtis Coal Coast community and the Gangulu People. Cumulative impacts may occur by stretching the limited resources of the Aboriginal Parties in responding to multiple requests to negotiate CHMPs and undertake surveys for different projects.

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact on indigenous cultural heritage is assessed as low.

4.14 Hazard and Risk

The likelihood of high pressure gas pipeline incidents is low. The predominant cause of incidents is external interference. A risk assessment of the GLNG gas transmission pipeline indicated that the likelihood of a pipeline incident can vary between 1.5×10^{-4} per kilometre per year and 1.3×10^{-6} per kilometre per year depending on the key influencing parameters. The risk assessment for the Queensland Curtis Project’s pipeline overall project risk was assessed as minor to negligible due to the mitigation strategies and the hazard and risk identification program to be implemented.

For part of its length the GLNG gas transmission pipeline will be located adjacent to the Queensland Gas Pipeline. It will then enter the CICSDA where there could be a number of gas pipelines in close proximity to each other.

In the case of a full bore rupture of the gas transmission pipeline where an off-site impact could occur, the cumulative effect does increase the overall risk due to the presence of adjacent pipelines along certain sections of the gas transmission pipeline route and the hazards already present. However, in this case it is considered that not all of the causes or effects of a pipe failure would result in the failure of adjacent pipelines at the same time. All the pipes would be buried and are likely to be up to 30 m or more apart. Therefore the cumulative risk is less than the sum of the risks of all the pipelines present and it is considered to remain low due to the low likelihood of occurrence.

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact on risk is assessed as low.

LNG Facility Cumulative Impacts

5.1 Overview

Table 2.3 summarises the projects currently planned within the potential sphere of influence of the GLNG Project's LNG facility and its associated marine facilities and dredge material placement facility. Most of these projects are located either on Curtis Island or opposite on the mainland. The locations of these projects are shown on Figure 2.3.

The potential environmental values that could be affected by cumulative impacts generated by the spatial or temporal overlapping of the GLNG Project and the projects listed in Table 2.3 are summarised in Table 5.1.

Table 5-1 Potential Cumulative Impacts – LNG Facility

Project	Environmental Values												
	Land	Nature Conservation	Surface Water	Groundwater	Air Quality	Greenhouse Gas	Noise	Land Use	Social & Community	Traffic & Transport	Solid Waste	Visual Amenity	Hazard and Risk
Queensland Curtis LNG Project	●	●	●	●	●	●	●	●	●	●	●	●	●
Australia Pacific LNG Project	●	●	●	●	●	●	●	●	●	●	●	●	●
Shell Australia LNG Project	●	●	●	●	●	●	●	●	●	●	●	●	●
Gladstone LNG (Fisherman's Landing)					●	●	●		●	●	●	●	
Sun LNG Project					●	●	●		●	●	●	●	
Wiggins Island Coal Terminal	●	●				●	●		●	●		●	
Gladstone Pacific Nickel Refinery	●	●			●	●	●		●	●	●		
Gladstone Steel Making Facility		●				●			●	●			
Fisherman's Landing Port Expansion		●							●	●		●	
Western Basin Strategic Dredging		●							●			●	
Boyne Island Aluminium Smelter						●			●	●			
Yarwun Alumina Refinery Expansion						●			●	●			

URS

The cumulative impact assessment has generally assumed that the timing of the construction activities of all of the above projects will coincide. This may not be the case as some projects may be deferred or some may even be cancelled. However a conservative approach was assumed by taking them all into consideration.

The nature and extent of the potential cumulative impacts are summarised in the following sections. In some cases more detail is provided in the relevant appendices. The assessment of the significance of the impact is based on the methodology described in Section 1.3.

5.2 Land

Land values potentially affected by the GLNG LNG facility, marine facilities and dredge material placement facility relate to impacts due to soil disturbance, erosion, stormwater drainage, contaminated land disturbance, topsoil management and management of acid sulfate soils (ASS). These impacts will generally be limited to areas within or adjacent to the project's footprint and environmental management plans have been prepared to minimise such impacts.

5.2.1 Soil Erosion

Three of the LNG projects listed in Table 5.1 (Queensland Curtis, Australia Pacific and Shell Australia) are located on Curtis Island adjacent to the GLNG LNG facility. Given this proximity there is potential for cumulative impacts on land values. The EIS for the Queensland Curtis LNG Project has committed to the preparation of a soil erosion and management plan which will be similar to that proposed by GLNG. It is expected that the other Curtis Island based projects will implement similar controls and hence the cumulative impact from soil disturbance and erosion will be minor.

5.2.2 Construction Materials

All of the development projects will require rock, sand and/or gravel for construction. The GLNG Project plans to obtain some of these construction materials from the LNG facility's site as it is excavated during the earthworks phase. However it likely that not all of the required materials can be obtained from the site and the balance will be imported from existing commercial sources on the mainland. The Queensland Curtis LNG Project has also indicted the likely use of existing approved quarry sites. Should the other projects in the Gladstone area also require construction materials from these sources there is likely to be a cumulative demand for additional quarry materials and the need for the expansion of existing sources, development of new resources, or the transportation of additional materials from outside the region.

5.2.3 Acid Sulfate Soils

Both the GLNG and Queensland Curtis LNG projects have identified the presence of ASS. ASS has also been identified on the Wiggins Island Coal Terminal site and the Gladstone Nickel Refinery pipeline alignment. ASS are also likely to be present on the other Curtis Island LNG Project sites. Port Curtis is the receiving environment for all of these sites and if not managed carefully, disturbance of ASS on these sites could lead to acidic runoff into Port Curtis with detrimental cumulative impacts on water quality and marine ecology.

It is a normal approval condition for all projects in ASS areas to prepare detailed ASS management guidelines. Such plans have been committed to by the GLNG and Queensland Curtis projects as well as by those approved projects on the mainland. It can be expected that a similar condition will apply to the other Curtis Island LNG projects. With the diligent implementation of approved ASS management plans by all relevant projects, the cumulative impacts from disturbance of ASS will be minor.

5.2.4 Contaminated Soils

The GLNG LNG facility site contains a number of areas of potential contamination concern that could have been caused by previous use of the site for cattle grazing. A former cattle dip site has also been identified on the Queensland Curtis site. Given the previous use of the south west section of Curtis Island for cattle grazing, it is likely that similar contaminated sites may exist on the Australia Pacific and the Shell Australia sites. The GLNG Project expects to be able to avoid disturbance of the areas of potential contamination concern on its site. If these areas need to be disturbed, further investigations and management strategies will be undertaken. A similar strategy is likely to be implemented by the other LNG projects on Curtis Island. Nevertheless, if a number of the projects' sites require the disposal of contaminated soil at an off-site disposal facility, there may be some cumulative impacts. The extent of these impacts will depend on the volume of material requiring disposal and the capacity of the disposal facility.

5.2.5 Overall Cumulative Impact

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact on land values is assessed as medium.

5.3 Nature Conservation

5.3.1 Terrestrial Ecology

Development of the GLNG LNG facility site and dredge material placement facility will result in the clearing of 262 ha of vegetation communities, the most dominant of which is the *Corymbia citriodora* and *Eucalyptus crebra* open forest to woodland community (140 ha). The Queensland Curtis LNG Project will result in the clearing of 203 ha of which *Corymbia citriodora* and *Eucalyptus crebra* open forest to woodland community is also the most dominant (119 ha). This community is not of conservation significance and there is approximately 10,000 ha of this community located within a 10 km radius of the site.

Clearing for the GLNG LNG facility and dredge material placement facility will require the disturbance of the following threatened communities:

- *Eucalyptus tereticornis* open forest to woodland (54 ha); and
- *Eucalyptus crebra, E. tereticornis* grassy woodland (61 ha).

The Queensland Curtis LNG facility will also disturb the first two communities (40 ha and 12 ha respectively) as well as the threatened *Eucalyptus siderophloia, E. tereticornis, Corymbia ntermedia* open forest (3 ha). It is likely that the other Curtis Island based LNG projects may also impact some or all of these communities and hence cumulative impacts can be expected.

Threatened fauna species recorded within the GLNG Project site on Curtis Island (including the LNG facility, dredge material placement facility and gas transmission pipeline sites) were:

- Beach Stone Curlew (*Esacus neglectus*);
- Sooty Oystercatcher (*Haematopus fuliginosus*);

- Powerful Owl (*Ninox strenua*); and
- Glossy Black Cockatoo (*Calyptorhynchus lathami*).

In addition, the GLNG LNG facility site has been mapped as an essential habitat area for the koala (*Phascolarctos cinereus*), and evidence of koala presence has been found at the dredge material placement facility site.

The Queensland Curtis EIS recorded the Squatter Pigeon, Powerful Owl and Beach Stone-curlew as well as the Eastern Curlew. It is likely that these species could also be present at the other Curtis Island LNG facility sites.

Apart from the loss of threatened communities, the cumulative impacts from the development of a number of LNG facilities on Curtis Island will result in the clearing of non-threatened floral communities and fauna habitats. These impacts will include increased fragmentation of habitats and communities, dislocation of fauna movement corridors, edge effects, increased use of and competition for adjacent habitat areas, possible mortality of common fauna species from clearing activities, and the conversion of the area from a natural environment to an industrial complex. This is a consequence of the designation of the area as the Curtis Island Industry Precinct in the GSDA Development Scheme.

The LNG projects on Fisherman's Landing will both be located on reclaimed land and will not have any terrestrial ecology impacts. Similarly, expansion of the alumina refinery and aluminium smelter will be within existing footprints with no terrestrial ecology effects.

Clearing of the Gladstone Nickel Refinery site will result in disturbance to threatened regional ecosystems but not to any of those to be affected by the GLNG Project. The only threatened fauna species recorded on the refinery site during its EIS studies was the powerful owl. Hence there will not be any substantial cumulative impact from the GLNG Project.

Clearing of the Gladstone Steel Making Facility site will result in disturbance to threatened regional ecosystems but not to any of those to be affected by the GLNG Project. Fauna surveys for the site have not yet been reported. Cumulative impacts from the GLNG Project are unlikely.

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact on terrestrial ecology is assessed as medium.

5.3.2 Aquatic Ecology

Drainage features on the GLNG LNG facility site only contain water during and immediately after rainfall events. There are no perennial freshwater features and negligible aquatic ecology values. The drainage features flow across an intertidal area to Port Curtis.

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact on aquatic ecology is assessed as low.

5.4 Surface Water

The proposed GLNG LNG facility catchment extends from the hills to the east to the flat salt marsh of the China Bay coast. Within this catchment all drainage features are ephemeral in nature and have small catchments. The project will not be using surface water as a source of water supply but stormwater runoff may be retained on site for hydro testing purposes. The main disturbance to the site's surface water resources will be from the recontouring of the site from the proposed earthworks.

A site drainage system will be installed to manage stormwater runoff from the site and to protect water quality. There are no downstream users of the site's surface water which flows directly into Port Curtis.

Surface water features of the Queensland Curtis LNG facility site are also ephemeral and will not be used for the project. It and any other LNG projects on Curtis Island will be situated within separate drainage catchments. As there is little or no connection between these catchments, it is expected that limited cumulative impacts will arise.

Further, it is expected that the other projects would include some or all of the proposed mitigation measures in relation to surface water management proposed for the GLNG LNG facility. Utilisation of these mitigation methods is expected to minimise the potential cumulative impacts on the receiving environment.

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact on surface water is assessed as low.

5.5 Groundwater

Groundwater at the GLNG LNG facility site is brackish in the deeper weathered and fractured rock aquifers and brine in the shallow alluvium aquifers, indicating the presence of a low-permeability confining layer between the two aquifers. There is one bore on the site which provides moderate yields of brackish groundwater and is used for stock watering.

Groundwater use is not proposed by the GLNG LNG facility but impacts could include reduced recharge, altered aquifers below the facility footprint (permanent alteration to aquifers due to compaction), and reduced water quality from the possible spillage of contaminants. The low recharge capacity of the site and low permeability of the underlying aquifers will limit the significance of these impacts. In addition, procedures for the storage and handling of potential contaminants are such that the risk of spillage affecting groundwater will be minimal.

The Queensland Curtis facility site has similar groundwater characteristics. It will not be using groundwater and will implement similar procedures for the storage and handling of potential contaminants. A similar situation can be expected from other LNG facilities on Curtis Island.

Potential cumulative impacts from the Curtis Island LNG facilities could include some reduction in recharge and compaction of underlying aquifers. However, given the low value of the groundwater resource neither of these impacts is significant.

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact on groundwater is assessed as low.

5.6 Marine Ecology

5.6.1 Habitat Disturbance

Marine impacts from the GLNG Project will include impacts from the dredging of the access channel and swing basin, construction of the product loading facility and materials offloading facility, the dredge material placement facility, the gas transmission pipeline crossing of Port Curtis, and construction of the potential Curtis Island bridge and access road. Some fringing mangroves will be cleared for the project and some areas of saltmarsh and benthic communities will also be affected. Port Curtis is a World Heritage Area and contains a number of protected marine species.

The Queensland Curtis facility will have similar marine impacts as it also involves dredging and dredge material disposal, loading and unloading marine facilities, pipeline crossing of Port Curtis, and the potential Curtis Island Bridge and access road. Similar project components and impacts can be expected from the other Curtis Island LNG projects.

Other projects listed in Table 5.1 with a marine component include the LNG projects at Fisherman's Landing (marine facilities), Wiggins Island Coal Terminal (jetty and associated dredging), Gladstone Nickel Refinery (pipelines and conveyors), Fisherman's Landing Expansion (reclamation), and the Western Basin Dredging and Disposal (WBDD) Project.

A more detailed discussion of the dredging projects proposed for Port Curtis, the relationship of these projects with the GLNG Project and a presentation of the cumulative impacts of these projects is contained in Appendix B.

Table 5.2 summarises the areas of key marine habitats to be affected by the above projects.

Table 5-2 Direct Cumulative Impacts on Marine Habitats

Project	Area of Habitat Affected (ha)			Percentage of Total in Port Curtis (%)			Dredging	
	Mangrove	Seagrass	Saltmarsh	Mangrove	Seagrass	Saltmarsh	Area (ha)	Volume (M m^3)
GLNG Project[8]	0.5	0	2.8	0.01	0	0.06	101[1]	6.9[1]
Queensland Curtis LNG	2.5	0	11.2	0.04	0	0.25	77[2]	8.9[2]
Australia Pacific LNG	NA	NA	NA	NA	NA	NA	NA	NA
Shell Australia LNG	NA	NA	NA	NA	NA	NA	NA	NA
Gladstone LNG	0	0	0	0	0	0	150[3]	1.6
Sun LNG	NA	NA	NA	NA	NA	NA	NA	NA
Wiggins Island Terminal	31	22	20	0.46	0.16	0.44	107	6.3
Gladstone Nickel Refinery	0.1	0	4.3	0.01	0	0.09	0	0
Fisherman's Landing Expansion	1.4	89	0.5	0.02	0.66	0.01	150[3]	4
WBDD Project	-	259[4]	-	-	1.6	-	338[5]	36[6]
Total	35.5	370	38.8	0.5	2.4	0.85	773	42.3[7]

[1] Significantly less if Queensland Curtis LNG dredging occurs before GLNG dredging
[2] Assumes that Queensland Curtis LNG dredging occurs after the GLNG dredging
[3] This is the same location but dredged to different depths
[4] Reclamation area plus dredged areas
[5] Excludes above listed projects
[6] Includes above listed projects (except Wiggins Island Terminal)
[7] Includes WBDD and Wiggins Island Terminal
[8] Excludes the Laird Point DMPF
NA – not available (EIS not finalised)

Based on the data in Table 5.2 the contribution of the GLNG Project to the overall cumulative impact on marine habitats of all of the projects for which data are available can be summarised as:

- 1.5 % of directly affected mangroves;
- 0 % of directly affected seagrass;
- 7.2 % of directly affected saltmarsh; and
- 23 % of the area affected by dredging if GLNG proceeds before Queensland Curtis. This would reduce significantly if GLNG proceeds after Queensland Curtis.

All four Curtis Island LNG facilities will require dredging to provide an access channel and swing basin for the LNG tankers. The Queensland Curtis facility will be able to use an extension of the dredged channel proposed for the GLNG LNG facility. Should the Australia Pacific facility be located to the north of the Queensland Curtis site then further dredging will be required possibly around the western side of Passage Island. The cumulative impact of this dredging could result in a significant increase in the area and volume of seabed disturbed.

5.6.2 Gas Transmission Pipeline Crossing

The four Curtis Island GLNG LNG facilities will require a pipeline from the mainland to deliver coal seam gas. Three of the four projects (GLNG, Queensland Curtis and Australia Pacific) have stated that their pipelines will cross Port Curtis between Friend Point and Laird Point. The Shell Australia LNG Project has indicated that it may use this route or one further south. Construction of three or four pipelines adjacent to each other on the seabed at different times (to suit the different project schedules) will require the pipelines to be well separated to ensure that the construction activities of one do not impact on those that are already laid. The width of a corridor to contain three or four undersea pipelines laid at different times could be of the order of a kilometre or more. If this corridor is to be placed north of the Curtis Island bridge, it would extend a significant distance into the Great Barrier Reef Coast Marine Park with associated environmental impacts. If it is located to the south of the bridge, it could potentially constrain the expansion of the Fisherman's Landing port facilities and the associated commercial shipping operations. This is a potentially significant cumulative impact. The significance of this impact could be reduced if some of the pipelines were laid at the same time in the same or adjacent trenches but this is dependent to some extent on similarity in project schedules between proponents.

5.6.3 Dredging

A major influence on the extent of the cumulative dredging impact will be the timing of the dredging for each project. If some or all of the projects were to happen simultaneously, there could be multiple dredgers operating at different locations in Port Curtis at the same time. This would increase port congestion, increase the extent of high turbidity levels, hasten the construction of reclamation areas, increase marine noise levels, and reduce the availability of refuge areas for marine creatures trying to avoid the dredging areas. Should the dredging for the various projects occur sequentially, the intensity of these cumulative impacts would reduce but they would occur at a reduced level over an extended period of time, possibly three to four years.

Appendix B provides a more detailed discussion of the dredging projects proposed for Port Curtis, the relationship of these projects with the GLNG Project and a presentation of the cumulative impacts of these projects. A detailed assessment of the cumulative effects of dredging in Port Curtis has been reported in the WBDD Project EIS (http://www.gpcl.com.au/Project_Western_Basin_Dredging_&_ Disposal.html).

5.6.4 Dredge Material Placement

The Queensland Government and the Gladstone Ports Corporation (GPC) are presently reviewing the dredged material management plan for Port Curtis to plan for the long term dredging and dredged material disposal that may be required to provide safe and efficient access to existing and proposed port facilities in the harbour for the foreseeable future. The plan considers dredging and dredged material disposal required for industrial and port related projects currently proposed for Gladstone. As part of the plan, the GPC is considering a single dredged material disposal area, which will be large enough to accommodate the combined dredged material from all of these projects in a manner which is consistent with GPC's long term port development objectives.

The GPC and the Queensland Government are presently undertaking an environmental assessment of the overall plan and to obtain the necessary approvals before adopting and implementing the plan. If the plan is approved, the dredging and the associated dredge material placement for the GLNG Project will be undertaken in accordance with the plan, provided the timing of the approval is consistent with the GLNG Project requirements. The cumulative impacts from the use of the Western Basin reclamation area for the placement of dredge material from all of the relevant projects proposed for Port Curtis are given in the WBDD Project's EIS (http://www.gpcl.com.au/Project_Western_Basin_ Dredging_&_ Disposal.html). A summary of the cumulative impacts is provided in Appendix B.

If for some reason, the GPC's strategic dredging and disposal project is delayed or does not proceed, a plan specific to the GLNG Project has been prepared to manage the project's dredge material. The EIS (Section 2.3.9) identified a range of sites on and around Curtis Island for the potential location of a dredge material placement facility (DMPF), with the emphasis being on land-based placement and the containment of fine material. Laird Point was put forward as the proposed site because of its smaller footprint due to wall heights (as compared to the Boatshed Point site); reduced visual amenity impact; and greater distance from seagrass meadows (as compared to the Boatshed Point site). The Laird Point site was assessed in Section 8.17 of the EIS. Results of further investigations relating to the proposed DMPF at Laird Point in response to EIS submissions are provided in Attachment G of the EIS Supplement.

On 18 August 2009 (since the GLNG EIS was prepared), the Queensland Government and Australia Pacific LNG (APLNG) announced Laird Point on Curtis Island as the site for APLNG's proposed LNG facility. This site is the same area proposed for the GLNG DMPF.

Santos recognises the conflict in proposed land use of Laird Point for the APLNG Project and the proposed GLNG DMPF. If the site was used for the DMPF, it is unlikely that it would be able to be used for the construction of an LNG facility in the short to medium term. Whilst the site may be able to be used over the longer term for an LNG facility with the implementation of suitable engineering works, it is not likely that this would meet the time frame requirements for the APLNG Project.

Despite the announcement by the Queensland Government and APLNG, GLNG does not consider it to be a foregone conclusion that the site will ultimately be used for the construction of an LNG facility as the development of the site, as for all proponents currently, will depend on a range of factors. For example, it is recognised that at some point in the future there may be consolidation of the LNG projects in the Gladstone area and that not all currently proposed LNG projects are likely to proceed. If this occurs, it is possible that the Laird Point site may not be required for the construction of an LNG facility in the short to medium term.

Furthermore, in the event that the GPC proposal to use the Western Basin reclamation area for the disposal of the dredge material does not proceed or is delayed, Laird Point remains a viable stand-alone option for disposal of dredge material arising from the GLNG Project, and the only viable alternative dredge material placement facility at this time, for the LNG industry.

GLNG is seeking approval for the DMPF at Laird Point subject to the following two conditions:

- The CG being satisfied that the site is not required for another LNG facility in the short to medium term; and
- The CG being satisfied that the dredge material placement facilities at Fisherman's Landing are not available to be utilised within the time required to commence construction of the GLNG Project.

5.6.5 Hydrodynamics

Increased dredging and reclamation within Port Curtis will lead to changes in local bathymetry, currents and tidal flows potentially resulting in changes to the existing patterns of accretion and deposition of marine sediments. Cumulative changes to the hydrodynamic regime in the port may affect mangrove and seagrass communities in otherwise unaffected parts of the bay. Similarly, coastal geomorphologic processes associated with sediment erosion and deposition patterns could be altered following dredging and reclamation under the cumulative impact scenario in such a way as to cause long-term effects in the harbour. Modelling undertaken for the GLNG Project has shown that it alone will not result in any significant changes to tidal flows or current velocities.

The cumulative impacts of all relevant projects in Port Curtis have been discussed in the WBDD Project’s EIS. The cumulative hydrodynamic impacts can be summarised as follows:

- Only minor effects are predicted on the extreme wave climate in the Western Basin area;
- Current velocities east of the Western Basin reclamation area are highest for the initial dredging stage and reduce progressively for the subsequent dredging stages due to the increased capacity provided by the dredged channels; and
- There will be a slight reduction in total flow entering and leaving the Western Basin at its southern end. For The Narrows, there will be negligible changes to the flood tide flows while there will be a small increase in ebb tides flows.

5.6.6 Shipping

The development of six LNG facilities in Gladstone would lead to a significant increase in shipping though Port Curtis. At full capacity (10 Mtpa) the GLNG Project will generate 160 LNG vessel trips per year. On a pro-rata basis, cumulative impacts from the exporting of the proposed 56.5 Mtpa from the six (6) LNG projects would result in 900 LNG vessel trips per year. This increase in ship movements will increase the risks of the introduction of marine pests, collisions with other ships or marine fauna, and fuel spills. These risks can be mitigated and the cumulative impacts can be managed by the implementation of appropriate management strategies such as those proposed by the GLNG Project and others. The risks of ship collision are discussed further in Section 5.15.

In the absence of the road and bridge, access to Curtis Island for the construction of both the GLNG LNG facility and the Queensland Curtis facility will be by ferry (for personnel) and barge (for plant and equipment). Should their construction periods coincide, the peak cumulative impacts will be 225 ferry movements (one way) per month (90 for GLNG and 135 for Queensland Curtis) and 210 barge movements (one way) per month (140 for GLNG and 70 for Queensland Curtis). In addition, Queensland Curtis also has an unspecified number of additional ferry journeys for the transport of consumables and equipment and for waste removal from the site. These estimated vessel movements would increase further should the construction periods of the other Curtis Island facilities coincide. The ferries and barges for the Queensland Curtis Project will leave from Auckland Point. To reduce cumulative congestion impacts at Auckland Point, the GLNG ferries will leave initially from the Gladstone Marina and after 6 months from Auckland Point (Port Central). The GLNG barges (carrying construction materials and equipment) will leave initially from Fisherman's Landing and after 6 months from the RG Tanna wharves or from a new facility to be developed near the mouth of the Calliope River. In this way the cumulative congestion impacts at Port Central from the GLNG Project will be reduced.

Other factors mitigating the cumulative impact of vessel movements across Port Curtis include:

- The ferries to be used will be fast and manoeuvrable and will not be confined to designated shipping channels and hence will be able to navigate around bulk carriers entering and leaving the port; and
- The above estimates of vessel movements are assuming co-incident peaks in the construction activities of the projects. Outside of peak times (approximately 6 months) the number of vessel movements will be less.

5.6.7 Marine Pests

The LNG vessels as well as the dredges and barges to be used for the LNG facilities can move rapidly between different areas of the world. In doing so, they may translocate exotic species between different geographic regions. The cumulative risk of this occurring will increase with the increasing number and size of proposed LNG facilities.

All vessels entering an Australian port from overseas must obtain a quarantine ship clearance from the Australian Quarantine and Inspection Service (AQIS). Ships with ballast water that are considered a high risk for introduced marine pest species and that have not exchanged ballast water mid-ocean, are now not allowed to discharge into Australian waters.

A risk assessment of potential marine pest introductions will be carried out for each vessel proposed to be used on the GLNG Project. For vessels that are considered high risk, inspections of the hulls and/or hoppers may be carried out, preferably before they depart for Australian waters. In addition, a quarantine area will be located in the GLNG MOF facility and it will have a wash down water supply and contained runoff, collection and treatment facility. Provided all of the other LNG projects implement similar controls to those proposed by the GLNG Project, the cumulative impact of the increased risk of introduced marine species in Port Curtis will be minimised.

5.6.8 Overall Cumulative Impact

A detailed assessment of the overall cumulative impacts on the marine ecology is provided in the EIS for the WBDD Project and is outlined in Appendix B. The level of impact from the various actions on the range of marine components in Port Curtis varies. However, based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact on marine ecology is assessed as high.

5.7 Air Quality

The cumulative impact assessment of the GLNG Project's air emissions has compared the predicted ground level concentrations from the GLNG Project emissions with those predicted from the following existing and proposed future industrial developments:

- Boyne Island Aluminium Smelter;
- Cement Australia Plant;
- Yarwun Alumina Refinery;
- Gladstone Power Station;
- Orica Chemical Complex;
- QAL Alumina Refinery;
- Queensland Energy Resources, formerly Southern Pacific Petroleum Oil Shale;
- Gladstone Pacific Nickel Refinery;
- Sun LNG Project;
- Gladstone LNG Project; and
- Queensland Curtis LNG Project.

These are collectively called the background sources. Emissions from the other LNG projects proposed in Gladstone are not yet known as their EISs are not yet available.

The main criteria pollutants emitted from LNG facilities are oxides of nitrogen (NO_x) which are generated by the combustion of gas. Emissions of sulphur dioxide (SO_2) and particulates from the combustion of gas are negligible.

Modelling has shown that the ground level concentrations for NO_2 (1 hour) and SO_2 (1 hour and 24 hour) from the background sources (i.e. without any input from the GLNG Project) exceed guideline levels in the vicinity of the Clinton and Yarwun areas. Ground level concentrations from the GLNG LNG facility alone are well below the relevant guidelines.

The cumulative impacts from the GLNG Project are summarised in Table 5.3.

Table 5-3 Modelling Results for NO_2 and SO_2 Presented as the Maximum Throughout the Modelling Domain but Outside the GLNG Facility Boundary

Source	NO_2 (µg/m³)		SO_2 (µg/m³)		
	1 hour, 99.9th	Annual	1 hour, 99.9th	24 hour	Annual
GLNG in Isolation	67	3.3	0.3	0.1	<0.05
Background	414	11	832	173	48
GLNG plus Background	414	11	832	173	48
EPP (Air) 2008 Guideline	**250**[1]	**62**[1] **33**[2]	**570**[1]	**230**[1]	**57**[1] **32**[3] **22**[2]

[1] EPP (Air) 2008 Guideline for Human Health and Wellbeing.
[2] EPP (Air) 2008 Guideline for Ecological Health and Biodiversity (for Forests and Natural Vegetation).
[3] EPP (Air) 2008 Guideline for Agriculture.

As can be seen from Table 5.3, the cumulative air quality effects of the GLNG Project are insignificant. There are no changes in the maximum predicted background ground level concentrations caused by the GLNG emissions.

It should be noted that the guideline exceedances presented in Table 5.3 occur in a very small area in the vicinity of existing industrial uses in the Clinton and Yarwun areas. Outside of this limited area all air quality guidelines are met both with and without the GLNG Project emissions.

A detailed report on the cumulative air quality impacts including figures showing ground level concentration contours is given in Appendix C.

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact on air quality is assessed as low.

5.8 Greenhouse

This section addresses the greenhouse impacts from all components of the project (CSG field, gas transmission pipeline construction and LNG facility) as they need to be considered on a project wide basis.

The major sources of greenhouse gases from the GLNG Project are from the operation of the GLNG LNG facility and the CSG field. These sources include the following:

- Fuel consumption in process equipment;
- Fuel consumption in vehicles;
- Power generation;
- Fugitive emissions;
- Flaring and venting; and
- Land clearing.

Similar sources can be expected from the other LNG projects considered in the cumulative impact assessment.

Table 5.4 summarise the Scope 1 and Scope 2 greenhouse gas emissions for the projects assessed in the cumulative impact assessment for which emissions data were available.

Table 5-4 Greenhouse Gas Emissions (Mt/a) (CO_2 equivalent)

GLNG	QCLNG	Shell LNG	Gladstone LNG	Gladstone Nickel Refinery	Yarwun Alumina Refinery	Spring Gully Power Station	Wandoan Coal Mine	Total
7.2	4.51	4.2	0.6	0.6	3.6	1.7	0.6	23

[1] CSG field for 2 trains only

From Table 5.4 it can be seen that the total CO_2 equivalent greenhouse gas emissions from the operation of the projects for which the emissions are known are 23 million tonnes per annum. This is equivalent to 13.5 % of Queensland's total emissions in 2006 and 4 % of Australia's emissions.

To minimise greenhouse gas emissions Santos proposes to implement a number of mitigation measures including:

- Gas liquefaction processes that are highly efficient and minimise flaring of gas;
- High-efficiency compressor and power generation turbines at the LNG facility running on CSG, reducing energy consumption and reliance on coal-based electricity from the grid;
- Use of boil-off gas in the LNG facility as fuel rather than venting or flaring to improve overall plant energy efficiency;
- As part of the carbon dioxide removal process, careful selection of solvent to minimise the co-release of methane;
- Use of more efficient turbines at the LNG facility compared to frame-type turbines that have been traditionally used for gas compression in LNG facilities;
- Gas-fired in-field pipeline compressor station engines (in place of diesel fuel) with the possibility of electrically powered compressor engines using power generated by Santos' own gas-powered generators; and
- Field operation protocols designed to minimise flaring, venting and other emissions sources.

It is expected that the other LNG projects would implement similar greenhouse gas emissions controls.

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact on air quality is assessed as medium.

5.9 Noise

The cumulative noise impact assessment that has been undertaken has been based on the predicted operational noise emission levels from the following proposed industrial developments located in the Gladstone Harbour region in addition to the GLNG LNG facility:

- Queensland Curtis LNG facility;
- Gladstone LNG facility;
- Sun LNG facility;
- Gladstone Nickel Refinery; and
- Wiggins Island Coal Terminal.

Noise data for the other proposed Curtis Island LNG facilities (Australia Pacific and Shell) are not yet available.

Full details of the cumulative noise assessment are given in Appendix D.

The following noise source level scenarios from the GLNG LNG facility have been assumed in the cumulative noise assessment:

- **Scenario 1** – Predicted noise levels from the GLNG LNG facility (based on updated noise source levels provided by the project's design engineers (Bechtel)[1]); and
- **Scenario 2** – Predicted noise levels from the GLNG LNG facility are based on mitigated noise source levels provided by Bechtel[2] including pipe lagging and low noise air coolers amongst other mitigated noise sources (approximate noise reduction of 7 dBA compared to Scenario 1).

The cumulative noise impacts associated with the GLNG LNG facility have been assessed by comparison of the existing and future (predicted) background (L_{A90}) noise levels. The predicted noise levels are presented in terms of the L_{Aeq} noise parameter.

The results of the cumulative impact assessment modelling are presented in the following tables for seven specific locations around the harbour. Table 5.5 compares the predicted noise levels from the GLNG LNG facility, based on the noise source levels as per Scenario 1 above, with those from the other proposed industrial developments. Table 5.6 compares the predicted noise levels from the GLNG LNG facility, based on the noise source levels as per Scenario 2 above, with those from the other proposed industrial developments.

Table 5-5 Noise Levels from Proposed Industries – Scenario 1

Assessment Location	G LNG Scenario 1	Queensland Curtis LNG	Gladstone LNG	Sun LNG (Estimated)	Wiggins Island	Gladstone Nickel Refinery	Total without GLNG	Total with GLNG	Current Background
Tide Island	44	30	31	31	48	25	48	50	41
South End	26	11	< 10	< 10	17	< 10	18	27	31
Auckland Point	36	25	21	21	29	19	32	37	37
Yarwun	25	-	17	17	11	21	24	27	37
Flinders Rd	29	24	22	22	10	< 10	28	31	33
Gladstone Marina	32	24	21	21	32	22	34	36	38
Fisherman's Rd	38	30	35	35	26	30	39	42	40

[1] *GLNG list of noise sources* and *Noise source locations (13Aug09)*, email dated 2 September 2009

[2] *List of Noise Sources and their PWL SPL_12Oct09*, email dated 21 October 2009

Table 5-6 Noise Levels from Proposed Industries – Scenario 2

Assessment Location	GLNG Scenario 2	Queensland Curtis LNG	Gladstone LNG	Sun LNG (Estimated)	Wiggins Island	Gladstone Nickel Refinery	Total without GLNG	Total with GLNG	Current Background
Tide Island	37	30	31	31	48	25	48	49	41
South End	20	11	-	-	17	-	18	22	31
Auckland Point	29	25	21	21	29	19	32	33	37
Yarwun	18	-	17	17	11	21	24	25	37
Flinders Rd	22	24	22	22	10	-	28	29	33
Gladstone Marina	25	24	21	21	32	22	34	34	38
Fisherman's Rd	31	30	35	35	26	30	39	40	40

It can be seen from Table 5.5 that the predicted noise levels from the GLNG LNG facility are below the existing background noise levels at all assessment locations except Tide Island.

Table 5.7 below summarises the significance of noise impacts associated with the GLNG LNG facility on the predicted cumulative noise levels at the assessment locations. The significance of the cumulative noise impacts associated with the GLNG LNG facility has been determined with respect to the following factors:

- **Cumulative Noise Impact 1** – Noise from the GLNG LNG facility has a significant impact on the cumulative noise level from all proposed industrial developments (i.e. it increases the total noise level by more than 2 dBA). This is determined by comparing the "Total with GLNG" with the "Total without GLNG" in Tables 5.5 and 5.6.
- **Cumulative Noise Impact 2** – The predicted cumulative noise level from all proposed industrial developments (including GLNG) is equal to or above the existing background noise level (i.e. the predicted cumulative noise level is having a significant noise impact on the existing background noise level).

Table 5-7 Summary of Cumulative Noise Impact Assessment

Assessment Location	Scenario 1		Scenario 2	
	Cumulative Noise Impact 1	Cumulative Noise Impact 2	Cumulative Noise Impact 1	Cumulative Noise Impact 2
Tide Island	No	Yes	No	Yes
South End	Yes	No	Yes	No
Auckland Point	Yes	Yes	No	No
Yarwun	Yes	No	No	No
Flinders Rd	Yes	No	No	No
Gladstone Marina	No	No	No	No
Fisherman's Rd	Yes	Yes	No	Yes

For the un-mitigated noise levels (Scenario 1), Table 5.7 shows that the GLNG LNG facility is a significant contributor to the total cumulative noise level at the majority of the assessment locations except Tide Island and P6 Gladstone Marina. Of the locations at which the GLNG LNG facility is a significant contributor, two locations (Auckland Point and Fisherman's Road) are also predicted to have cumulative noise levels (from all industrial developments) which are significantly impacting on the existing background noise level. Of all the industrial developments that contributed, the significant cumulative noise impacting on existing background noise levels at Tide Island is primarily due to the proposed Wiggins Island Coal Terminal.

For the mitigated noise levels (Scenario 2), Table 5.7 shows that the GLNG LNG facility does not significantly contribute to the total cumulative noise level at any of the assessment locations with the exception of South End. However the total cumulative noise level at South End is 10 dBA below the existing noise level and hence there will be no significant cumulative noise impact.

Table 5.7 indicates that there will be a significant cumulative noise impact at Tide Island and Fisherman's Road. The cumulative noise impact at Tide Island is primarily due to noise emissions from the proposed Wiggins Island Coal Terminal and the cumulative noise impact at Fisherman's Road is due to the two LNG facilities proposed to be located at Fisherman's Landing (Gladstone LNG and Sun LNG). Noise from the GLNG LNG facility does not contribute to the cumulative noise impacts at either of these two locations. At the other assessment locations there is not predicted to be any significant cumulative noise impact on the existing background noise level from the proposed industrial projects.

Santos has committed to mitigating the noise emissions from its major noise sources in line with Scenario 2. In this case and based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact on noise is assessed as low.

5.10 Land Use

All four of the Curtis Island based LNG facilities will be located within the Curtis Island Industry Precinct of the GSDA Development Plan. The proposed use of this precinct is for "high impact industry limited to natural gas (liquefaction and storage)". The Development Plan also allows for associated infrastructure and material transport facilities.

The cumulative land use impact of all of the Curtis Island LNG facilities being located within the precinct is to reinforce and support the GSDA Development Plan. Such development will also be compatible with the Gladstone Ports Corporation's 50 Year Strategic Plan, which identifies the south western section of Curtis Island as a suitable location for berths to accommodate future LNG exports. The cumulative land use effect of this will be to change the south west corner of Curtis Island from nature conservation and grazing land use to an industrial land use which is consistent with the intent of the GSDA Development Plan.

Construction of the potential Curtis Island bridge and access road will significantly increase the island's accessibility which is currently limited to boat access. Uncontrolled access to the island could result in increased disturbance to its existing environmental values and to the residents at South End. To avoid these potential cumulative impacts it is proposed that the bridge will not be open to the public and will only connect with industrial developments in the GSDA's Curtis Island Industry Precinct. However public access may be allowed in emergency situations such as bushfires or cyclones.

There is a land use conflict between the use of Laird Point for the GLNG DMPF and the announcement in 2009 from the Queensland Government and Australia Pacific LNG that Laird Point is the preferred site for Australia Pacific LNG's proposed LNG facility. This issue has been discussed in Section 5.6.4.

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact on land use is assessed as low.

5.11 Social and Community

The greatest potential for cumulative impacts to social and community aspects will arise during the construction phases of the projects listed in 5.1. The construction workforce information available for a number of these projects was limited to the peak construction workforce and the duration of the construction phase. These details are summarised in Table 5.8.

Table 5-8 Summary of Cumulative Construction Workforces

Project	Construction Period	Construction Workforce (peak numbers)
GLNG	2010 - 2013	3,080
Wiggins Island Coal Terminal	2010 - 2013	650
Queensland Curtis LNG	2010 - 2013	4,175
Fisherman's Landing Port Expansion	start 2010	150
Gladstone LNG Project - Fisherman's Landing	2010 - 2012	120
Gladstone Pacific Nickel Refinery	2008 - 2011	2,600
Boyne Island Aluminium Smelter	2008 - 2011	650
Yarwun Alumina Refinery	2007 - 2012	2,800
Sun LNG Project	2011 - 2013	400
Australia Pacific LNG Project	Late 2010 - 2014	4,000 - 5,000
Shell Australia LNG	2010 - 2014	2,500 - 3,000
Gladstone Steel Making Facility	2009 - 2012	2,100

Table 5.8 shows that a number of large-scale industrial construction projects are expected to be occurring in the Gladstone area at the same time. Due to the overlapping nature of the projects, the cumulative impacts can be expected to result in the following effects:

- Occurrence/Likelihood – higher probability of the impact to occur;
- Magnitude/Consequence – greater effect from the impact;
- Duration – longer timeframe for the impact to occur; and
- Degree of Confidence – decreased confidence in the ability to predict and mitigate the impact.

The lack of consistency in the construction workforce information available for the relevant projects limits the amount of quantitative assessment that can be undertaken. Consequently this cumulative assessment has concentrated on identifying issues and commitments to monitor the cumulative impact on social and community conditions in consultation with key stakeholders and State and local government agencies as appropriate.

Given the significant number of construction workers required by the overlapping construction phases of the numerous projects, the need for a strategy to reduce cumulative social and community impacts within Gladstone becomes more critical. Many of these impacts will relate to a rapidly increasing demand for housing and for the social and community facilities required by the rapidly increasing population. A key strategy proposed by the GLNG Project to reduce its cumulative impact in this regard is to provide a construction accommodation facility (CAF) on Curtis Island for its construction workforce.

An adaptive management strategy will be employed where more GLNG workers will initially be housed in Gladstone at the start of construction. Then as the Curtis Island CAF becomes available and there is increased demand on mainland-based accommodation from the other projects, the GLNG workers will transfer to the CAF. This will result in more mainland-based accommodation becoming available for the other projects and a reduced cumulative impact.

While the number of projects beginning construction will increase, the number of local workers available will remain relatively constant. Although there will be training opportunities developed for most or all of the projects, the local labour supply is relatively finite. This means that the ratio of imported workers to locally sourced workers will shift toward the imported workers as the projects advance.

5.11.1 Demographic Impacts

The estimated maximum increase in Gladstone's (mainland) population from the GLNG construction workforce will be 750. This is expected to occur during months 18 – 24 of the LNG facility construction phase. This assumes that 20 % of the workforce is accommodated in Gladstone (as opposed to the CAF on Curtis Island) and it includes allowance for accompanying families.

Construction of the Queensland Curtis LNG Project is expected to result in a maximum increase in Gladstone's (mainland) population of 830 during its construction phase. Most of its construction workforce will also be accommodated on Curtis Island.

Known estimated maximum population increases from the peak construction workforces of other development projects include:

- Gladstone LNG (Fisherman's Landing) – not available;
- Wiggins Island Coal Terminal - 497;
- Gladstone Pacific Nickel Refinery – 3,100;
- Fisherman's Landing Port Expansion – 0; and
- Yarwun Alumina Refinery – not available.

It is not reasonable to add these totals together as they will occur at different times due to the different starting dates of the construction phases of the various projects. However it is reasonable to expect that there will be some overlap of the construction phases of some of the above projects and that Gladstone's resident population could possibly increase during the peak construction periods by approximately 2,000 to 5,000 as a consequence. This would be up to 10 % of the existing regional population. The GLNG Project would contribute approximately 12 % of this regional population increase. This population increase would reduce significantly once the peak of the construction activities has passed.

During the operational phases of the various projects the cumulative demographic effects will be less than that predicted for the peaks of the construction phases.

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact of the GLNG Project on the regional population numbers is assessed as medium.

5.11.2 Accommodation Impacts

There are positive and negative impacts associated with housing the imported workforce in the Gladstone area. These can increase from low to medium to high level impacts depending on the cumulative effect of numerous projects being constructed in the area at the same time. Key determining factors affecting the significance of the cumulative impacts are the size of the construction workforces of the various projects and the extent of their timing overlap.

There is potential for significant positive impacts as a result of an increase in property values in the area from the perspective of a person who:

- Owns a property;
- Owns investment property;
- Has property to sell; and/or
- Is looking to sell and move out of the area.

There are potentially significant negative impacts if the person:

- Is renting;
- Is looking to buy; and/or
- Is looking to sell a property and upgrade in the area.

People in the lower socioeconomic echelon of society are more susceptible to the negative effects of the cumulative accommodation impacts; however, the increased employment opportunities that come with the development projects have some positive effects as well. The negative effects are more likely to affect people who are not easily employed or are disabled, under skilled (relevant to the various project requirements), young or elderly.

There is potential for the demand on the local housing market (real and perceived) from workforces associated with the projects listed in Table 5.8 to result in unsustainable increases in real estate and rental values. Markets are driven by supply and demand; however, the people generally affected the most by such circumstances are those in the potentially significant negative impact categories listed above. This impact could be compounded by the overlapping construction phases of multiple projects which could see sustained high prices for housing and rental properties extend for three to four years or longer.

To overcome this cumulative impact, additional accommodation facilities are required and in a timely fashion. Strategies to achieve this could include building more houses and flats, shifting more workers to CAF style accommodation, and/or deterring accompanying families from moving with the imported workers. The GLNG Project plans to reduce its cumulative impacts on the Gladstone accommodation market by providing CAF style accommodation for the bulk of its workforce. This strategy is also proposed by the Queensland Curtis LNG Project. The CAFs for both of these projects will be provided on Curtis Island thus reducing the demand for accommodation in Gladstone.

Despite the reduced demand for housing and community facilities and services in Gladstone, there will be cumulative impacts from having two (or more) CAFs on Curtis Island. These include increased demand for water supply and sewerage facilities, increased volumes of waste requiring disposal, increased ferry traffic across Port Curtis, and increased demand for entertainment and recreational facilities. The cumulative impacts from the discharge of water and sewage wastes as well as the management of solid wastes are discussed in Section 5.13. The cumulative impacts of the additional ferry traffic across Port Curtis are discussed in Section 5.6.6. The CAFs for both projects will provide on-site entertainment and recreational facilities for the workers when they are not working. When they are off-roster, when their entertainment and recreational demands are greater, they will return to their homes. No significant cumulative impacts are expected.

Other projects listed in Table 5.1 are proposing a variety of accommodation options for their workforces on the mainland which will add to the cumulative impacts on Gladstone. Those for which the accommodation strategies are known include:

- Gladstone LNG (Fisherman's Landing) – workers accommodation facility and/or local housing;
- Wiggins Island Coal Terminal – local housing;
- Gladstone Pacific Nickel Refinery – workers accommodation facility and/or local housing;
- Fisherman's Landing Port Expansion – local housing; and
- Yarwun Alumina Refinery – workers accommodation facility and/or local housing.

Given the demands placed by these projects on mainland-based facilities, the proposal by GLNG and Queensland Curtis LNG to accommodate the bulk of their workforces on Curtis Island will reduce the regional cumulative impacts on housing and accommodation.

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact of the GLNG Project on accommodation is assessed as medium.

5.11.3 Health and Wellbeing

The strains on health services and community wellbeing from the cumulative effects of several projects could be an issue for the community. The major concern for health and emergency services is that large portions of the workforce may not be considered local due to their placement in CAF style accommodation, but they reside within the service area of these services while on their work rotation. Workers requiring emergency assistance will rely on the local health services. However, the local services may have difficulty factoring these transient workers into their budgeting and planning from year to year. The GLNG Project proposes to reduce these cumulative impacts on the local health services by providing on-site health facilities for the treatment of non-emergency and non-serious cases. More serious cases will be transferred to Gladstone or beyond. Santos will also provide the local health services with regular updated forecasts of planned workforce numbers to facilitate planning strategies. Provided similar strategies were implemented by the other project developers with significant construction workforces, the overall cumulative effects on health services will be reduced.

Cumulative effects on wellbeing are more likely to be individual issues though there is a potential for negative issues to create ripple effects through the local community. Community development programs and sponsorship programs can help in uniting the community as the reality of several concurrent construction projects eventuates. The various proposed projects have the potential to increase community wellbeing through new initiatives, additional funding and programs, attracting new skills to the community, diversification and maintaining the feeling that Gladstone is moving forward. Conversely, there is the potential for negative effects like uncontrollable changes to the community, increases in unfamiliar faces, changes to the community character, and increased pressure on local health services.

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact of the GLNG Project on health and wellbeing is assessed as low.

5.11.4 Education and Training

The estimated maximum increase in school-aged children in the Gladstone region from the GLNG Project's construction workforce will be 60. This is expected to occur during months 18 – 24 of the LNG facility construction phase. This assumes that 20 % of the workforce is accommodated in Gladstone (as opposed to the CAF on Curtis Island) and it includes allowance for accompanying families.

The estimated maximum increase in school-aged children from the other development projects is not known but on a pro-rata basis could be in the order of 400 – 500.

It is not reasonable to add these totals together as they will occur at different times due to the different starting dates of the construction phases of the various projects. Moreover, the age distribution of the children may vary from project to project so that a uniform increase in demand across all school year levels is unlikely.

Schools base their planning on enrolment numbers. The accuracy of this planning can be greatly improved if a coordinated response is provided from project proponents, local schools and State and local agencies as projects are approved and the real impacts from the first projects start to identify areas of concern. Pre-empting such impacts is difficult to do since many projects have accommodation strategies to limit the in-migration of accompanying families to the area but this choice will be largely an individual/family decision. Santos proposes to actively encourage and participate in any overall co-ordination of school enrolment projections and it is anticipated that the proponents of the other major developments will do likewise.

Increases in training opportunities associated with the various projects will place the Gladstone area in higher standing as a post-secondary education and training centre. This will likely have a prolonged effect since many programs will be driven by, or coordinated through, TAFE and university accommodation facility uses, thus enhancing their capabilities. Long-term employment opportunities directly linked to the training programs offered will also increase the profile of these institutions in Australia.

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact of the GLNG Project on education and training is assessed as low.

5.11.5 Economic Development and Employment

There is a potential for significant indirect cumulative economic and employment opportunities from the various other projects in the Gladstone area. The Gladstone Region could be perceived as both a strong investment area and a strong labour market. This has the potential to create an economic boon for the area in the short to medium-term as the growth potential for the area increases with each large scale industrial project, depending on its size and scheduling. This can be seen as both a significant positive impact and a significant negative impact. The potential positive impacts from the prolonged construction period from cumulative projects include:

- Increases in economic opportunities:
  - For established businesses in the area; and
  - For new businesses to establish themselves in the area.
- Increases in employment opportunities:
  - Working for various construction projects; and
  - Servicing the community and projects.

The potential negative impacts include:

- Unsustainable increases in the population resulting in:
  - Unsustainable increases in real estate and rental properties;
  - Strains on health services and community wellbeing;
  - Large numbers of school aged children straining the school system; and
  - Unsustainable demand on social infrastructure.
- Potential for an economic bust after all the construction activity ends.

The various projects will contribute significantly to State and local government revenue from royalties and taxes which can result in additional local development projects and infrastructure upgrades.

The cumulative effects will also result in Gladstone being viewed as an area of economic and employment opportunity. This can help encourage further population growth which will further increase economic and employment opportunities.

There is potential for an economic bust to follow the economic boon generated by the multiple projects in the region. However, in this case the likelihood of such a possibility is reduced as many of the major projects are proposing long term construction phases which could extend for up to 15 years of more as multiple trains or stages are constructed.

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact of the GLNG Project on economic development and employment is positive and assessed as medium.

5.11.6 Social Infrastructure

The cumulative population growth from the multiple projects could result in an unsustainable increase in demand on the existing social infrastructure in the area. This is more likely as more people are housed in the region. The main advantage of a CAF style accommodation on Curtis Island is that it will reduce the pressure on local social infrastructure by providing basic services at the CAF and by the workers returning to their non-local place of residence when off roster where any other necessary social services can be accessed.

The GLNG Project proposes to contribute to the strengthening of local social services through various programs and initiatives. It is anticipated that the other projects would also contribute. The role of State and local government would be to coordinate these programs to ensure social infrastructure improvements are more evenly distributed. Once completed, implementation of the proposed Strategic Social Infrastructure Plan should assist in this coordination.

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact of the GLNG Project on social infrastructure is assessed as low.

5.12 Traffic and Transport

A detailed assessment of the traffic impacts of the GLNG Project including its cumulative impacts is provided in Appendix A. The cumulative aspects of that assessment are summarised below.

5.12.1 Cumulative Assessment Methodology

To undertake the cumulative impact assessment a review of the available traffic information for each of the projects listed in Table 5.1 was undertaken. Only the following three projects had information publicly available that was in a form that could be readily included in the quantitative assessment of the GLNG Project:

- Gladstone Pacific Nickel Refinery Project;
- Moura Link-Aldoga Rail Project; and
- Wiggins Island Coal Terminal Project.

While the Queensland Curtis EIS contained traffic information, it was not readily or easily extractable for direct use within the analysis for the GLNG Project. However, the cumulative traffic impacts from that project have been taken into account by assuming that Queensland Curtis LNG traffic will be equivalent to that of the GLNG Project. This is considered reasonable as both projects are of a relatively similar scale and timeframe and will use similar routes, particularly around the Gladstone area.

Traffic added by the other projects has been accounted for in the background growth rates that have been assumed in the traffic model.

The traffic impact assessment was undertaken for the years 2012, 2014 and 2024. Cumulative impacts were taken into consideration by assuming that the background consisted of general traffic growth of 4 % in Gladstone and 6 % on rural roadways, together with the estimated project traffic from the four projects discussed above.

The traffic from each of the listed cumulative projects was reviewed and combined for each assessment year. This involved identifying the estimated traffic volumes from each of the projects for each assessment year and combining them to estimate the total additional trips that would be generated by the cumulative projects. The combined traffic from the cumulative projects was then added to the background volumes for the assessment years (assuming the percentage increases given above) to give the total cumulative background traffic volumes in each assessment year. The cumulative impact assessment was then made on the basis of the combined GLNG Project traffic and the cumulative background volumes.

5.12.2 Cumulative Impacts

The cumulative traffic impacts for the LNG facility have been estimated for both the construction and operational phases. The base case has assumed the construction of an access road and bridge connecting Landing Road to Curtis Island (available after construction of Train 1) as well as a dredge material placement facility at Laird Point. The impacts in Gladstone also include the effects of the trucking of pipe from the port through the city to the proposed alignment of the gas transmission pipeline.

The cumulative traffic impacts in Gladstone for the base case will result in additional traffic distributed across a number of Gladstone's major roads. To mitigate these impacts the following mitigation measures are proposed:

- The following intersections in Gladstone have been identified as needing to be upgraded
  - Gladstone-Mt Larcom Road/Calliope River Road/Targinie Road;
  - Gladstone-Mt Larcom Road/Landing Road/Hanson Road;
  - Hanson Road/Red Rover Road intersection;
  - Hanson Road/Blain Drive/Alf O'Rourke Drive intersection;
  - Dawson Highway/Blain Drive/Herbertson Street;
  - Dawson Highway/Philip Street; and
  - Dawson Highway/Don Young Drive.
- The following roads will need capacity upgrades. The GLNG Project will bring forward the timing of the upgrading from two to four lanes of the following sections of road:
  - Gladstone-Mount Larcom Road from Red Rover Road to Power Station (approximately 1.0 km) – bring forward 1.2 years from 2025 to 2024.
  - Gladstone-Mount Larcom Road from Power Station to Reid Road (approximately 5.0 km) – bring forward 1.2 years from 2025 to 2024.
- There will be an increased requirement for pavement rehabilitation and road maintenance.

Santos will negotiate a suitable contribution package for these road works. The extent of any contribution to be made by Santos is a matter for discussion and resolution between Santos and relevantly each DTMR, local authorities and the Coordinator-General (depending on the status of the road network).

The "no bridge" option will result in a reduced number of project trips from the base case due to the removal of traffic associated with the bridge construction. The quantitative impacts of the "no bridge" option have been found to be comparable to those found for the base case assessment, with the following notable differences:

- Intersection impacts within Gladstone result in intersections closer to the central city needing to be upgraded. This is understandable given that Port Central and the proposed Calliope River wharves (or RG Tanna) will be the origin/destination of trips to/from Curtis Island after the first six months.
- Roadway segment capacity improvements for the "no bridge" option are required in the urbanised central city streets in Gladstone rather than on the urban fringe (as in base case).
- Pavement impacts for pavement rehabilitation are the same as for the base case. Road maintenance costs are less for the "no bridge" option because of the removal of bridge construction traffic.

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact on traffic and transport is assessed as medium.

5.13 Wastes

5.13.1 Solid Waste

The construction of the GLNG LNG facility will generate a number of waste streams from the various stages of construction. It is proposed to manage this waste by maximising opportunities to reduce, recycle and reuse it wherever possible. However there will be waste streams for which this cannot be achieved and they will be disposed of at an approved landfill on the mainland. A similar approach will be taken to solid wastes generated during the LNG facility's operational stage. During operations the facility will generate approximately 1 tonne of solid wastes per day.

The EIS for the Queensland Curtis LNG facility indicates that approximately 1.8 tonnes per day of solid wastes will be produced. On a pro-rata basis the total amount of solid wastes that could be expected from the six proposed LNG projects could be approximately 8 tonnes per day. Not all of this waste will be landfilled, as some will be reused or recycled. In addition, the Gladstone Nickel Refinery is estimated to generate approximately 1 tonne of solid waste per day (apart from residue) that could potentially go to landfill. Volumes of waste to landfill from the expansions of the Boyne Island Aluminium Smelter and the Yarwun Alumina Refinery are not available.

The Queensland Curtis EIS reports that the Benaraby landfill to the south of Gladstone has adequate capacity at current predicted levels until 2050 and received an average of 150 tonnes of waste per day in 2008. Even if all the solid wastes from the proposed projects went to the landfill, the additional 9 tonnes per day is unlikely to have a significant impact.

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact on solid waste is assessed as low.

5.13.2 Liquid Wastes

GLNG facilities are essentially dry operations and there is little in the way of liquid wastes. However, locating the CAFs on Curtis Island will result in the generation of water and sewage treatment wastes which will require disposal. Both the GLNG and the Queensland Curtis LNG projects propose to discharge reverse osmosis concentrate and treated sewage effluent to Port Curtis. Modelling for both projects has shown that these discharges will result in no detectable changes in local water quality within a short distance (<100 m) of the discharge locations. Given the discharge points for the GLNG and Queensland Curtis LNG facilities are likely to be over 1 km apart, there is minimal risk of cumulative impacts.

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact on liquid wastes is assessed as low.

5.14 Visual Amenity

Development of the proposed LNG facilities on Curtis Island will significantly change the visual characteristics of the island's south west corner from one of an undeveloped area covered by remnant vegetation and undisturbed foreshore to a large industrial and port complex. The cumulative effect of four LNG facilities and their associated marine facilities will result on a new visual landscape being created in the area.

Such a change conflicts with the desired coastal outcome of the Curtis Coast Regional Management Plan for the south-west of Curtis Island, which is to ensure that any impacts on the scenic coastal landscape values associated with this part of the island are minimised. However the plan notes that although this coastal locality is undeveloped there is significant potential for future development associated with port and industrial expansion and such development has been identified by the GPC's strategic port plan.

Furthermore, changing the land use of the area has been envisaged by the GSDA Development Scheme which designates the area as the Curtis Island Industry Precinct. This planning decision inevitably requires a change in the visual amenity of the area from one of a natural coastal landscape to one of a major industrial and port complex.

The significance of this cumulative visual impact will vary depending on the position of the viewer. An overview of what the site might look like when viewed from the air showing details for the two LNG facilities for which details are known (GLNG and Queensland Curtis LNG) is provided in Figure 5.1.

Figure 5-1 Artist's Impression of the Cumulative Visual Impact from Above

Figure 5.2 shows the view of Curtis Island from the Auckland Point lookout. Virtually all of the GLNG and Queensland Curtis facilities will be hidden by the vegetated ridge at Hamilton Point. The flares will be the only noticeable visual impact from this location and these will only be visible if they are flaring (which will be an infrequent occurrence). The Shell Australia (SA) site will be visible and its facility is likely to be more visible from this viewpoint.

Figure 5-2 Artist's Impression of the Cumulative Visual Impact from Auckland Point

Figure 5-3 Artist's Impression of the Cumulative Visual Impact from Direction of Fisherman's Landing

The bridge to Curtis Island will also increase the level of cumulative impact. When viewed from a distance (Figure 5.2) it will be seen as being part of the newly developed industrial character of Curtis Island. However, its near-field views will have a greater visual impact as they will be incompatible with the significant natural landscape values of The Narrows to the north.

The cumulative impact of the LNG facilities proposed for Fisherman's Landing will be less significant as they will be viewed in the context of the existing industrial development in the area. This site is cleared reclaimed land and further industrial development of this area will further reinforce the area's industrial character and will not result in any significant visual impact. This industrialisation effect will be further supported by the Wiggins Island Coal Terminal and development of the land to be reclaimed as a result of the Fisherman's Landing expansion and the Western Basin dredging and reclamation project. From a viewpoint within Port Curtis, the cumulative impact of the LNG facilities at Fisherman's Landing to the west and at Curtis Island to the east will reinforce the viewshed's industrial character with a further reduction in its natural amenity values.

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact on visual amenity is assessed as high.

5.15 Cultural Heritage

5.15.1 Non Indigenous Cultural Heritage

Two heritage and archaeological sites of local significance (industrial working area and loading facilities) and an historical indicator site (old fence line) will be disturbed by the GLNG LNG facility and dredge material placement facility. In addition, two heritage sites have been identified on the Queensland Curtis LNG facility site (cattle yards and timber posts) and these are likely to be disturbed by that project. The presence of heritage sites on the sites of the other proposed LNG facilities on Curtis Island is not yet known. However given the historical use of the south west corner of Curtis Island for cattle grazing, historical remnants of that industry could be present on these sites.

The cumulative impact of the development of all four LNG facilities on Curtis Island could be the loss of a number of heritage sites of local significance that are remnants of the area's grazing and pastoral activities. To mitigate these impacts, recording and salvage operations will be undertaken prior to disturbance.

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact on non-indigenous cultural heritage is assessed as low.

5.15.2 Indigenous Cultural Heritage

Management of indigenous cultural heritage significance for the GLNG Project will be by the Cultural Heritage Management Plan (CHMP) process agreed with the relevant Aboriginal Party. As yet, this has not been finalised. Protection, management and mitigation measures will be agreed after cultural heritage surveys are completed and they will then be incorporated into the Santos cultural heritage management system.

The CHMP will deal with the cultural heritage issues particular to the GLNG Project site. This will generally not affect or be affected by any of the other projects listed in Table 5.1. Queensland Curtis LNG is currently in the process of negotiating their CHMP and it is assumed that the other Curtis Island LNG projects are doing likewise.

All of the Curtis Island CHMPs will need to be negotiated with the same Aboriginal Party (Port Curtis Coral Coast community). Cumulative impacts may occur by stretching the limited resources of the Port Curtis Coal Coast community in responding to multiple requests to negotiate multiple CHMPs and undertake surveys for the different projects. Cumulative impacts will also include a reduction in the presence of indigenous artefacts in the south west corner of Curtis Island as the four LNG facilities will result in the salvage or loss of all artefacts within their footprints.

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact on indigenous cultural heritage is assessed as low.

5.16 Hazard and Risk

5.16.1 Facility Risk

LNG facilities have an exemplary safety record. Since 1980, there have been no fatalities at LNG import and storage facilities around the world.

The hazard assessment of the GLNG LNG facility found that most of the hazards did not result in an off-site impact. There were two scenarios where the hazard end-point extended over the site boundary bordered by the coastline into the marine area in an area which is not occupied and will not be built upon. It was therefore concluded that a significant off-site hazard was not posed by the facility. Modelling determined that for the product loading facility the hazard end point is 186 m and hence a safety zone of 250 m radius is appropriate.

The industrial land use risk contours for the Queensland Curtis LNG facility are contained within its site boundaries except for an extension over the coastal boundary into the marine environment. Like the GLNG LNG facility, there is also a safety zone around the Queensland Curtis product loading facility.

In summary, the locations proposed for both the GLNG and Queensland Curtis facilities meet the relevant risk criteria because they are sufficiently distant from each other and from sensitive land uses and because of the robust risk mitigation measures proposed. It can be expected that the other proposed LNG facilities on Curtis Island would have similar risk profiles.

The cumulative risk impacts of having four LNG facilities on Curtis Island include limiting adjacent land uses to similar industrial and associated facilities and the effective exclusion of the public from coastal areas along the frontage of the facilities sites and within approximately 250 m of each of the proposed product loading facilities. This will impose restrictions on recreational boating and fishing activities along and adjacent to the south west coastline of Curtis Island.

5.16.2 Shipping Risk

The development of six LNG facilities in Gladstone would lead to a significant increase in shipping though Port Curtis. The cumulative impact from all these projects could result in approximately 900 LNG vessel trips transiting Gladstone Port each year.

Overall, the Port of Gladstone is extremely safe, with navigation features, support systems and redundancy contributing towards a low risk of an incident during transit. Key shipping hazards for LNG vessels would include the passage through the South Channel, transit past other wharf facilities, and interaction between the LNG vessel and support vessels during transit. The route through the port meets industry criteria for channel draught, angles of turn and turning basin even for large-beam LNG carriers. Channel widths are acceptable following a scenario-specific risk assessment and implementation of appropriate mitigation measures.

A cumulative quantitative assessment of all potential incidents (including collision, grounding, capsizing, sinking or exposure to specific hazardous conditions) during transit of ships from both the GLNG and Queensland Curtis LNG facilities shows that the likelihood of an incident is extremely low – less than 2.2 x 10^{-3} per LNG carrier visit.

There are approximately 6,000 large vessels movements (bulk carriers, oil tankers, container carriers, general cargo ships, and other large ships) through the Great Barrier Reef (GBR) and Torres Strait annually. Adding a further 900 LNG vessels (1,800 one way movements) would represent a 30% increase in shipping through the GBR and a commensurate increased risk of collision. To mitigate the risk of collision between ships at sea the International Regulations for Preventing Collisions at Sea, 1972 (COLREGS) apply to both trading ships and fishing vessels. Mitigation measures include adequate watch keeping, keeping a proper lookout, maintaining safe speeds and the use of appropriate lighting. Other risk mitigation measures include ensuring adequate training of crews and fatigue management. Santos will require all of its LNG vessels to comply with the requirements of COLREGS.

Based on the assessment methodology given in Section 1.3, the significance of the overall cumulative impact on risk is assessed as medium.

References

Australia Pacific LNG, 2009, *Australia Pacific LNG Project Initial Advice Statement*. prepared for Origin Energy and ConocoPhillips.

Connell Hatch, 2006, *Wiggins Island Coal Terminal Environmental Impact Statement*, prepared for Queensland Rail and Central Queensland Ports Authority.

Connell Hatch, 2008, *Moura Link-Aldoga Rail Project Environmental Impact Statement*, prepared for Queensland Rail.

Connell Hatch, PB, Maunsell Aecom, 2009, *Surat Basin Rail Project EIS*, prepared fro Surat Basin Rail.

Dames & Moore, 1998, *Comalco Alumina Refinery Project, Impact Assessment Statement/Environmental Impact Statemen*t, prepared for Comalco Aluminium.

Enertrade, 2006, Central Queensland Gas Pipeline Environmental Impact Statement.

GHD, Sep 2009, *Fisherman's Landing Northern Expansion Environmental Impact Statement*, prepared for Gladstone Ports Corporation.

GHD, Nov 2009, *Western Basin Dredging and Disposal Environmental Impact Statement*, prepared for Gladstone Ports Corporation.

Gladstone Area Water Board, 2008, *Gladstone-Fitzroy Pipeline Project, Environmental Impact Statement*, prepared for the Gladstone Area Water Board.

Worley Parsons, 2008, *Gladstone LNG Project – Fisherman's Landing, Environmental Impact Statement*, prepared for Gladstone LNG Pty Ltd.

Worley Parsons, Nov 2008, *Steel Making Facility Initial Advice Statement*, prepared for Boulder Steel Limited.

Queensland Curtis LNG, 2009, *Queensland Curtis LNG Environmental Impact Statement*.

Queensland Government State Development, 2003, *Coordinator-General's Report on the Environmental Impact Statement for the Boyne Island Aluminium Smelter Extension of Reduction Lines Project.*

Queensland Government The Coordinator-General, 2007, *Coordinator-General's Report Central Queensland Gas Pipeline.*

RLMS, 2008, *Project Sun LNG Project Gladstone, Initial Advice Statement*, prepared for Sunshine Gas Limited and Sojitz.

RPS Environment and Planning Pty Ltd, 2009, *Surat to Gladstone Pipeline Project Environmental Impact Statement*, prepared for SGP.

Santos, Petronas, 2009, *GLNG Project Environmental Impact Statement*.

Shell SGS (Australia) Pty Ltd, 2009, *Initial Advice Statement Shell Australia LNG Project*.

Sunwater, 2008, *Nathan Dam Initial Advice Statement*.

URS, 2007, *Gladstone Pacific Nickel Environmental Impact Statement,* prepared for Gladstone Pacific Nickel Ltd.

Xstrata Coal, 2008, *Wandoan Coal Project, Environmental Impact Statement*.

Limitations

URS Australia Pty Ltd (URS) has prepared this report in accordance with the usual care and thoroughness of the consulting profession. It is based on generally accepted practices and standards at the time it was prepared. No other warranty, expressed or implied, is made as to the professional advice included in this report. It is prepared in accordance with the scope of work and for the purpose outlined in the proposal dated 15 July 2009.

This report should be read in full. No responsibility is accepted for use of any part of this report in any other context or for any other purpose. This report does not purport to give legal advice. Legal advice can only be given by qualified legal practitioners.

A

Appendix A Cumulative Transport and Traffic Assessment

Cardno Epppell Olsen Pty Ltd
ABN 82 095 614 154

Transportation and Traffic Specialists

Level 11 Green Square North Tower
515 St Paul's Terrace
Locked Bag 4006 Fortitude Valley
Queensland 4006 Australia
Telephone: 07 3310 2401
Facsimile: 07 3369 9722
Email: transportqld@cardno.com.au
www.cardno.com.au/eo

Our Ref: CE005780: mg

Date: 6 November 2009

DESIGN NOTE

GLNG PROJECT SUPPLEMENTARY ENVIRONMENTAL IMPACT STATEMENT – TRAFFIC REPORT
CUMULATIVE PROJECTS IN TRANSPORT REVIEW

Cumulative Impacts of Regionally Significant Projects

A review of the Department of Infrastructure and Planning website was undertaken to determine if any other regionally significant projects within the GLNG Project area may contribute to the future levels of background traffic to be added to the road network. The following projects being planned in the vicinity of the proposed GLNG Project were identified (as of September 2009):

- Gladstone LNG Project – Fisherman's Landing (LNG Limited/Arrow Energy project);
- Yarwun Alumina Refinery Expansion;
- Aldoga Aluminium Smelter Project;
- Central Queensland Gas Pipeline;
- Fisherman's Landing Port Expansion;
- Gladstone Pacific Nickel Refinery Project;
- Gladstone-Fitzroy Pipeline Project;
- Moura Link-Aldoga Rail Project;
- Queensland Curtis LNG Project;
- Wandoan Coal Project; and
- Wiggins Island Coal Terminal Project.

Quantitative Review of Projects

A review of the available information and planning stage for each project as well as the useability of the information for this study was undertaken. Only the following projects had information publicly available that was in a form to be readily included in the quantitative assessment of the GLNG Project:

- Gladstone Pacific Nickel Refinery Project;
- Moura Link-Aldoga Rail Project; and
- Wiggins Island Coal Terminal Project.

At the time of review, the Queensland Curtis LNG Project is still active in the EIS process and traffic impact assessment data had been made publicly available by the proponents. However, this data is not readily or easily extractable for direct use within the analysis for the GLNG Project by Santos. From the EIS submissions received from DTMR the cumulative traffic impacts have however been taken account of. This has been done by considering that Queensland Curtis LNG traffic will be equivalent to that of the GLNG Project. This is considered reasonable as both projects are of a relatively similar scale and timeframe and will use similar routes particularly around the Gladstone area.

It is also considered more accurate than applying a further global percentage growth to existing background traffic as this disproportionately increases traffic (and turning movements) to/from minor road which would be unlikely to occur from the Queensland Curtis LNG industrial/commuting traffic routes.

The remaining traffic added by the other projects is accounted for in the background growth rates presented above.

Key information from the Gladstone Pacific Nickel Refinery Project, Moura Link-Aldoga Rail Project, Wiggins Island Coal Terminal Project and Queensland Curtis LNG Project is included at Appendix F.

Qualitative Review of Projects

A qualitative review of the recommendations for each project was undertaken to provide context and maintain consistency with the recommendations of this assessment. The relevant findings and recommendations available for each project are summarised below.

Gladstone LNG Project - LNG Limited/Arrow Energy

A Traffic Assessment Report, dated 16 September 2008, for the LNG Limited/Arrow Energy Project became available during the preparation of this assessment, though the information included in the report was inadequate to include in the traffic modelling for this assessment.

No recommendations for mitigation measures were proposed in the Traffic Assessment Report for the project.

Yarwun Alumina Refinery Expansion

No information was publically available at the time of the review.

Aldoga Aluminium Smelter Project

The Coordinator-General's EIS Evaluation Report, published February 2003, recommended that the Aldoga Aluminium Smelter Project proponent enter into infrastructure arrangements covering the supply, funding and use of the infrastructure listed below insofar as, and to the extent that there is a demonstrated impact of the Project on that infrastructure or a requirement for the infrastructure is generated by the Project:

- Roads:
  - upgrade of Calliope River Road and intersections
  - construction of Don Young Drive Rail overpass
  - upgrade of Hansen Road/Port Curtis Way intersection
  - upgrade of Landing Road

- Rail:
  - design and construction of Aldoga Rail Loop (including signalling)
  - design and construction of AAS Rail Siding
  - design and construction of Fishermans Landing Loading Spur
  - design and construction of Rio Tinto Alumina Refinery Alumina
  - Loading Facility
  - design and construction of Queensland Alumina Limited Alumina Loading Facility
  - design and construction of Auckland Point Rail System (including signalling)
  - New Rolling Stock

Central Queensland Gas Pipeline

No assessment of traffic impacts had been undertaken at the time of publication of the Coordinator-General's Report, dated October 2007.

Fisherman's Landing Port Expansion

No information was publically available at the time of the review.

Gladstone Pacific Nickel Refinery Project
The trip generation for the Gladstone Pacific Nickel Refinery Project (GPNL) was available for inclusion as background traffic in the GLNG traffic impact assessment. The Coordinator-General's Report, dated January 2009, became available during the preparation of this assessment. Relevant conditions of the GPNL project for road impacts are summarised below:

- GPNL must provide DTMR a contribution equivalent to 26% of the cost of upgrading the Hanson Rd/Reid Rd intersection to a single-circulating lane roundabout standard, in accordance with DTMR's 'Road Planning and Design Manual' before commencement of construction of the GNP;
- GPNL must provide DTMR a contribution equivalent to 42% of the cost of upgrading the Hanson Road/Blain Drive/Alf O'Rourke Drive intersection to a dual circulating lane roundabout standard, in accordance with DTMR's 'Road Planning and Design Manual' before commencement of construction of the GNP; and
- GPNL must provide DTMR a contribution equivalent to a maximum of 18% of the cost of upgrading the Dawson Highway/Blain Drive/Herberton Street intersection to a signalised dual-circulating lane roundabout standard, in accordance with DTMR's 'Road Planning and Design Manual' before commencement of construction of the GNP. The exact contribution will be negotiated between GPNL and DTMR prior to the commencement of any construction.

Gladstone-Fitzroy Pipeline Project
The EIS document was publically available for the Gladstone-Fitzroy Pipeline Project at the time of review. The transport chapter of the EIS proposes road/intersection improvements at the following locations:

- Laurel Banks Road – The first 2.3 km section is proposed to be widened to a similar standard as the remaining wider section to Ski Gardens Road. This would allow opposing vehicles to pass each other without pulling over onto the gravel shoulder;
- Laurel Banks Road / Rockhampton Ridgelands Road intersection – upgrading to a BAR (Basic Right Turn) treatment is proposed. During this phase a traffic management plan will need to be implemented, which would require a reduction in the speed limit to 80 km/h, advanced heavy vehicle turning warning signs, and general access construction warning signs; and
- Rockhampton Ridgelands Road – The newly formed direct access for the Alton Downs WTP which is proposed to be constructed will require a BAR treatment to be implemented.

None of these proposed mitigations are relevant to the GLNG Project outcomes.

Moura Link-Aldoga Rail Project
The trip generation for the Moura Link-Aldoga Rail Project was available for inclusion as background traffic in the GLNG traffic impact assessment. The EIS document was also publically available for the Moura Link-Aldoga Rail Project at the time of review. The transport chapter of the EIS proposes road/intersection improvements at the following locations:

- Gladstone-Mount Larcom Road/Calliope River Road/Targinie Road intersection – requires lane upgrades due to development.

Wandoan Coal Project
This project does have quantitative traffic data available however a review of this data concluded that it does not merit inclusion in the analysis for the GLNG Project. This is due to its effects on the Leichhardt Highway being primarily located south of the Warrego Highway and therefore not coincident

with GLNG traffic. On the Warrego Highway, the Wandoan Project generates traffic east of Miles through to Brisbane but the relatively low volumes involved have no bring forward effects on either Pavement Impact Assessment or Roadway Link Capacity Assessment results. Additionally, the methodology used for the Queensland Curtis LNG Project is considered conservative and therefore any overestimates due to that project are considered to be offset by those of the Wandoan Project.

Wiggins Island Coal Terminal Project

The trip generation for the Wiggins Island Coal Terminal Project (WICT) was available for inclusion as background traffic in the GLNG traffic impact assessment. The Coordinator-General's Report, dated January 2008, was also available during the preparation of this assessment. Relevant conditions of the GPNL project for road impacts are summarised below:

- provide at no cost to the Department of Transport and Main Roads an 'at grade' T-intersection - Seagull type with Hanson Road for access to/from the development site;
- Hanson Road/Red Rover Road intersection – Contribute to upgrade to two-lane roundabout, with two-lane entries on Hanson Road;
- Hanson Road/Blain Drive/Alf O'Rourke Drive – Contribute to upgrade to two-lane roundabout, with two-lane entries on all approaches; and
- Hanson Road/Reid Road – Contribute to potential intersection upgrades, depending on level of adjacent development.

Cumulative Impacts of Other Projects

As indicated in Section 3.8 of the "GLNG Supplementary Environmental Impact Statement – Traffic Report", only the Moura Link-Aldoga Rail Project, Wiggins Island Coal Terminal Project, the Queensland Curtis LNG Project and Gladstone Pacific Nickel Refinery Project had suitable information available for inclusion in this assessment. The other projects identified as potentially having a cumulative impact on the development did not have traffic data that could be used in the assessment and were not included in the cumulative impacts. Traffic from the projects not included has been accounted for in the background traffic growth rates applied.

The cumulative traffic from each development was reviewed and combined for each assessment year. This involved identifying the development traffic at the various scenario years and combining them to identify the total additional trips that were to be generated by the cumulative projects. The cumulative number of trips was then combined to the background volumes for the scenario years to give the total background traffic volumes in each assessment year.

Cardno Eppell Olsen

SUMMARY of CUMMULATIVE PROJECTS

Developments	Name	Construction														Operation																							
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
1	Aldoga																																						
2	WICT																																						
3	Nickel																																						
4	Curtis LNG																																						

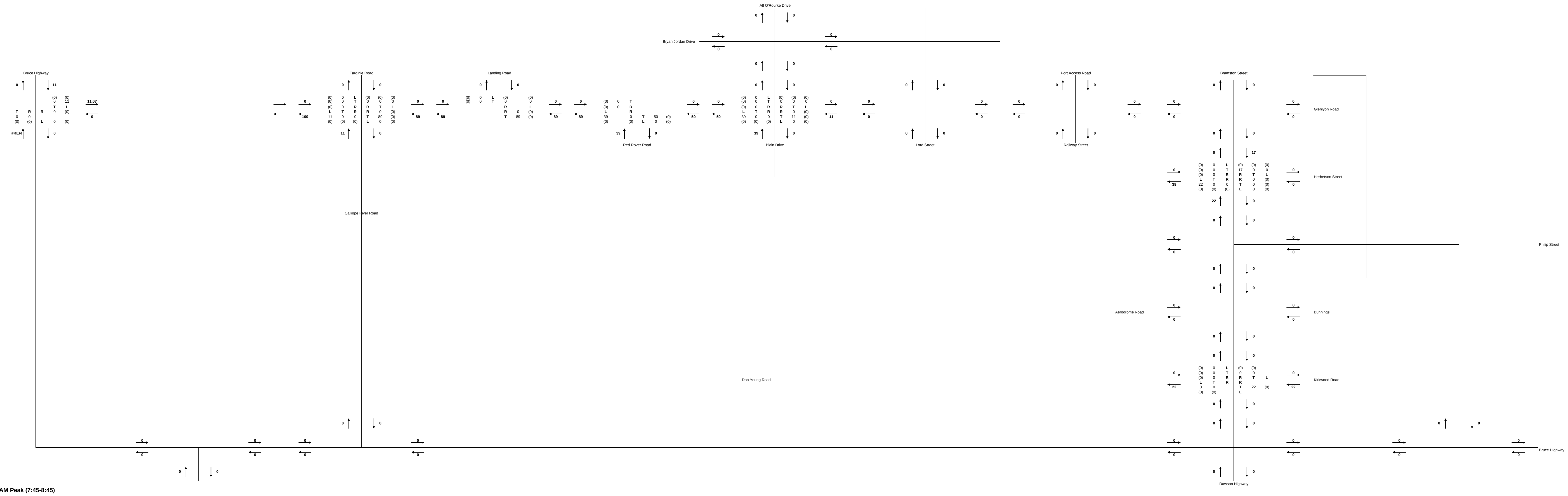
Counts available
construction/operation works

Gladstone Pacific Nickel http://www.dip.qld.gov.au/projects/mining-and-mineral-processing/nickel/gladstone-pacific-nickel-refinery.html
Cladstone Steel Making Facility http://www.dip.qld.gov.au/projects/mining-and-mineral-processing/steel/gladstone-steel-making-facility.html
Moura-Aldoga Rail http://www.dip.qld.gov.au/projects/transport/rail/moura-link-aldoga-rail.html
Fishermans Island Expansion http://www.dip.qld.gov.au/projects/transport/harbours-and-ports/fishermans-landing-port-expansion.html
Port of Gladstone Dredging http://www.dip.qld.gov.au/projects/transport/harbours-and-ports/port-of-gladstone-western-basin-strategic-dredging-and-disposal-project.html
WICT http://www.dip.qld.gov.au/projects/mining-and-mineral-processing/coal/wiggins-island-coal-terminal.html
Arrow Pipeline http://www.dip.qld.gov.au/projects/energy/gas/central-queensland-gas-pipeline.html
GLNG http://www.dip.qld.gov.au/projects/energy/gas/gladstone-liquefied-natural-gas-project.html
Curtis LNG Project http://www.dip.qld.gov.au/projects/energy/gas/queensland-curtis-lng-project.html
Shell LNG Project http://www.dip.qld.gov.au/projects/energy/gas/shell-australia-lng-project.html
Aldoga Aluminium Smelter http://www.dip.qld.gov.au/projects/mining-and-mineral-processing/bauxite-and-aluminium/aldoga-aluminium-smelter.html
Boyune Island Aluminium Smelter http://www.dip.qld.gov.au/projects/mining-and-mineral-processing/bauxite-and-aluminium/boyne-island-aluminium-smelter.html

2010 Cummulative Impact Traffic of Aldoga

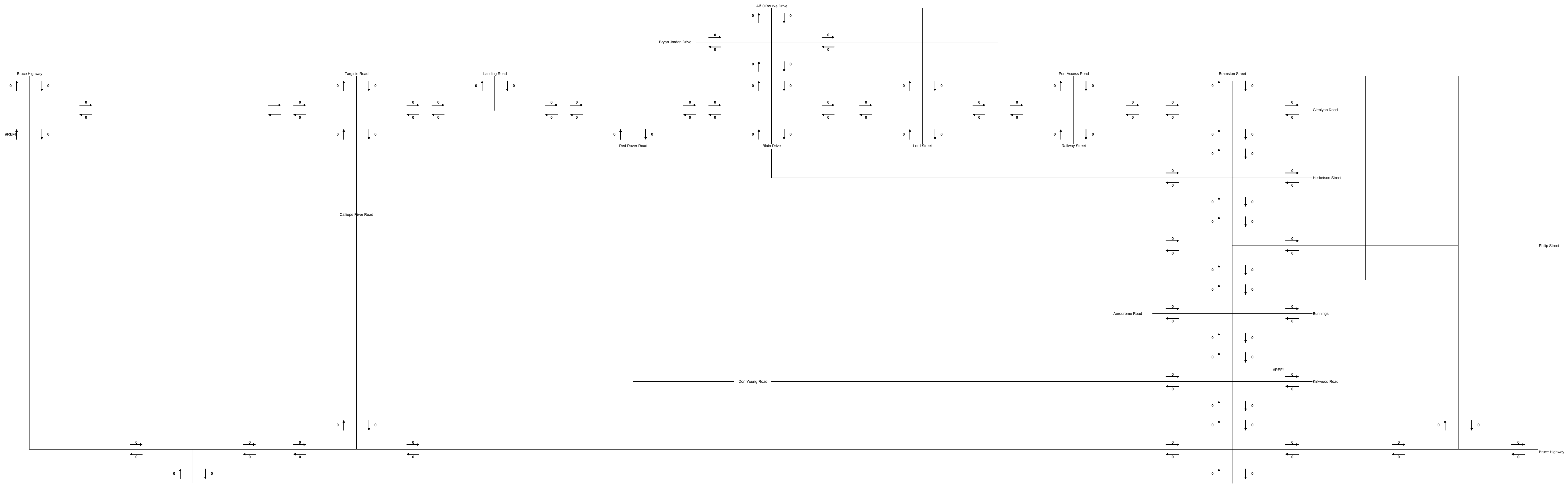
LEGEND
100 Total Volume
(10) Heavy Vehicle Volume

AM Peak (6:00-7:00)

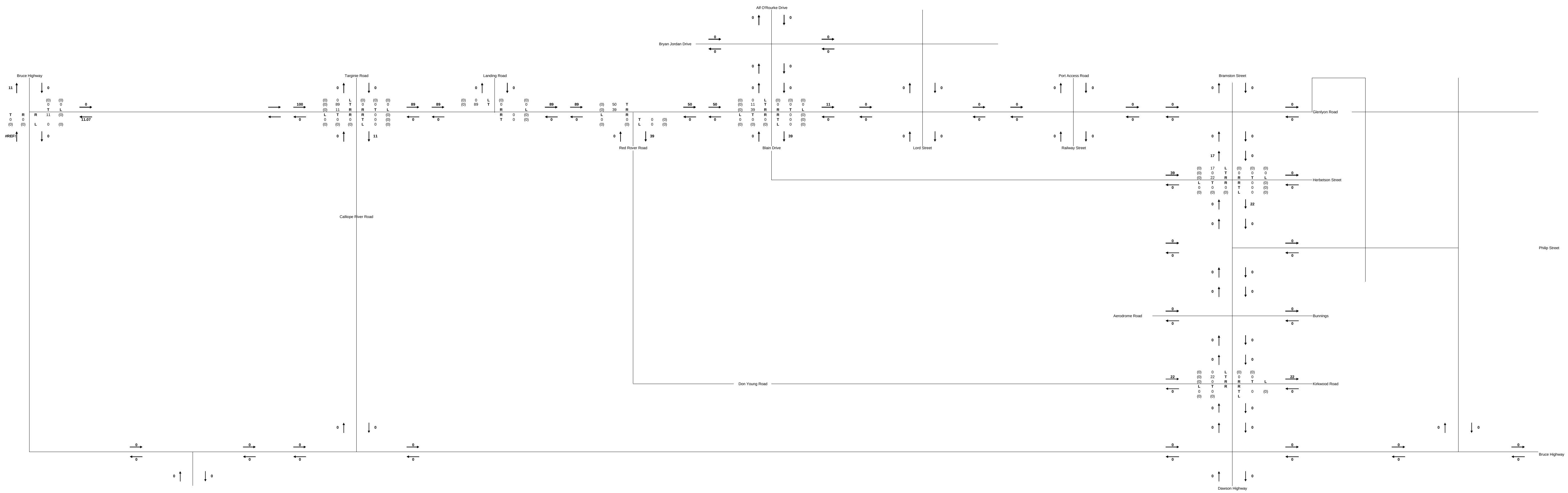


AM Peak (7:45-8:45)

PM Peak (13:30-14:30)



PM Peak (16:30-17:30)

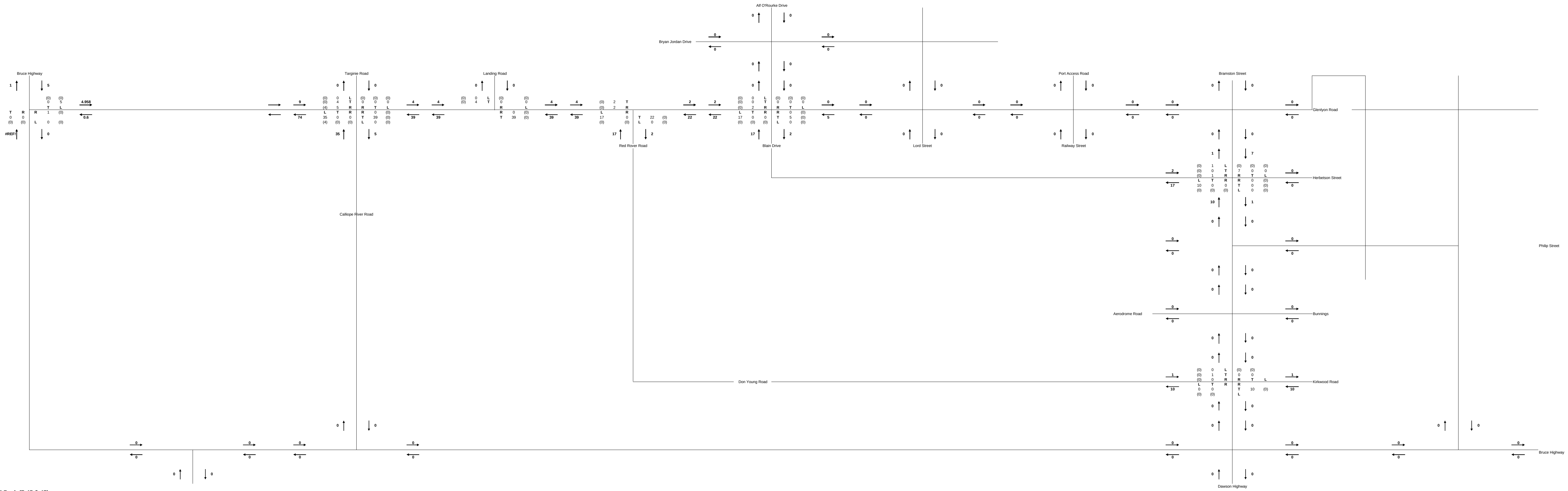


2012 Cummulative Impact Traffic of Aldoga

LEGEND

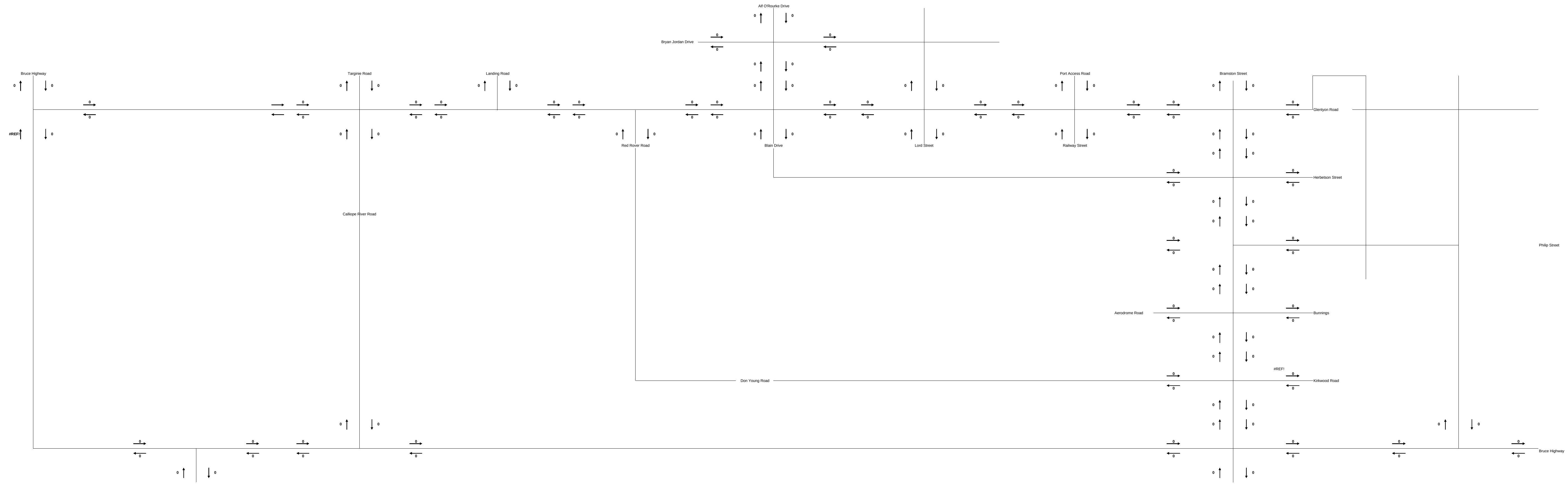
100 Total Volume
(10) Heavy Vehicle Volume

AM Peak (6:00-7:00)

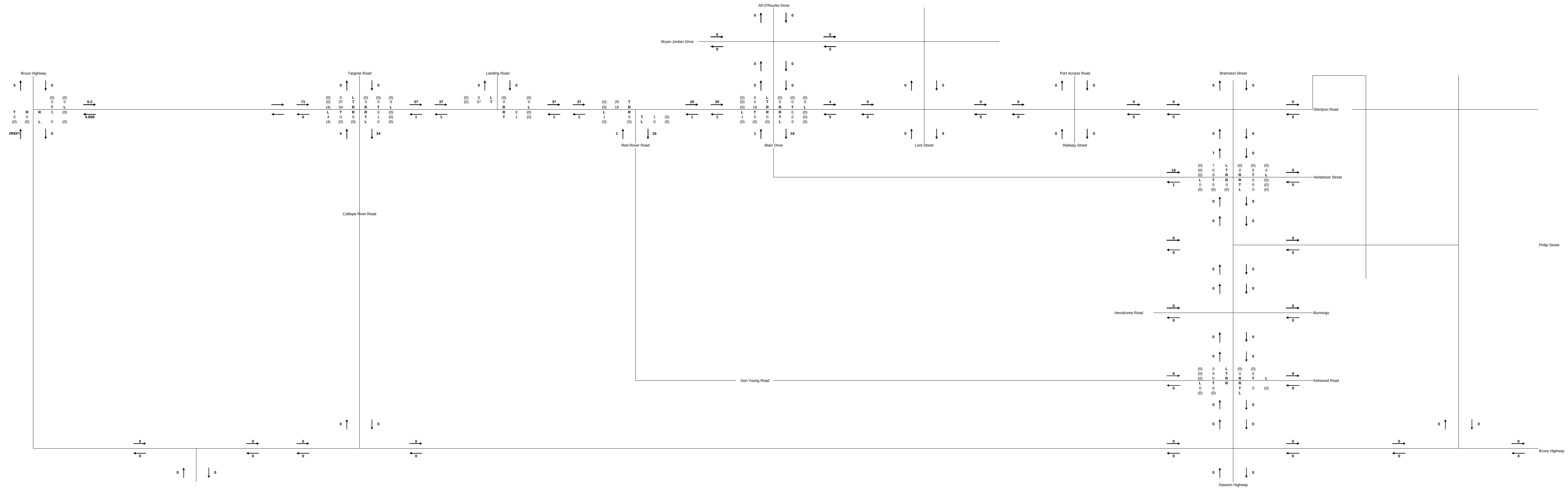


AM Peak (7:45-8:45)

PM Peak (13:30-14:30)



PM Peak (16:30-17:30)

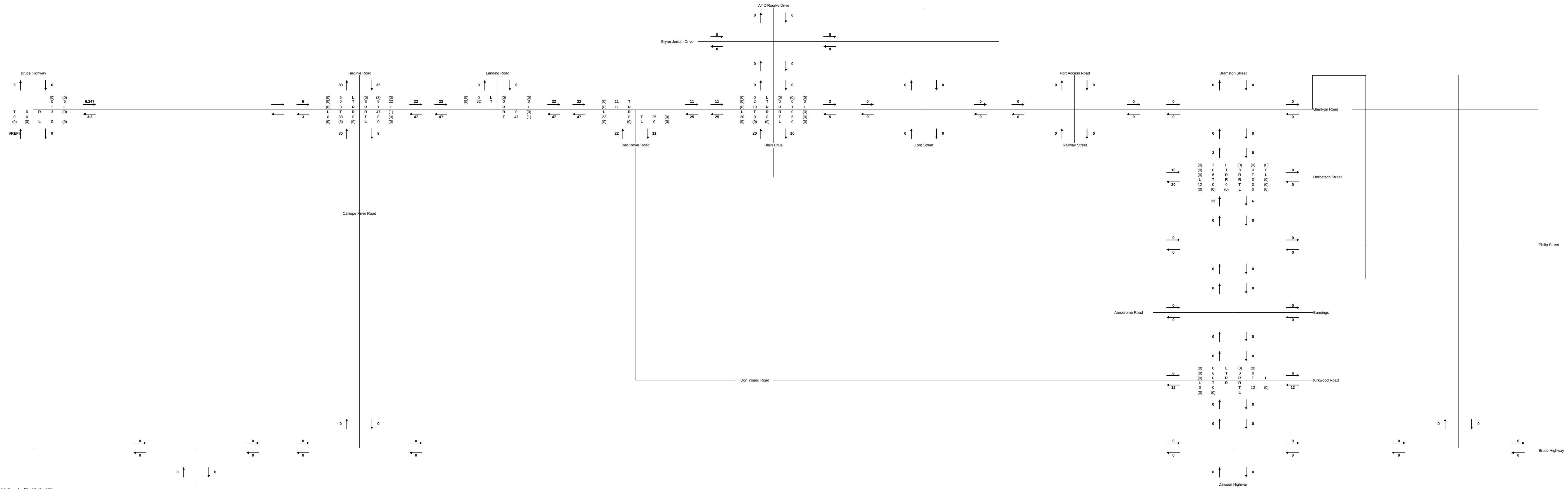


2013 Cummulative Impact Traffic of Aldoga

LEGEND

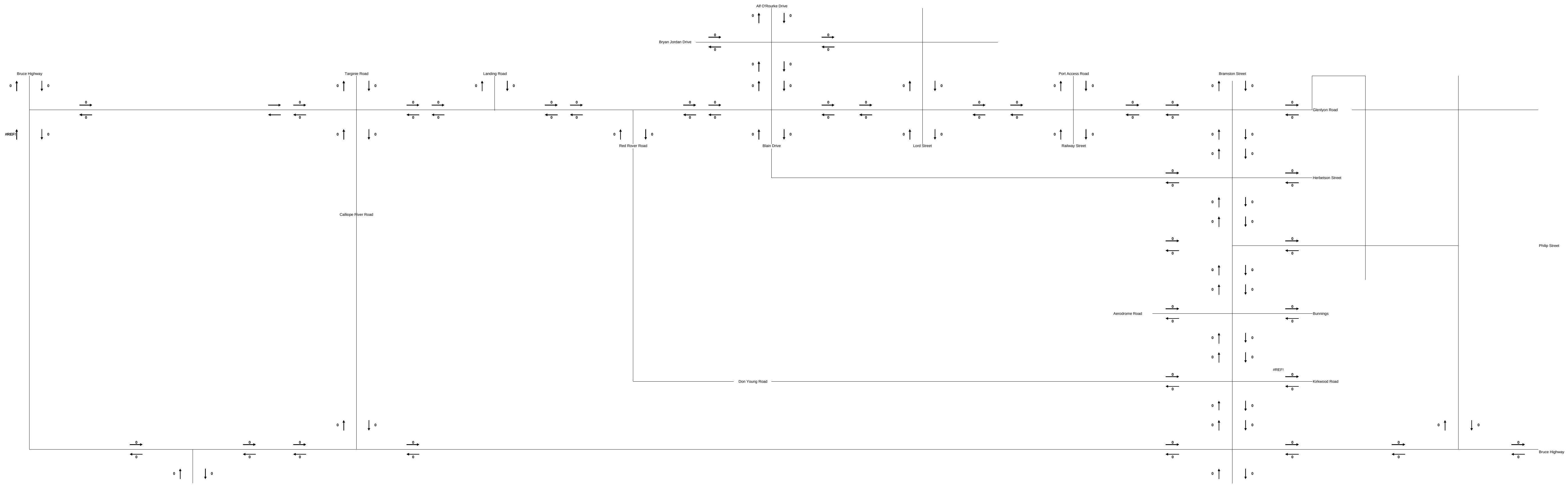
100 Total Volume
(10) Heavy Vehicle Volume

AM Peak (6:00-7:00)

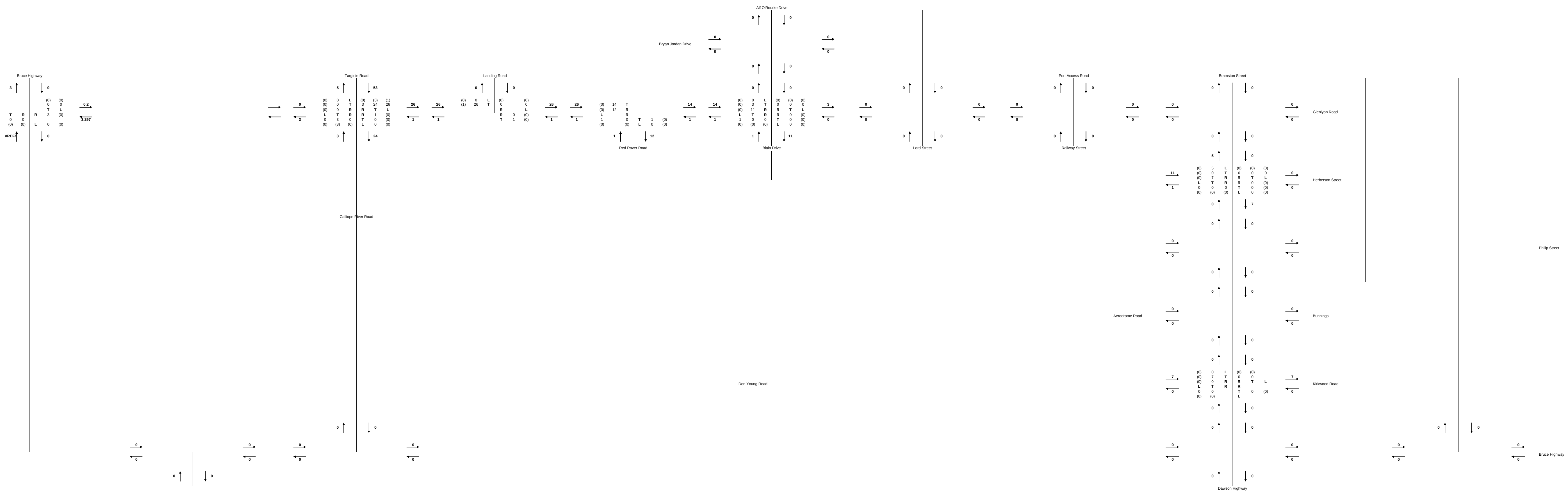


AM Peak (7:45-8:45)

PM Peak (13:30-14:30)



PM Peak (16:30-17:30)

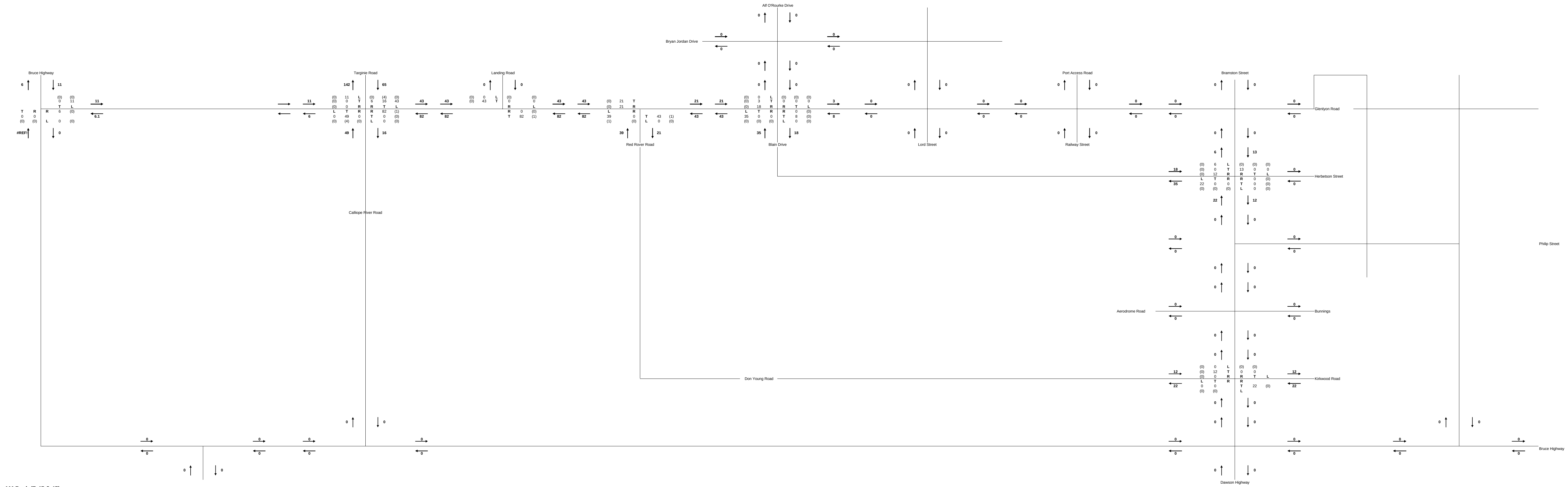


2015 Cummulative Impact Traffic of Aldoga

LEGEND

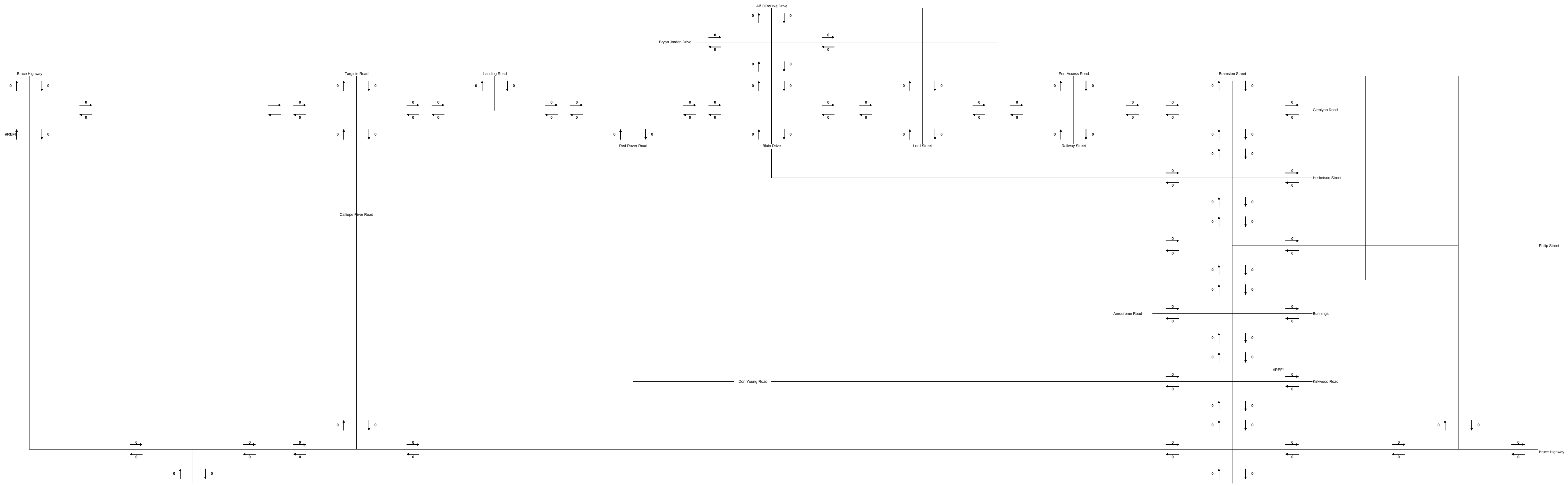
100 Total Volume
(10) Heavy Vehicle Volume

AM Peak (6:00-7:00)

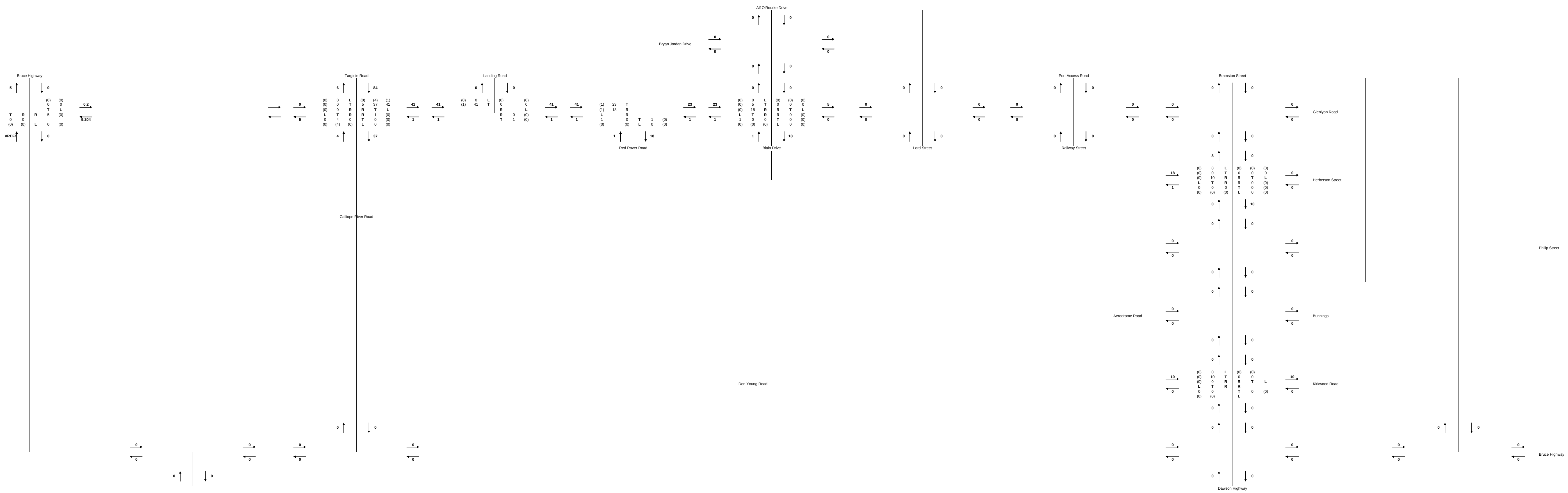


AM Peak (7:45-8:45)

PM Peak (13:30-14:30)



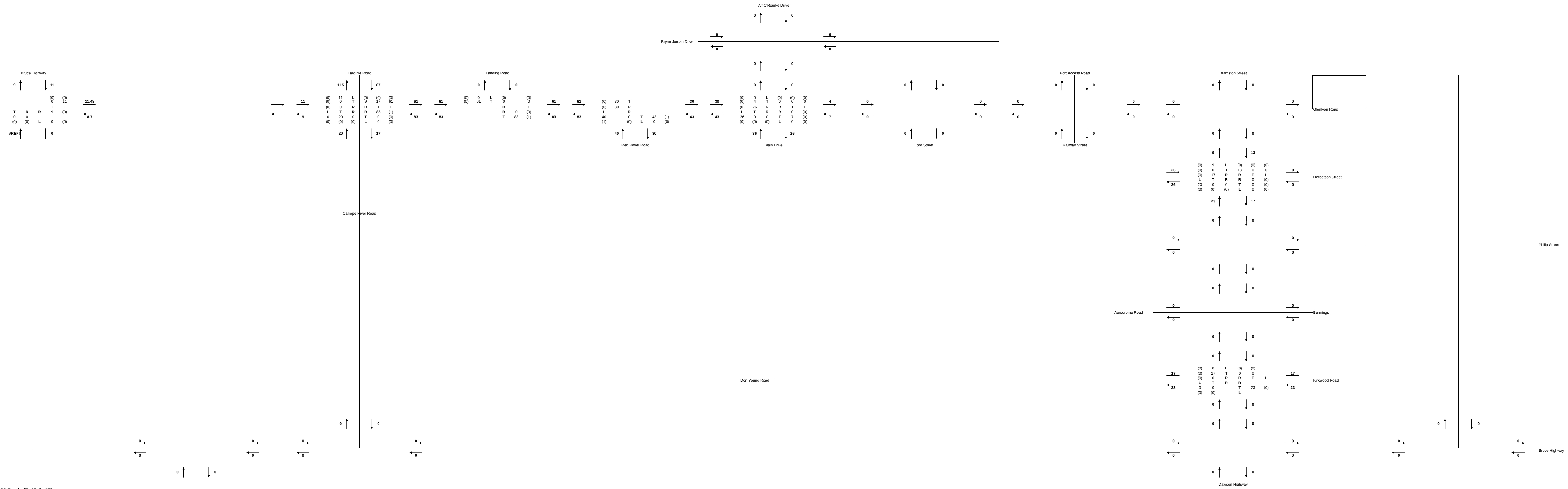
PM Peak (16:30-17:30)



2019 Cummulative Impact Traffic of Aldoga

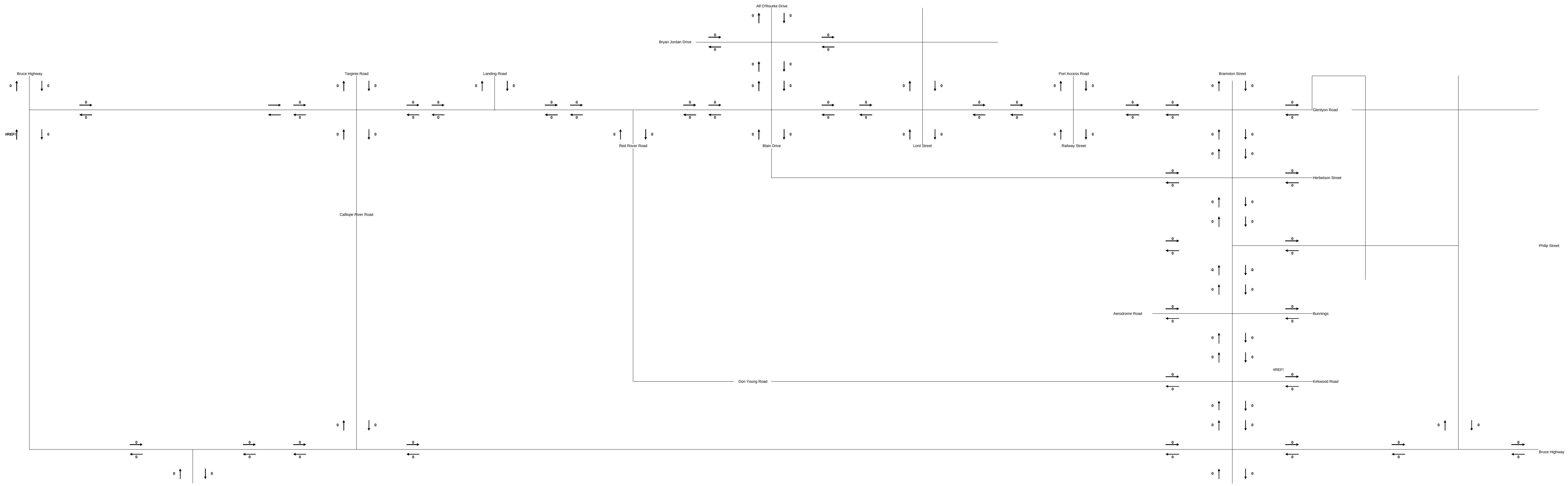
LEGEND
100 Total Volume
(10) Heavy Vehicle Volume

AM Peak (6:00-7:00)

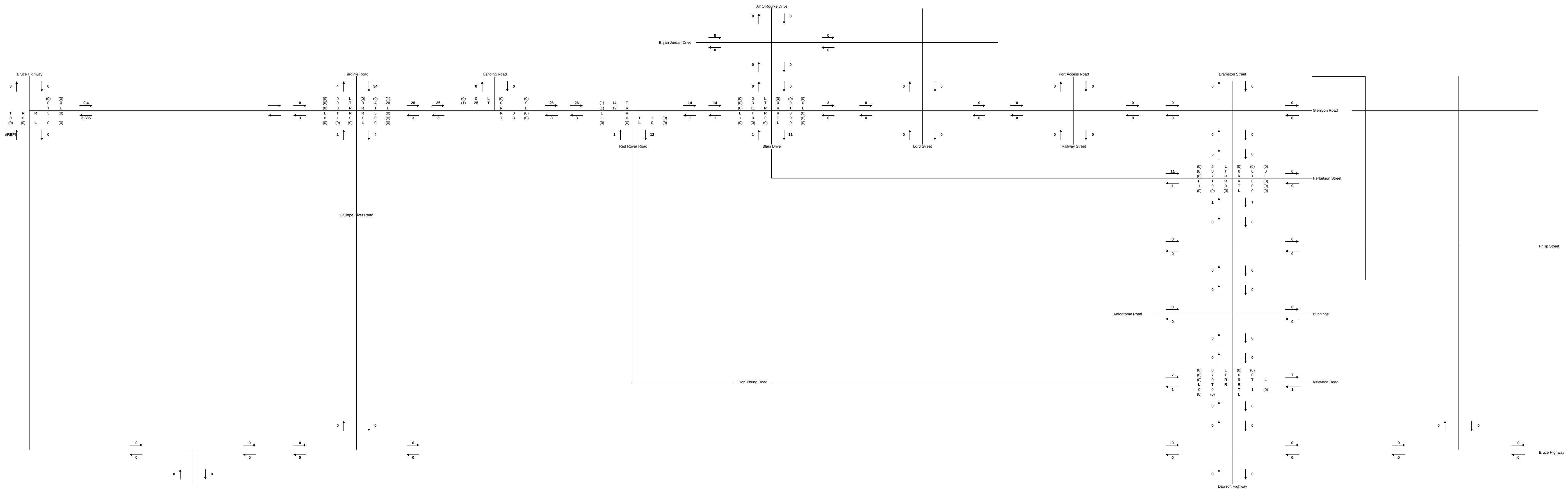


AM Peak (7:45-8:45)

PM Peak (13:30-14:30)



PM Peak (16:30-17:30)



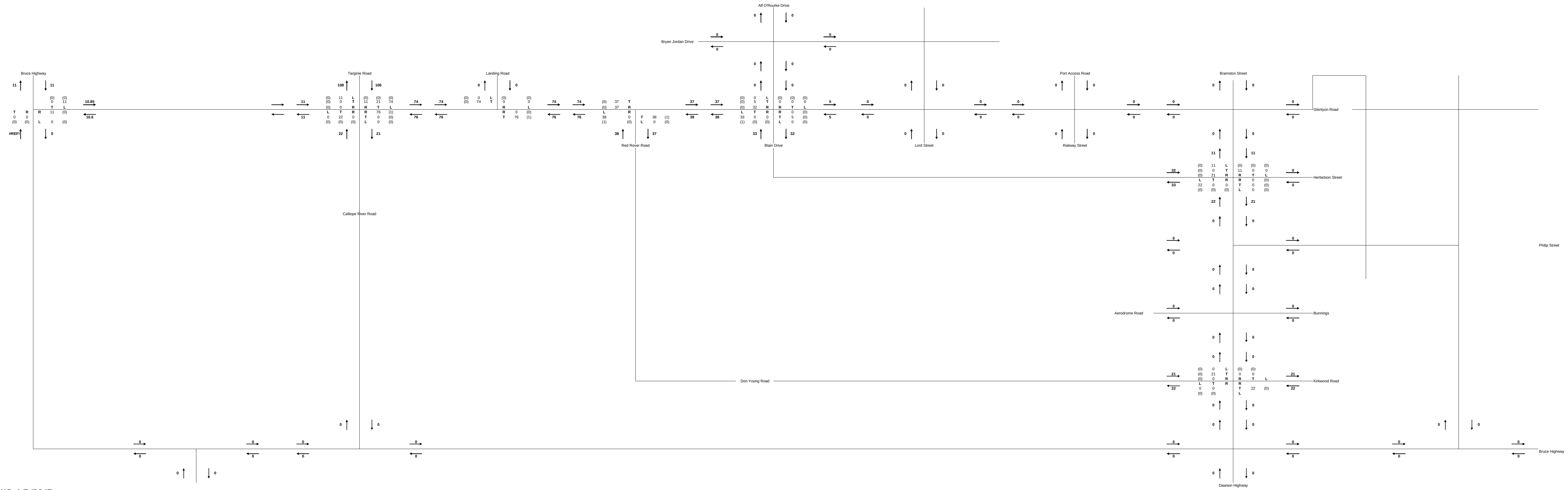
Cardno Eppell Olsen

2020 Cummulative Impact Traffic of Aldoga

LEGEND

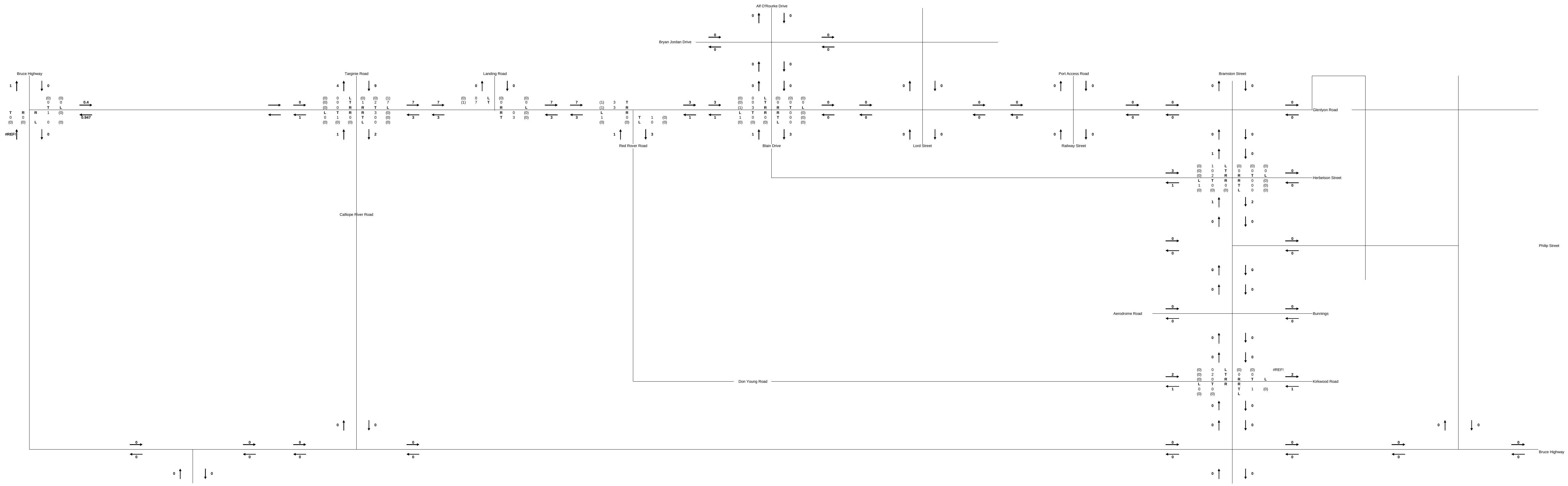
100 Total Volume
(10) Heavy Vehicle Volume

AM Peak (6:00-7:00)

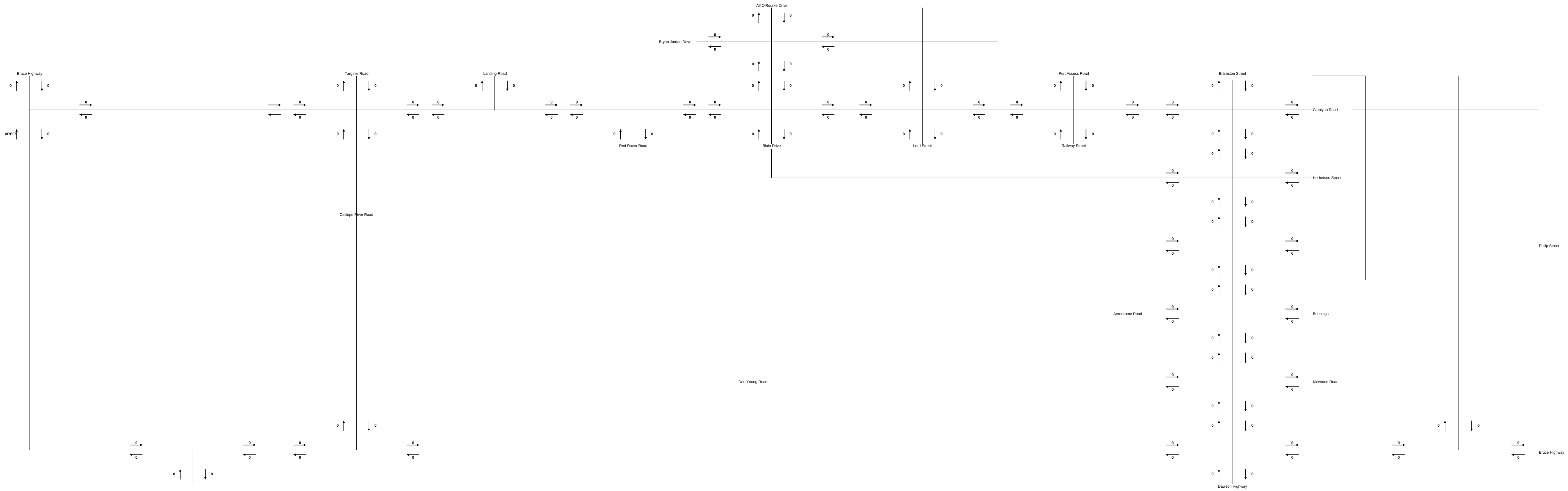


AM Peak (7:45-8:45)

PM Peak (13:30-14:30)



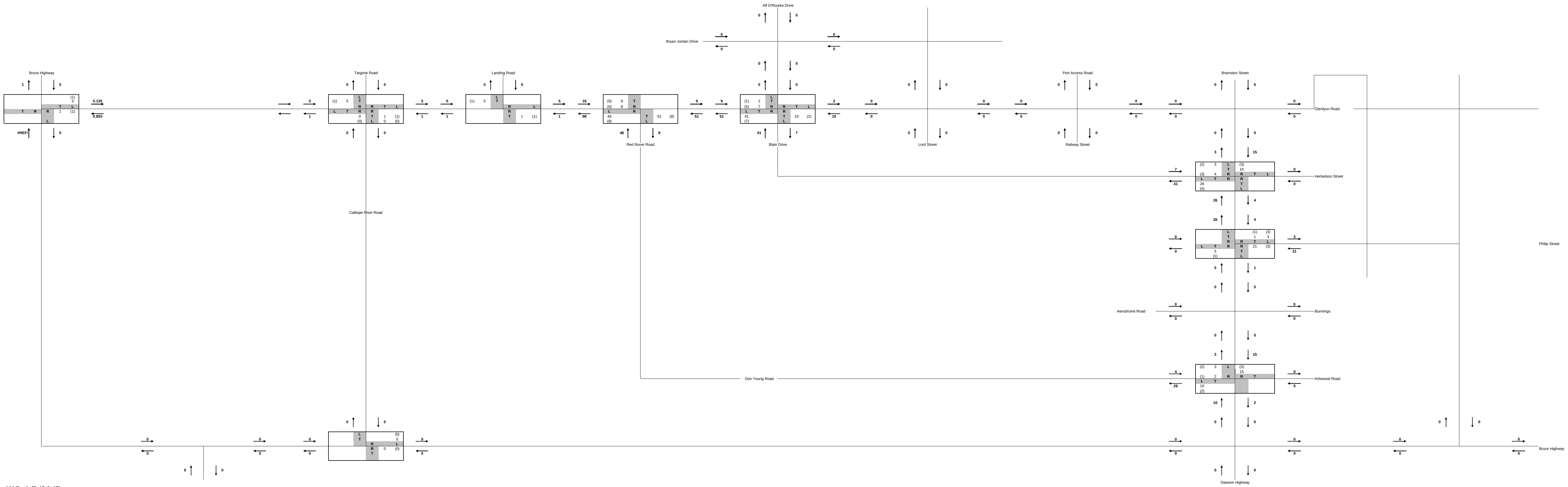
PM Peak (16:30-17:30)



2010 Cummulative Impact Traffic of WICT - Construction

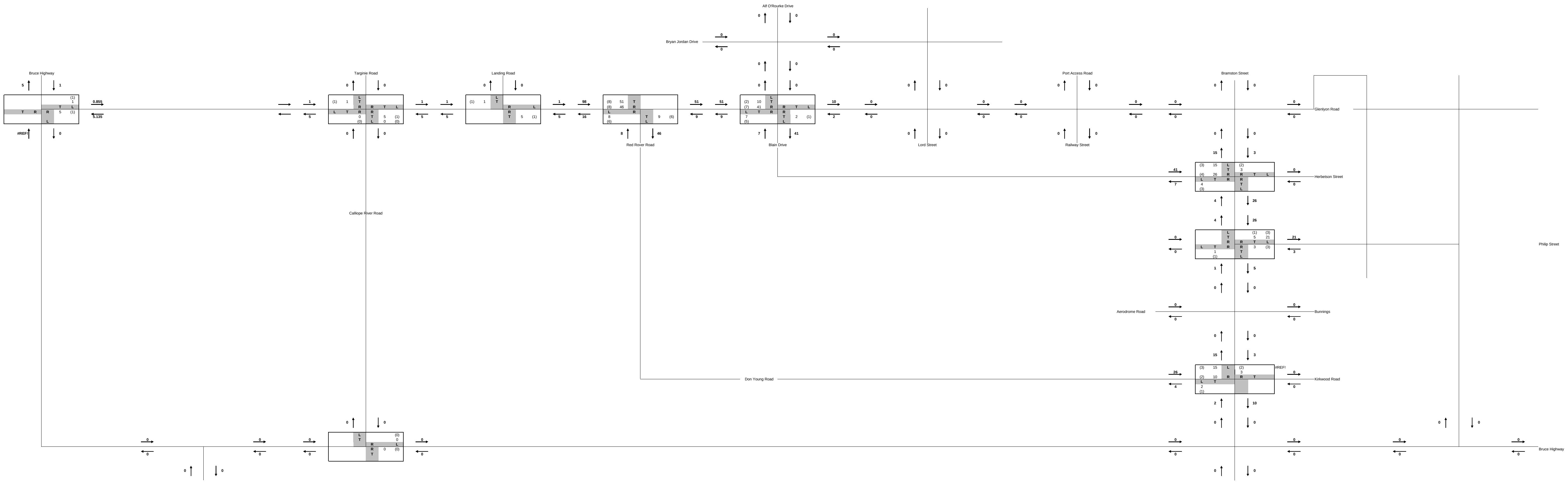
LEGEND
100 Total Volume
(10) Heavy Vehicle Volume

AM Peak (6:00-7:00)

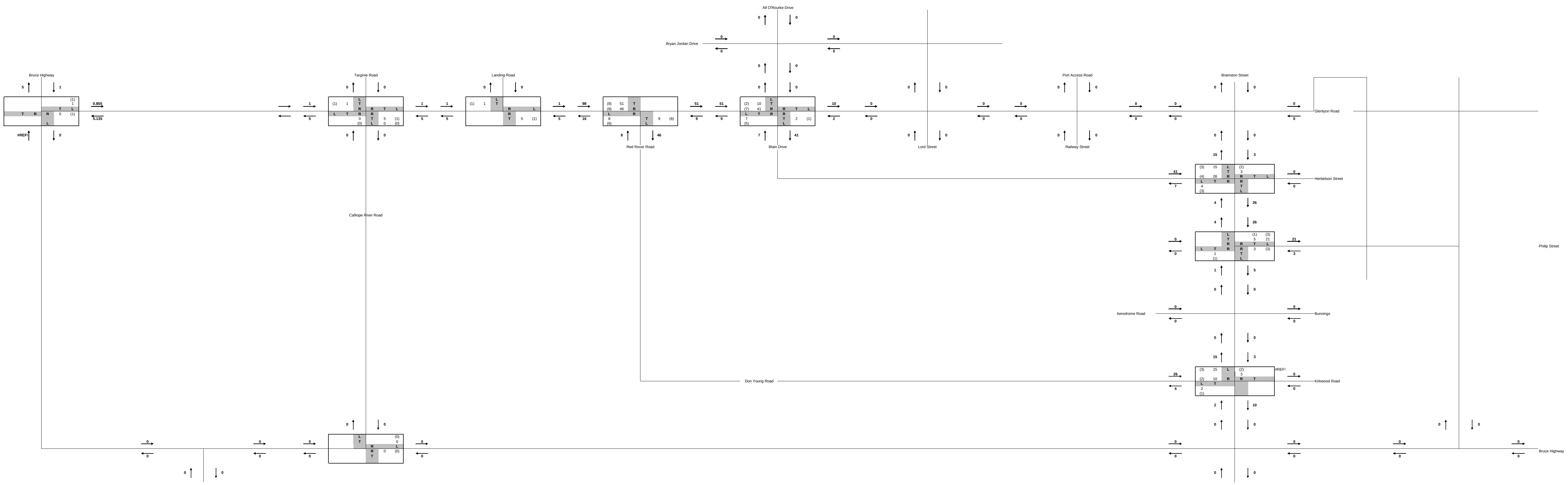


AM Peak (7:45-8:45)

PM Peak (13:30-14:30)



PM Peak (16:30-17:30)

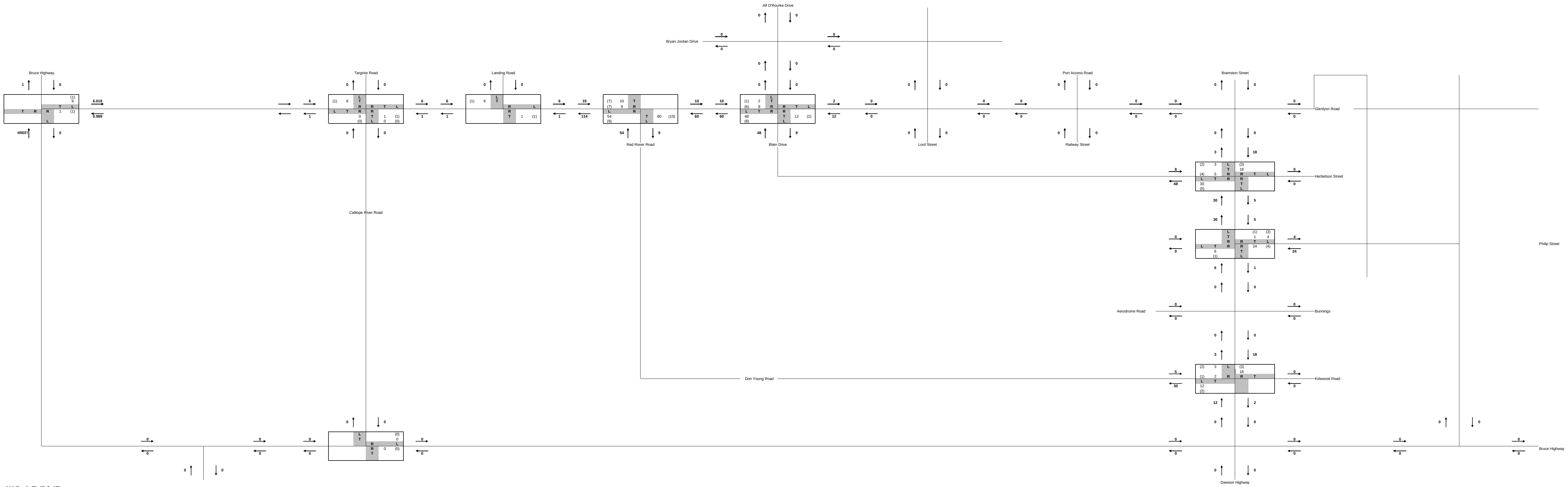


2014 Cummulative Impact Traffic of WICT - Construction

LEGEND

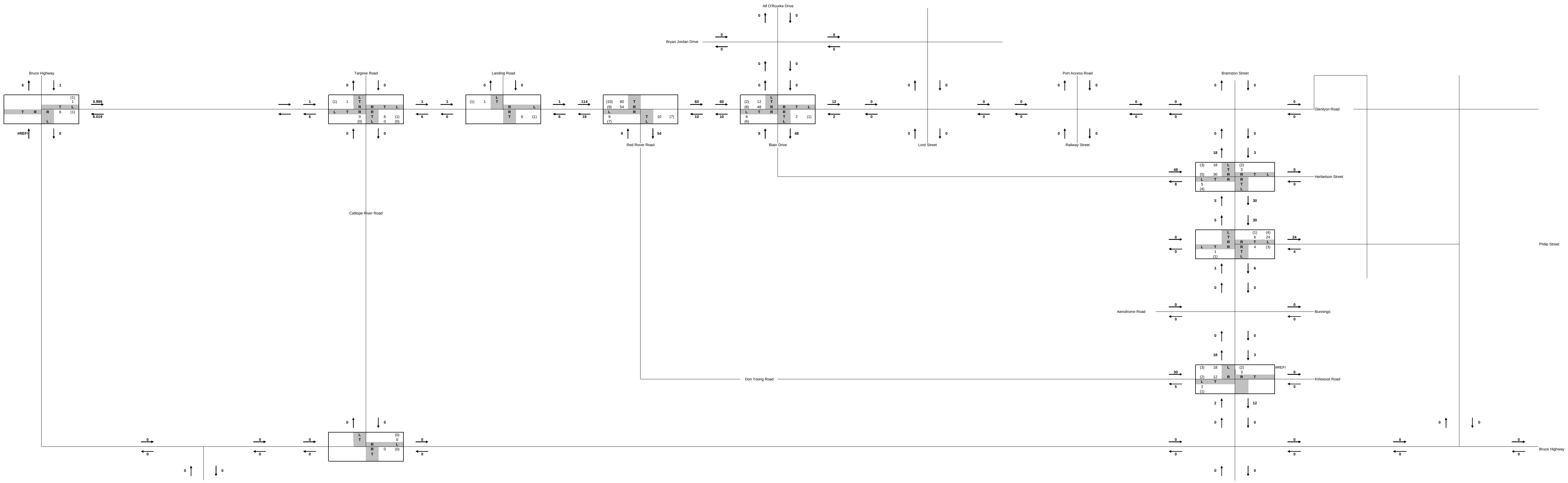
100 Total Volume
(10) Heavy Vehilce Volume

AM Peak (6:00-7:00)

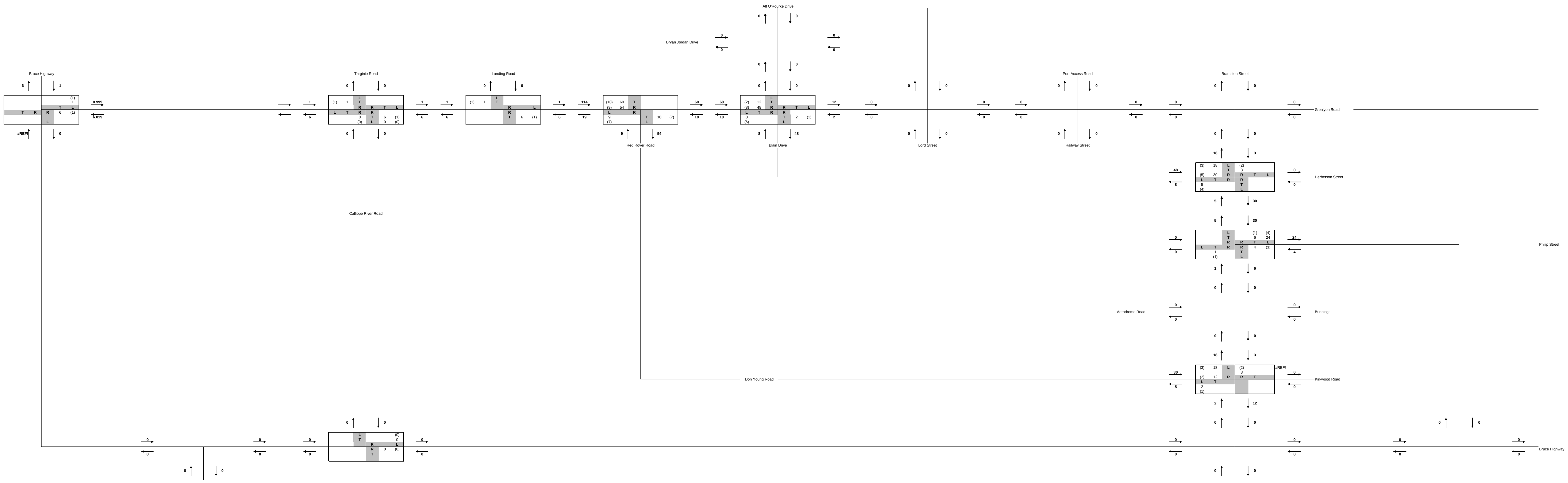


AM Peak (7:45-8:45)

PM Peak (13:30-14:30)



PM Peak (16:30-17:30)

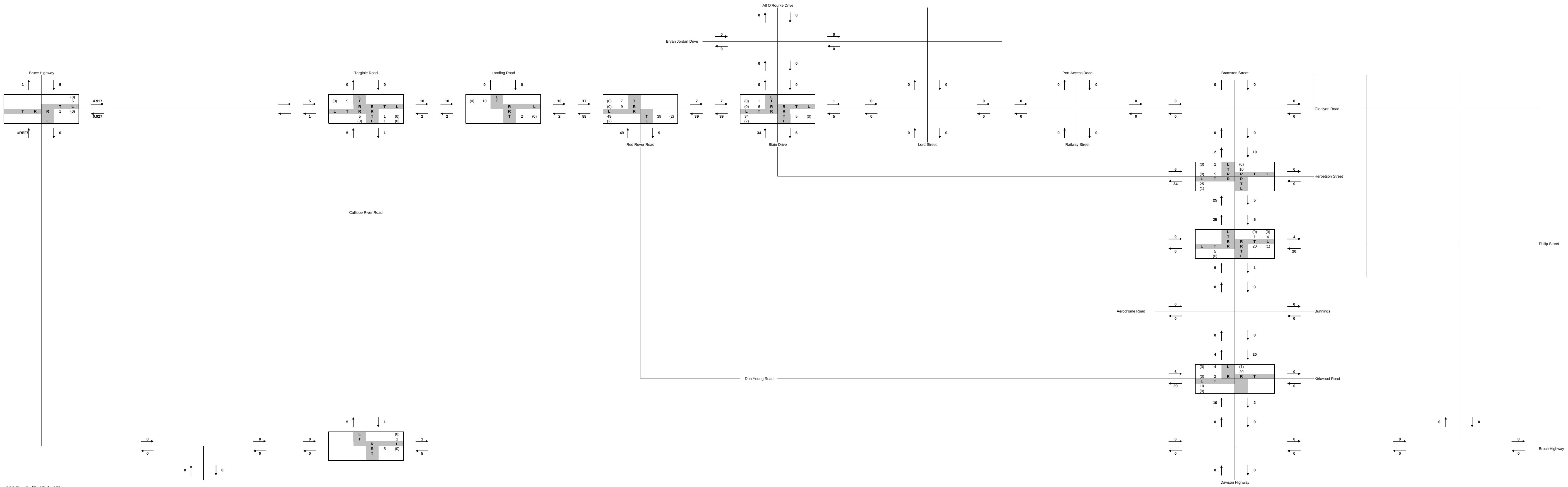


2014 Cummulative Impact Traffic of WICT - Operation

LEGEND

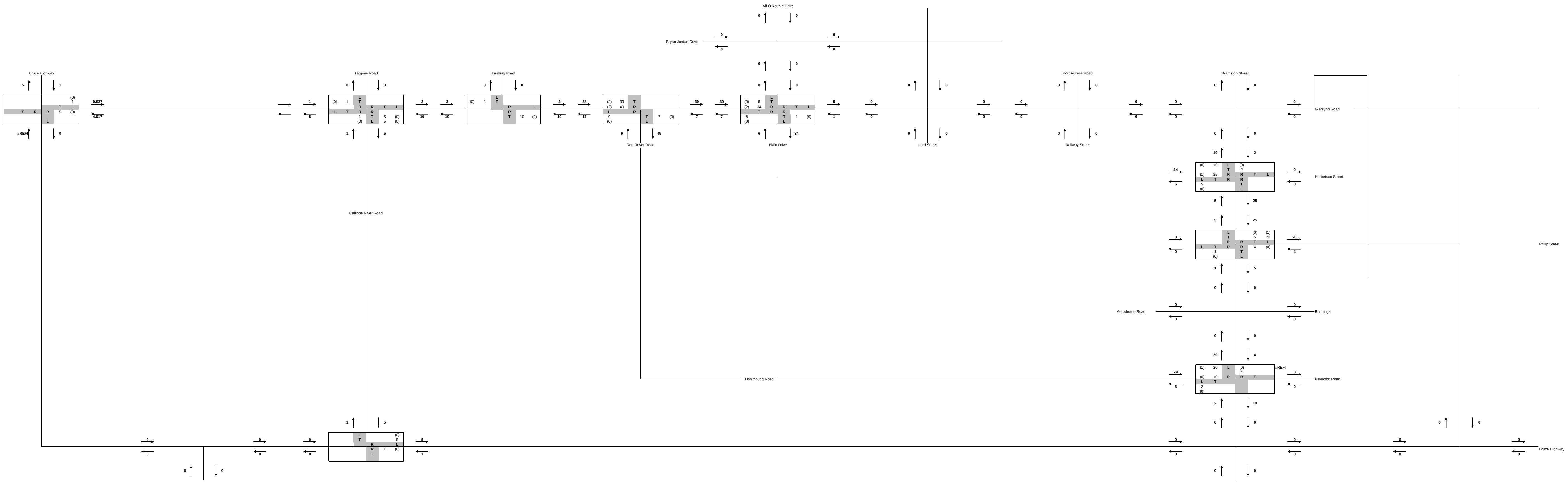
100 Total Volume
(10) Heavy Vehicle Volume

AM Peak (6:00-7:00)

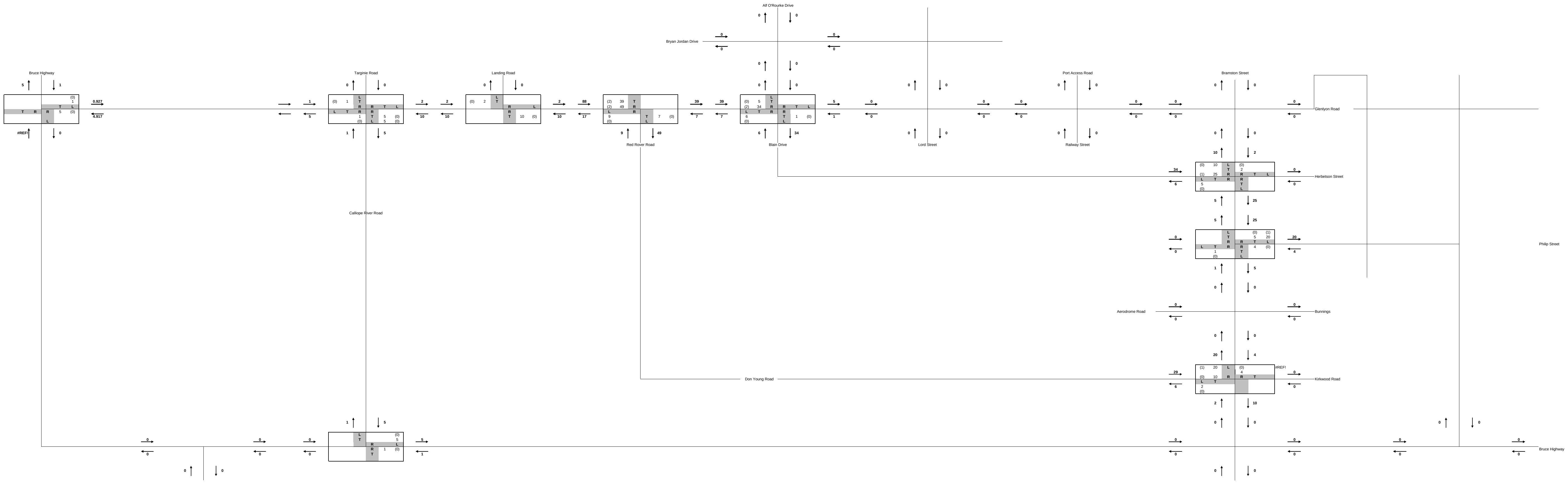


AM Peak (7:45-8:45)

PM Peak (13:30-14:30)



PM Peak (16:30-17:30)

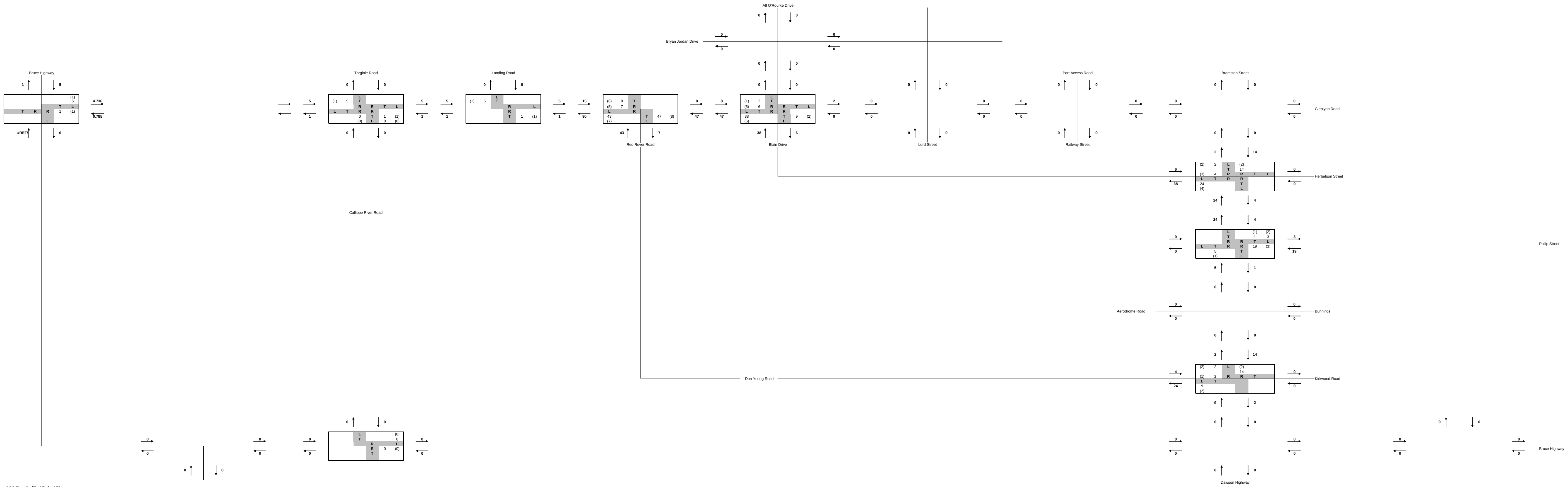


2017 Cummulative Impact Traffic of WICT - Construction

LEGEND

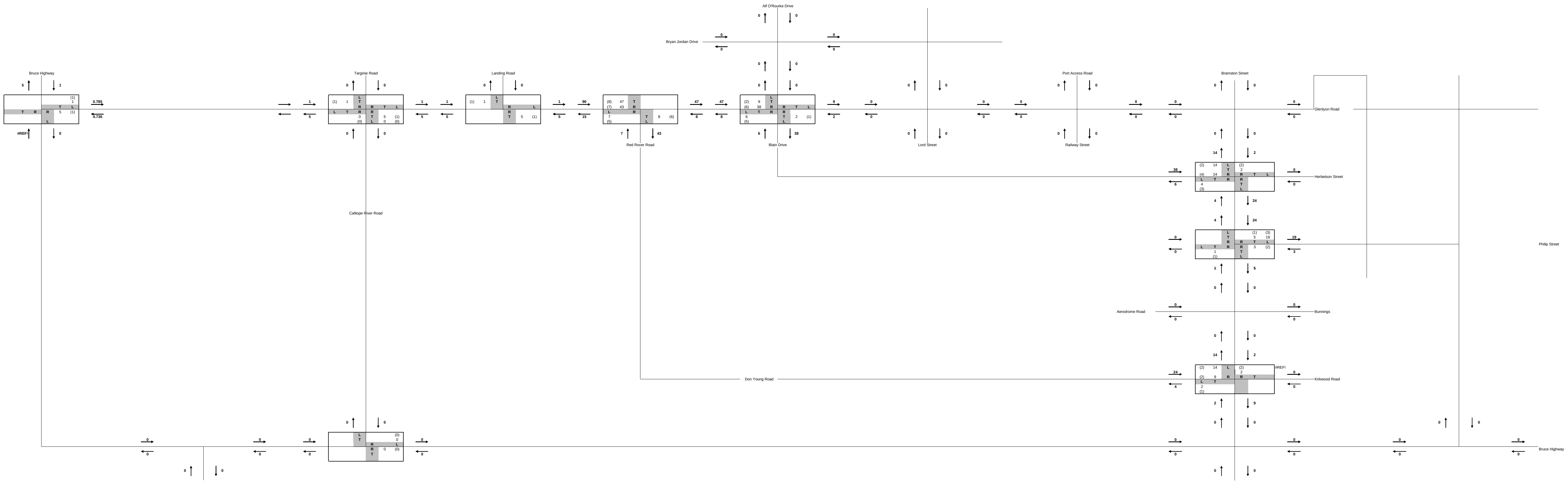
100 Total Volume
(10) Heavy Vehicle Volume

AM Peak (6:00-7:00)

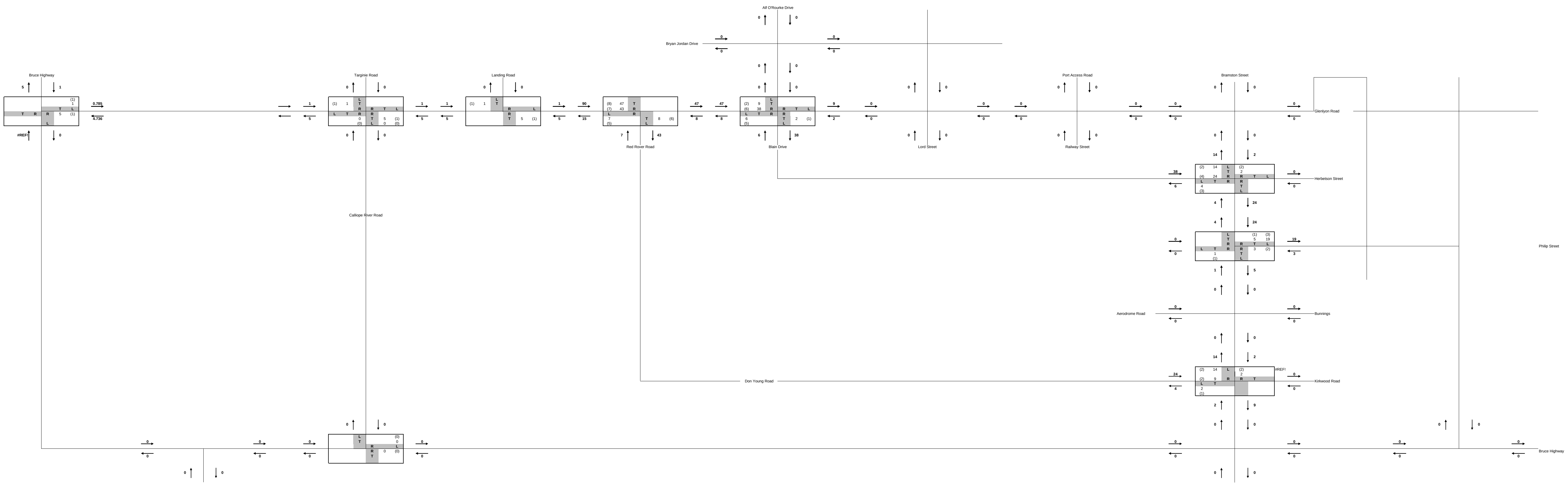


AM Peak (7:45-8:45)

PM Peak (13:30-14:30)



PM Peak (16:30-17:30)

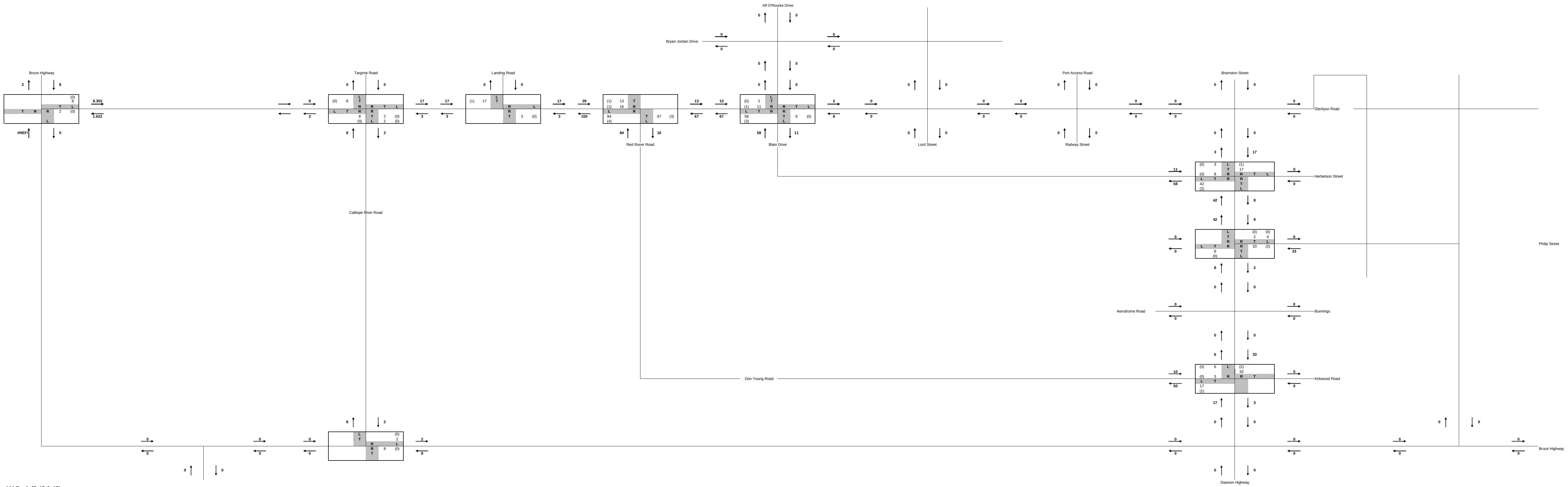


2017 Cummulative Impact Traffic of WICT - Operation

LEGEND

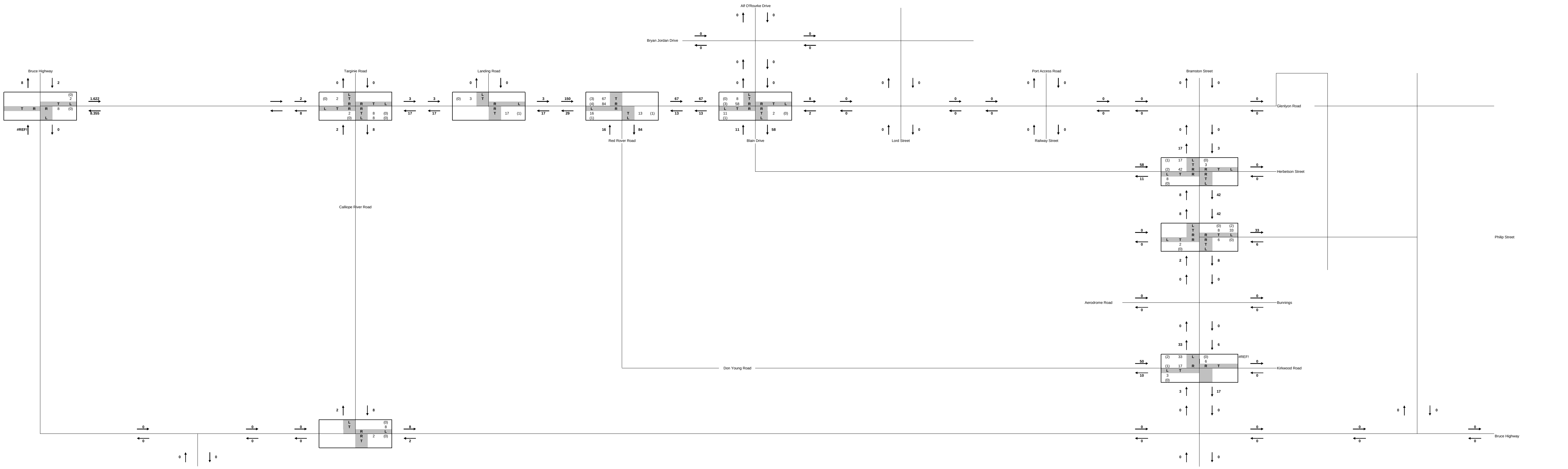
100 Total Volume
(10) Heavy Vehilce Volume

AM Peak (6:00-7:00)

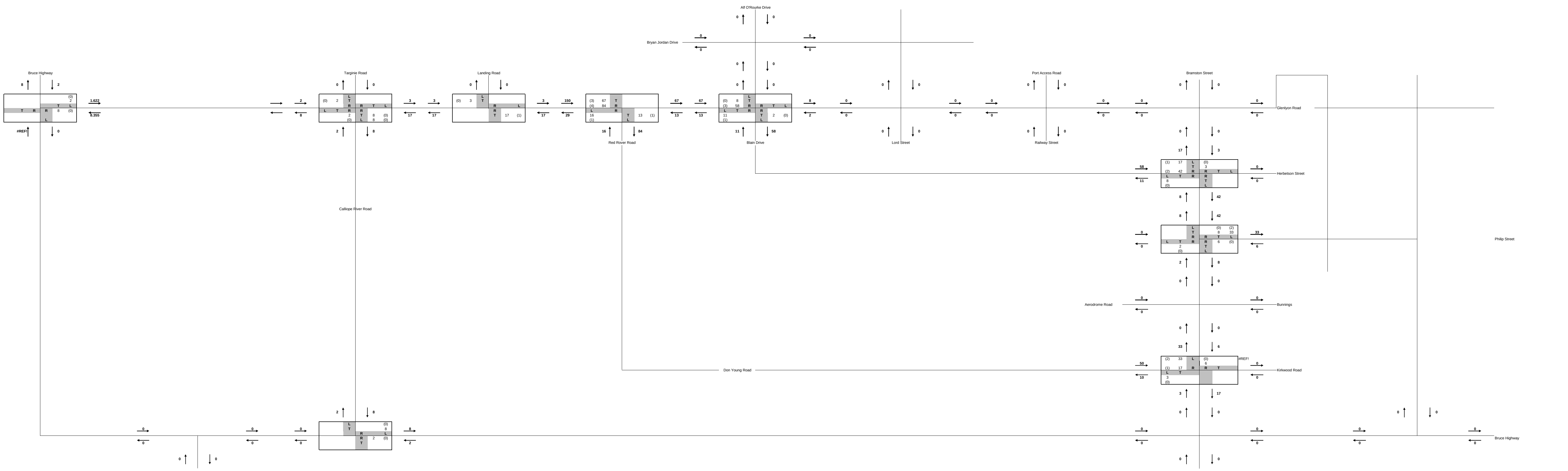


AM Peak (7:45-8:45)

PM Peak (13:30-14:30)



PM Peak (16:30-17:30)

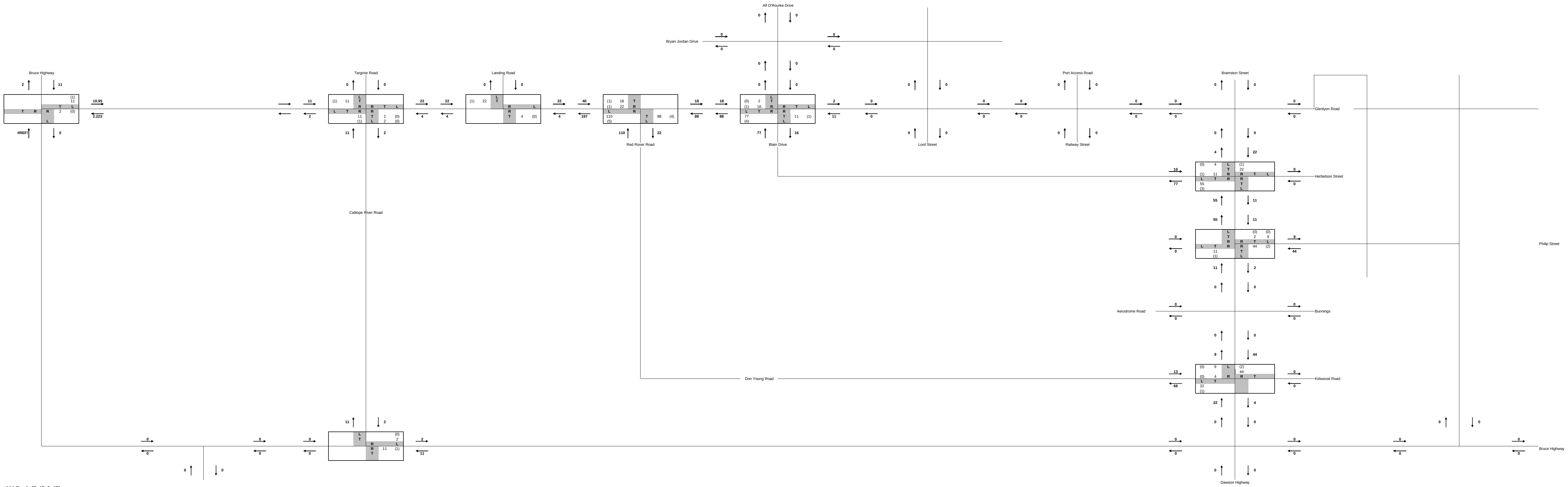


2019 Cummulative Impact Traffic of WICT - Operation

LEGEND

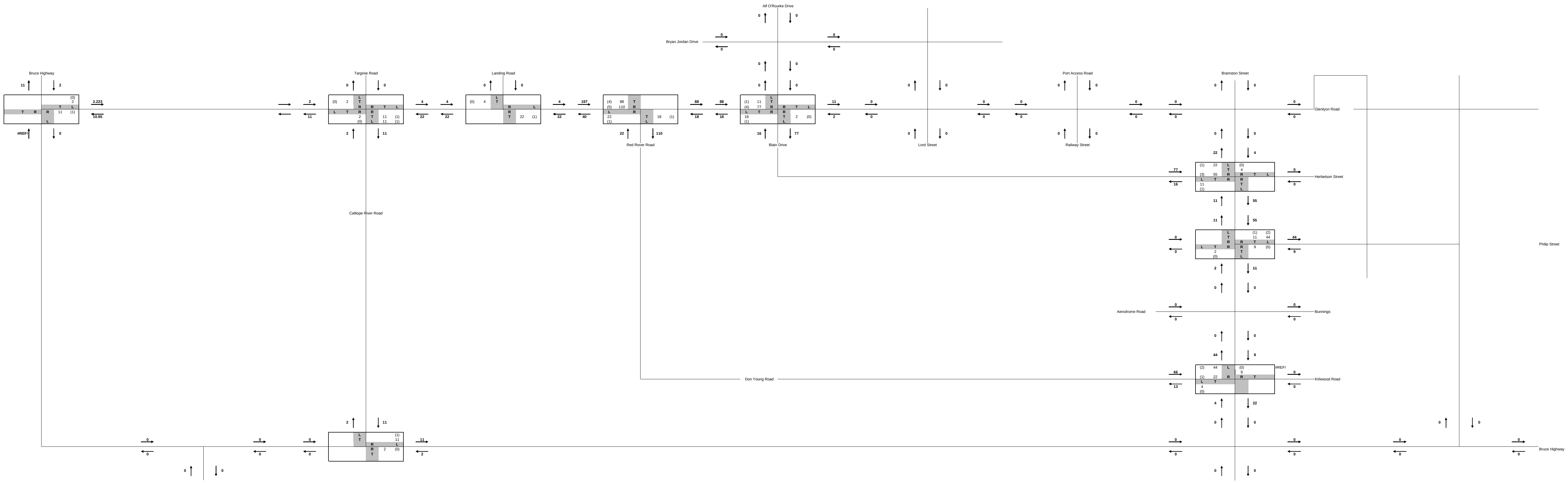
100 Total Volume
(10) Heavy Vehilce Volume

AM Peak (6:00-7:00)

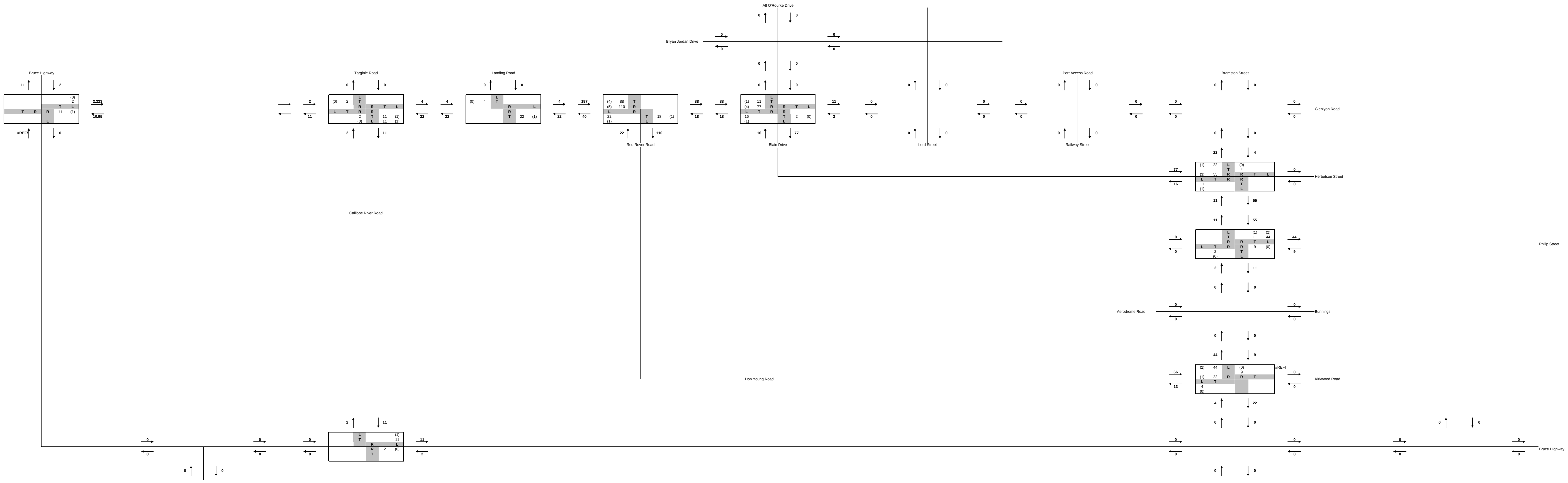


AM Peak (7:45-8:45)

PM Peak (13:30-14:30)



PM Peak (16:30-17:30)

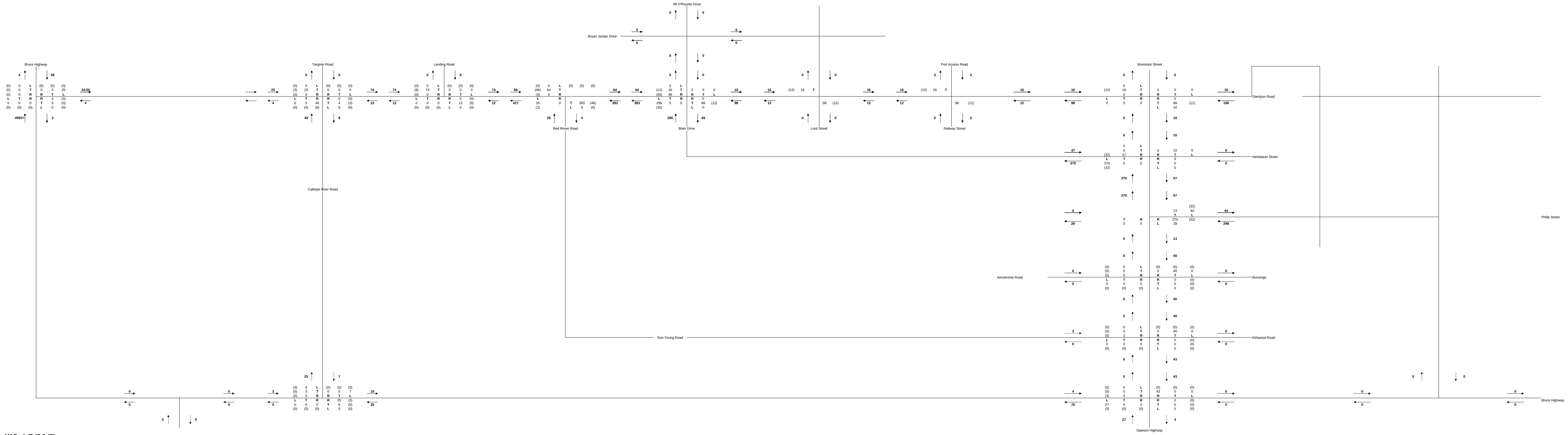


2009 Cummulative Impact Traffic of Gladstone Nickel - Construction

LEGEND

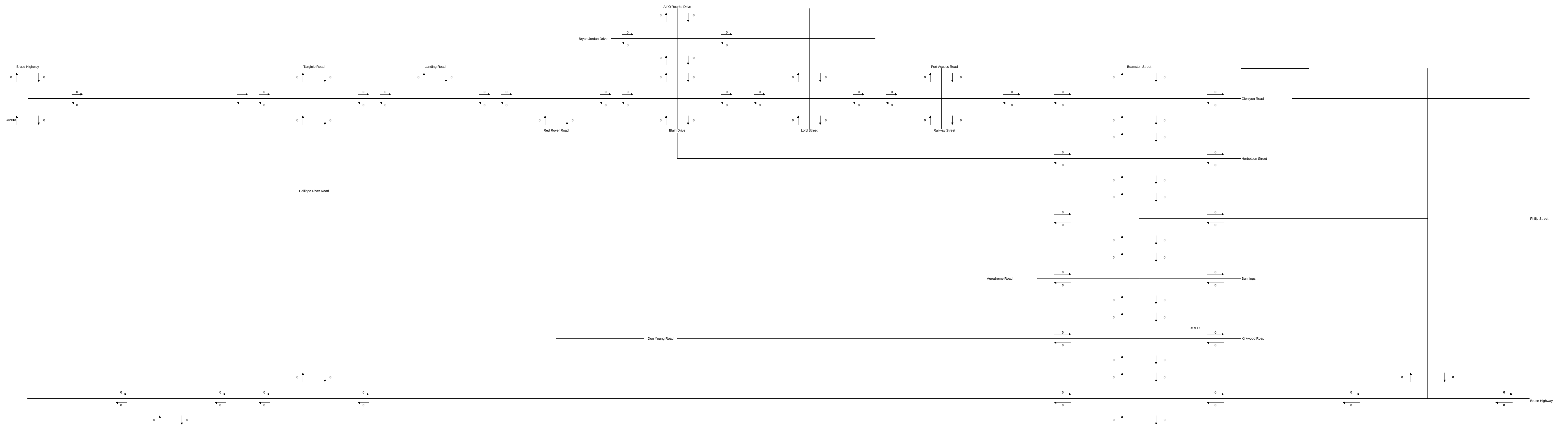
100 Total Volume
(10) Heavy Vehicle Volume

AM Peak (6:00-7:00)

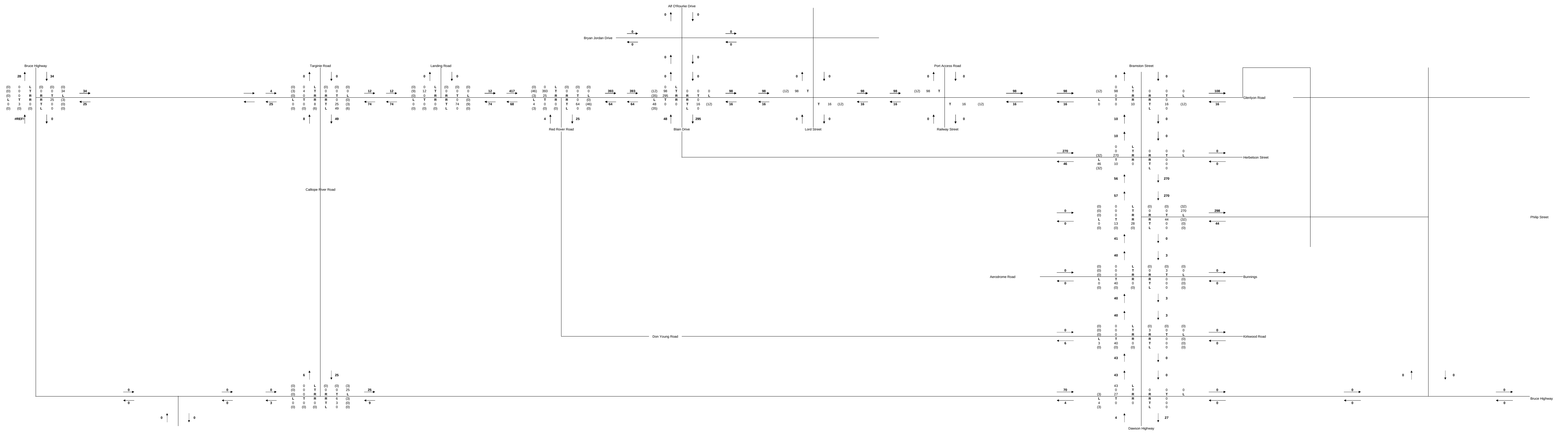


AM Peak (7:45-8:45)

PM Peak (13:30-14:30)



PM Peak (16:30-17:30)

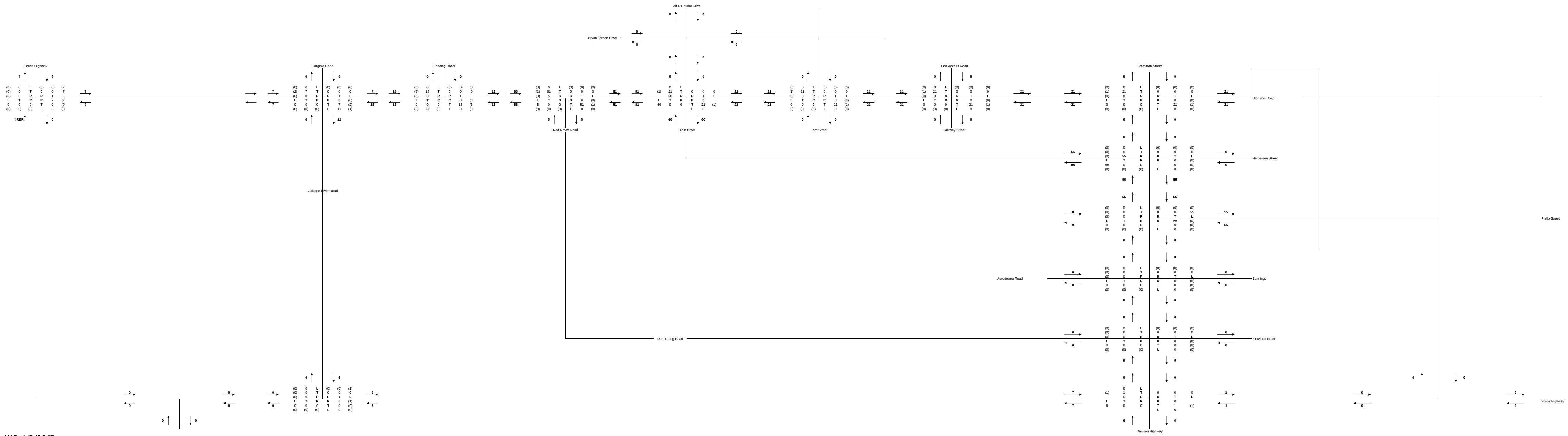


2011 Cummulative Impact Traffic of Gladstone Nickel - Operation

LEGEND

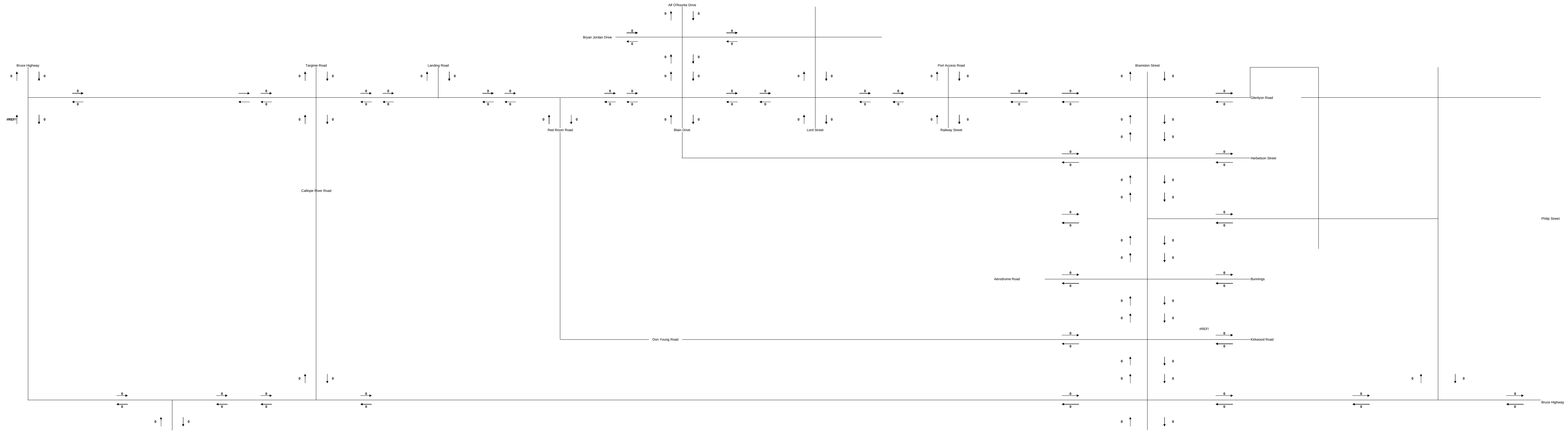
100 Total Volume
(10) Heavy Vehicle Volume

AM Peak (6:00-7:00)

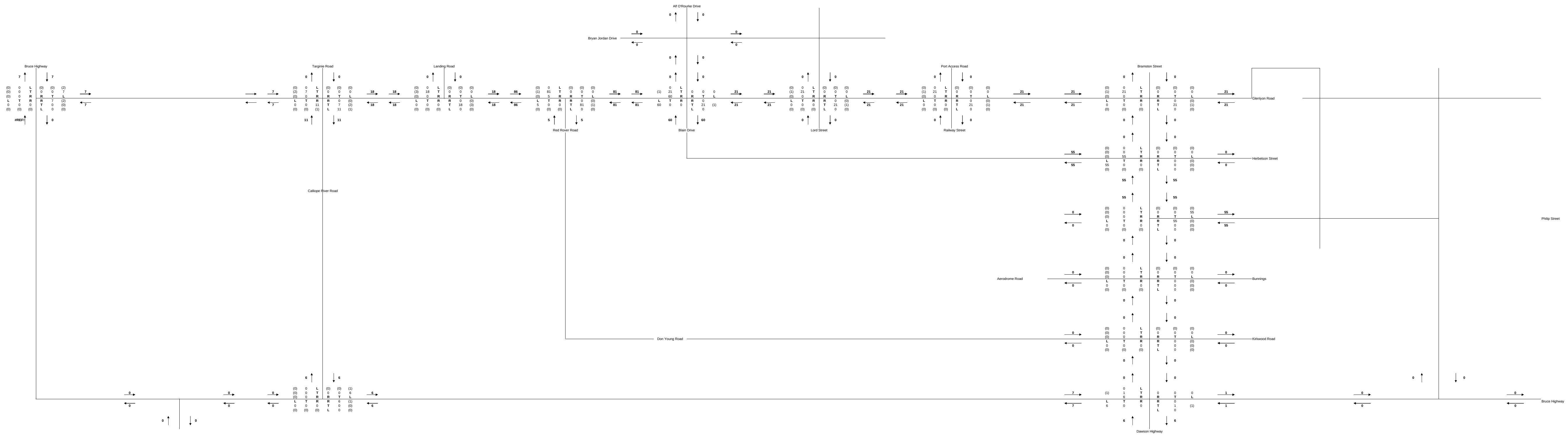


AM Peak (7:45-8:45)

PM Peak (13:30-14:30)



PM Peak (16:30-17:30)

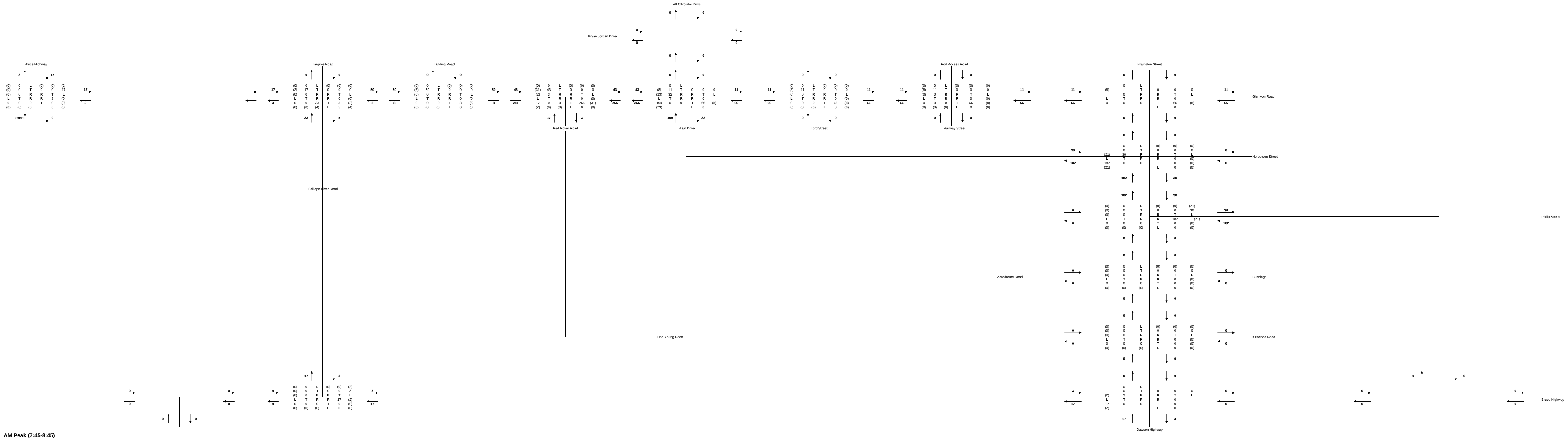


2014 Cummulative Impact Traffic of Gladstone Nickel - Construction

LEGEND

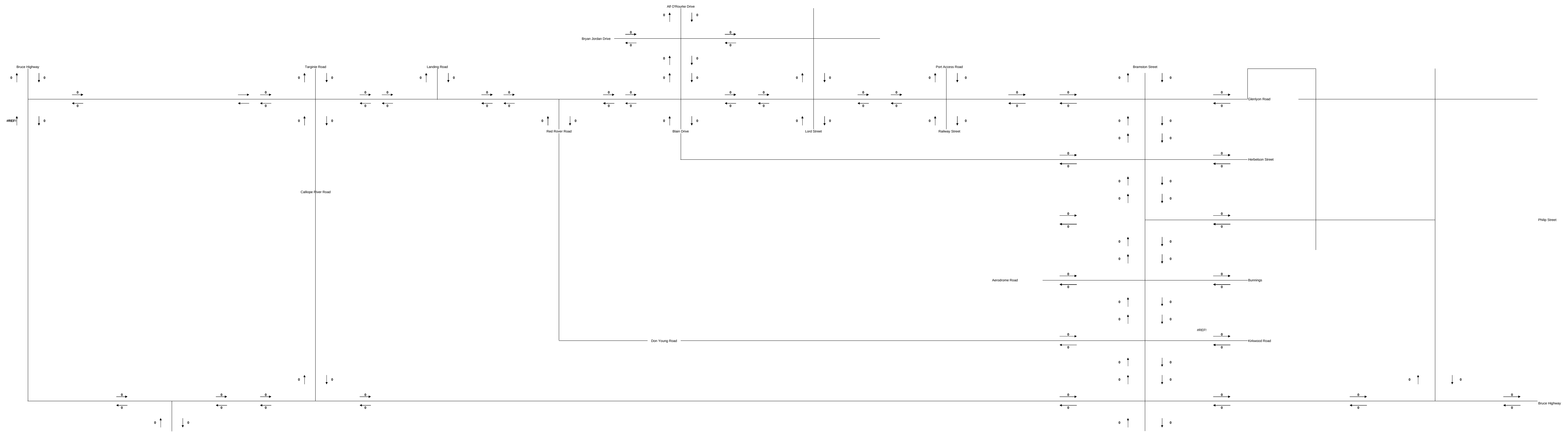
100 Total Volume
(10) Heavy Vehicle Volume

AM Peak (6:00-7:00)

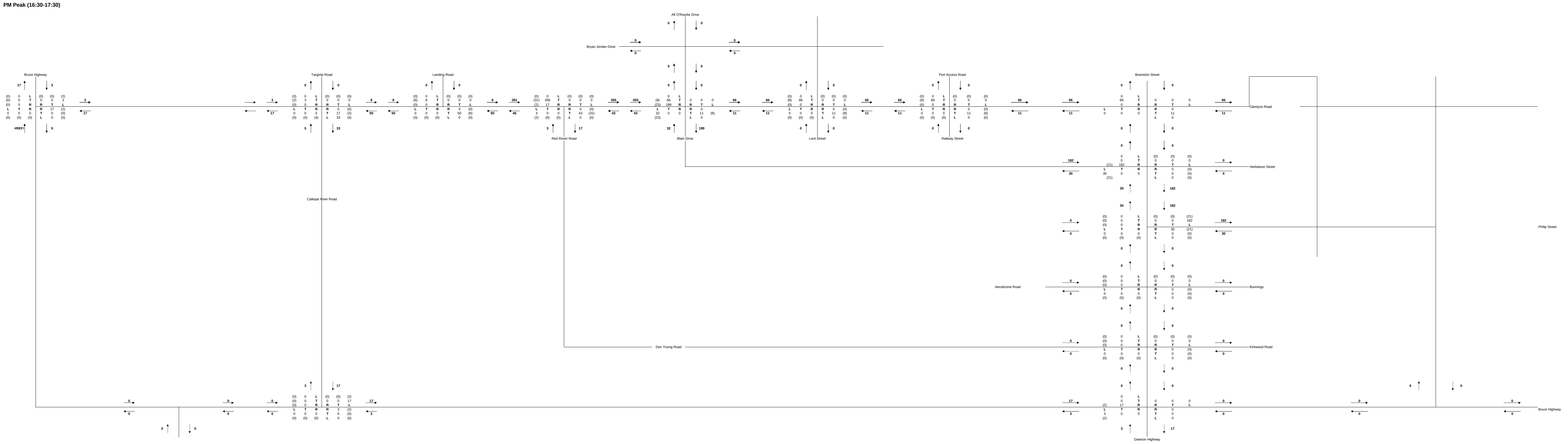


AM Peak (7:45-8:45)

PM Peak (13:30-14:30)



PM Peak (16:30-17:30)

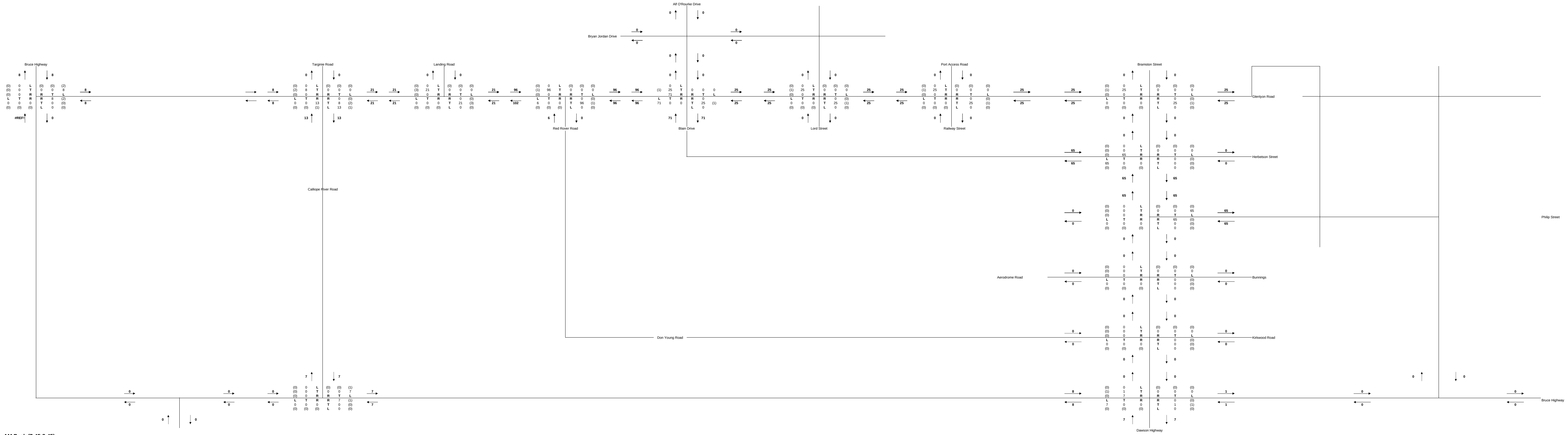


2016 Cummulative Impact Traffic of Gladstone Nickel - Operation

LEGEND

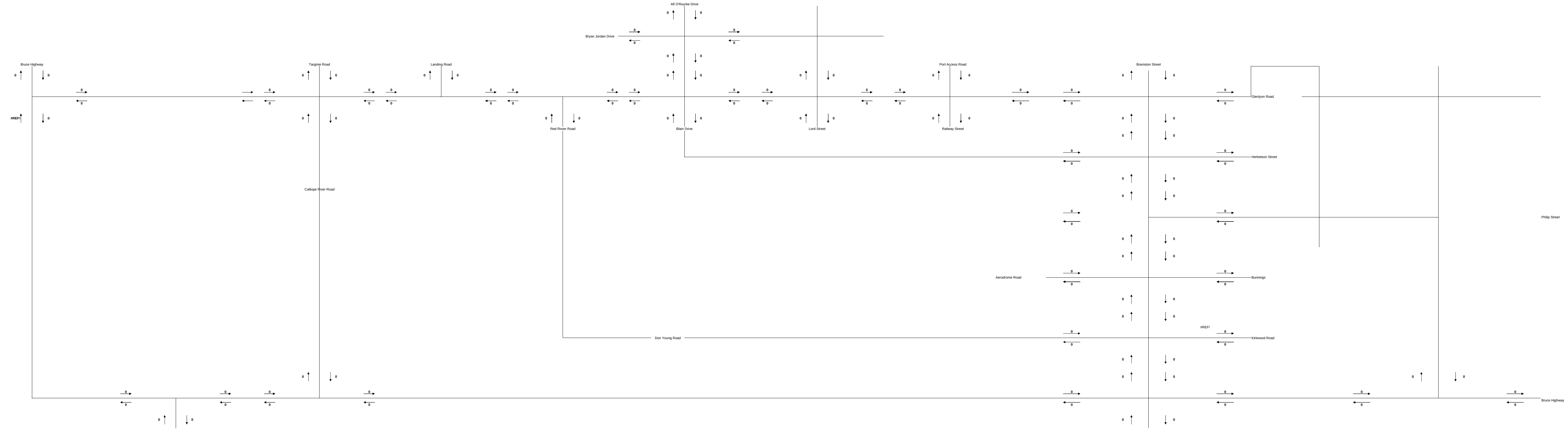
100 Total Volume
(10) Heavy Vehicle Volume

AM Peak (6:00-7:00)

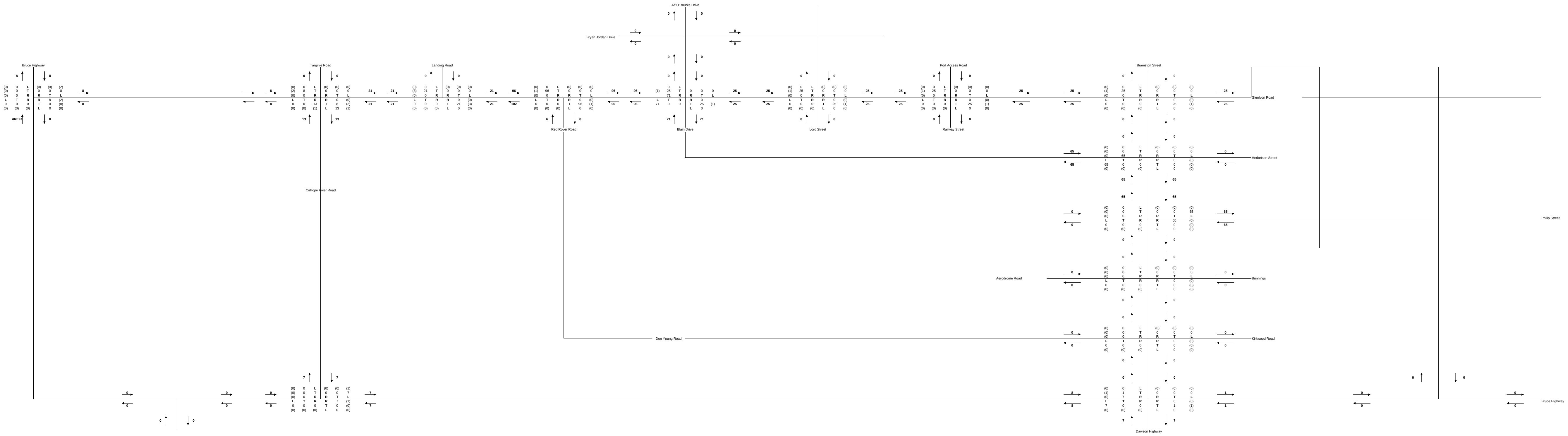


AM Peak (7:45-8:45)

PM Peak (13:30-14:30)



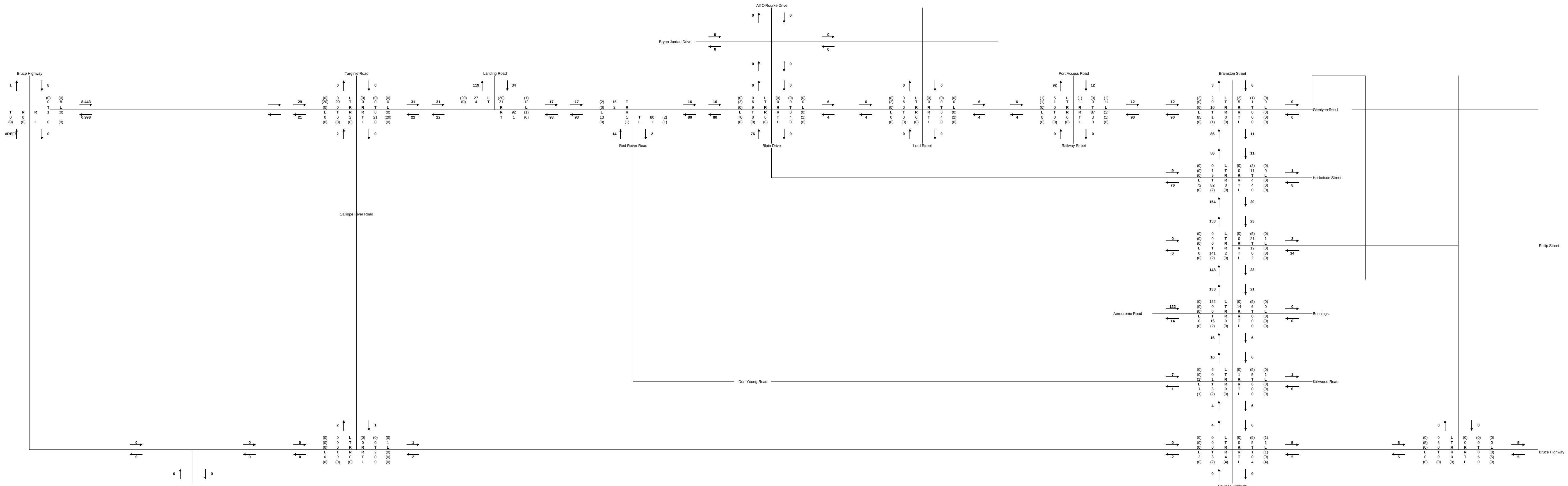
PM Peak (16:30-17:30)



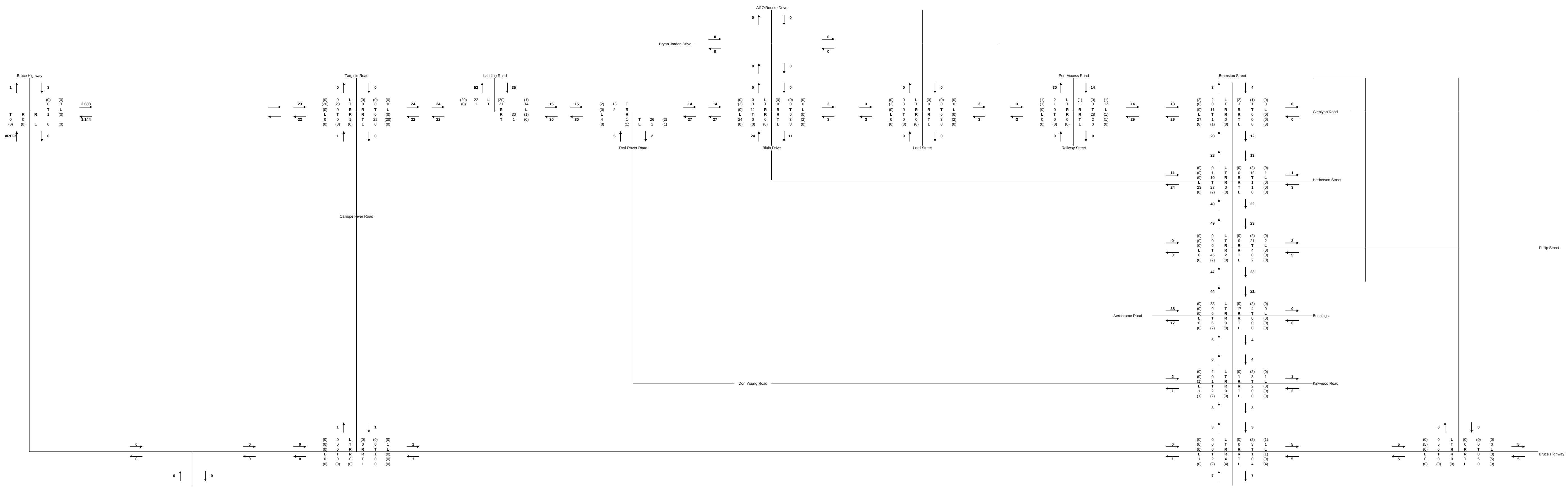
2012 Cummulative Impact Traffic of SANTOS

LEGEND
100 Total Volume
(10) Heavy Vehicle Volume

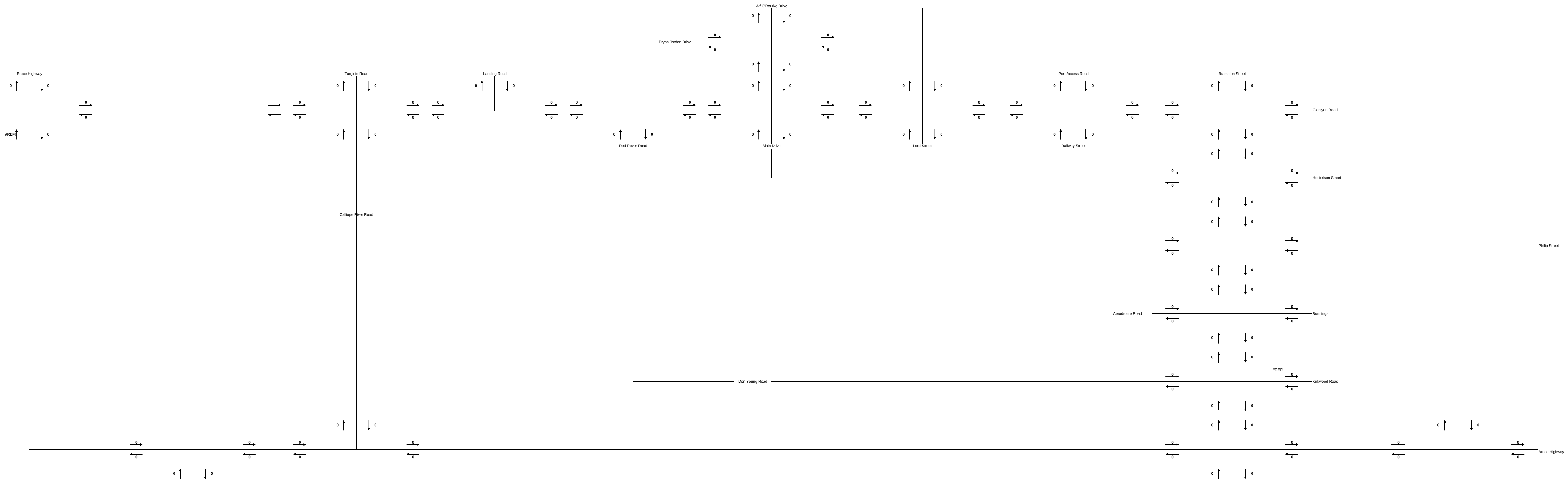
AM Peak (6:00-7:00)



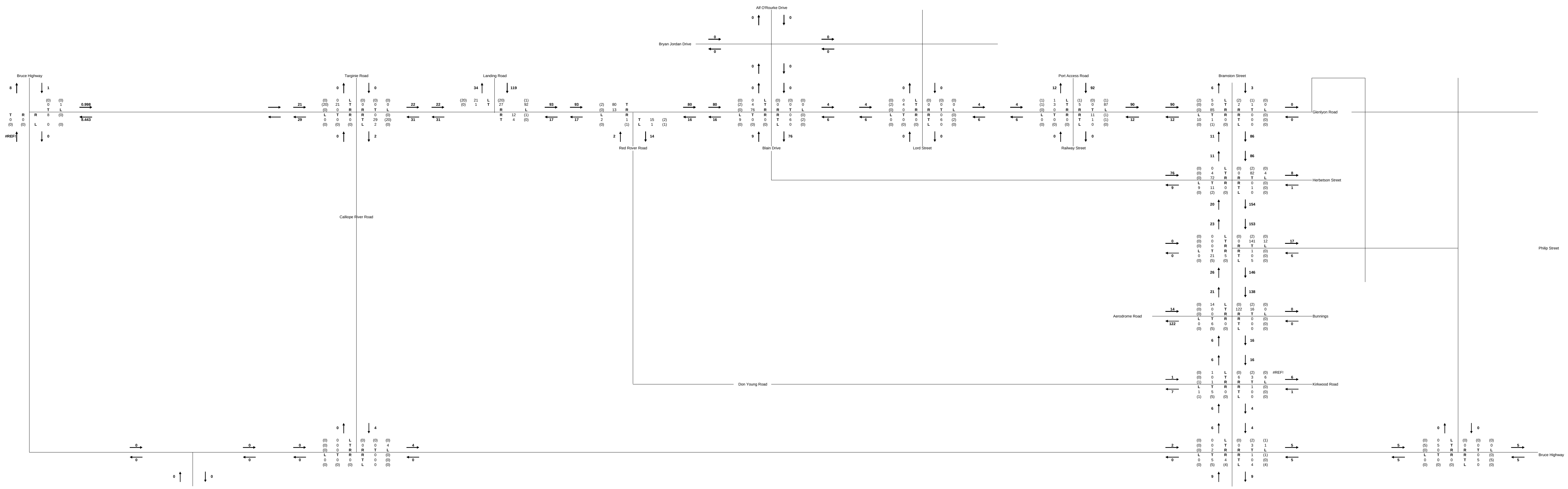
AM Peak (7:45-8:45)



PM Peak (13:30-14:30)



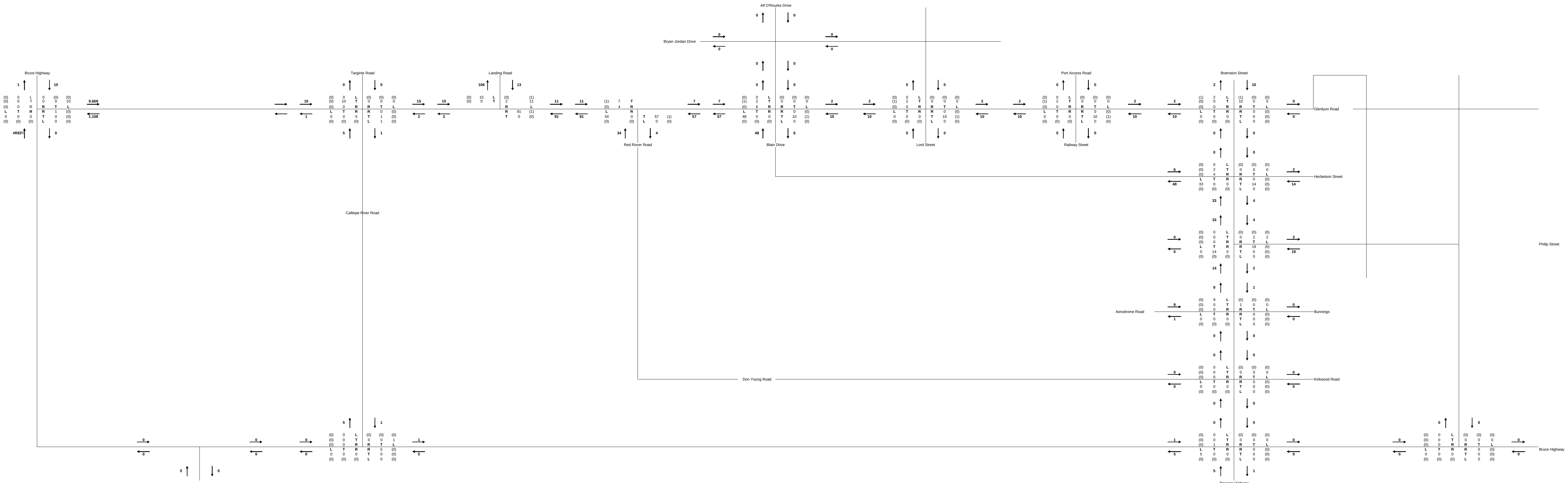
PM Peak (16:30-17:30)



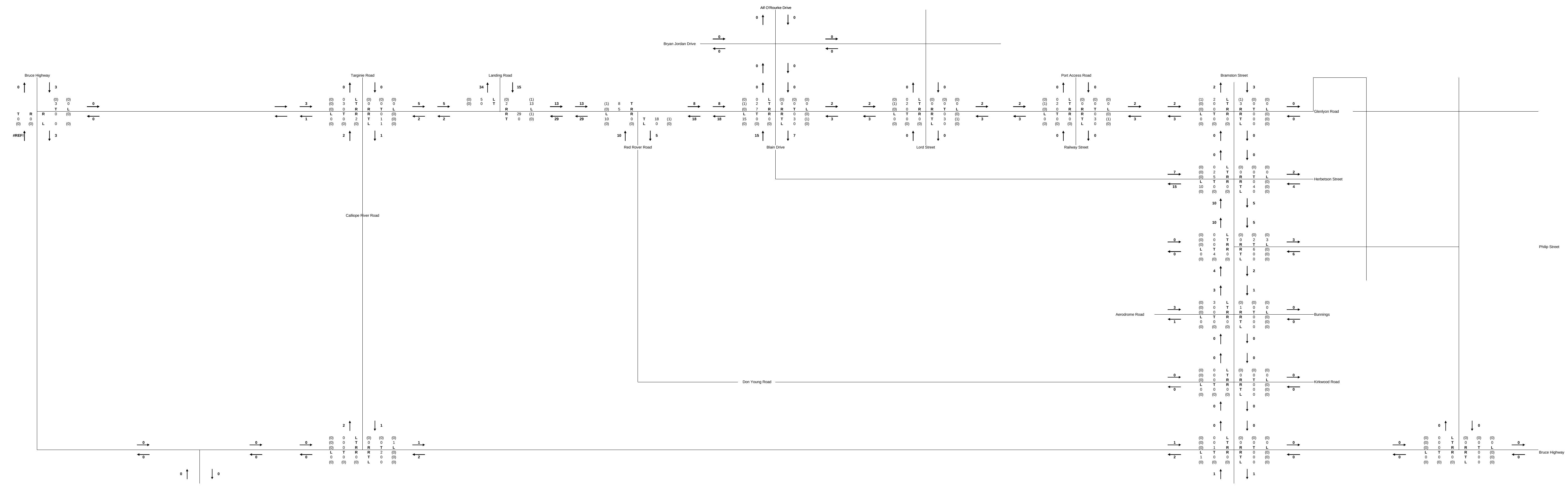
2014 Cummulative Impact Traffic of SANTOS

LEGEND
100 Total Volume
(10) Heavy Vehicle Volume

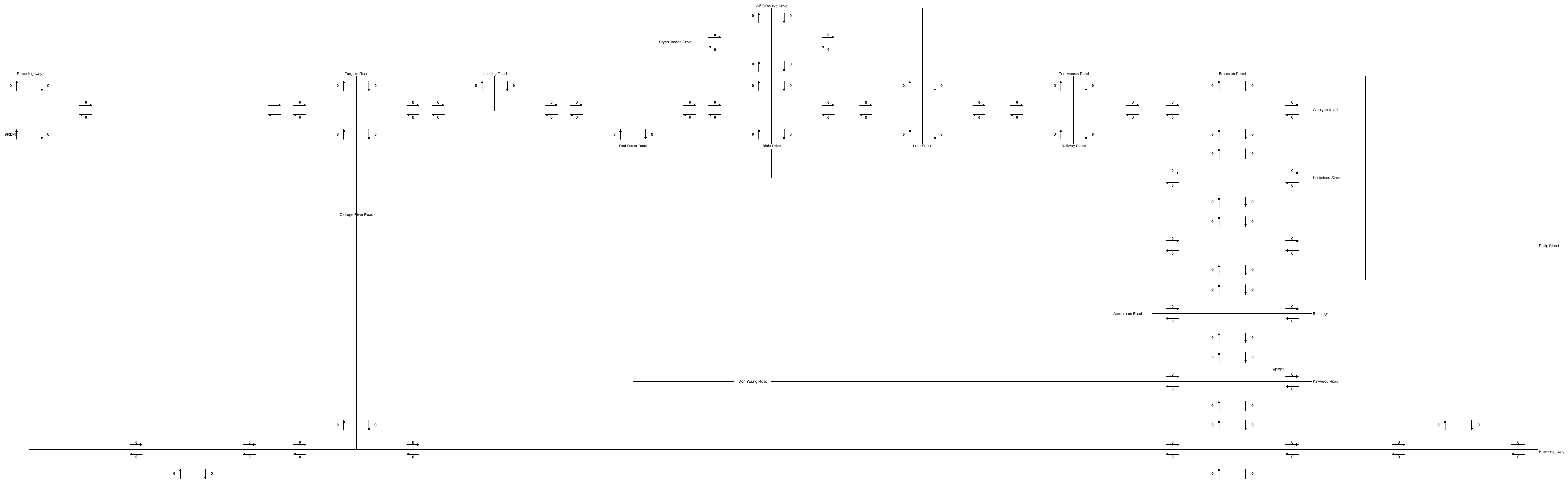
AM Peak (6:00-7:00)



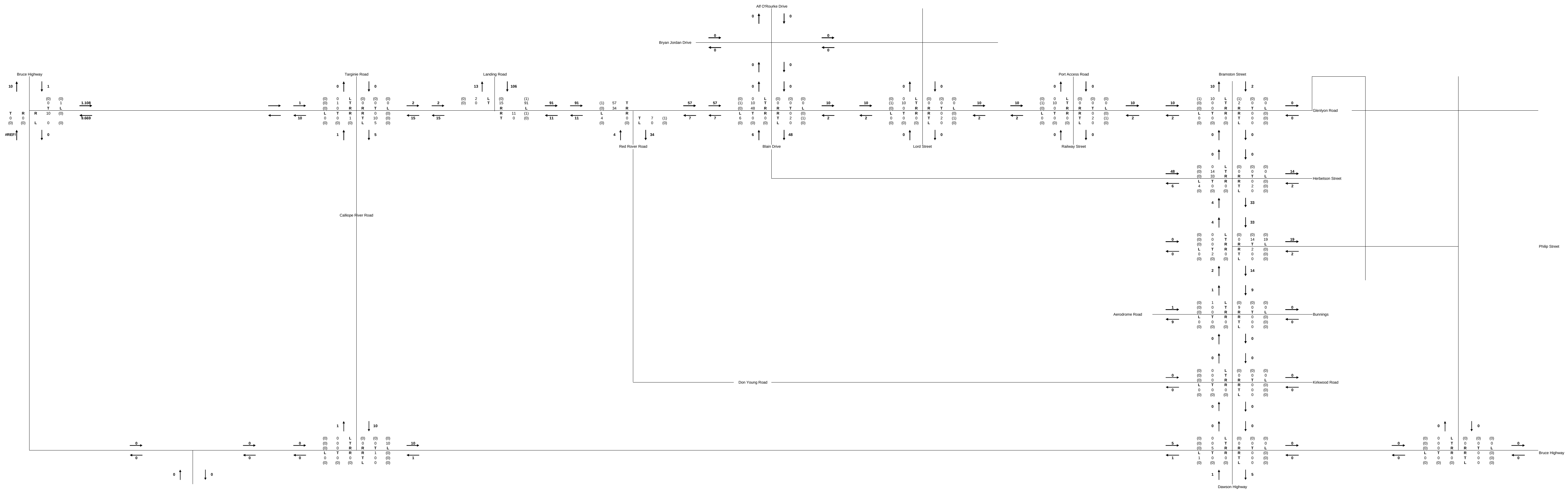
AM Peak (7:45-8:45)



PM Peak (13:30-14:30)



PM Peak (16:30-17:30)

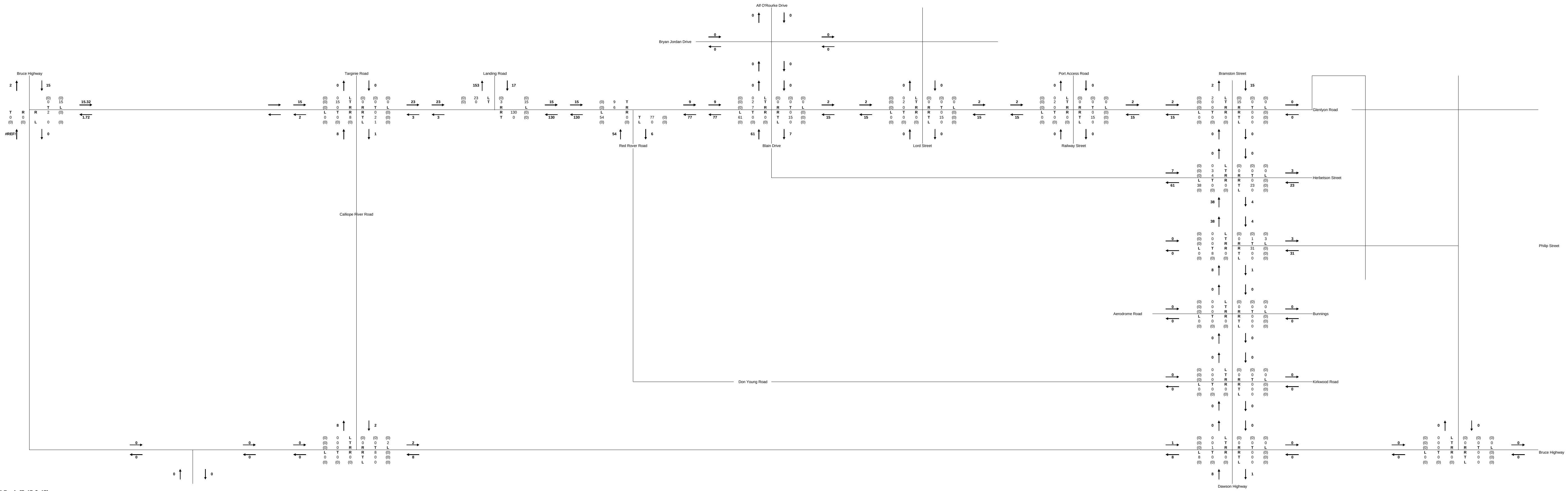


2024 Cummulative Impact Traffic of SANTOS

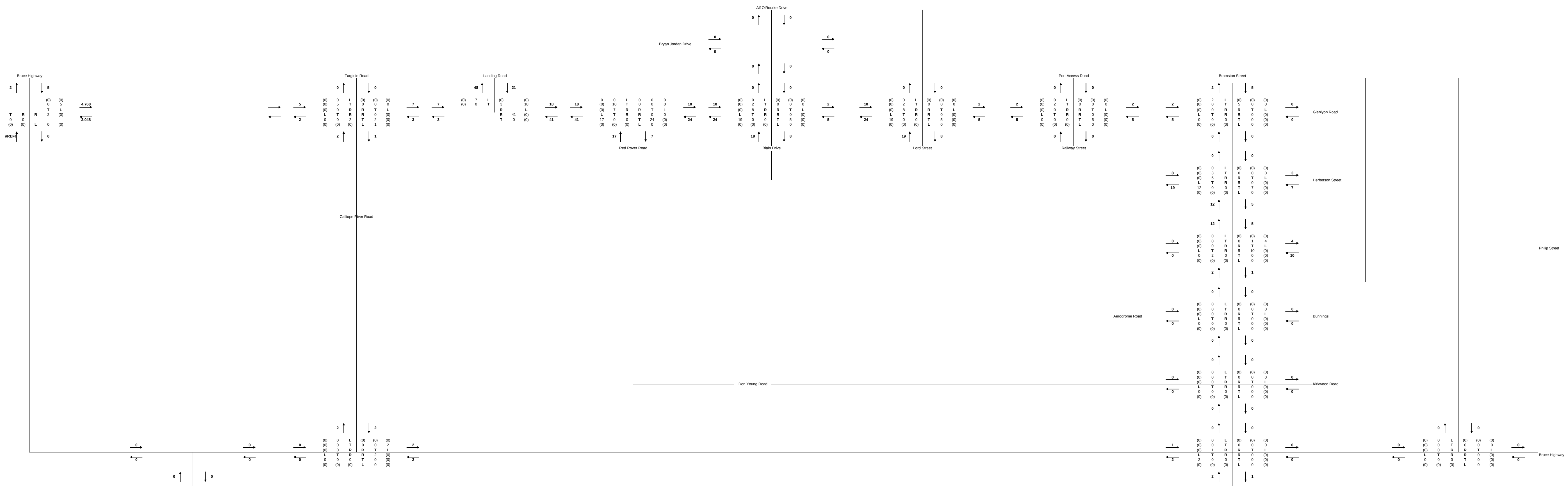
LEGEND

100 Total Volume
(10) Heavy Vehicle Volume

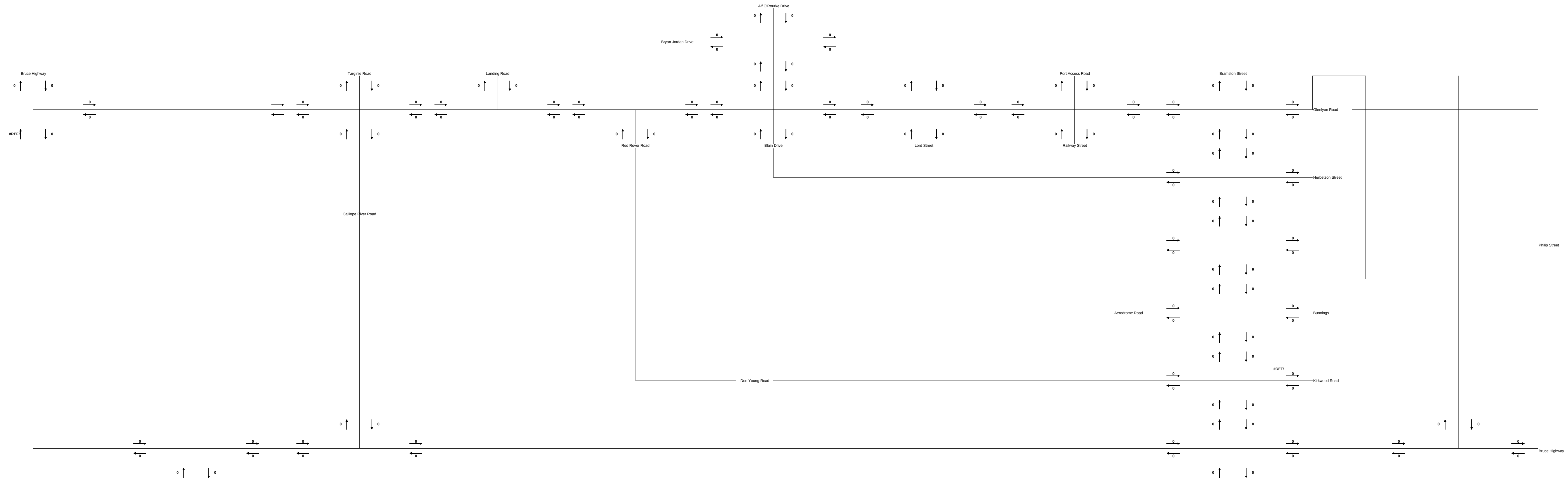
AM Peak (6:00-7:00)



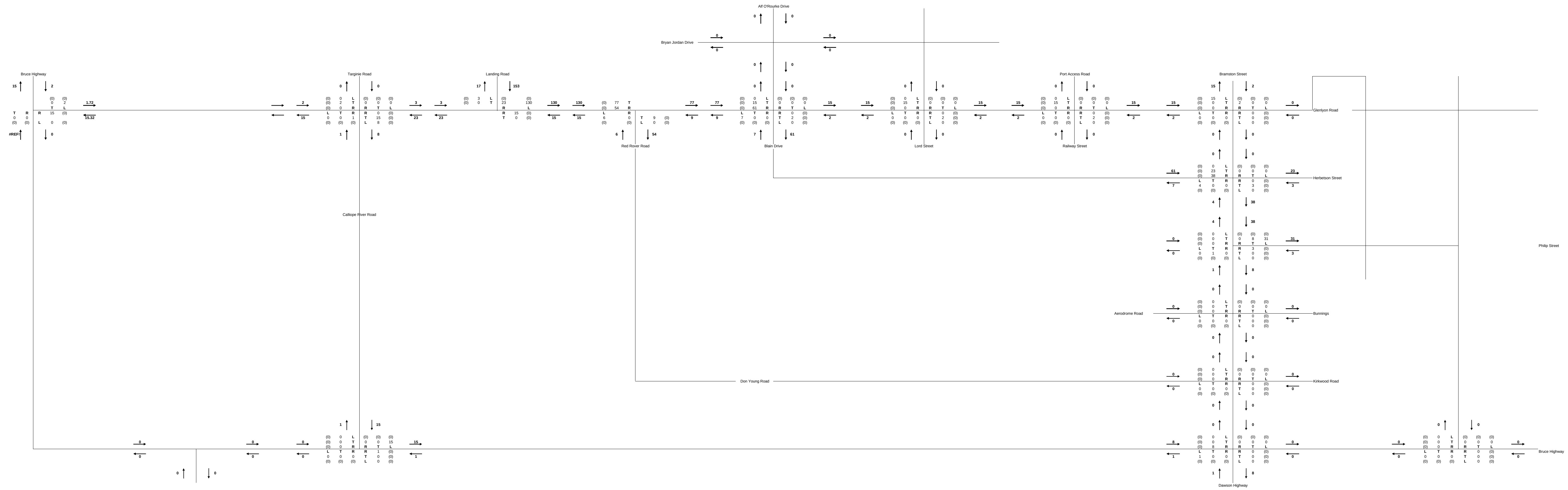
AM Peak (7:45-8:45)



PM Peak (13:30-14:30)



PM Peak (16:30-17:30)

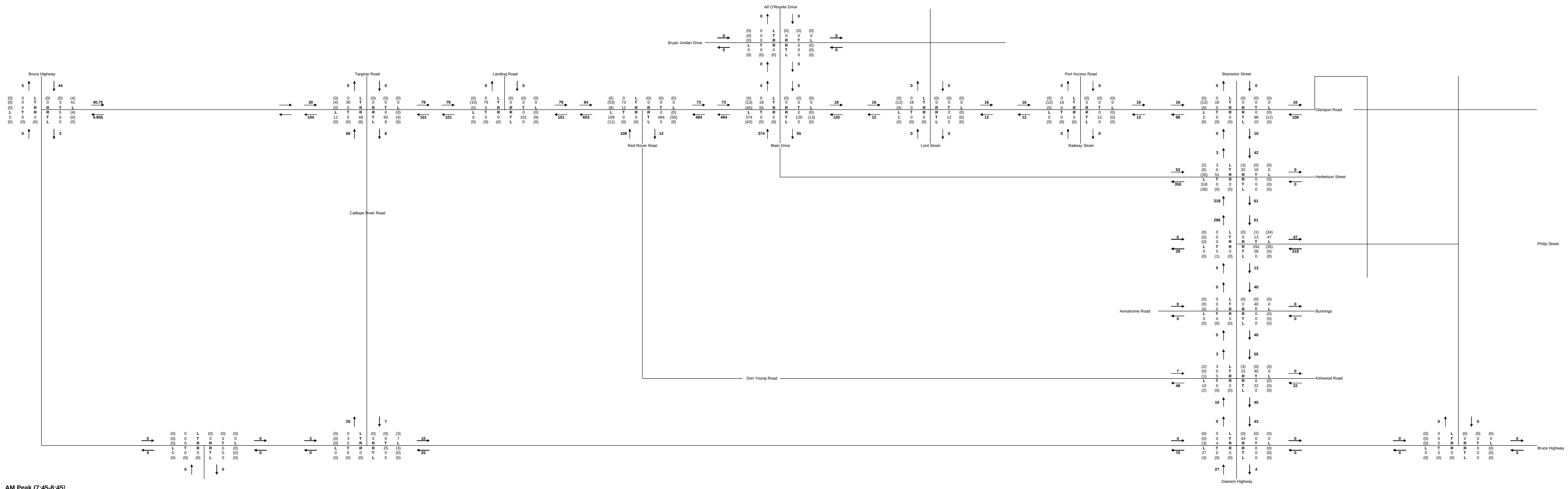


2010 Cummulative Impact Traffic Total

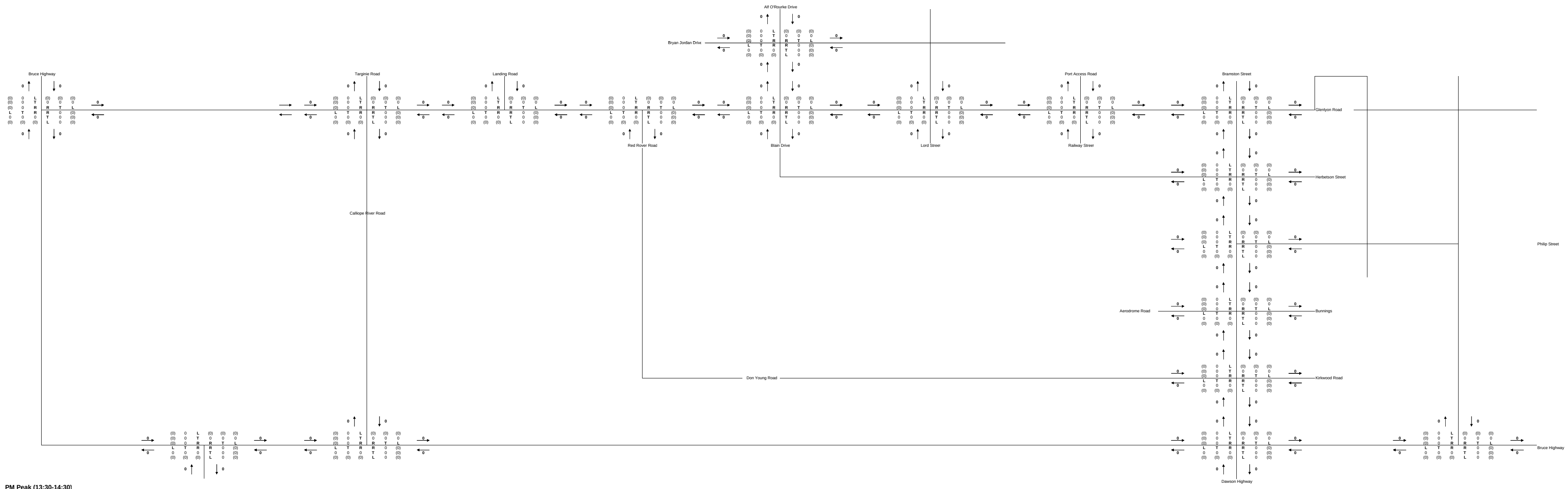
LEGEND

100 Total Volume
(10) Heavy Vehilce Volume

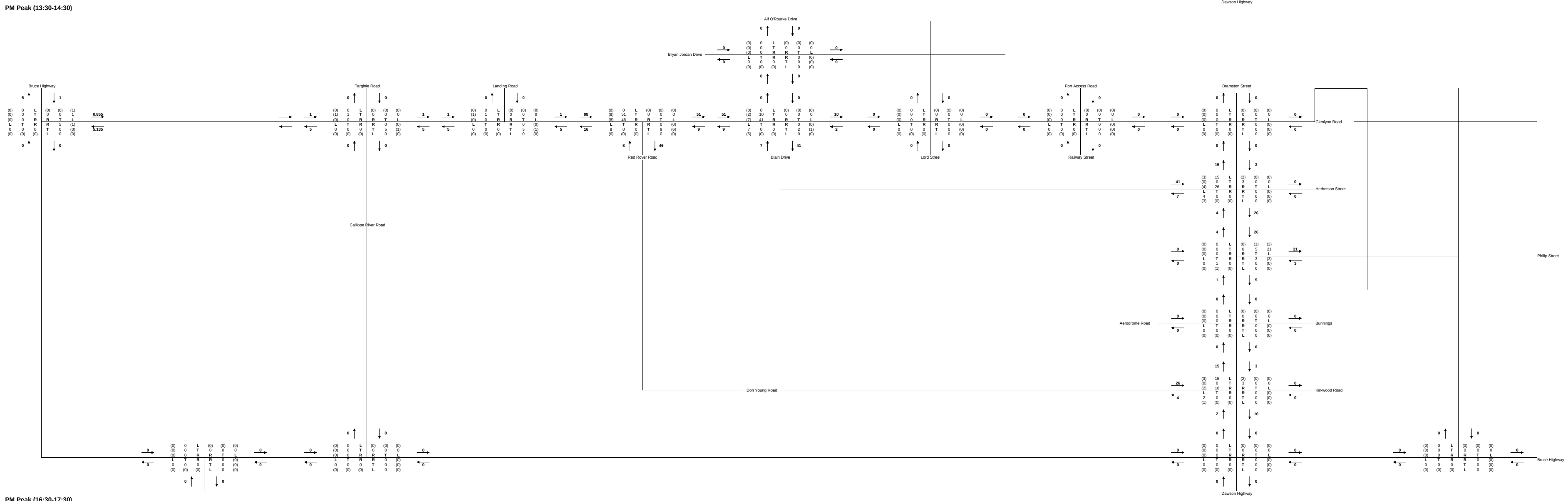
AM Peak (6:00-7:00)



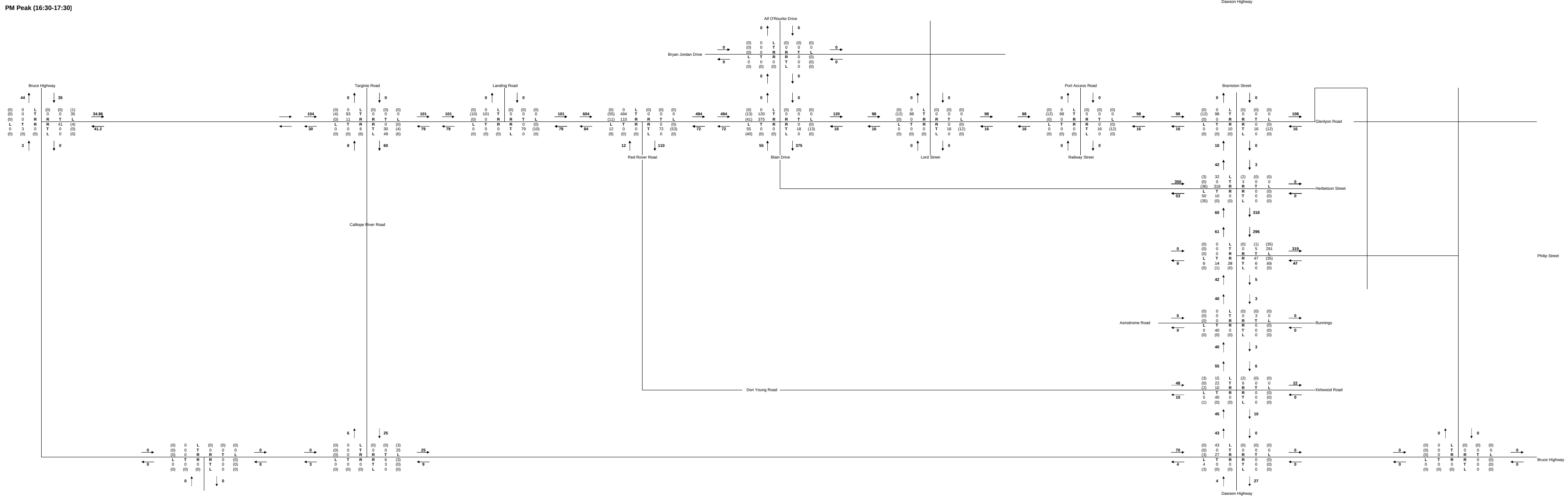
AM Peak (7:45-8:45)



PM Peak (13:30-14:30)



PM Peak (16:30-17:30)

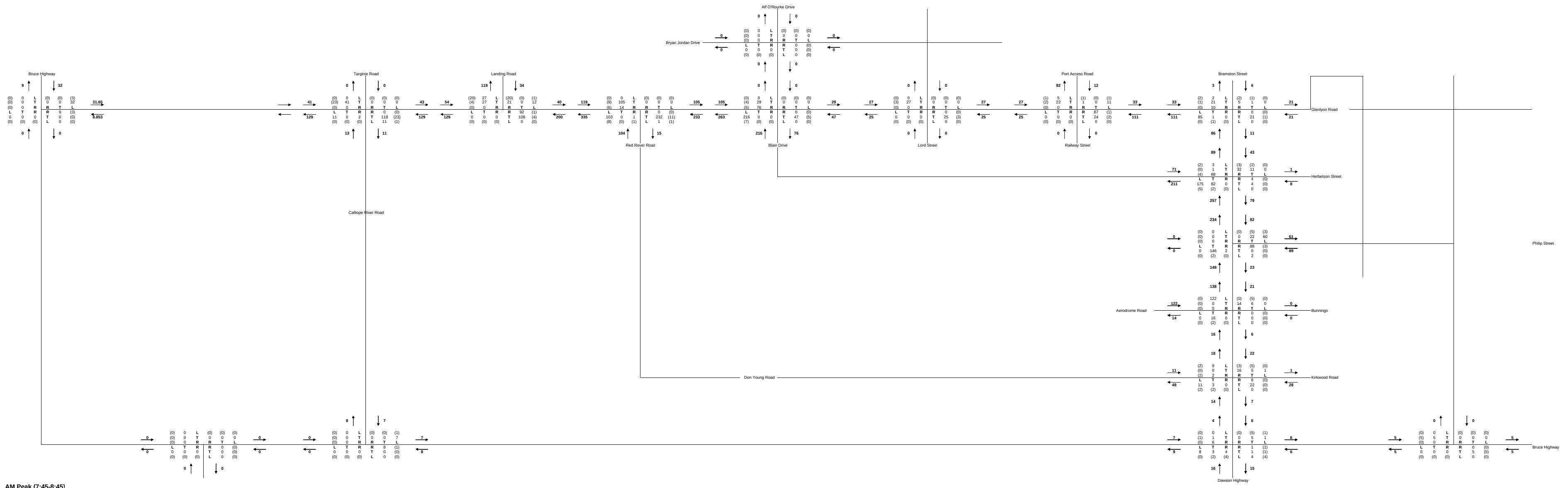


2011 Cummulative Impact Traffic Total

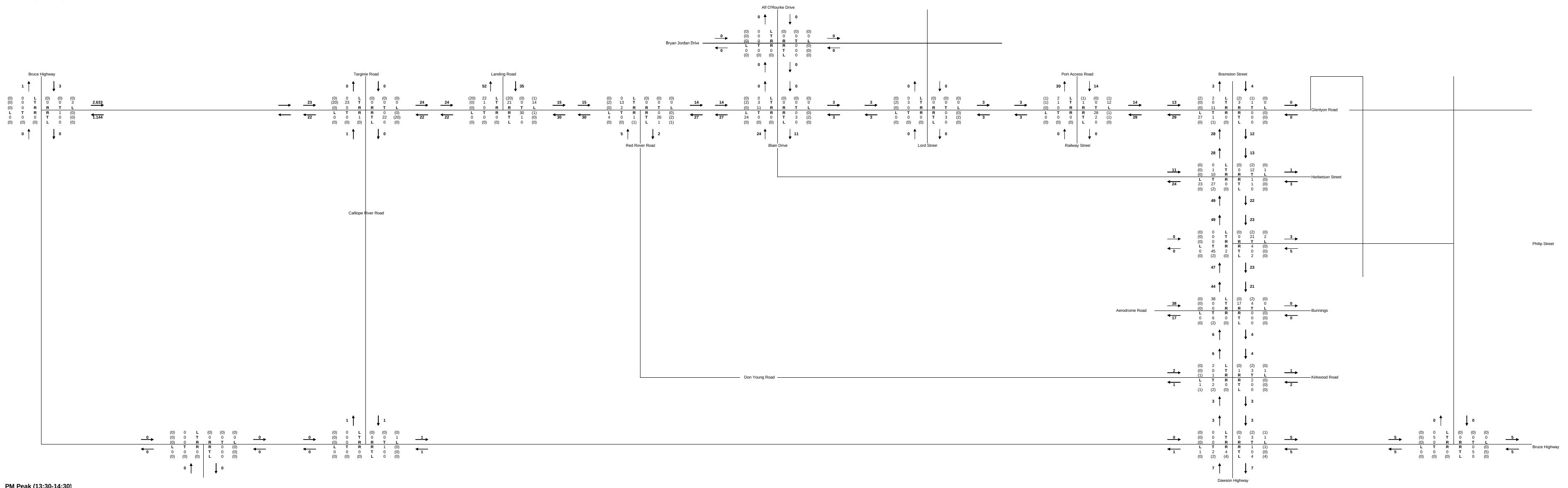
LEGEND

100 Total Volume
(10) Heavy Vehilce Volume

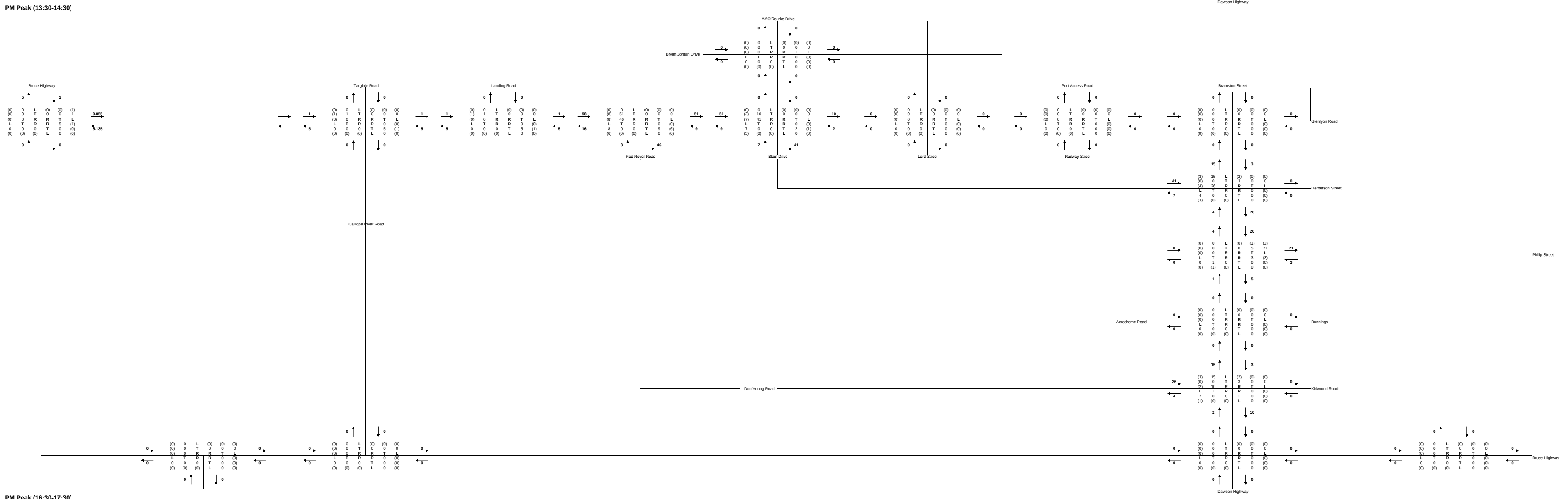
AM Peak (6:00-7:00)



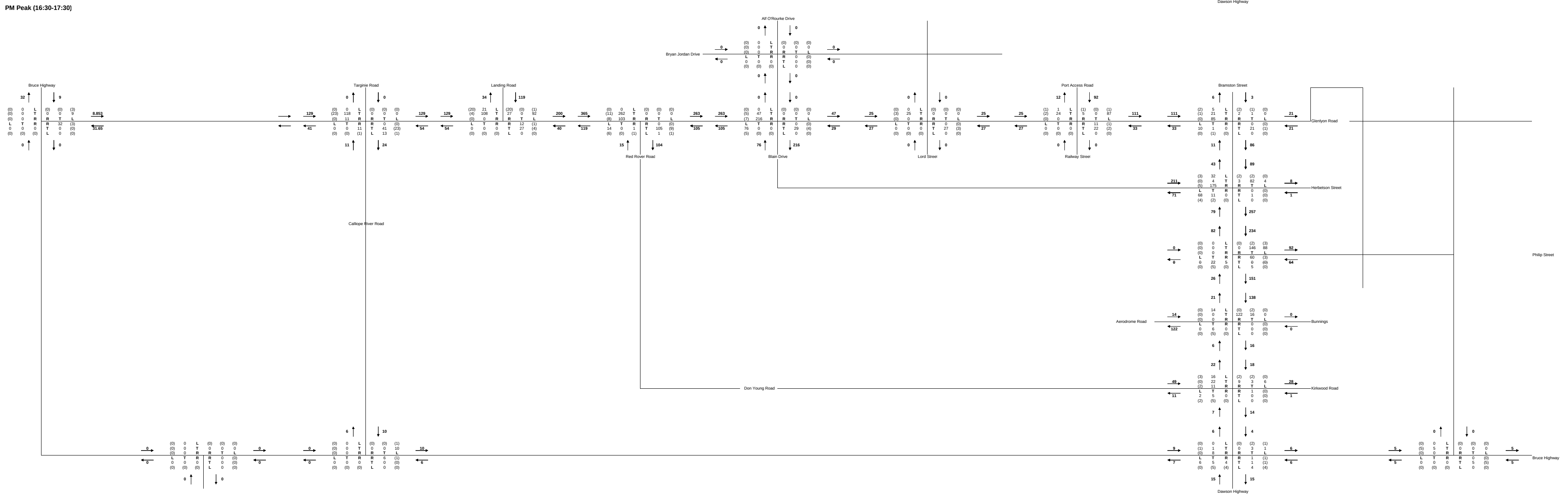
AM Peak (7:45-8:45)



PM Peak (13:30-14:30)



PM Peak (16:30-17:30)

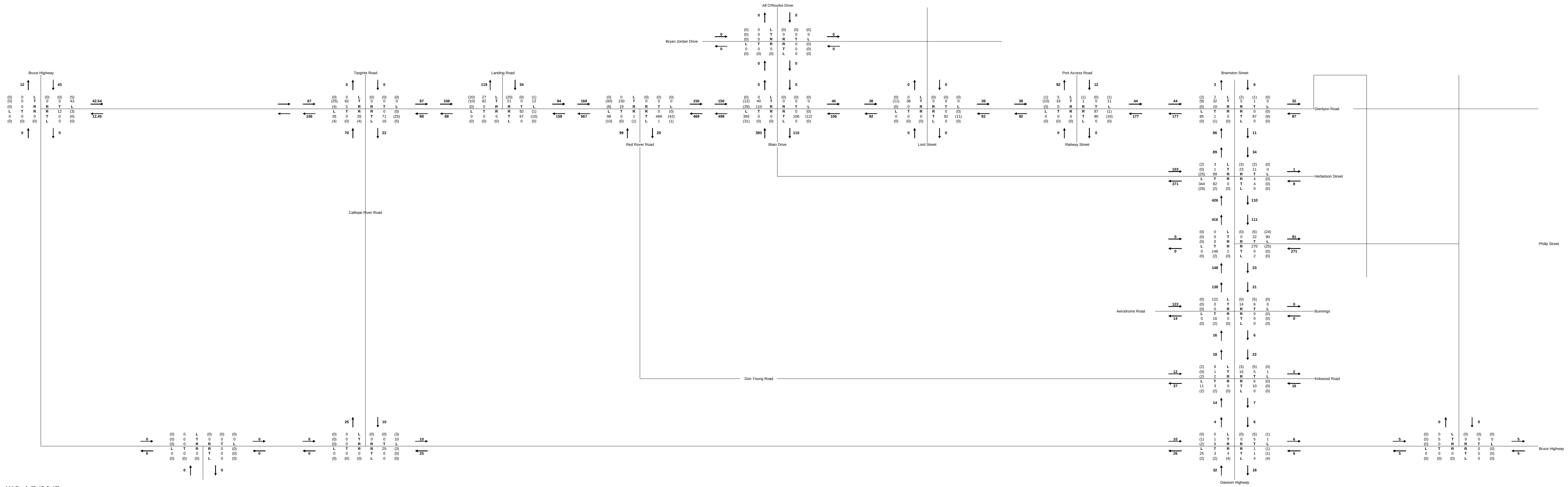


2012 Cummulative Impact Traffic Total

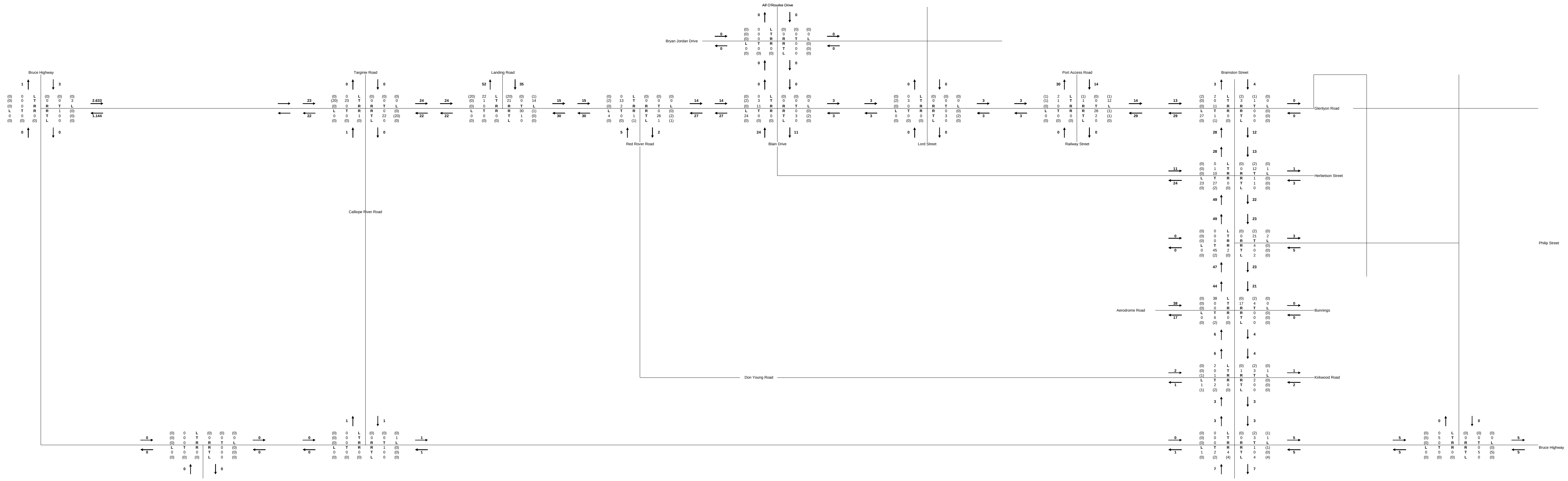
LEGEND

100 Total Volume
(10) Heavy Vehicle Volume

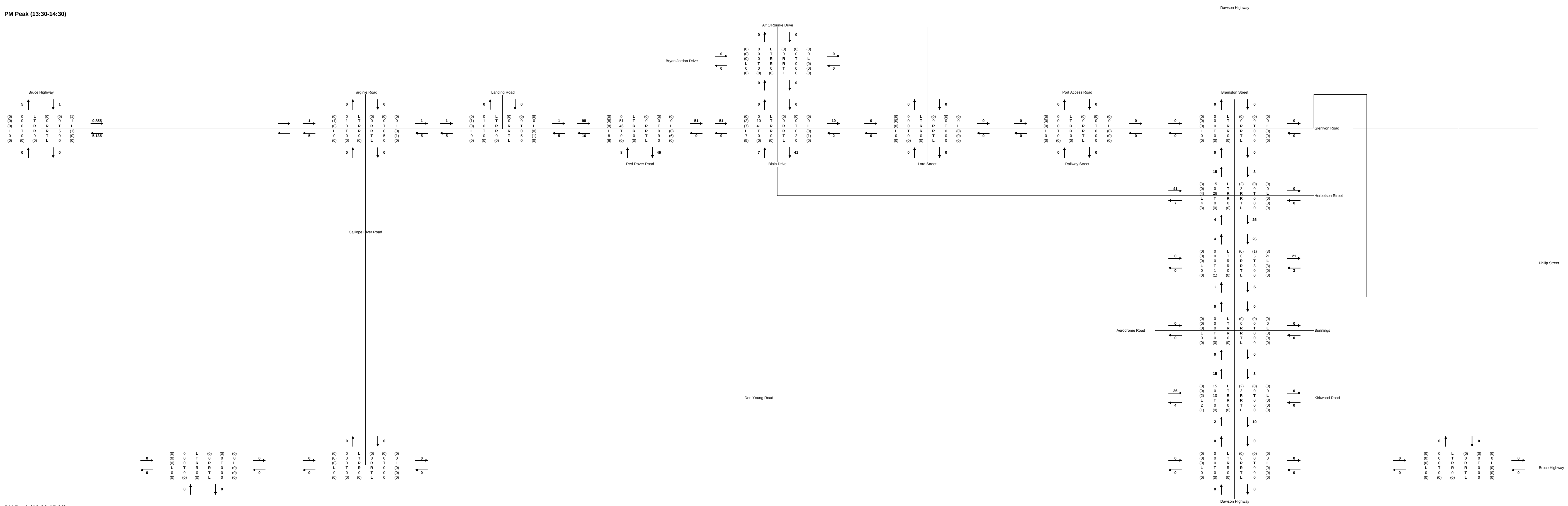
AM Peak (6:00-7:00)



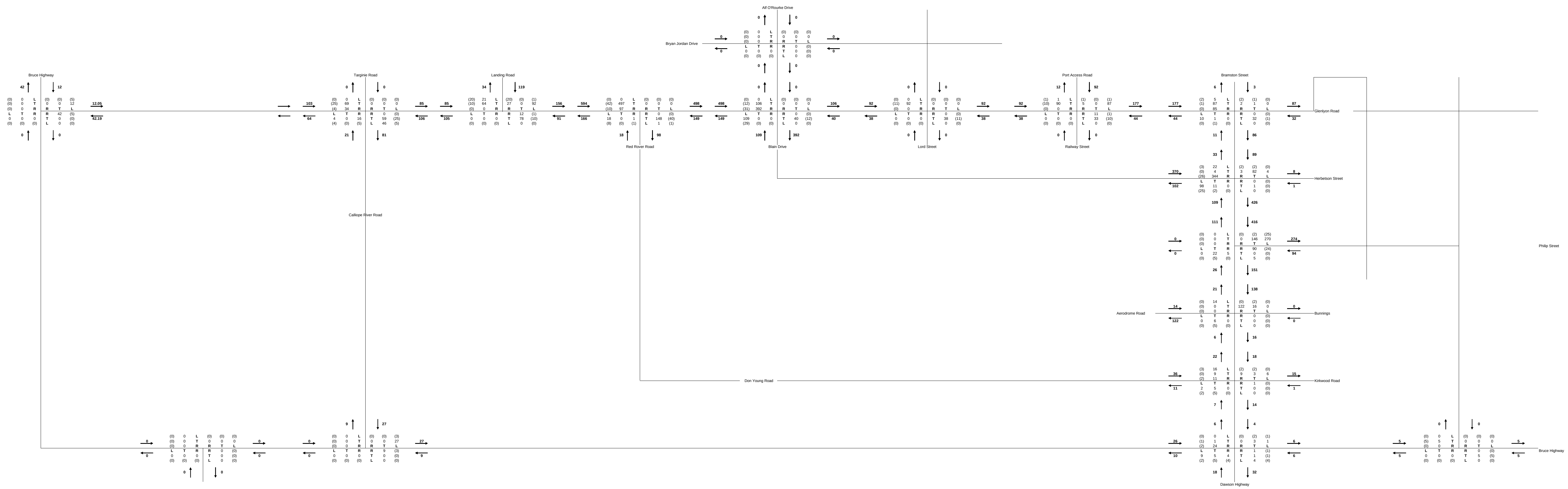
AM Peak (7:45-8:45)



PM Peak (13:30-14:30)



PM Peak (16:30-17:30)

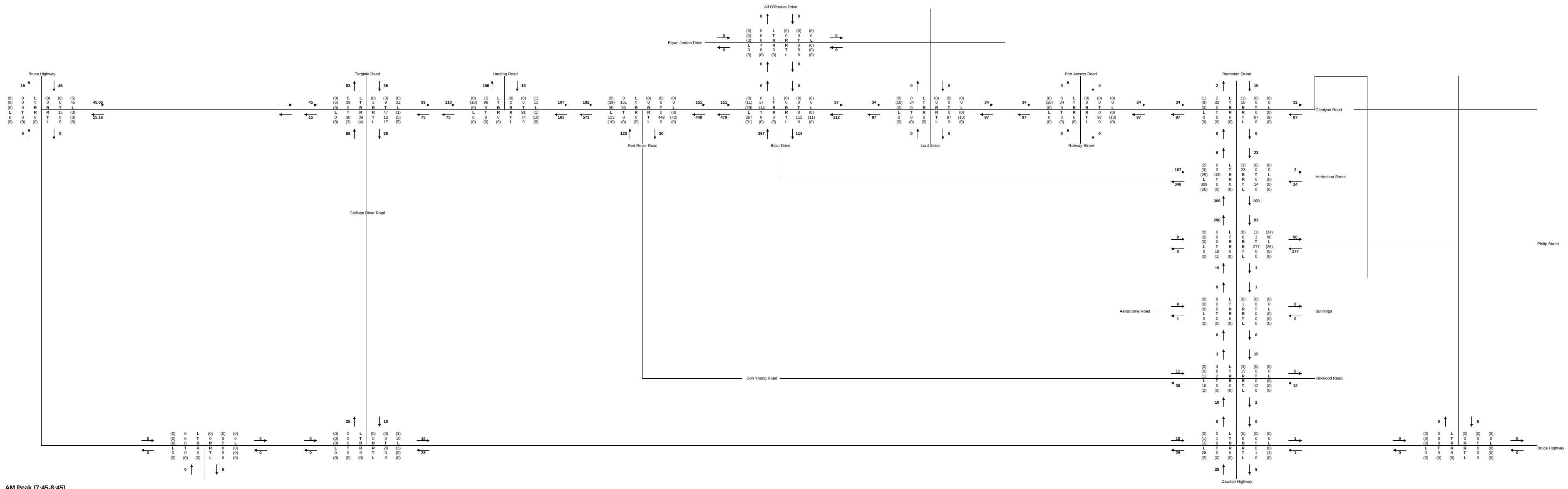


2013 Cummulative Impact Traffic Total

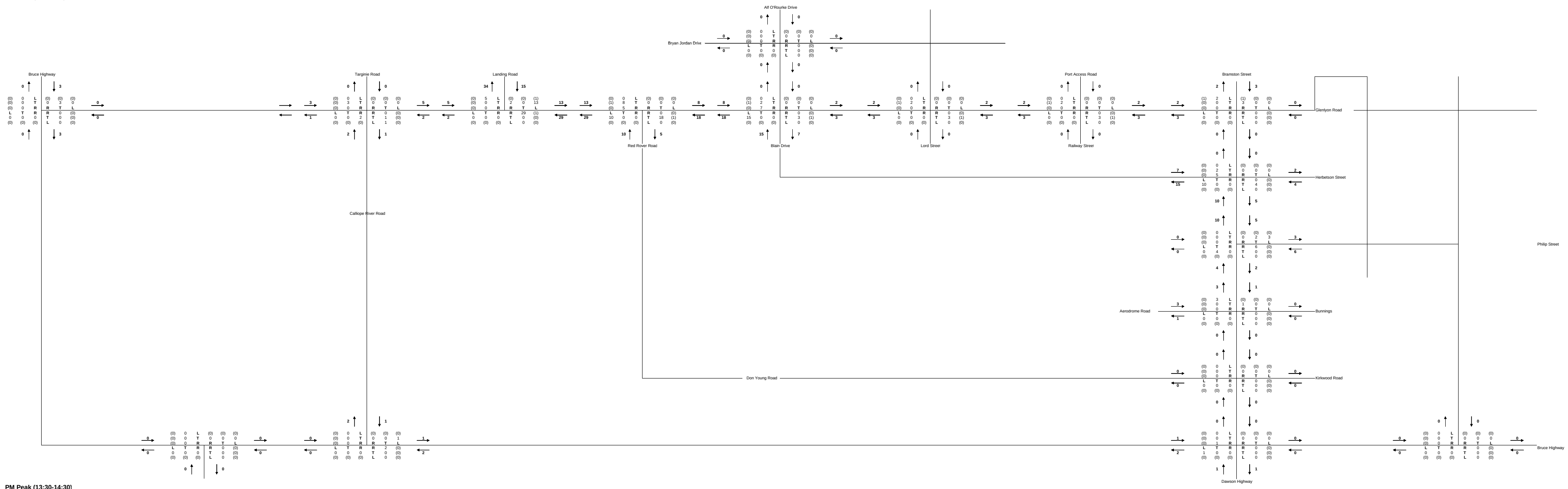
LEGEND

100 Total Volume
(10) Heavy Vehilce Volume

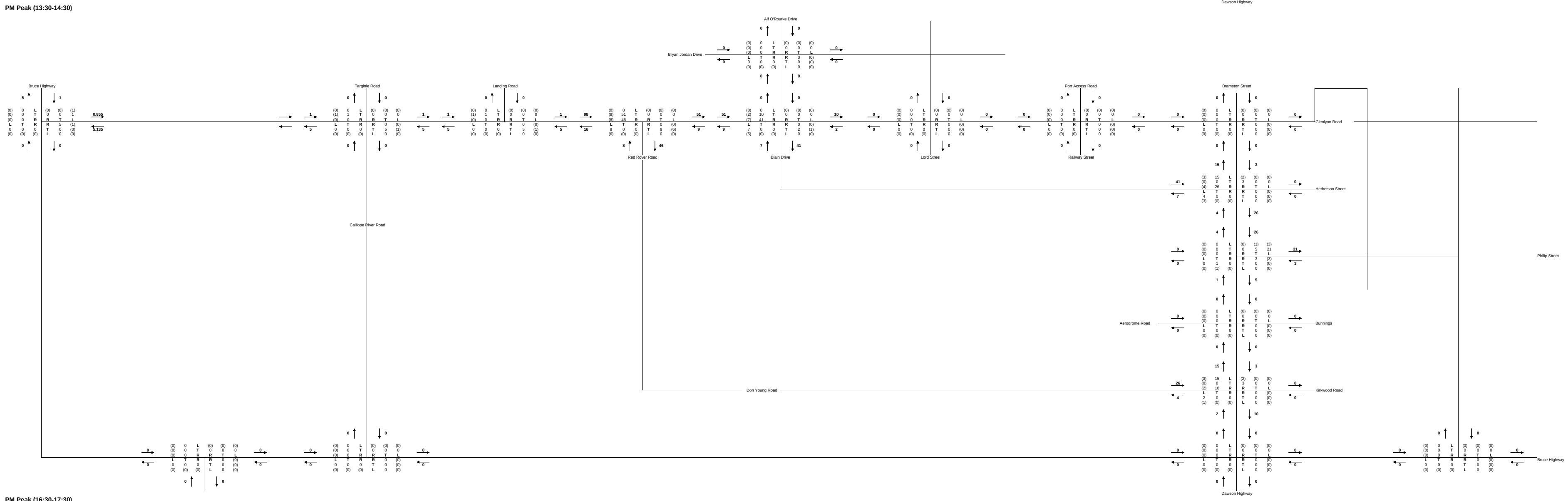
AM Peak (6:00-7:00)



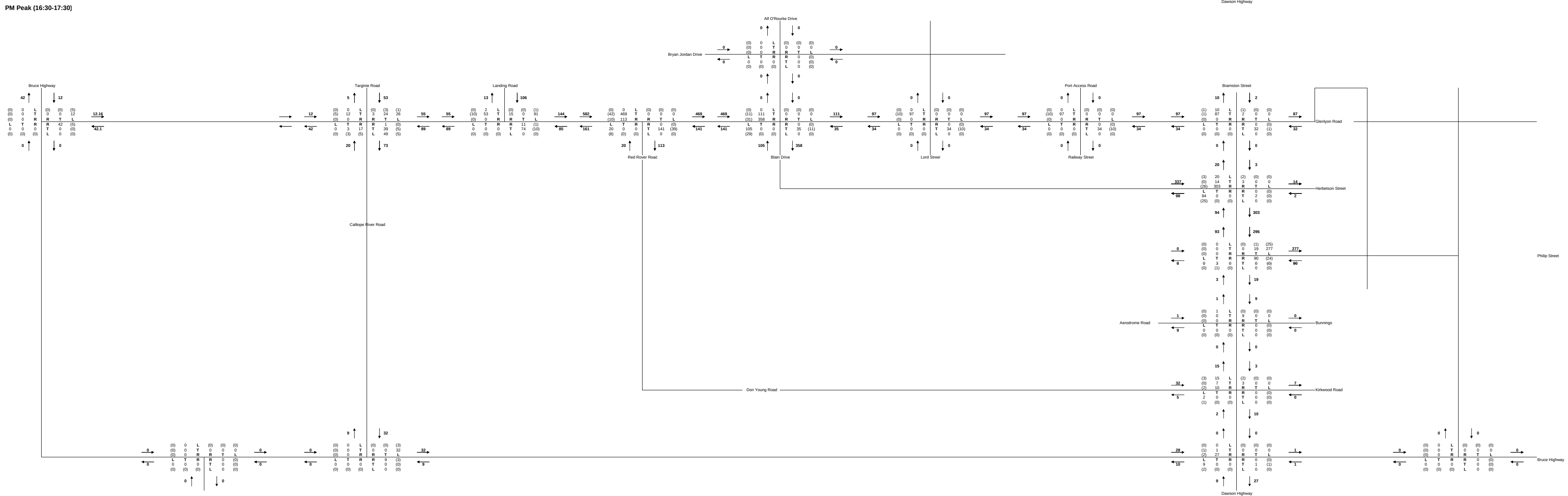
AM Peak (7:45-8:45)



PM Peak (13:30-14:30)



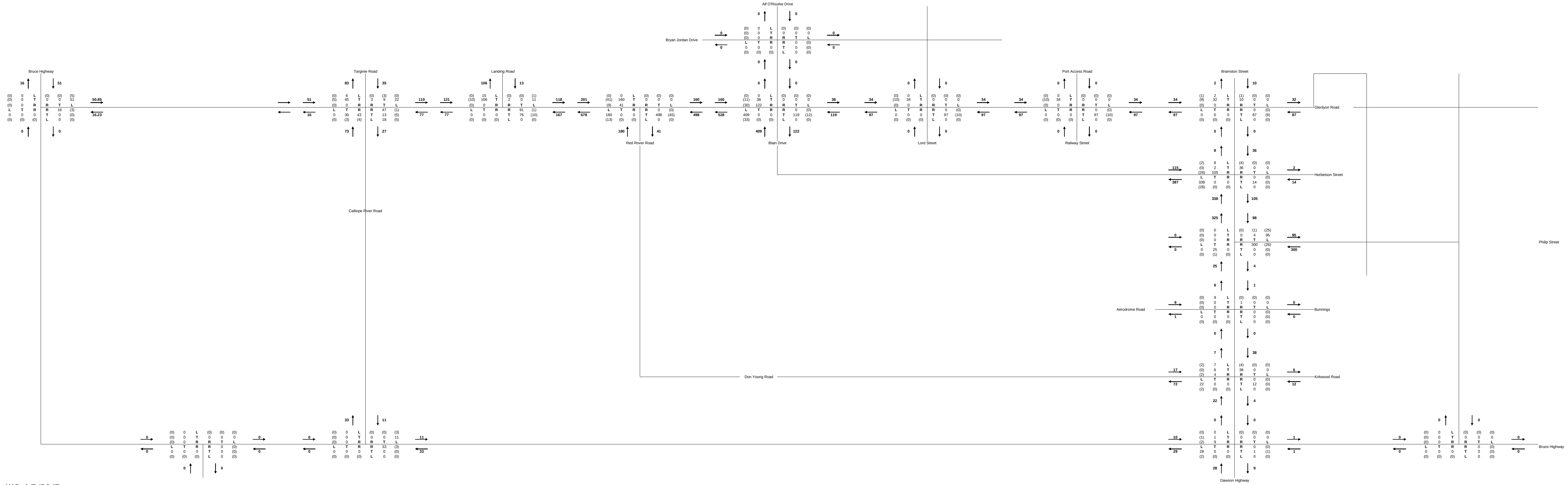
PM Peak (16:30-17:30)



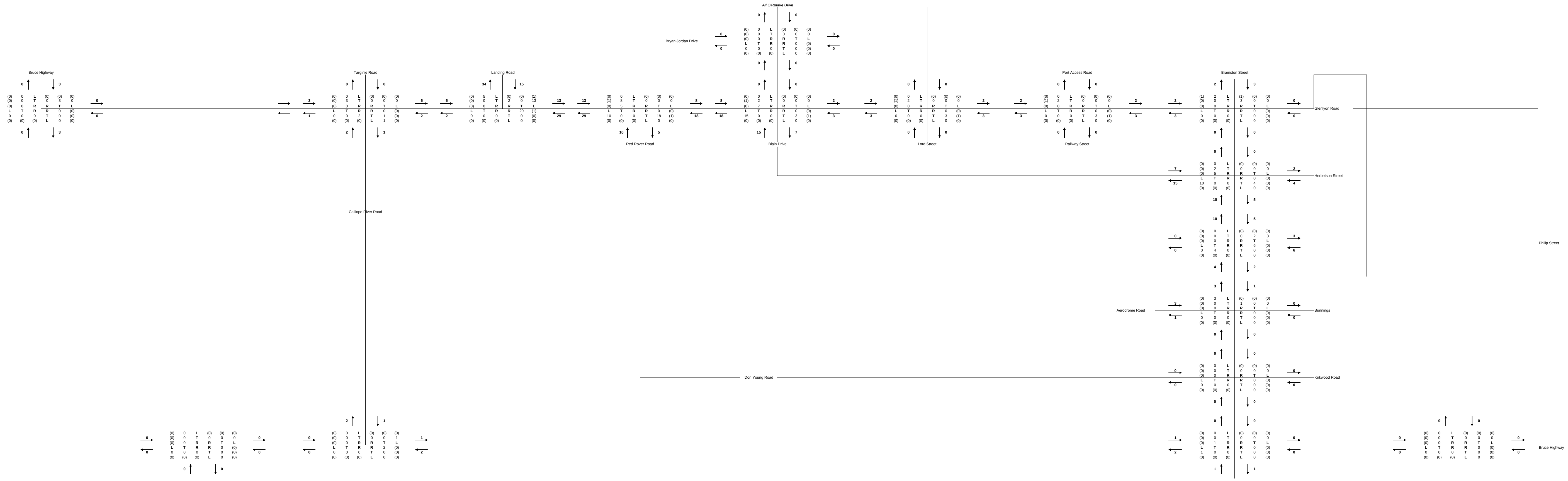
2014 Cummulative Impact Traffic Total

LEGEND
100 Total Volume
(10) Heavy Vehicle Volume

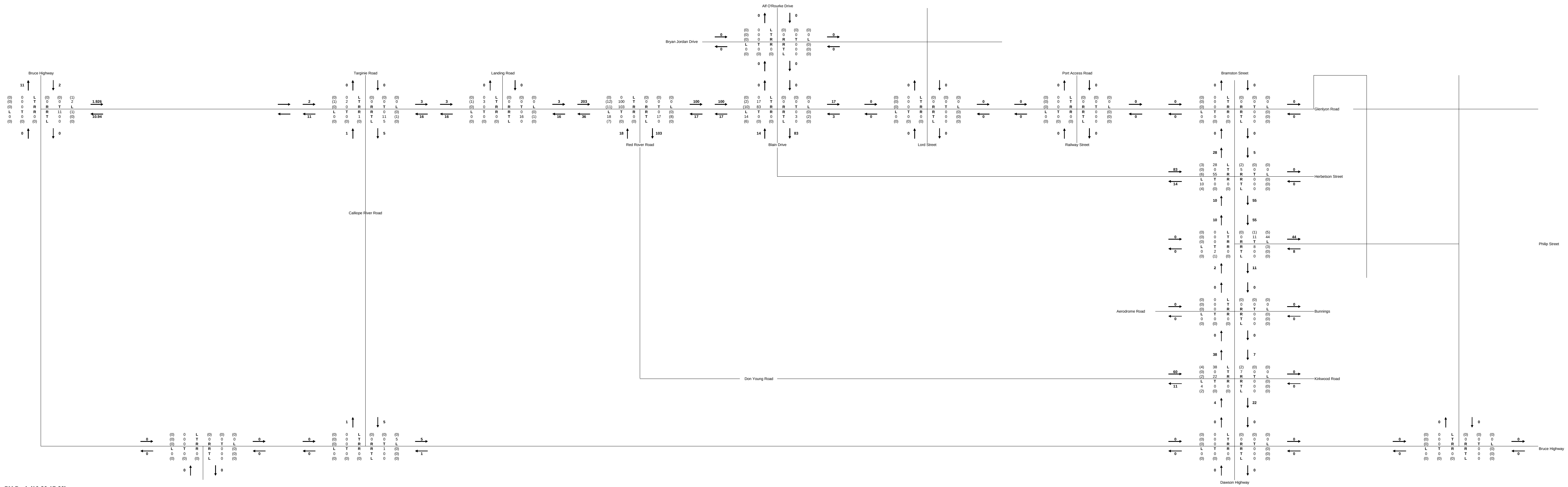
AM Peak (6:00-7:00)



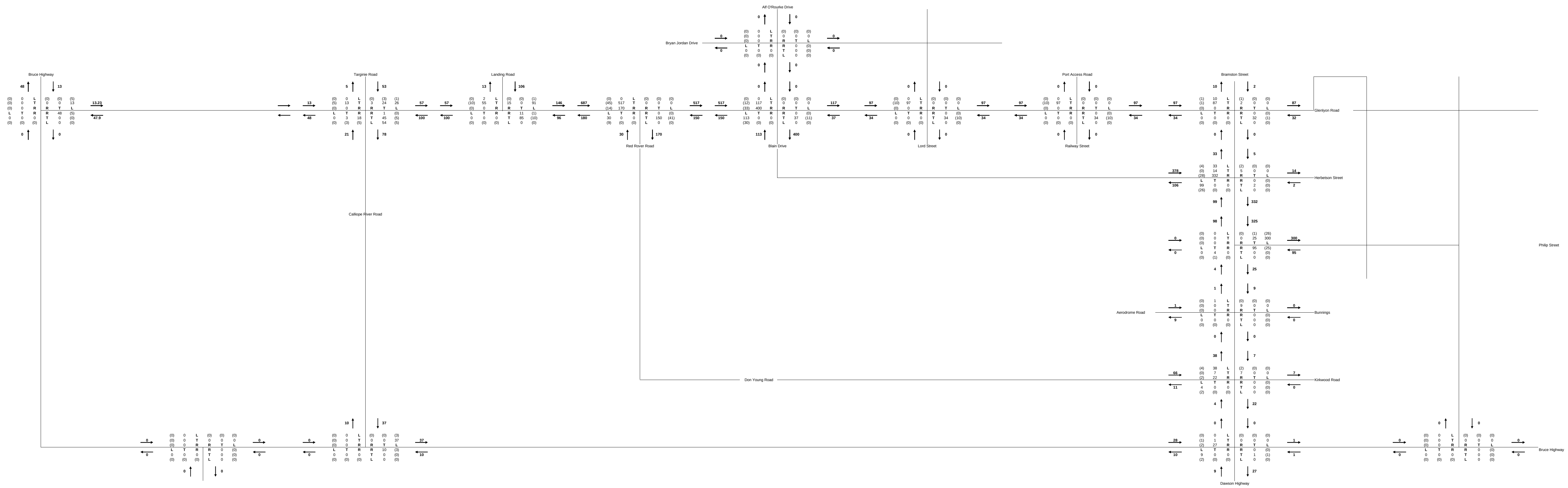
AM Peak (7:45-8:45)



PM Peak (13:30-14:30)



PM Peak (16:30-17:30)

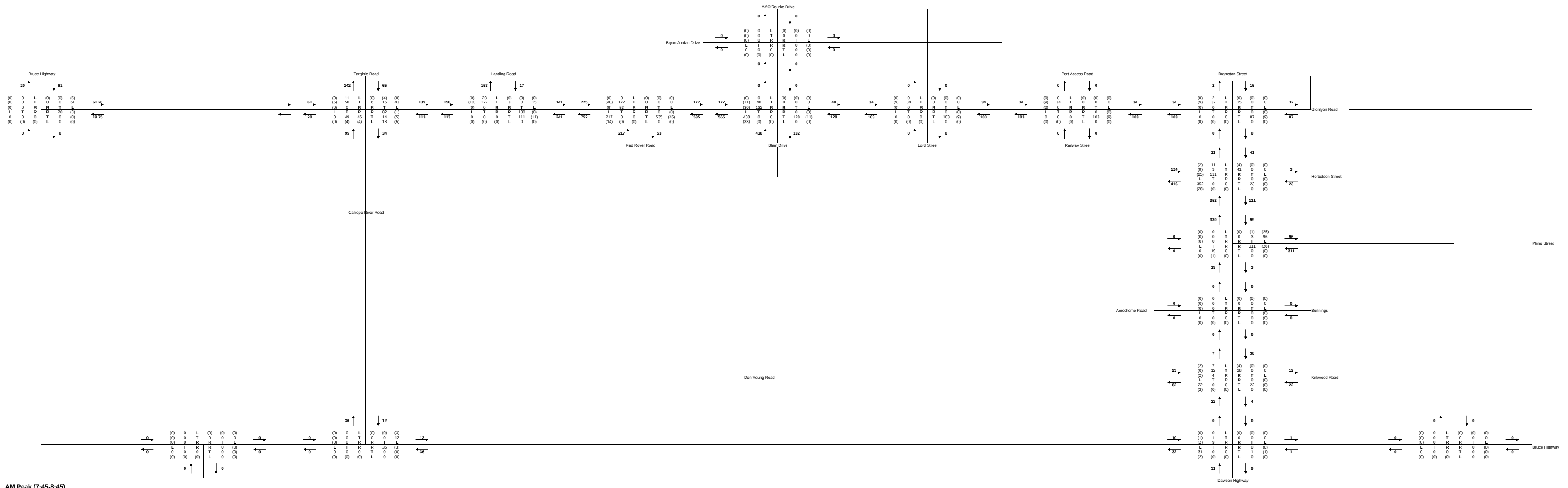


2015 Cummulative Impact Traffic Total

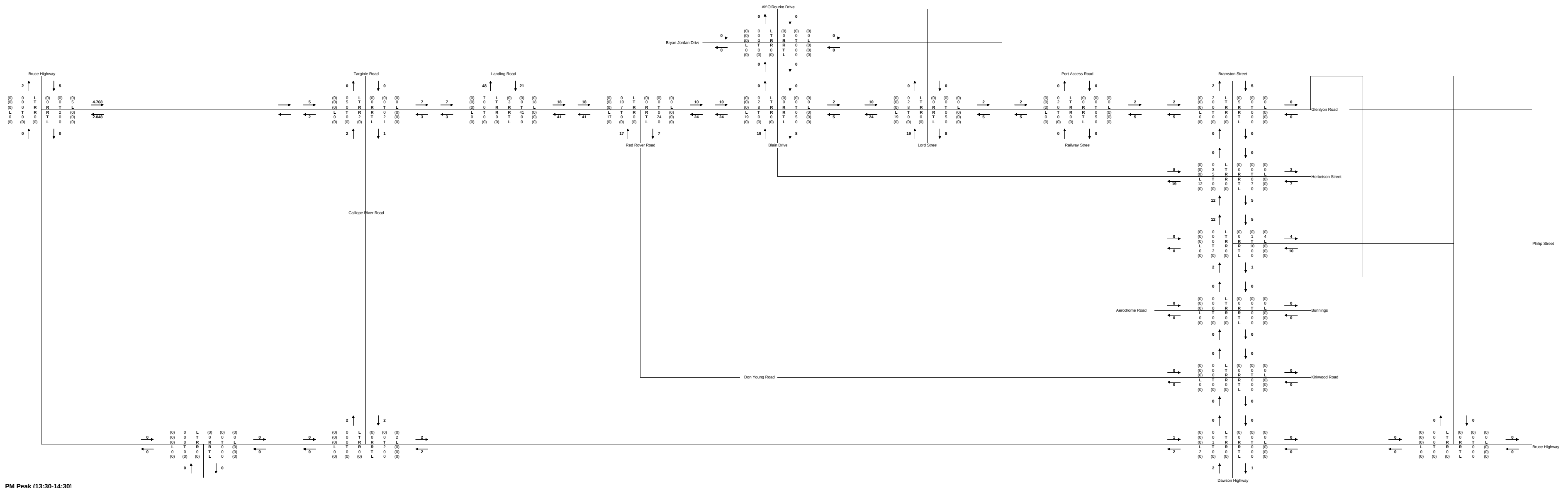
LEGEND

100 Total Volume
(10) Heavy Vehilce Volume

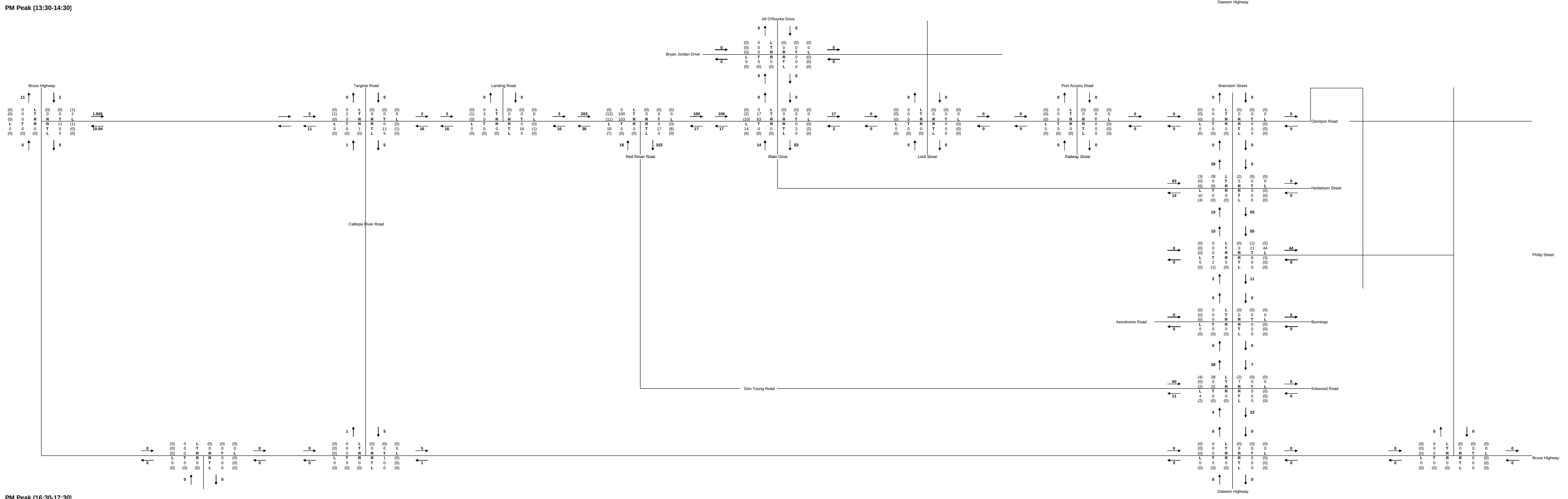
AM Peak (6:00-7:00)



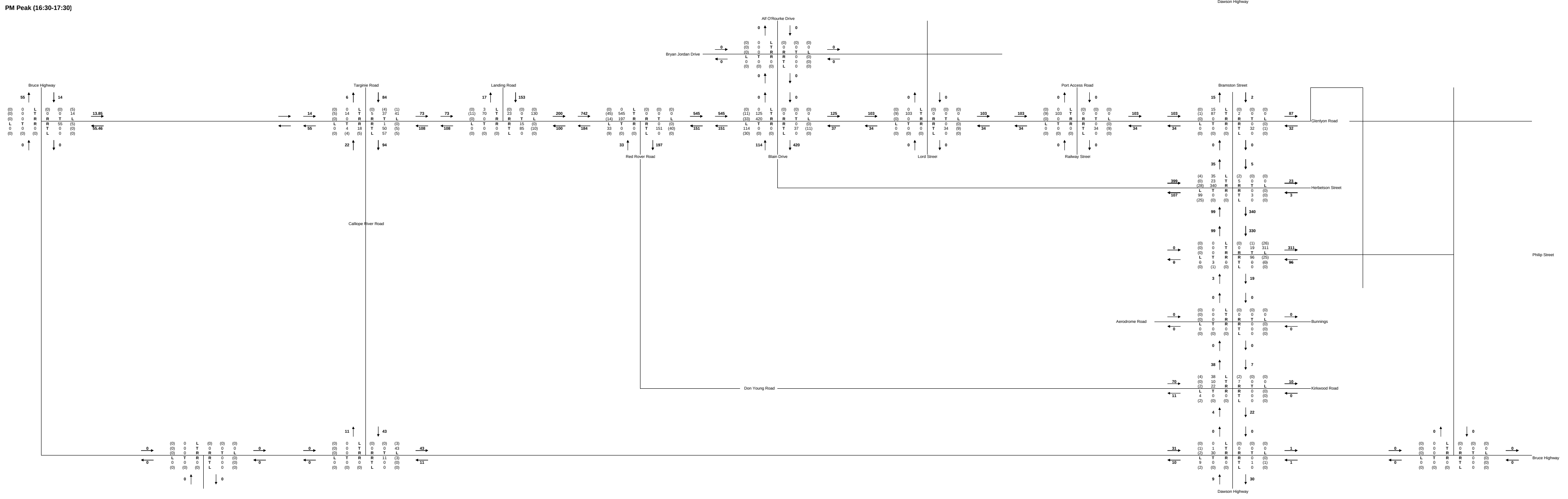
AM Peak (7:45-8:45)



PM Peak (13:30-14:30)



PM Peak (16:30-17:30)

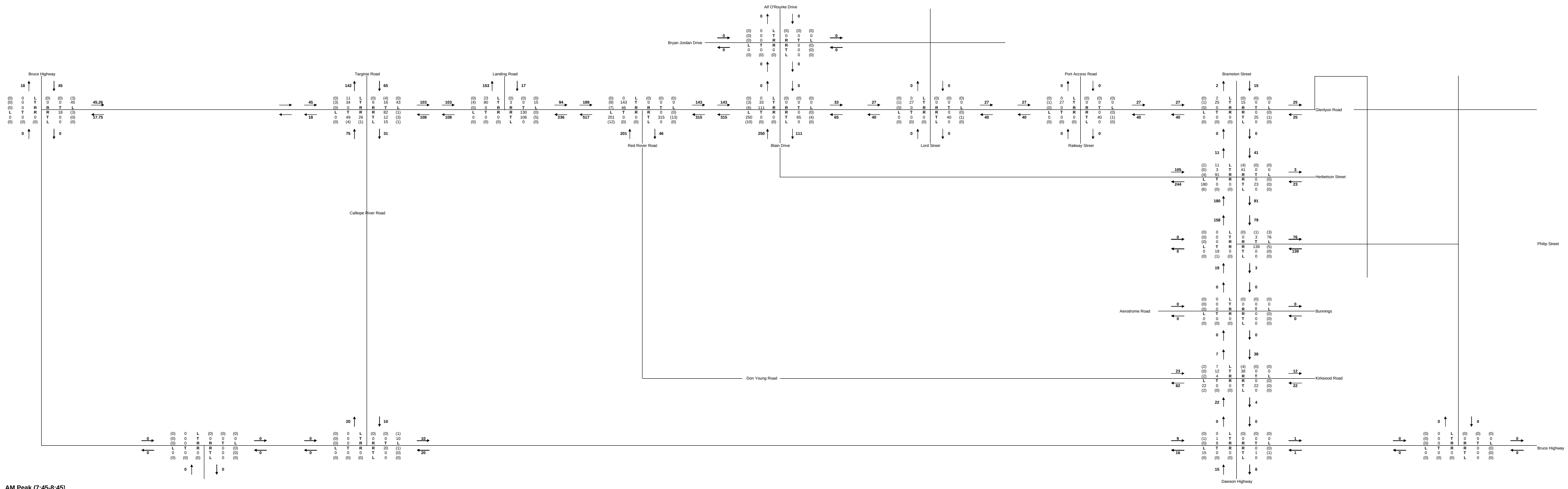


2016 Cummulative Impact Traffic Total

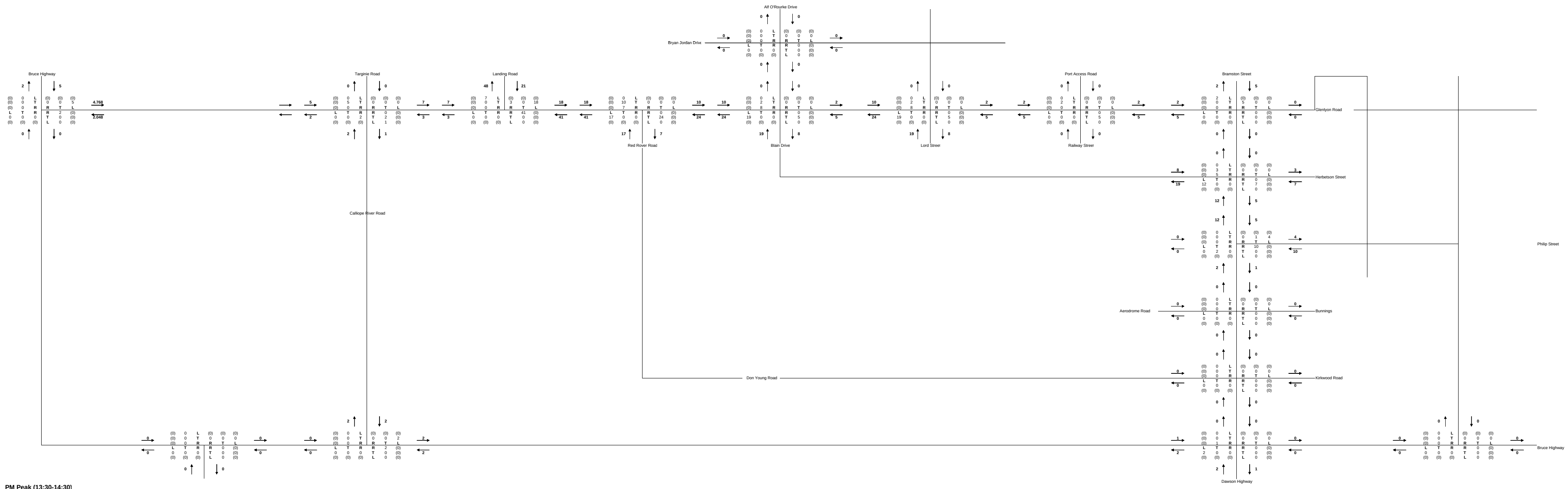
LEGEND

100 Total Volume
(10) Heavy Vehilce Volume

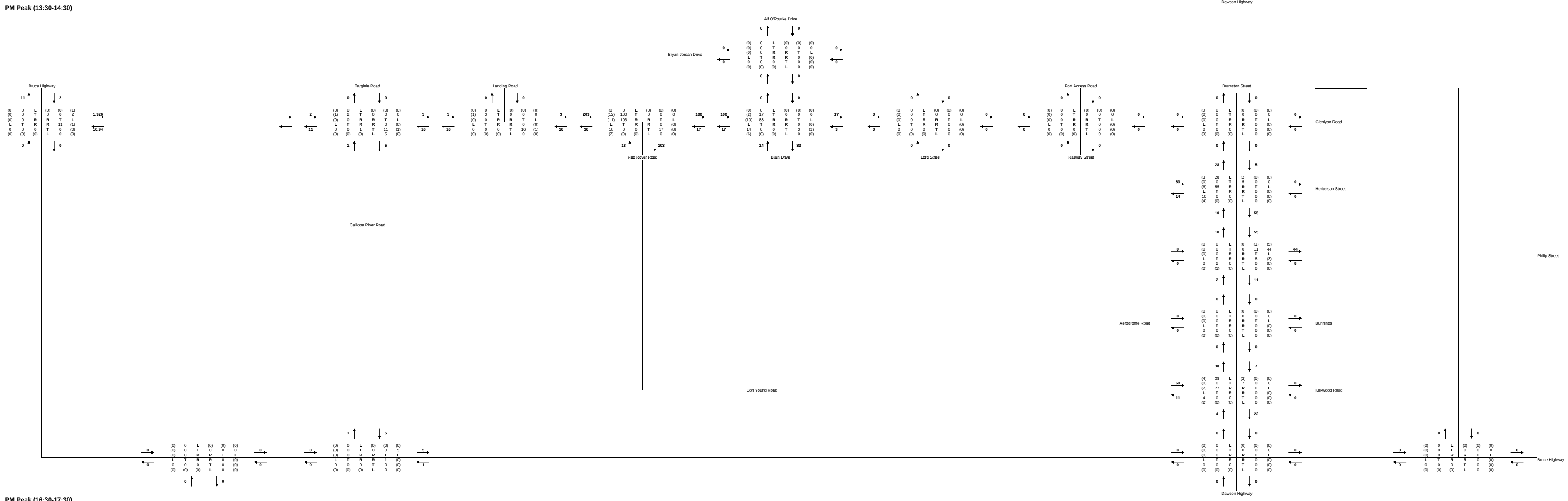
AM Peak (6:00-7:00)



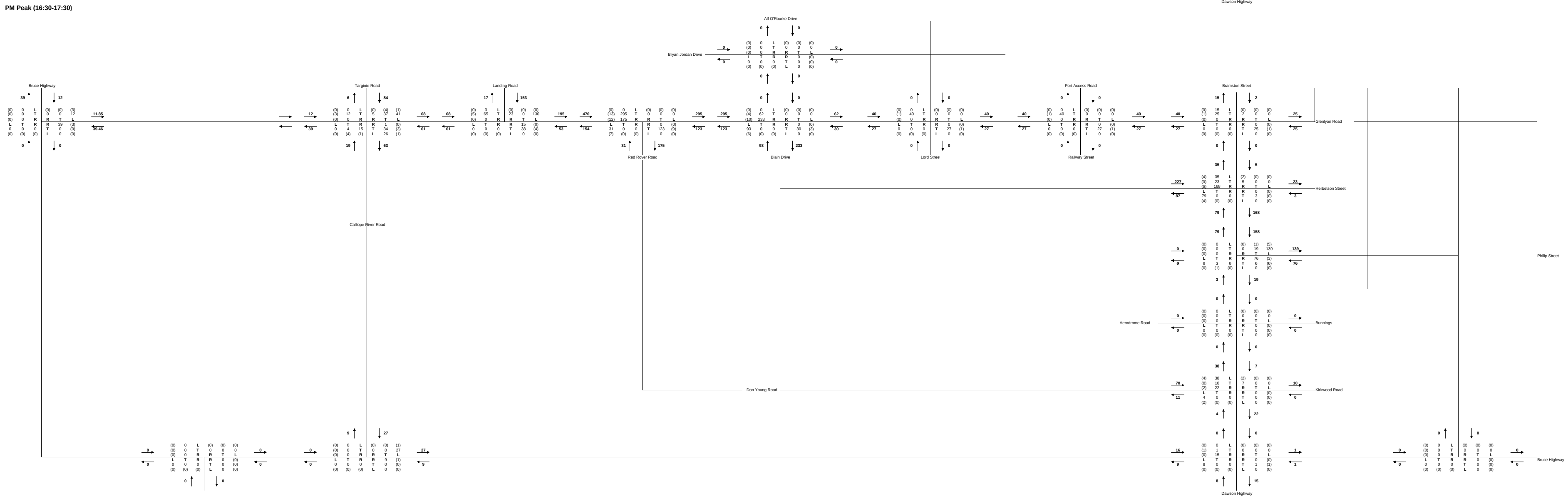
AM Peak (7:45-8:45)



PM Peak (13:30-14:30)



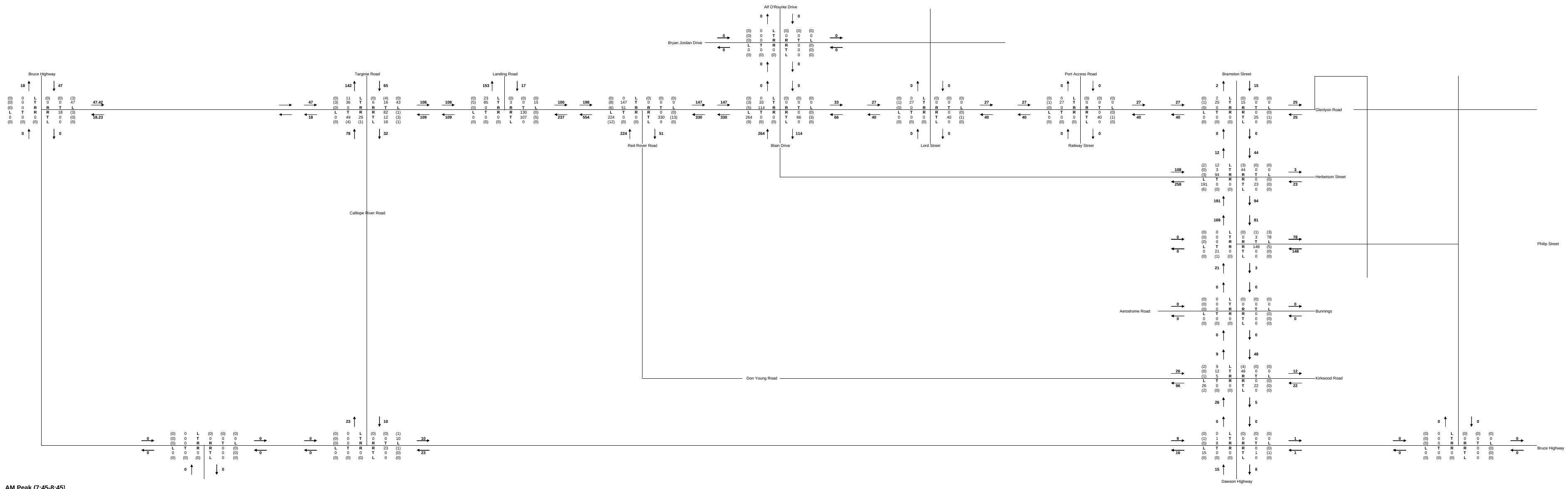
PM Peak (16:30-17:30)



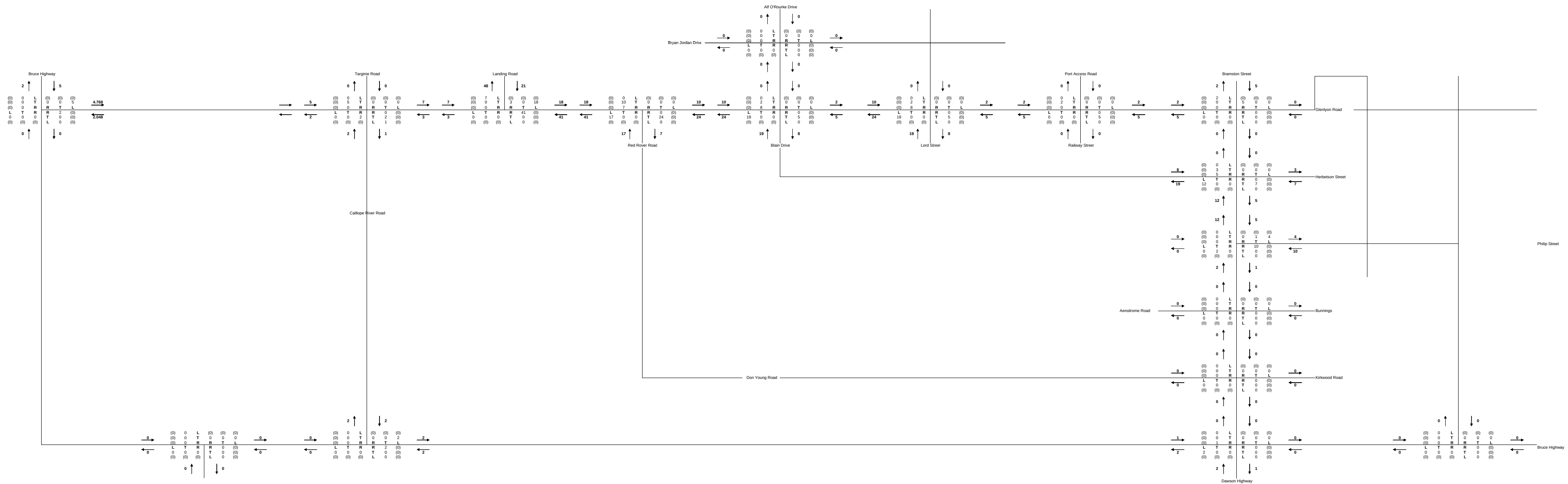
2017 Cummulative Impact Traffic Total

LEGEND
100 Total Volume
(10) Heavy Vehilce Volume

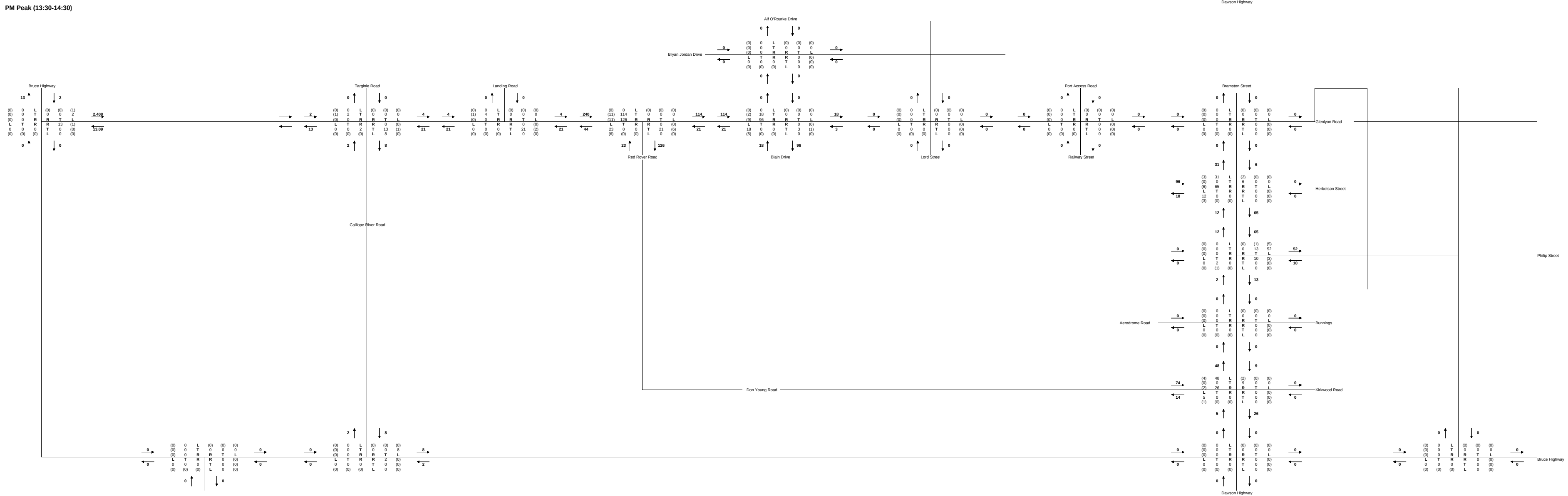
AM Peak (6:00-7:00)



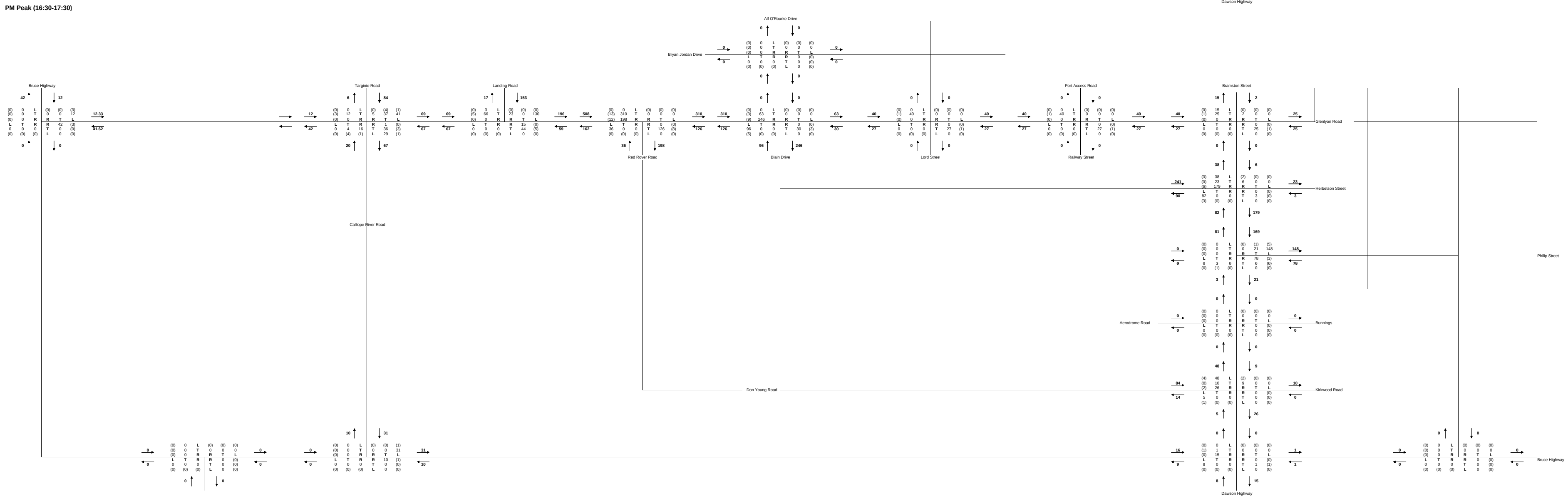
AM Peak (7:45-8:45)



PM Peak (13:30-14:30)



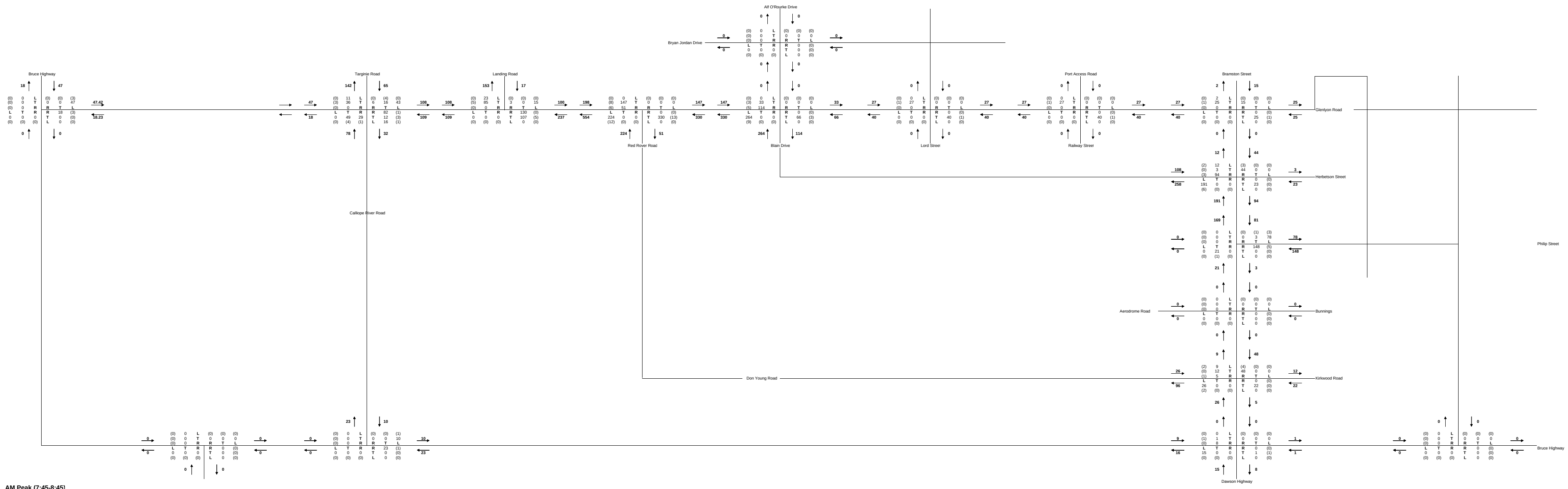
PM Peak (16:30-17:30)



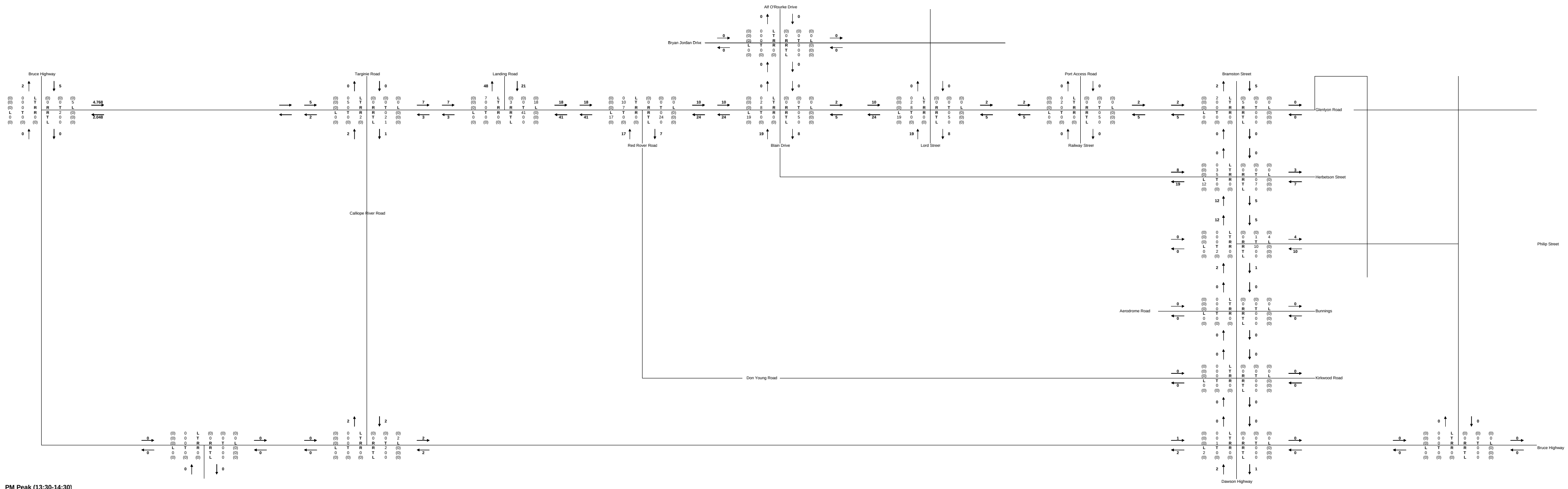
2018 Cummulative Impact Traffic Total

LEGEND
100 Total Volume
(10) Heavy Vehilce Volume

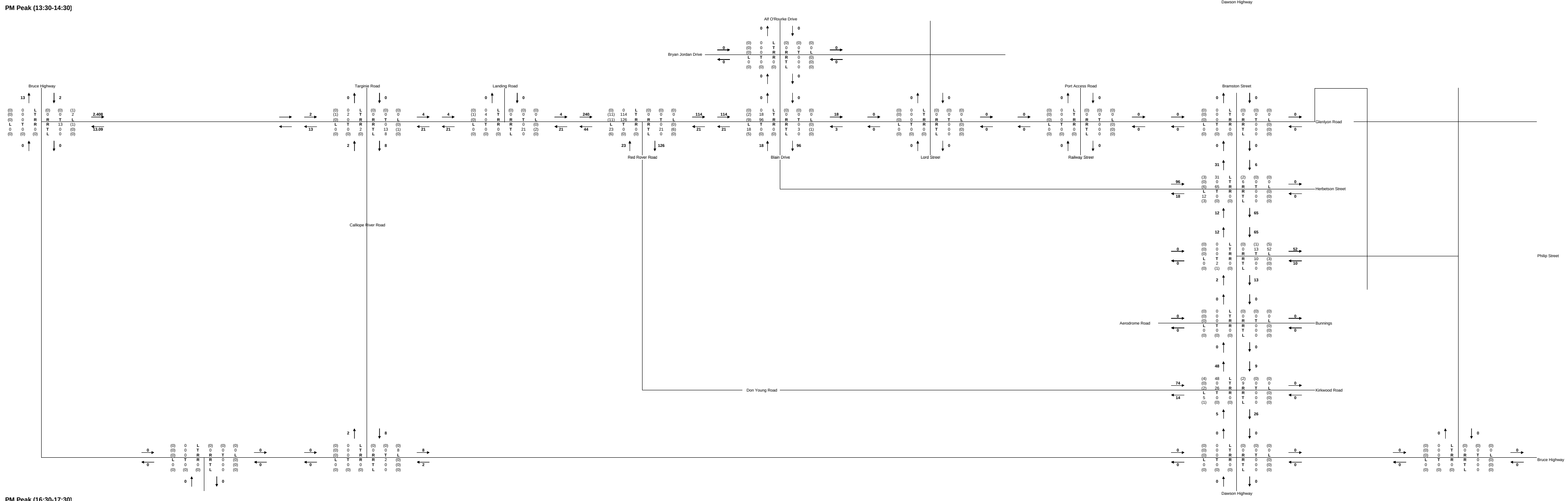
AM Peak (6:00-7:00)



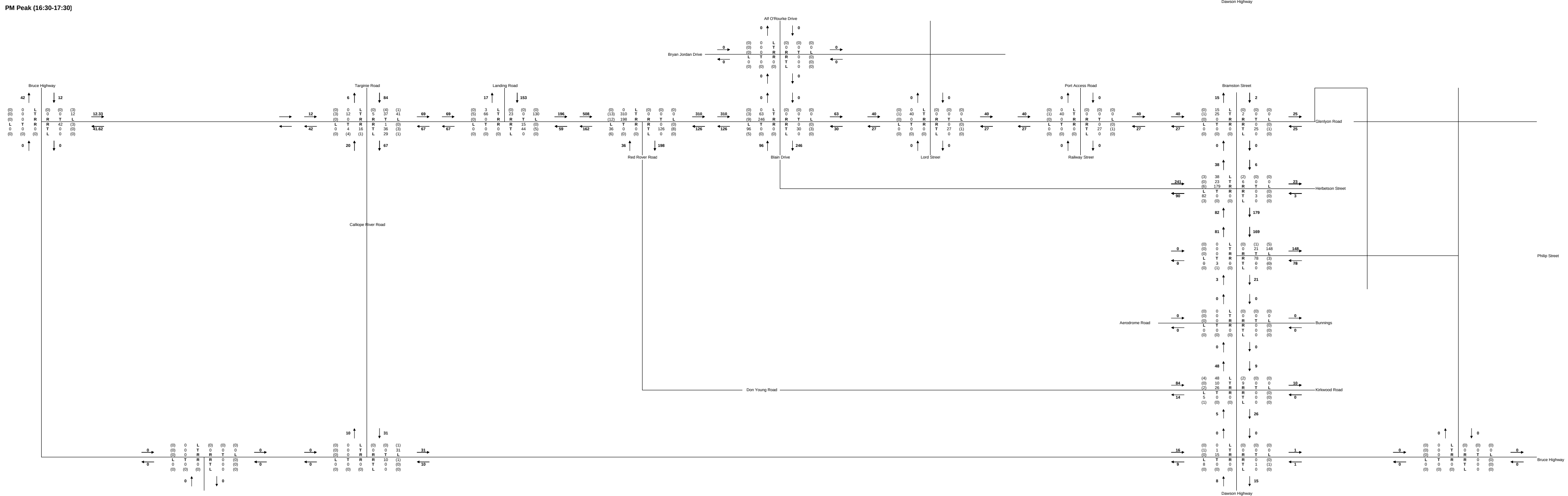
AM Peak (7:45-8:45)



PM Peak (13:30-14:30)



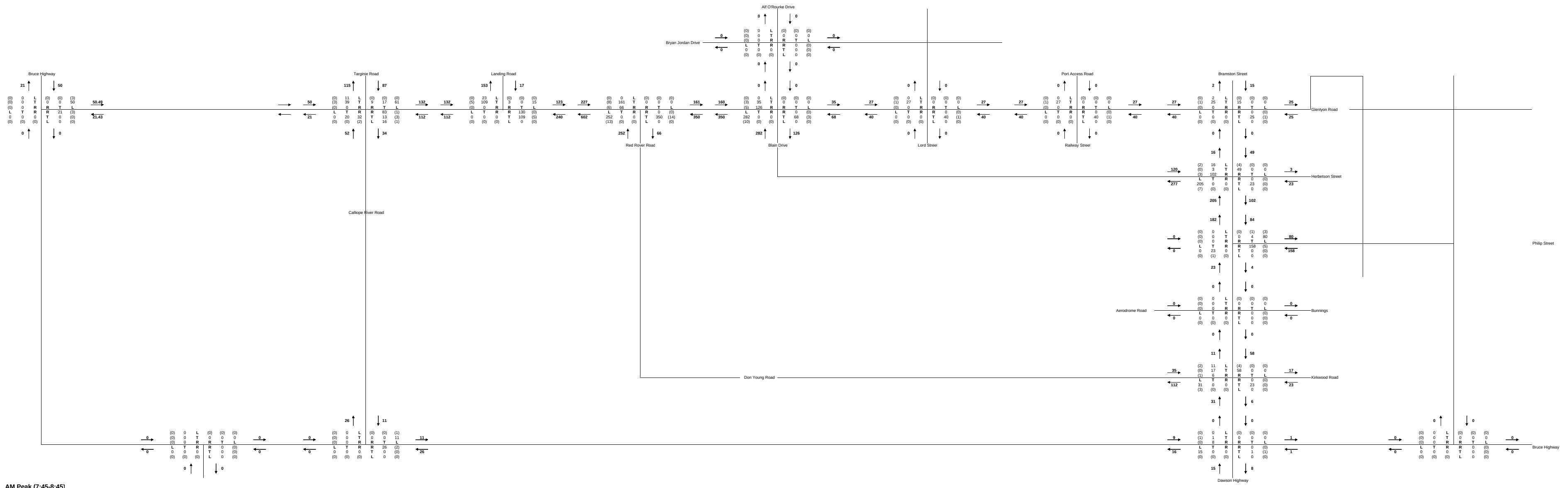
PM Peak (16:30-17:30)



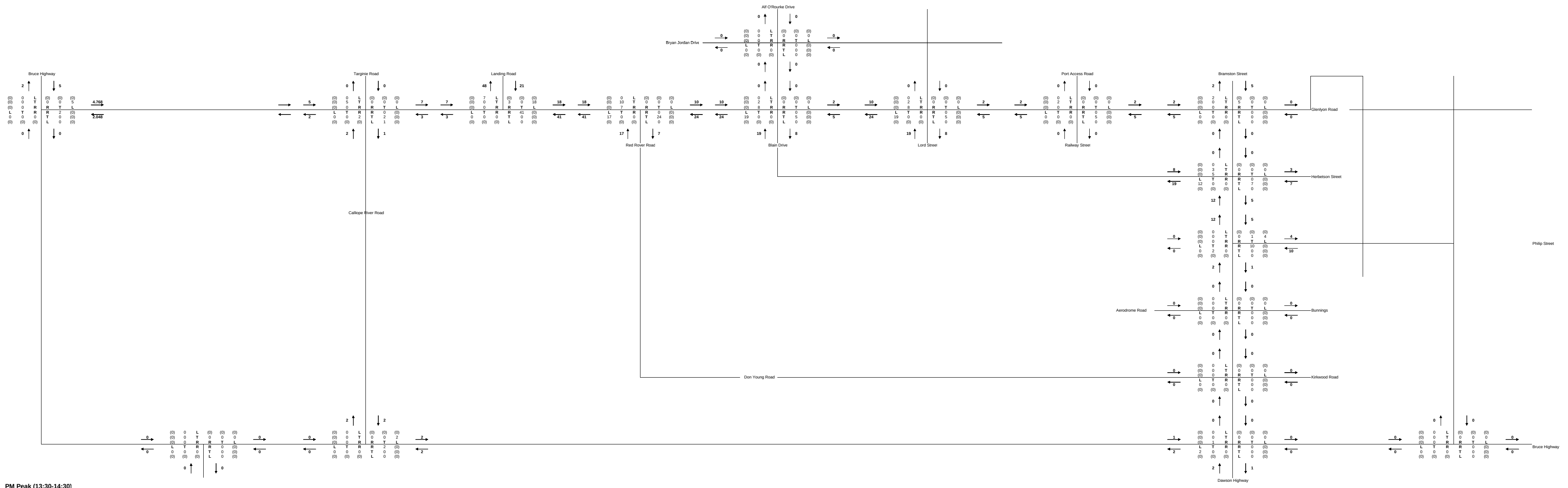
2019 Cummulative Impact Traffic Total

LEGEND
100 Total Volume
(10) Heavy Vehilce Volume

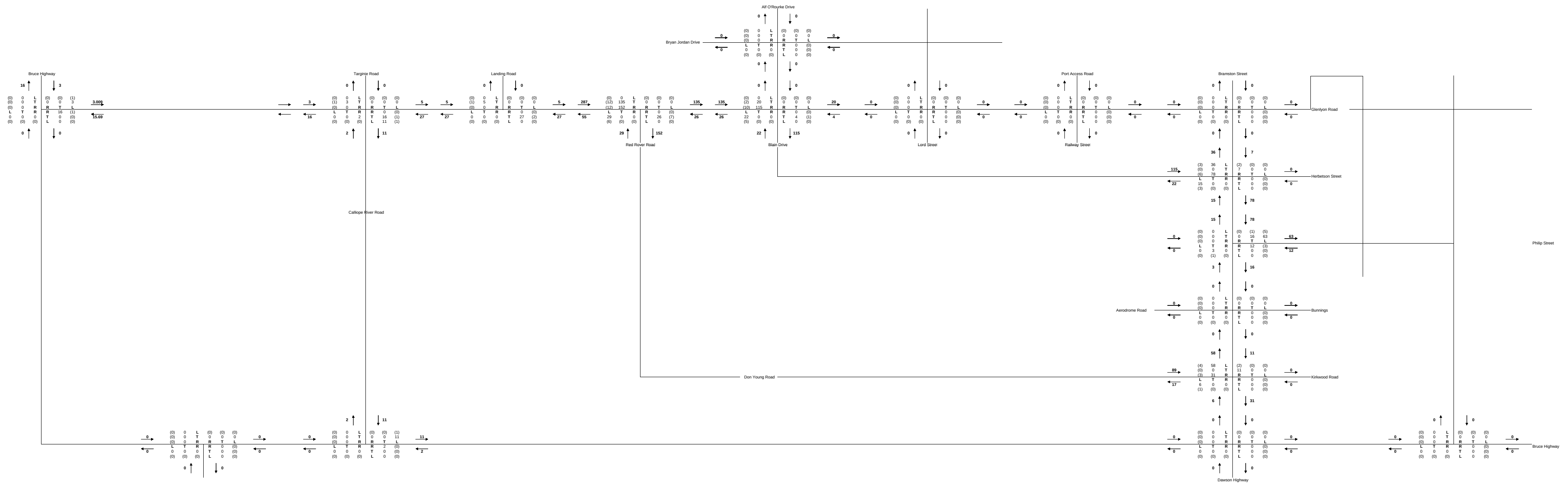
AM Peak (6:00-7:00)



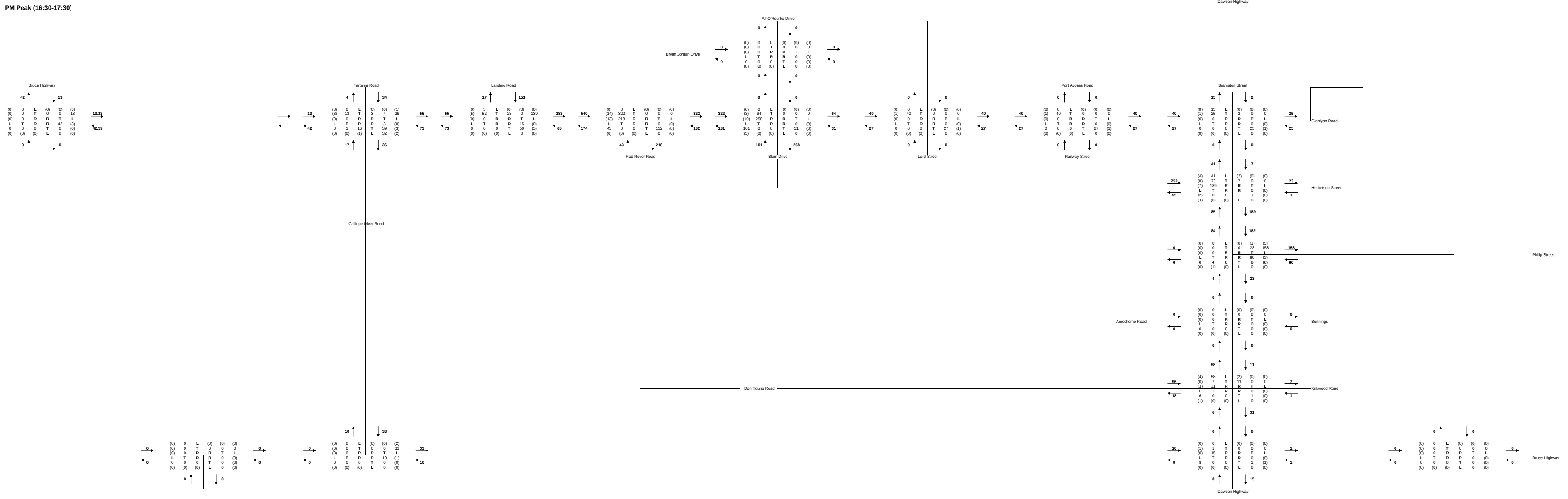
AM Peak (7:45-8:45)



PM Peak (13:30-14:30)



PM Peak (16:30-17:30)

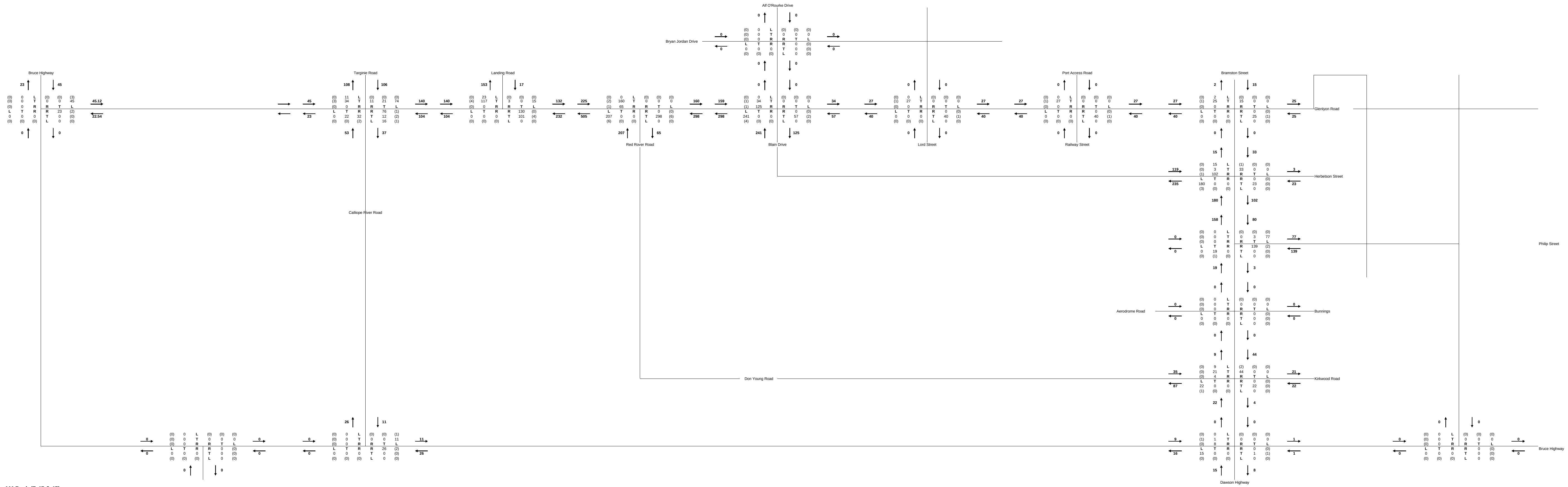


2020 Cummulative Impact Traffic Total

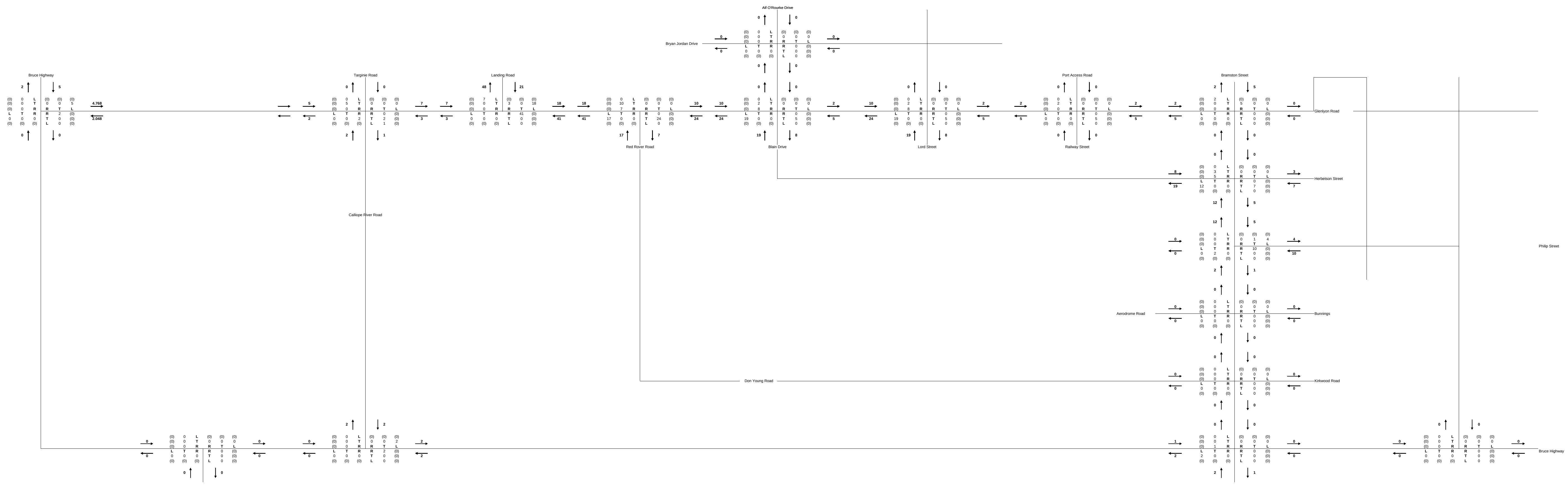
LEGEND

100 Total Volume
(10) Heavy Vehicle Volume

AM Peak (6:00-7:00)

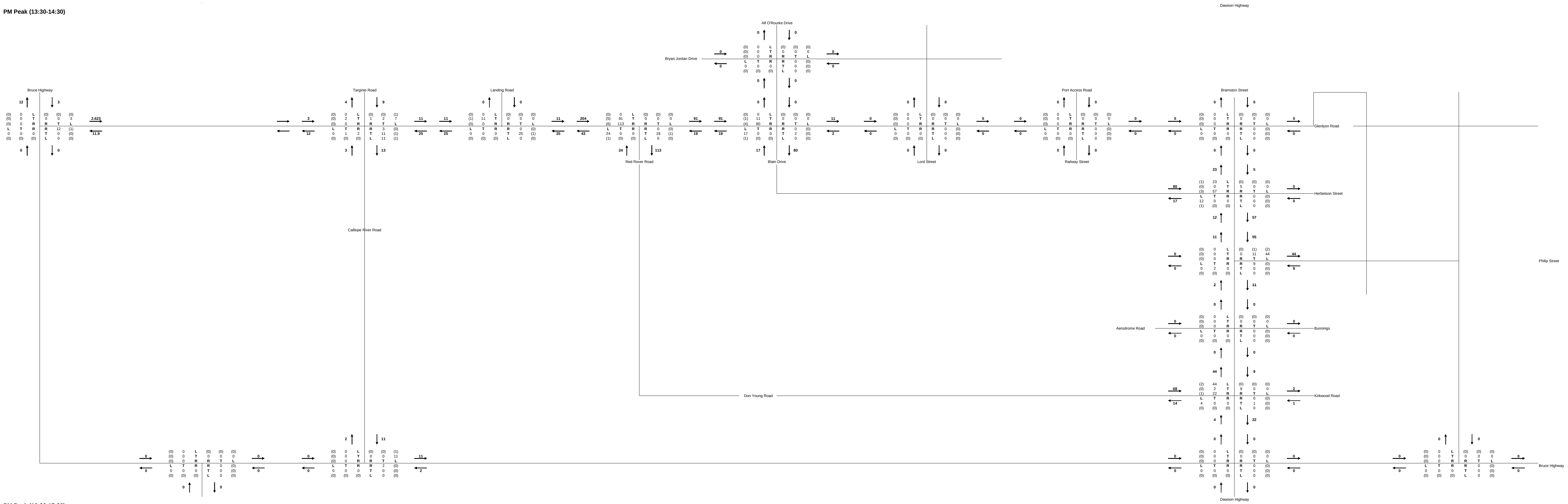


AM Peak (7:45-8:45)

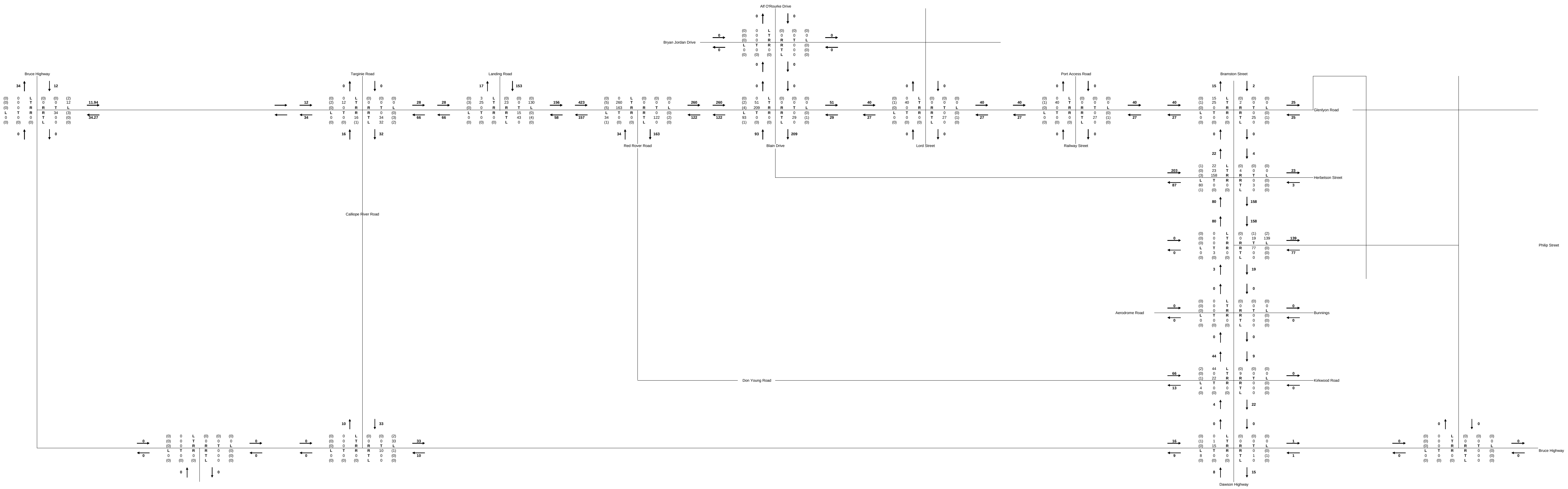


Cardno Eppell Olsen

PM Peak (13:30-14:30)



PM Peak (16:30-17:30)



SUMMARY of CUMMULATIVE PROJECTS

Developments	Name	Construction														Operation																							
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
1	Aldoga																																						
2	WICT																																						
3	Nickel																																						
4	Curtis LNG																																						

Counts available
construction/operation works

Gladstone Pacific Nickel http://www.dip.qld.gov.au/projects/mining-and-mineral-processing/nickel/gladstone-pacific-nickel-refinery.html
Cladstone Steel Making Facility http://www.dip.qld.gov.au/projects/mining-and-mineral-processing/steel/gladstone-steel-making-facility.html
Moura-Aldoga Rail http://www.dip.qld.gov.au/projects/transport/rail/moura-link-aldoga-rail.html
Fishermans Island Expansion http://www.dip.qld.gov.au/projects/transport/harbours-and-ports/fishermans-landing-port-expansion.html
Port of Gladstone Dredging http://www.dip.qld.gov.au/projects/transport/harbours-and-ports/port-of-gladstone-western-basin-strategic-dredging-and-disposal-project.html
WICT http://www.dip.qld.gov.au/projects/mining-and-mineral-processing/coal/wiggins-island-coal-terminal.html
Arrow Pipeline http://www.dip.qld.gov.au/projects/energy/gas/central-queensland-gas-pipeline.html
GLNG http://www.dip.qld.gov.au/projects/energy/gas/gladstone-liquefied-natural-gas-project.html
Curtis LNG Project http://www.dip.qld.gov.au/projects/energy/gas/queensland-curtis-lng-project.html
Shell LNG Project http://www.dip.qld.gov.au/projects/energy/gas/shell-australia-lng-project.html
Aldoga Aluminium Smelter http://www.dip.qld.gov.au/projects/mining-and-mineral-processing/bauxite-and-aluminium/aldoga-aluminium-smelter.html
Boyune Island Aluminium Smelter http://www.dip.qld.gov.au/projects/mining-and-mineral-processing/bauxite-and-aluminium/boyne-island-aluminium-smelter.html

Background Parameters

	Road	Section	Direction	Seal Width (m)	Link Width (m)	Width Difference (m)	Length (km)	Count Year	Total Volume (vpd)	Classification: Light Vehicle %	Truck/Bus %	Articulated %	Road Train %	Heavy Vehicle %	Total Heavy Vehicle volume (vpd)	Annual HV Growth	Base Year	Growth Type	Total Base Year Heavy Vehicle Volume (vpd)	ESA/Heavy Vehicle Ratio	Total Base Year ESA Load	Start Chainage	End Chainage	Roughness
1	Dawson Highway 46A	Gladstone-Mt Larcom Road to Breslin Street	Southbound (G)	11	9	-2.0	1.50	2006	7,010	96.13%	3.16%	0.65%	0.06%	3.87%	271	3.00%	2009	Cumulative	296	3.20	346,245	0.0	1.5	79
2	Dawson Highway 46A	Gladstone-Mt Larcom Road to Breslin Street	Northbound (A)	11	9	-2.0	1.50	2006	5,977	97.75%	1.77%	0.40%	0.08%	2.25%	134	3.00%	2009	Cumulative	147	3.20	171,641	1.5	0.0	79
3	Dawson Highway 46A	Breslin Street to Blain Drive	Southbound (G)	11	16	5.0	0.70	2006	10,836	97.44%	2.17%	0.30%	0.09%	2.56%	277	3.00%	2009	Cumulative	303	3.20	354,049	1.5	2.2	59
4	Dawson Highway 46A	Breslin Street to Blain Drive	Northbound (A)	11	16	5.0	0.70	2006	9,912	96.53%	3.02%	0.38%	0.07%	3.47%	344	3.00%	2009	Cumulative	376	3.20	438,981	2.2	1.5	59
5	Dawson Highway 46A	Blain Drive to Philip Street	Southbound (G)	11	16	5.0	0.90	2006	12,269	96.43%	3.05%	0.40%	0.12%	3.57%	438	3.00%	2009	Cumulative	479	3.20	559,026	2.2	3.1	66
6	Dawson Highway 46A	Blain Drive to Philip Street	Northbound (A)	11	16	5.0	0.90	2006	11,949	91.91%	7.45%	0.50%	0.14%	8.09%	967	3.00%	2009	Cumulative	1,056	3.20	1,233,771	3.1	2.2	66
7	Dawson Highway 46A	Philip Street to Penda Avenue	Southbound (G)	11	16	5.0	1.30	2006	13,377	96.76%	2.89%	0.25%	0.10%	3.24%	433	3.00%	2009	Cumulative	474	3.20	553,170	3.1	4.4	76
8	Dawson Highway 46A	Philip Street to Penda Avenue	Northbound (A)	11	16	5.0	1.30	2006	14,257	96.36%	3.16%	0.32%	0.16%	3.64%	519	3.00%	2009	Cumulative	567	3.20	662,345	4.4	3.1	76
9	Dawson Highway 46A	Penda Avenue to Chapman Drive	Southbound (G)	11	16	5.0	0.80	2006	10,630	97.69%	2.16%	0.13%	0.02%	2.31%	246	3.00%	2009	Cumulative	268	3.20	313,401	4.4	5.2	54
10	Dawson Highway 46A	Penda Avenue to Chapman Drive	Northbound (A)	11	16	5.0	0.80	2006	9,914	96.37%	3.11%	0.36%	0.16%	3.63%	360	3.00%	2009	Cumulative	393	3.20	459,314	5.2	4.4	54
11	Dawson Highway 46A	Chapman Drive to Don Young Drive	Southbound (G)	11	9	-2.0	3.20	2006	2,020	94.10%	3.99%	0.94%	0.97%	5.90%	119	3.00%	2009	Cumulative	130	3.20	152,110	5.2	8.4	51
	Dawson Highway 46A	Chapman Drive to Don Young Drive	Northbound (A)	11	9	-2.0	3.20	2006	2,971	94.23%	3.94%	0.99%	0.84%	5.77%	171	3.00%	2009	Cumulative	187	3.20	218,793	8.4	5.2	51
13	Dawson Highway 46A	Don Young Drive to Harvey Road	Southbound (G)	11	9	-2.0	1.90	2006	2,820	94.10%	3.99%	0.94%	0.97%	5.90%	166	3.00%	2009	Cumulative	182	3.20	212,352	8.4	10.3	54
14	Dawson Highway 46A	Don Young Drive to Harvey Road	Northbound (A)	11	9	-2.0	1.90	2006	2,971	94.23%	3.94%	0.99%	0.84%	5.77%	171	3.00%	2009	Cumulative	187	3.20	218,793	10.3	8.4	54
15	Dawson Highway 46A	Harvey Road to Bruce Highway	Southbound (G)	11	9	-2.0	8.70	2006	2,137	92.04%	4.93%	1.81%	1.22%	7.96%	170	3.00%	2009	Cumulative	186	3.20	217,106	10.3	19.0	79
16	Dawson Highway 46A	Harvey Road to Bruce Highway	Northbound (A)	11	9	-2.0	8.70	2006	2,112	92.07%	4.82%	1.92%	1.19%	7.93%	167	3.00%	2009	Cumulative	183	3.20	213,758	19.0	10.3	79
17	Dawson Highway 46A	Bruce Highway to Drynan Drive	Southbound (G)	11	9	-2.0	2.75	2006	2,354	91.02%	5.34%	2.09%	1.55%	8.98%	211	3.00%	2009	Cumulative	231	3.20	269,797	19.0	21.8	48
18	Dawson Highway 46A	Bruce Highway to Drynan Drive	Northbound (A)	11	9	-2.0	2.75	2006	2,353	90.66%	5.41%	2.40%	1.53%	9.34%	220	3.00%	2009	Cumulative	240	3.20	280,494	21.8	19.0	48
19	Dawson Highway 46A	Drynan Drive to Gladstone-Monto Road	Westbound (G)	9	9	0.0	3.94	2006	827	87.65%	6.99%	3.06%	2.30%	12.35%	102	3.00%	2009	Cumulative	112	3.20	130,355	21.8	25.7	60
20	Dawson Highway 46A	Drynan Drive to Gladstone-Monto Road	Eastbound (A)	9	9	0.0	3.94	2006	827	86.55%	6.94%	3.94%	2.57%	13.45%	111	3.00%	2009	Cumulative	122	3.20	141,965	25.7	21.8	60
21	Dawson Highway 46A	Gladstone-Monto Road to Access to Pipeline Camp 4	Westbound (G)	9	8	-1.0	23.31	2006	464	81.01%	8.99%	5.15%	4.85%	18.99%	88	3.00%	2009	Cumulative	96	3.20	112,460	25.7	49.0	60
22	Dawson Highway 46A	Access to Pipeline Camp 4 to Gladstone-Monto Road	Eastbound (A)	9	8	-1.0	23.31	2006	465	81.72%	7.76%	5.98%	4.54%	18.28%	85	3.00%	2009	Cumulative	93	3.20	108,488	49.0	25.7	60
	Dawson Highway 46A	Access to Pipline Camp 4 to New point 1	Westbound (G)	9	8	-1.0	23.50	2006	464	81.01%	8.99%	5.15%	4.85%	18.99%	88	3.00%	2009	Cumulative	96	3.20	112,460	49.0	72.5	60
24	Dawson Highway 46A	Access to Pipline Camp 4 to New point 1	Eastbound (A)	9	8	-1.0	23.50	2006	465	81.72%	7.76%	5.98%	4.54%	18.28%	85	3.00%	2009	Cumulative	93	3.20	108,488	72.5	49.0	60
25	Dawson Highway 46A	New to CSC/BSC Border	Westbound (G)	6	8	2.0	4.10	2006	464	81.01%	8.99%	5.15%	4.85%	18.99%	88	3.00%	2009	Cumulative	96	3.20	112,460	72.5	76.6	118
26	Dawson Highway 46A	New to CSC/BSC Border	Eastbound (A)	6	8	2.0	4.10	2006	465	81.72%	7.76%	5.98%	4.54%	18.28%	85	3.00%	2009	Cumulative	93	3.20	108,488	76.6	72.5	118
27	Dawson Highway 46A	CSC/BSC Border to New point 2	Westbound (G)	9	8	-1.0	8.40	2006	464	81.01%	8.99%	5.15%	4.85%	18.99%	88	3.00%	2009	Cumulative	96	3.20	112,460	76.6	85.0	60
28	Dawson Highway 46A	CSC/BSC Border to New point 2	Eastbound (A)	9	8	-1.0	8.40	2006	465	81.72%	7.76%	5.98%	4.54%	18.28%	85	3.00%	2009	Cumulative	93	3.20	108,488	85.0	76.6	60
29	Dawson Highway 46A	New point 2 to Argoon Road	Westbound (G)	9	8	-1.0	16.30	2006	464	81.01%	8.99%	5.15%	4.85%	18.99%	88	3.00%	2009	Cumulative	96	3.20	112,460	85.0	101.3	71
30	Dawson Highway 46A	New point 2 to Argoon Road	Eastbound (A)	9	8	-1.0	16.27	2006	465	81.72%	7.76%	5.98%	4.54%	18.28%	85	3.00%	2009	Cumulative	93	3.20	108,488	101.3	85.0	71
31	Dawson Highway 46A	Agoon Road to Callide Dam Road	Westbound (G)	8	8	0.0	12.72	2006	431	81.83%	8.60%	5.25%	4.32%	18.17%	78	3.00%	2009	Cumulative	86	3.20	99,951	101.3	114.0	80
32	Dawson Highway 46A	Agoon Road to Callide Dam Road	Eastbound (A)	8	8	0.0	12.72	2006	435	82.54%	7.15%	6.04%	4.27%	17.46%	76	3.00%	2009	Cumulative	83	3.20	96,937	114.0	101.3	80
33	Dawson Highway 46A	Callide Dam Road to Tognalini - Baldwin Road	Westbound (G)	10	9	-1.0	3.11	2006	634	84.04%	9.58%	3.78%	2.60%	15.96%	101	3.00%	2009	Cumulative	111	3.20	129,145	114.0	117.1	80
34	Dawson Highway 46A	Callide Dam Road to Tognalini - Baldwin Road	Eastbound (A)	10	8	-2.0	3.11	2006	651	85.18%	7.80%	4.32%	2.70%	14.82%	96	3.00%	2009	Cumulative	105	3.20	123,136	117.1	114.0	80
35	Dawson Highway 46A	Tognalini - Baldwin Road to Biloela	Westbound (G)	11	9	-2.0	2.90	2006	3,579	94.21%	4.34%	0.94%	0.51%	5.79%	207	3.00%	2009	Cumulative	226	3.20	264,481	117.1	120.0	106
36	Dawson Highway 46A	Tognalini - Baldwin Road to Biloela	Eastbound (A)	11	9	-2.0	2.92	2006	3,668	94.44%	4.09%	0.99%	0.48%	5.56%	204	3.00%	2009	Cumulative	223	3.20	260,291	120.0	117.1	106
37	Dawson Highway 46B	Biloela to Crowsdale Camboon Road	Westbound (G)	9	9	0.0	6.80	2007	878					15.53%	136	3.00%	2009	Cumulative	145	3.20	168,960	0	6.8	88
38	Dawson Highway 46B	Crewsdale Camboon Road to Bioela	Eastbound (A)	9	9	0.0	6.80	2007	878					15.53%	136	3.00%	2009	Cumulative	145	3.20	168,960	6.8	0	88
39	Dawson Highway 46B	Crowsdale Camboon Road to Point 1	Westbound (G)	9	9	0.0	3.20	2007	878					15.53%	136	3.00%	2009	Cumulative	145	3.20	168,960	6.8	10	88
40	Dawson Highway 46B	Point 1 to Crowsdale Camboon Road	Eastbound (A)	9	9	0.0	3.20	2007	878					15.53%	136	3.00%	2009	Cumulative	145	3.20	168,960	10	6.8	88
41	Dawson Highway 46B	Point 1 to Greycliffe Road	Westbound (G)	9	9	0.0	16.80	2007	878					15.53%	136	3.00%	2009	Cumulative	145	3.20	168,960	10	26.8	60
42	Dawson Highway 46B	Greycliffe Road to Point 1	Eastbound (A)	9	9	0.0	16.80	2007	878					15.53%	136	3.00%	2009	Cumulative	145	3.20	168,960	26.8	10	60
43	Dawson Highway 46B	Grecliffe Road to Banana	Westbound (G)	9	9	0.0	18.90	2007	619					16.89%	105	3.00%	2009	Cumulative	111	3.20	129,550	45.7	26.8	60
44	Dawson Highway 46B	Banana to Greycliffe Road	Eastbound (A)	9	9	0.0	18.90	2007	619					16.89%	105	3.00%	2009	Cumulative	111	3.20	129,550	26.8	45.7	60
45	Dawson Highway 46C	Banana to Moura Mine	Westbound (G)	9	9	0.0	7.80	2007	653					17.42%	114	3.00%	2009	Cumulative	121	3.20	140,846	0	7.8	79
46	Dawson Highway 46C	Moura Mine to Banana	Eastbound (A)	9	9	0.0	7.80	2007	653					17.42%	114	3.00%	2009	Cumulative	121	3.20	140,846	7.8	0	79
47	Dawson Highway 46C	Moura Mine to Moura Township	Westbound (G)	9	9	0.0	11.20	2007	830					14.20%	118	3.00%	2009	Cumulative	125	3.20	146,044	7.8	19	76
48	Dawson Highway 46C	Moura Township to Moura Mine	Eastbound (A)	9	9	0.0	11.20	2007	830					14.20%	118	3.00%	2009	Cumulative	125	3.20	146,044	19	7.8	76
49	Dawson Highway 46C	Moura Township to CH. 30	Westbound (G)	9	8	-1.0	11.00	2007	187					21.71%	40	3.00%	2009	Cumulative	43	3.20	50,171	19	30	81
50	Dawson Highway 46C	CH. 30 to Moura Township	Eastbound (A)	9	8	-1.0	11.00	2007	187					21.71%	40	3.00%	2009	Cumulative	43	3.20	50,171	30	19	81
51	Dawson Highway 46C	CH. 30 to CH. 41	Westbound (G)	6	8	2.0	11.00	2007	187					21.71%	40	3.00%	2009	Cumulative	43	3.20	50,171	30	41	117
52	Dawson Highway 46C	CH. 41 to CH. 30	Eastbound (A)	6	8	2.0	11.00	2007	187					21.71%	40	3.00%	2009	Cumulative	43	3.20	50,171	41	30	117
53	Dawson Highway 46C	CH. 41 to District Boundary	Westbound (G)	9	8	-1.0	4.00	2007	187					21.71%	40	3.00%	2009	Cumulative	43	3.20	50,171	41	45	85
54	Dawson Highway 46C	Boundary to CH. 41	Eastbound (A)	9	8	-1.0	4.00	2007	187					21.71%	40	3.00%	2009	Cumulative	43	3.20	50,171	45	41	85
55	Gladstone-Mt Larcom Rd	Dawspn Highway to Hilderbrand Street	Westbound (G)	11	9	-2.0	1.40	2006	4,458	88.62%	6.44%	2.51%	2.43%	11.38%	507	3.00%	2009	Cumulative	554	3.20	647,496	0	1.4	105
56	Gladstone-Mt Larcom Rd	Dawspn Highway to Hilderbrand Street	Eastbound (A)	11	9	-2.0	1.40	2006	4,200	87.56%	6.76%	2.87%	2.81%	12.44%	522	3.00%	2009	Cumulative	571	3.20	666,844	1.4	0	105
57	Gladstone-Mt Larcom Rd	Hilderbrand Street to Blain Drive	Westbound (G)	10	9	-1.0	1.90	2006	2,943	83.43%	10.94%	3.80%	1.83%	16.57%	488	3.00%	2009	Cumulative	533	3.20	622,397	1.4	3.3	62
58	Gladstone-Mt Larcom Rd	Hilderbrand Street to Blain Drive	Eastbound (A)	10	9	-1.0	1.90	2006	2,760	82.74%	11.08%	4.13%	2.05%	17.26%	476	3.00%	2009	Cumulative	521	3.20	608,001	3.3	1.4	62
59	Gladstone-Mt Larcom Rd	Blain Drive to Red Rover Road	Westbound (G)	12	9	-3.0	0.60	2006	3,828	85.31%	7.38%	5.40%	1.91%	14.69%	562	3.00%	2009	Cumulative	614	3.20	717,709	3.3	3.9	92
60	Gladstone-Mt Larcom Rd	Blain Drive to Red Rover Road	Eastbound (A)	12	9	-3.0	0.60	2006	3,798	83.82%	8.92%	5.21%	2.05%	16.18%	615	3.00%	2009	Cumulative	671	3.20	784,310	3.9	3.3	92
61	Gladstone-Mt Larcom Rd	Red Rover Road to Power Station	Westbound (G)	11	9	-2.0	0.70	2006	3,828	85.31%	7.38%	5.40%	1.91%	14.69%	562	3.00%	2009	Cumulative	614	3.20	717,709	3.9	4.6	64
62	Gladstone-Mt Larcom Rd	Red Rover Road to Power Station	Eastbound (A)	11	9	-2.0	0.70	2006	3,798	83.82%	8.92%	5.21%	2.05%	16.18%	615	3.00%	2009	Cumulative	671	3.20	784,310	4.6	3.9	64
63	Gladstone-Mt Larcom Rd	Power Station to Reid Road	Westbound (G)	10	9	-1.0	5.20	2006	2,578	82.92%	5.91%	8.15%	3.02%	17.08%	440	3.00%	2009	Cumulative	481	3.20	561,986	4.6	9.8	76
64	Gladstone-Mt Larcom Rd	Power Station to Reid Road	Eastbound (A)	10	9	-1.0	5.20	2006	2,622	82.56%	6.32%	7.87%	3.25%	17.44%	457	3.00%	2009	Cumulative	500	3.20	583,625	9.8	4.6	76
65	Gladstone-Mt Larcom Rd	Reid Road to Landing Road	Westbound (G)	10	9	-1.0	2.50	2006	2,578	82.92%	5.91%	8.15%	3.02%	17.08%	440	3.00%	2009	Cumulative	481	3.20	561,986	9.8	12.3	51
66	Gladstone-Mt Larcom Rd	Reid Road to Landing Road	Eastbound (A)	10	9	-1.0	2.50	2006	2,622	82.56%	6.32%	7.87%	3.25%	17.44%	457	3.00%	2009	Cumulative	500	3.20	583,625	12.3	9.8	51

67	Gladstone-Mt Larcom Rd	Landing Road to Targinnie Road	Westbound (G)	10	9	-1.0	4.00	2006	1,346	80.07%	6.45%	6.68%	6.80%	19.93%	268	3.00%	2009	Cumulative	293	3.20	342,379	12.3	16.3	51
68	Gladstone-Mt Larcom Rd	Landing Road to Targinnie Road	Eastbound (A)	10	9	-1.0	4.00	2006	1,401	78.34%	7.31%	7.29%	7.06%	21.66%	303	3.00%	2009	Cumulative	332	3.20	387,303	16.3	12.3	51
69	Gladstone-Mt Larcom Rd	Targinnie Road to Quarry Road	Westbound (G)	10	9	-1.0	2.70	2006	1,346	80.07%	6.45%	6.68%	6.80%	19.93%	268	3.00%	2009	Cumulative	293	3.20	342,379	16.3	19	51
70	Gladstone-Mt Larcom Rd	Targinnie Road to Quarry Road	Eastbound (A)	10	9	-1.0	2.70	2006	1,401	78.34%	7.31%	7.29%	7.06%	21.66%	303	3.00%	2009	Cumulative	332	3.20	387,303	19	16.3	51
71	Gladstone-Mt Larcom Rd	Quarry Road to Bruce Highway	Westbound (G)	10	9	-1.0	13.10	2006	1,346	80.07%	6.45%	6.68%	6.80%	19.93%	268	3.00%	2009	Cumulative	293	3.20	342,379	19	32.1	51
72	Gladstone-Mt Larcom Rd	Quarry Road to Bruce Highway	Eastbound (A)	10	9	-1.0	13.10	2006	1,401	78.34%	7.31%	7.29%	7.06%	21.66%	303	3.00%	2009	Cumulative	332	3.20	387,303	32.1	19	51
73	Carnarvon Highway 24A	CH. 0.00 (NSW border) to CH. 10	Northbound (G)	9	8	-1.0	10.00	2007	152					19.45%	29	3.00%	2009	Cumulative	31	3.20	36,513	0.0	10.0	66
74	Carnarvon Highway 24A	CH. 10 to CH. 0.0 (NSW border)	Southbound (A)	9	8	-1.0	10.00	2007	152					19.45%	29	3.00%	2009	Cumulative	31	3.20	36,513	10.0	0.0	66
75	Carnarvon Highway 24A	CH. 10m to CH. 40 (Thallon)	Northbound (G)	6	8	2.0	30.00	2007	90					32.77%	29	3.00%	2009	Cumulative	31	3.20	36,546	10.0	40.0	96
76	Carnarvon Highway 24A	CH. 40 (Thallon) to CH. 10	Southbound (A)	6	8	2.0	30.00	2007	90					32.77%	29	3.00%	2009	Cumulative	31	3.20	36,546	40.0	10.0	96
77	Carnarvon Highway 24A	CH. 40 (Thallon) to CH. 74 (Ningdigully)	Northbound (G)	8	8	0.0	34.00	2007	111					25.03%	28	3.00%	2009	Cumulative	29	3.20	34,427	40.0	74.0	82
78	Carnarvon Highway 24A	CH. 74 (Nindigully) to CH. 40 (Thallon)	Southbound (A)	8	8	0.0	34.00	2007	111					25.03%	28	3.00%	2009	Cumulative	29	3.20	34,427	74.0	40.0	82
79	Carnarvon Highway 24A	CH. 74 (Nindigully) to CH. 111	Northbound (G)	7	8	1.0	37.00	2007	173					24.49%	42	3.00%	2009	Cumulative	45	3.20	52,499	74.0	111.0	83
80	Carnarvon Highway 24A	CH. 111 to CH.74 (Nindigully)	Southbound (A)	7	8	1.0	37.00	2007	173					24.49%	42	3.00%	2009	Cumulative	45	3.20	52,499	111.0	74.0	83
81	Carnarvon Highway 24A	CH. 111 to St George	Northbound (G)	8	8	0.0	7.00	2007	512					17.44%	89	3.00%	2009	Cumulative	95	3.20	110,537	111.0	118.0	83
82	Carnarvon Highway 24A	St George to CH. 111	Southbound (A)	8	8	0.0	7.00	2007	512					17.44%	89	3.00%	2009	Cumulative	95	3.20	110,537	118.0	111.0	83
83	Carnarvon Highway 24B	CH. 0.00 (St George) to CH. 4	Northbound (G)	8	8	0.0	4.00	2007	662					12.56%	83	3.00%	2009	Cumulative	88	3.20	102,952	0	4	79
84	Carnarvon Highway 24B	CH. 4 to CH. 0.0 (St George)	Southbound (A)	8	8	0.0	4.00	2007	662					12.56%	83	3.00%	2009	Cumulative	88	3.20	102,952	4	0	79
85	Carnarvon Highway 24B	CH. 4m to CH. 9	Northbound (G)	7	8	1.0	5.00	2007	396					19.65%	78	3.00%	2009	Cumulative	83	3.20	96,422	4	9	55
86	Carnarvon Highway 24B	CH. 9 to CH. 56	Southbound (A)	7	8	1.0	5.00	2007	396					19.65%	78	3.00%	2009	Cumulative	83	3.20	96,422	9	4	55
87	Carnarvon Highway 24B	CH. 9 to CH. 4	Northbound (G)	6	8	2.0	47.00	2007	132					28.39%	37	3.00%	2009	Cumulative	40	3.20	46,436	9	56	76
88	Carnarvon Highway 24B	CH. 56 to CH. 9	Southbound (A)	6	8	2.0	47.00	2007	132					28.39%	37	3.00%	2009	Cumulative	40	3.20	46,436	56	9	76
89	Carnarvon Highway 24B	CH. 56 to CH. 116 (Surat)	Northbound (G)	7	8	1.0	60.00	2007	111					30.96%	34	3.00%	2009	Cumulative	36	3.20	42,583	56	116	82
90	Carnarvon Highway 24B	CH. 116 (Surat) to CH. 56	Southbound (A)	7	8	1.0	60.00	2007	111					30.96%	34	3.00%	2009	Cumulative	36	3.20	42,583	116	56	82
91	Carnarvon Highway 24C	CH. 0.00 (Surat) to CH. 33	Northbound (G)	7	8	1.0	33.00	2007	184					25.25%	46	3.00%	2009	Cumulative	49	3.20	57,570	0	33	96
92	Carnarvon Highway 24C	CH. 33 to CH. 0.0 (Surat)	Southbound (A)	7	8	1.0	33.00	2007	184					25.25%	46	3.00%	2009	Cumulative	49	3.20	57,570	33	0	96
93	Carnarvon Highway 24C	CH. 33m to CH. 73 (Roma)	Northbound (G)	8	8	0.0	40.00	2007	213					23.53%	50	3.00%	2009	Cumulative	53	3.20	61,958	33	73	90
94	Carnarvon Highway 24C	CH. 73 (Roma) to CH. 33	Southbound (A)	8	8	0.0	40.00	2007	213					23.53%	50	3.00%	2009	Cumulative	53	3.20	61,958	73	33	90
95	Carnarvon Highway 24D	CH. 0.00 (Roma) to CH. 3	Northbound (G)	10	9	-1.0	3.00	2007	900					17.57%	158	3.00%	2009	Cumulative	168	3.20	195,835	0	3	111
96	Carnarvon Highway 24D	CH. 3 to CH. 0.0 (Roma)	Southbound (A)	10	9	-1.0	3.00	2007	900					17.57%	158	3.00%	2009	Cumulative	168	3.20	195,835	3	0	111
97	Carnarvon Highway 24D	CH. 3m to CH. 18 Roma - Taroom Road	Northbound (G)	9	9	0.0	15.00	2007	527					28.60%	151	3.00%	2009	Cumulative	160	3.20	186,587	3	18	91
98	Carnarvon Highway 24D	CH. 18 Roma - Taroom Road to CH. 3	Southbound (A)	9	9	0.0	15.00	2007	527					28.60%	151	3.00%	2009	Cumulative	160	3.20	186,587	18	3	91
99	Carnarvon Highway 24D	Roma - Taroom Road to Injune	Northbound (G)	9	8	-1.0	72.00	2007	292					28.75%	84	3.00%	2009	Cumulative	89	3.20	104,025	18	90	85
100	Carnarvon Highway 24D	Injune to Roma - Taroom Road	Southbound (A)	9	8	-1.0	72.00	2007	292					28.75%	84	3.00%	2009	Cumulative	89	3.20	104,025	90	18	85
101	Carnarvon Highway 24E	CH. 0.00 (Injune) to Fairview Field Access CH25.00	Northbound (G)	7	8	1.0	25.00	2007	168					36.38%	61	3.00%	2009	Cumulative	65	3.20	75,734	0	25	92
102	Carnarvon Highway 24E	Fairview Field Access CH. 25.00 to CH. 0.0 (Injune)	Southbound (A)	7	8	1.0	25.00	2007	168					36.38%	61	3.00%	2009	Cumulative	65	3.20	75,734	25	0	92
103	Carnarvon Highway 24E	Fairview Field Access to CH. 69 Boundary with Emerald	Northbound (G)	7	8	1.0	44.00	2007	168					36.38%	61	3.00%	2009	Cumulative	65	3.20	75,734	25	69	92
104	Carnarvon Highway 24E	CH. 69 to Fairview Field Access	Southbound (A)	7	8	1.0	44.00	2007	168					36.38%	61	3.00%	2009	Cumulative	65	3.20	75,734	69	25	92
105	Carnarvon Highway 24E	CH. 69 to CH. 86 Access to Camp 1	Northbound (G)	8	8	0.0	17.00	2007	195					31.80%	62	3.00%	2009	Cumulative	66	3.20	76,839	69	86	76
106	Carnarvon Highway 24E	CH. 86 Access to Camp 1 to CH. 69	Southbound (A)	8	8	0.0	17.00	2007	195					31.80%	62	3.00%	2009	Cumulative	66	3.20	76,839	86	69	76
107	Carnarvon Highway 24E	CH. 86 Access to Camp 1 to CH. 111	Northbound (G)	8	8	0.0	25.00	2007	195					31.80%	62	3.00%	2009	Cumulative	66	3.20	76,839	86	111	76
108	Carnarvon Highway 24E	CH. 111 to CH. 86 Access to Camp 1	Southbound (A)	8	8	0.0	25.00	2007	195					31.80%	62	3.00%	2009	Cumulative	66	3.20	76,839	111	86	76
109	Carnarvon Highway 24E	CH. 111 to CH.172 (Rollestone)	Northbound (G)	8	8	0.0	61.00	2007	204					34.77%	71	3.00%	2009	Cumulative	75	3.20	87,677	111	172	75
110	Carnarvon Highway 24E	CH. 172 (Rollestone) to CH.111	Southbound (A)	8	8	0.0	61.00	2007	204					34.77%	71	3.00%	2009	Cumulative	75	3.20	87,677	172	111	75
111	Leichhardt Highway 26A	CH. 00 Capicorn Highway to Burnett Highway	Southbound (G)	9	9	0.0	25.70	2007	436					27.52%	120	3.00%	2009	Cumulative	127	3.20	148,680	0.0	25.7	59
112	Leichhardt Highway 26A	Burnett Highway to Capicorn Highway	Northbound (A)	9	9	0.0	25.70	2007	436					27.52%	120	3.00%	2009	Cumulative	127	3.20	148,680	25.7	0.0	59
113	Leichhardt Highway 26A	Burnett Highway to CH. 51.1	Southbound (G)	9	8	-1.0	25.40	2007	327					23.99%	78	3.00%	2009	Cumulative	83	3.20	97,206	25.7	51.1	59
114	Leichhardt Highway 26A	CH. 51.1 to Burnett Highway	Northbound (A)	9	8	-1.0	25.40	2007	327					23.99%	78	3.00%	2009	Cumulative	83	3.20	97,206	51.1	25.7	59
115	Leichhardt Highway 26A	CH. 51.1 to CH. 62.6	Southbound (G)	6	8	2.0	11.50	2007	327					23.99%	78	3.00%	2009	Cumulative	83	3.20	97,206	51.1	62.6	82
116	Leichhardt Highway 26A	CH. 62.6 to CH. 51.1	Northbound (A)	6	8	2.0	11.50	2007	327					23.99%	78	3.00%	2009	Cumulative	83	3.20	97,206	62.6	51.1	82
117	Leichhardt Highway 26A	CH. 62.6 to CH. 86.0 Fairview Road	Southbound (G)	9	8	-1.0	23.40	2007	335					24.67%	83	3.00%	2009	Cumulative	88	3.20	102,407	62.6	86.0	62
118	Leichhardt Highway 26A	CH. 86.0 Fairview Road to CH. 62.6	Northbound (A)	9	8	-1.0	23.40	2007	335					24.67%	83	3.00%	2009	Cumulative	88	3.20	102,407	86.0	62.6	62
119	Leichhardt Highway 26A	CH. 86.0 Fairview Road to CH. 88.0	Southbound (G)	9	8	-1.0	2.00	2007	323					24.67%	80	3.00%	2009	Cumulative	84	3.20	98,586	86.0	88.0	62
120	Leichhardt Highway 26A	CH. 88.0 to CH.86.0	Northbound (A)	9	8	-1.0	2.00	2007	323					24.67%	80	3.00%	2009	Cumulative	84	3.20	98,586	88.0	86.0	62
121	Leichhardt Highway 26A	CH. 88.0 to CH. 99.0 (Camp 3)	Southbound (G)	9	8	-1.0	11.00	2007	332					25.41%	84	3.00%	2009	Cumulative	89	3.20	104,535	88.0	99.0	74
122	Leichhardt Highway 26A	CH. 99.0 (Camp 3) to CH. 88.0	Northbound (A)	9	8	-1.0	11.00	2007	332					25.41%	84	3.00%	2009	Cumulative	89	3.20	104,535	99.0	88.0	74
123	Leichhardt Highway 26A	CH. 99.0 to Banana CH. 105.2	Southbound (G)	9	8	-1.0	6.20	2007	323					29.43%	95	3.00%	2009	Cumulative	101	3.20	117,608	99.0	105.2	93
124	Leichhardt Highway 26A	Banana CH. 105.2 to CH. 99.0	Northbound (A)	9	8	-1.0	6.20	2007	323					29.43%	95	3.00%	2009	Cumulative	101	3.20	117,608	105.2	99.0	93
125	Leichhardt Highway 26A	Banana CH. 105.2 to CH. 117.0	Southbound (G)	9	8	-1.0	11.80	2007	332					29.43%	98	3.00%	2009	Cumulative	104	3.20	121,073	105.2	117.0	84
126	Leichhardt Highway 26A	CH. 117.0 to Banana CH. 105.2	Northbound (A)	9	8	-1.0	11.80	2007	332					29.43%	98	3.00%	2009	Cumulative	104	3.20	121,073	117.0	105.2	84
127	Leichhardt Highway 26A	CH. 117.0 to CH. 124.0	Southbound (G)	6	8	2.0	7.00	2007	332					29.43%	98	3.00%	2009	Cumulative	104	3.20	121,073	117.0	124.0	104
128	Leichhardt Highway 26A	CH. 124.0 to CH. 117.0	Northbound (A)	6	8	2.0	7.00	2007	332					29.43%	98	3.00%	2009	Cumulative	104	3.20	121,073	124.0	117.0	104
129	Leichhardt Highway 26A	Theodore CH. 162.3 to CH.124.0	Westbound (G)	9	8	-1.0	38.30	2007	332					29.43%	98	3.00%	2009	Cumulative	104	3.20	121,073	124.0	162.3	100
130	Leichhardt Highway 26A	CH.124.0 to Theodore CH. 162.4	Eastbound (A)	9	8	-1.0	38.30	2007	332					29.43%	98	3.00%	2009	Cumulative	104	3.20	121,073	162.3	124.0	100
131	Leichhardt Highway 26A	Theodore CH. 162.3 to CH. 124.0	Westbound (G)	9	8	-1.0	8.00	2007	363					21.12%	77	3.00%	2009	Cumulative	81	3.20	94,999	162.3	170.3	60
132	Leichhardt Highway 26A	Theodore CH. 162.3 to Glenmoral Roundstone Road	Eastbound (A)	9	8	-1.0	8.00	2007	363					21.12%	77	3.00%	2009	Cumulative	81	3.20	94,999	170.3	162.3	60
133	Leichhardt Highway 26A	Glenmoral Roundstone Road to Isla Delusion Road	Westbound (G)	9	8	-1.0	13.70	2007	246					28.81%	71	3.00%	2009	Cumulative	75	3.20	87,820	170.3	184.0	60
134	Leichhardt Highway 26A	Isla Delusion Road to Glenmoral Roundstone Road	Eastbound (A)	9	8	-1.0	13.70	2007	246					28.81%	71	3.00%	2009	Cumulative	75	3.20	87,820	184.0	170.3	60
135	Leichhardt Highway 26A	Isla Delusion Road to District Boundary	Westbound (G)	9	8	-1.0	8.20	2007	246					28.81%	71	3.00%	2009	Cumulative	75	3.20	87,820	184.0	192.2	97
136	Leichhardt Highway 26A	District Boundary to Isla Delusion Road	Eastbound (A)	9	8	-1.0	8.20	2007	246					28.81%	71	3.00%	2009	Cumulative	75	3.20	87,820	192.2	184	97
137	Bruce Highway	Gladstone-Beraraby Road to Dawson Highway	Westbound (G)	10	10	0.0	11.60	2006	1,919	79.05%	6.13%	9.38%	5.44%	20.95%	402	3.00%	2009	Cumulative	439	2.90	465,009	0	11.6	62
138	Bruce Highway	Gladstone-Beraraby Road to Dawson Highway	Eastbound (A)	10	10	0.0	11.60	2006	1,959	77.70%	6.34%	9.87%	6.09%	22.30%	437	3.00%	2009	Cumulative	477	2.90	505,291	11.6	0	62
139	Bruce Highway	Dawson Highway to Calliope River Road	Westbound (G)	12	10	-2.0	7.10	2006	1,539	75.87%	6.36%	11.12%	6.65%	24.13%	371	3.00%	2009	Cumulative	406	2.90	429,535	11.6	18.7	72
140	Bruce Highway	Dawson Highway to Calliope River Road	Eastbound (A)	12	10	-2.0	7.10	2006	1,508	74.17%	6.09%	11.96%	7.78%	25.83%	390	3.00%	2009	Cumulative	426	2.90	450,535	18.7	11.6	72
141	Bruce Highway	Calliope River Road to Gladstone Mt-Larcom Road	Westbound (G)	9	10	1.0	26.70	2006	1,539	75.87%	6.36%	11.12%	6.65%	24.13%	371	3.00%	2009	Cumulative	406	2.90	429,535	18.7	45.4	70
142	Bruce Highway	Calliope River Road to Gladstone Mt-Larcom Road	Eastbound (A)	9	10	1.0	26.70	2006	1,508	74.17%	6.09%	11.96%	7.78%	25.83%	390	3.00%	2009	Cumulative	426	2.90	450,535	45.4	18.7	70
143	Bruce Highway	Gladstone-Mt Larcom Road to Bajool Port Alma Road	Westbound (G)	11	10	-1.0	39.90	2006	2,272	76.27%	6.63%	9.74%	7.36%	23.73%	539	3.00%	2009	Cumulative	589	2.90	623,604	45.4	85.3	62
144	Bruce Highway	Gladstone-Mt Larcom Road to Bajool Port Alma Road	Eastbound (A)	11	10	-1.0	39.90	2006	2,283	74.52%	7.14%	10.24%	8.10%	25.48%	582	3.00%	2009	Cumulative	636	2.90	672,834	85.3	45.4	62

145	Bruce Highway	Bajool Port Alma Road to Gavial-Gracemere Road	Westbound (G)	11	10	-1.0	23.70	2006	2,574	76.67%	6.88%	9.45%	7.00%	23.33%	601	3.00%	2009	Cumulative	656	2.90	694,586	85.3	109	66
146	Bruce Highway	Bajool Port Alma Road to Gavial-Gracemere Road	Eastbound (A)	11	10	-1.0	23.70	2006	2,563	76.52%	6.64%	9.56%	7.28%	23.48%	602	3.00%	2009	Cumulative	658	2.90	696,064	109	85.3	66
147	Bruce Highway	Gavial-Gracemere Road to Burnett Highway	Westbound (G)	11	10	-1.0	5.40	2006	2,515	73.14%	7.38%	11.85%	7.63%	26.86%	676	3.00%	2009	Cumulative	738	2.90	781,352	109	114.4	64
148	Bruce Highway	Gavial-Gracemere Road to Burnett Highway	Eastbound (A)	11	10	-1.0	5.40	2006	2,471	72.57%	7.31%	12.03%	8.09%	27.43%	678	3.00%	2009	Cumulative	741	2.90	783,973	114.4	109	64
149	Bruce Highway	Burnett Highway to Capricorn Highway	Westbound (G)	12	11	-1.0	2.60	2006	3,138	77.75%	6.51%	9.57%	6.17%	22.25%	698	3.00%	2009	Cumulative	763	2.90	807,580	114.4	117	71
150	Bruce Highway	Burnett Highway to Capricorn Highway	Eastbound (A)	12	11	-1.0	2.60	2006	3,112	76.93%	6.98%	9.65%	6.44%	23.07%	718	3.00%	2009	Cumulative	785	2.90	830,405	117	114.4	71
151	Bruce Highway	Capricorn Highway to Stanley Street	Westbound (G)	12	18	6.0	2.74	2006	9,245	88.70%	6.01%	3.65%	1.64%	11.30%	1,045	3.00%	2009	Cumulative	1,142	2.90	1,208,337	117	119.736	79
152	Bruce Highway	Capricorn Highway to Stanley Street	Eastbound (A)	12	18	6.0	2.74	2006	8,839	88.54%	5.99%	3.77%	1.70%	11.46%	1,013	3.00%	2009	Cumulative	1,107	2.90	1,171,629	119.736	117	79
153	Gladstone - Benaraby Road	CH.0.0 Dawson Highway CH. 0.00 to Sun valley Road CH. 0.645	Southbound (G)	12	16	4.0	0.65	2007	10,070	96.17%	3.16%	0.59%	0.08%	3.83%	386	3.00%	2009	Cumulative	409	3.20	477,909	0	0.645	66
154	Gladstone - Benaraby Road	Sun Valley Road CH. 0.645 to Dawson Highway CH.0.00	Northbound (A)	12	16	4.0	0.65	2007	9,769	96.52%	2.94%	0.48%	0.06%	3.48%	340	3.00%	2009	Cumulative	361	3.20	421,257	0.645	0	66
155	Gladstone - Benaraby Road	CH. 0.645 to Glenlyon Road CH. 2.159	Southbound (G)	12	9	-3.0	1.51	2007	6,784	95.98%	3.39%	0.56%	0.07%	4.02%	273	3.00%	2009	Cumulative	289	3.20	337,932	0.645	2.159	66
156	Gladstone - Benaraby Road	Glenlyon Road CH. 2.159 to CH. 0.645	Northbound (A)	12	9	-3.0	1.51	2007	7,007	95.98%	3.32%	0.61%	0.09%	4.02%	282	3.00%	2009	Cumulative	299	3.20	349,040	2.159	0.645	66
157	Gladstone - Benaraby Road	Glenlyon Road CH. 2.159 to French Street CH. 3.40	Southbound (G)	12	9	-3.0	1.24	2007	4,435	93.06%	4.86%	1.68%	0.40%	6.94%	308	3.00%	2009	Cumulative	327	3.20	381,391	2.159	3.4	93
158	Gladstone - Benaraby Road	French Street CH. 3.40 to Glenlyon Road CH. 2.159	Northbound (A)	12	9	-3.0	1.24	2007	4,861	92.95%	5.27%	1.43%	0.35%	7.05%	343	3.00%	2009	Cumulative	364	3.20	424,651	3.4	2.159	93
159	Gladstone - Benaraby Road	French Street CH. 3.40 to Glen Eden Drive CH. 5.70	Southbound (G)	12	9	-3.0	2.30	2007	4,435	93.06%	4.86%	1.68%	0.40%	6.94%	308	3.00%	2009	Cumulative	327	3.20	381,391	3.4	5.7	68
160	Gladstone - Benaraby Road	Glen Eden Drive CH. 5.70 to French Street CH. 3.40	Northbound (A)	12	9	-3.0	2.30	2007	4,861	92.95%	5.27%	1.43%	0.35%	7.05%	343	3.00%	2009	Cumulative	364	3.20	424,651	5.7	3.4	68
161	Gladstone - Benaraby Road	Glen Eden Drive CH. 5.70 to South Trees Drive CH. 7.30	Southbound (G)	12	9	-3.0	1.60	2007	4,435	93.06%	4.86%	1.68%	0.40%	6.94%	308	3.00%	2009	Cumulative	327	3.20	381,391	5.7	7.3	68
162	Gladstone - Benaraby Road	South Trees Drive CH. 5.70 to Glen Eden Drive CH. 3.40	Northbound (A)	12	9	-3.0	1.60	2007	4,861	92.95%	5.27%	1.43%	0.35%	7.05%	343	3.00%	2009	Cumulative	364	3.20	424,651	7.3	5.7	68
163	Gladstone - Benaraby Road	South Trees Drive CH. 7.30 to Boyne Island Road CH. 16.039	Southbound (G)	12	9	-3.0	8.74	2007	4,435	93.06%	4.86%	1.68%	0.40%	6.94%	308	3.00%	2009	Cumulative	327	3.20	381,391	7.3	16.039	68
164	Gladstone - Benaraby Road	Boyne Island Drive CH. 16.039 to South Trees Drive CH. 5.70	Northbound (A)	12	9	-3.0	8.74	2007	4,861	92.95%	5.27%	1.43%	0.35%	7.05%	343	3.00%	2009	Cumulative	364	3.20	424,651	16.039	7.3	68
165	Gladstone - Benaraby Road	Boyne Island Road CH. 16.039 to Bruce Highway CH. 19.21	Southbound (G)	8	9	1.0	3.17	2007	1,934	87.29%	7.68%	3.30%	1.73%	12.71%	246	3.00%	2009	Cumulative	261	3.20	304,593	16.039	19.21	70
166	Gladstone - Benaraby Road	Bruce Highway CH. 19.21 to Boyne Island Road CH. 16.039	Northbound (A)	8	9	1.0	3.17	2007	2,031	87.91%	7.21%	3.24%	1.64%	12.09%	246	3.00%	2009	Cumulative	261	3.20	304,266	19.21	16.039	70
167	Burnett Highway 41D	CH.0.0 District Boundary to CH.65.0	Southbound (G)	8	8	0.0	65.00	2007	335					17.66%	59	3.00%	2009	Cumulative	63	3.20	73,199	0.0	65.0	73
168	Burnett Highway 41D	CH.65.0 to District Boundary CH.0.0	Northbound (A)	8	8	0.0	65.00	2007	335					17.66%	59	3.00%	2009	Cumulative	63	3.20	73,199	65.0	0.0	73
169	Burnett Highway 41D	CH.65.0 to Hinton's Lane CH.85.5	Southbound (G)	6	8	2.0	20.50	2007	335					17.66%	59	3.00%	2009	Cumulative	63	3.20	73,199	65.0	85.5	102
170	Burnett Highway 41D	Hinton's Lane CH.85.5 to CH.65.0	Northbound (A)	6	8	2.0	20.50	2007	335					17.66%	59	3.00%	2009	Cumulative	63	3.20	73,199	85.5	65.0	102
171	Burnett Highway 41D	Hinton's Lane CH.85.5 to Sara Lane CH.92.0	Southbound (G)	6	8	2.0	6.50	2007	907					10.69%	97	3.00%	2009	Cumulative	103	3.20	120,144	85.5	92.0	67
172	Burnett Highway 41D	Sara Lane CH.92.0 to Hinton's Lane CH.85.5	Northbound (A)	6	8	2.0	6.50	2007	907					10.69%	97	3.00%	2009	Cumulative	103	3.20	120,144	92.0	85.5	67
173	Burnett Highway 41D	Sara Lane CH.92.0 to Dawson Highway CH.93.8	Southbound (G)	6	9	3.0	1.80	2007	1184					9.54%	113	3.00%	2009	Cumulative	120	3.20	139,905	92.0	93.8	142
174	Burnett Highway 41D	Dawson Highway CH.93.8 to Sara Lane CH.92.0	Northbound (A)	6	9	3.0	1.80	2007	1184					9.54%	113	3.00%	2009	Cumulative	120	3.20	139,905	93.8	92.0	142
175	Burnett Highway 41E	Dawson Highway CH.93.8 to CH.18.5	Southbound (G)	6	8	2.0	18.50	2007	566					14.35%	81	3.00%	2009	Cumulative	86	3.20	100,643	0.0	18.5	97
176	Burnett Highway 41E	CH.18.5 to Dawson Highway CH.93.8	Northbound (A)	6	8	2.0	18.50	2007	566					14.35%	81	3.00%	2009	Cumulative	86	3.20	100,643	18.5	0.0	97
177	Burnett Highway 41E	CH.18.5 to Jambin Rail Crossing CH.27.2	Southbound (G)	8	8	0.0	8.70	2007	566					14.35%	81	3.00%	2009	Cumulative	86	3.20	100,643	18.5	27.2	60
178	Burnett Highway 41E	Jambin Rail Crossing CH.27.2 to CH.18.5	Northbound (A)	8	8	0.0	8.70	2007	566					14.35%	81	3.00%	2009	Cumulative	86	3.20	100,643	27.2	18.5	60
179	Burnett Highway 41E	Jambin Rail Crossing CH.27.2 to Goovigen Connection Road CH.35.5	Southbound (G)	7	8	1.0	8.30	2007	566					14.35%	81	3.00%	2009	Cumulative	86	3.20	100,643	27.2	35.5	80
180	Burnett Highway 41E	Goovigen Connection Road CH.35.5 to Jambin Rail Crossing CH.27.2	Northbound (A)	7	8	1.0	8.30	2007	566					14.35%	81	3.00%	2009	Cumulative	86	3.20	100,643	35.5	27.2	80
181	Burnett Highway 41E	Goovigen Connection Road CH.35.5 to Tohlinn Road (South) CH.38.9	Southbound (G)	6	8	2.0	3.40	2007	417					16.93%	71	3.00%	2009	Cumulative	75	3.20	87,375	35.5	38.9	106
182	Burnett Highway 41E	Tohlinn Road (South) CH.38.9 to Goovigen Connection Road CH.35.5	Northbound (A)	6	8	2.0	3.40	2007	417					16.93%	71	3.00%	2009	Cumulative	75	3.20	87,375	38.9	35.5	106
183	Burnett Highway 41E	Tomlin Road (South) CH.38.9 to Tomlin Rd (North) CH.53.4	Southbound (G)	8	8	0.0	14.50	2007	417					16.93%	71	3.00%	2009	Cumulative	75	3.20	87,375	38.9	53.4	57
184	Burnett Highway 41E	Tomlin Rd (North) CH.53.4 to Tomlin Road (South) CH.38.9	Northbound (A)	8	8	0.0	14.50	2007	417					16.93%	71	3.00%	2009	Cumulative	75	3.20	87,375	53.4	38.9	57
185	Burnett Highway 41E	Tomlin Rd (North) CH.53.4 to Leichhardt Highway CH.71.8	Westbound (G)	6	8	2.0	18.40	2007	417					16.93%	71	3.00%	2009	Cumulative	75	3.20	87,375	53.4	71.8	90
186	Burnett Highway 41E	Leichhardt Highway CH.71.8 to Tohlinn Road (South) CH.38.9	Eastbound (A)	6	8	2.0	18.40	2007	417					16.93%	71	3.00%	2009	Cumulative	75	3.20	87,375	71.8	53.4	90
187	Burnett Highway 41E	Leichhardt Highway CH.71.8 to School Grounds CH.101.4	Westbound (G)	7	8	1.0	29.60	2007	446					8.21%	37	3.00%	2009	Cumulative	39	3.20	45,373	71.8	101.4	103
188	Burnett Highway 41E	School Grounds CH.101.4 to Leichhardt Highway CH.71.8	Eastbound (A)	7	8	1.0	29.60	2007	446					8.21%	37	3.00%	2009	Cumulative	39	3.20	45,373	101.4	71.8	103
189	Burnett Highway 41E	School Grounds CH.101.4 to Gordon Street CH.102.8	Westbound (G)	9	8	-1.0	1.40	2007	1220					4.95%	60	3.00%	2009	Cumulative	64	3.20	74,831	101.4	102.8	116
190	Burnett Highway 41E	Gordon Street CH.102.8 to School Grounds CH.101.4	Eastbound (A)	9	8	-1.0	1.40	2007	1220					4.95%	60	3.00%	2009	Cumulative	64	3.20	74,831	102.8	101.4	116
191	Dawson Highway 46C	Boundary to Fitzroy Development 85A Intersection	Westbound (G)	9	9	0.0	28.85	2007	134					26.27%	35	3.00%	2009	Cumulative	37	3.20	43620	45.05	73.9	67
192	Dawson Highway 46C	Fitzroy Dev. 85A Intersection to Boundary	Eastbound (A)	9	9	0.0	28.85	2007	134					26.27%	35	3.00%	2009	Cumulative	37	3.20	43620	73.9	45.05	67
193	Dawson Highway 46C	Fitzroy Dev. 85A Intersection to Duaringa/Woorabinda Intersection	Westbound (G)	9	9	0.2	6.60	2007	125					14.20%	18	3.00%	2009	Cumulative	19	3.20	21907	73.9	80.5	83
194	Dawson Highway 46C	Duaringa/Woorabinda Intersection to Fitzroy Dev. 85A Intersection	Eastbound (A)	9	9	0.2	6.60	2007	125					14.20%	18	3.00%	2009	Cumulative	19	3.20	21907	80.5	73.9	83
195	Dawson Highway 46C	Duaringa/Woorabinda Intersection to Woorabinda/Duaringa Intersection	Westbound (G)	9	9	0.5	3.10	2007	125					28.52%	36	3.00%	2009	Cumulative	38	3.20	43998	80.5	83.6	76
196	Dawson Highway 46C	Woorabinda/Duaringa to Duaringa/Woorabinda Intersection Intersection	Eastbound (A)	9	9	0.5	3.10	2007	125					28.52%	36	3.00%	2009	Cumulative	38	3.20	43998	83.6	80.5	76
197	Dawson Highway 46C	Woorabinda/Duaringa to 46C/85B Intersection	Westbound (G)	9	9	0.4	8.80	2007	125					28.52%	36	3.00%	2009	Cumulative	38	3.20	43998	83.6	92.4	80
198	Dawson Highway 46C	46C/85B Intersection to Woorabinda/Duaringa	Eastbound (A)	9	9	0.4	8.80	2007	125					28.52%	36	3.00%	2009	Cumulative	38	3.20	43998	92.4	83.6	80
199	Dawson Highway 46C	46C/85B Intersection to Prospect Creek Culvert	Westbound (G)	9	9	-0.4	9.00	2007	104					29.80%	31	3.00%	2009	Cumulative	33	3.20	38219	92.4	101.4	64
200	Dawson Highway 46C	Prospect Creek Culvert to 46C/85B Intersection	Eastbound (A)	9	9	-0.4	9.00	2007	104					29.80%	31	3.00%	2009	Cumulative	33	3.20	38219	101.4	92.4	64
201	Dawson Highway 46C	Prospect Creek Culvert to Duaringa/Bauhinia Intersection	Westbound (G)	8	9	0.6	22.20	2007	104					29.80%	31	3.00%	2009	Cumulative	33	3.20	38219	101.4	123.6	54.3
203	Dawson Highway 46C	Duaringa/Bauhinia Intersection to KM 137.5	Westbound (G)	6	9	2.7	13.90	2007	104					29.80%	31	3.00%	2009	Cumulative	33	3.20	38219	123.6	137.5	79
204	Dawson Highway 46C	KM 137.5 to Duaringa/Bauhinia Intersection	Eastbound (A)	6	9	2.7	13.90	2007	104					29.80%	31	3.00%	2009	Cumulative	33	3.20	38219	123.6	137.5	79
205	Dawson Highway 46C	KM 137.5 to Rolleston	Westbound (G)	9	9	0.0	30.50	2007	104					29.80%	31	3.00%	2009	Cumulative	33	3.20	38219	137.5	168	93
206	Dawson Highway 46C	Rollston to KM 137.5	Eastbound (A)	9	9	0.0	30.50	2007	104					29.80%	31	3.00%	2009	Cumulative	33	3.20	38219	168	137.5	93
207	Leichhardt Highway 26A	District Boundary to 26A/85A intersection	Westbound (G)	8	8	0.0	46.80	2008	227					35.41%	80	3.00%	2009	Cumulative	83	3.20	96,488	192.2	239.0	70
208	Leichhardt Highway 26A	26A/84A intersection to District Boundary	Eastbound (A)	8	8	0.0	46.80	2008	227					35.41%	80	3.00%	2009	Cumulative	83	3.20	96,488	239.0	192.2	70
209	Leichhardt Highway 26A	26A/85A intersection to Taroom	Westbound (G)	8	8	0.0	17.00	2008	261					35.46%	92	3.00%	2009	Cumulative	95	3.20	111,129	239.0	256.0	68
210	Leichhardt Highway 26A	Taroom to 26A/84A intersection	Eastbound (A)	8	8	0.0	17.00	2008	261					35.46%	92	3.00%	2009	Cumulative	95	3.20	111,129	256.0	239	68
211	Leichhardt Highway 26B	Taroom to KM35.00	Westbound (G)	6	8	2.0	35.00	2008	327					28.89%	94	3.00%	2009	Cumulative	97	3.20	113,652	0.0	35.0	104
212	Leichhardt Highway 26B	KM35.00 to Taroom	Eastbound (A)	6	8	2.0	35.00	2008	327					28.89%	94	3.00%	2009	Cumulative	97	3.20	113,652	35.0	0	104
213	Leichhardt Highway 26B	KM35.00 to Jackson-Wandoan Road	Westbound (G)	9	8	-1.0	26.00	2008	327					28.89%	94	3.00%	2009	Cumulative	97	3.20	113,652	35.0	61.0	81
214	Leichhardt Highway 26B	Jackson-Wandoan Road to KM35.00	Eastbound (A)	9	8	-1.0	26.00	2008	327					28.89%	94	3.00%	2009	Cumulative	97	3.20	113,652	61.0	35	81
215	Leichhardt Highway 26B	Jackson-Wandoan Road to Miles	Westbound (G)	9	9	0.0	66.61	2008	319					31.86%	102	3.00%	2009	Cumulative	105	3.20	122,269	61.0	127.6	81
216	Leichhardt Highway 26B	Miles to Jackson-Wandoan Road	Eastbound (A)	9	9	0.0	66.61	2008	319					31.86%	102	3.00%	2009	Cumulative	105	3.20	122,269	127.6	61	81
217	Warrego Highway	Miles to 18D/Dulacca North Intersetcion	Westbound (G)	9	9	0.0	43.00	2008	745					25.91%	193	3.00%	2009	Cumulative	199	3.20	232,066	0	43	89
218	Warrego Highway	18D/Dulacca North Intersection to Miles	Eastbound (A)	9	9	0.0	43.00	2008	745					25.91%	193	3.00%	2009	Cumulative	199	3.20	232,066	43	0	89
219	Warrego Highway	18D/Dulacca North Intersection to 18D/3441 Intersection\	Westbound (G)	9	9	0.0	58.00	2008	616					28.00%	172	3.00%	2009	Cumulative	178	3.20	207,332	43	101	89
220	Warrego Highway	18D/3441 Intersection to 18D/Dulacca North Intersection	Eastbound (A)	9	9	0.0	58.00	2008	616					28.00%	172	3.00%	2009	Cumulative	178	3.20	207,332	101	43	89
221	Warrego Highway	18D/3441 Intersection to KM135.5	Westbound (G)	9	9	0.0	34.00	2008	781					25.61%	200	3.00%	2009	Cumulative	206	3.20	240,625	101	135	89
222	Warrego Highway	KM135.5 to 18D/3441 Intersection	Eastbound (A)	9	9	0.0	34.00	2008	781					25.61%	200	3.00%	2009	Cumulative	206	3.20	240,625	135	101	89
223	Warrego Highway	KM135.5 to Roma	Westbound (G)	9	9	0.0	6.20	2008	781					18.97%	148	3.00%	2009	Cumulative	153	3.20	178,237	135	141.2	89
224	Warrego Highway	Roma to KM135.5	Eastbound (A)	9	9	0.0	6.20	2008	781					18.97%	148	3.00%	2009	Cumulative	153	3.20	178,237	141.2	135	89

225	Warrego Highway	Ruthven Street to Peachy Street	Westbound (G)	9	16	7.0	0.99	2008	12826	84.31%				15.69%	2,012	3.00%	2009	152.6004	2,073	3.20	#######	0.00	0.99	108.4
226	Warrego Highway	Peachy Street to Ruthven Street	Eastbound (A)	9	16	7.0	0.99	2008	12826	84.31%				15.69%	2,012	3.00%	2009	152.6004	2,073	3.20	#######	0.99	0.00	108.4
227	Warrego Highway	Peachy Street to Fifth Avenue	Westbound (G)	9	16	7.0	1.22	2008	11295	82.66%				17.34%	1,959	3.00%	2009	152.6004	2,017	3.20	#######	0.99	2.21	77.3
228	Warrego Highway	Fifth Avenue to Peachy Street	Eastbound (A)	9	16	7.0	1.22	2008	11295	82.66%				17.34%	1,959	3.00%	2009	152.6004	2,017	3.20	#######	2.21	0.99	77.3
229	Warrego Highway	Fifth Avenue to Higgins Street	Westbound (G)	9	16	7.0	1.53	2008	8288	50.27%				19.73%	1,635	3.00%	2009	152.6004	1,684	3.20	#######	2.21	3.74	99.8
230	Warrego Highway	Higgins Street to Fifth Avenue	Eastbound (A)	9	16	7.0	1.53	2008	8288	50.27%				19.73%	1,635	3.00%	2009	152.6004	1,684	3.20	#######	3.74	2.21	99.8
231	Warrego Highway	Higgins Street to Park Street	Westbound (G)	9	9	0.0	0.78	2008	5309	92.19%				7.81%	415	3.00%	2009	152.6004	427	3.20	498,820	3.74	4.52	74.9
232	Warrego Highway	Park Street to Higgins Street	Eastbound (A)	9	9	0.0	0.78	2008	5309	92.19%				7.81%	415	3.00%	2009	152.6004	427	3.20	498,820	4.52	3.74	74.9
233	Warrego Highway	Park Street to Airport	Westbound (G)	9	9	0.0	2.11	2008	7898	92.05%				7.95%	628	3.00%	2009	152.6004	647	3.20	755,330	4.52	6.63	68.0
234	Warrego Highway	Airport to Park Street	Eastbound (A)	9	9	0.0	2.11	2008	7898	92.05%				7.95%	628	3.00%	2009	152.6004	647	3.20	755,330	6.63	4.52	68.0
235	Warrego Highway	Airport to Troys Road	Westbound (G)	9	9	0.0	3.96	2008	6061	89.82%				10.20%	618	3.00%	2009	152.6004	637	3.20	743,746	6.63	10.59	65.8
236	Warrego Highway	Troys Road to Airport	Eastbound (A)	9	9	0.0	3.96	2008	6061	89.82%				10.20%	618	3.00%	2009	152.6004	637	3.20	743,746	10.59	6.63	65.8
237	Warrego Highway	Troys Road to Oakey Biddeston Road	Westbound (G)	9	9	0.0	16.24	2008	5778	86.88%				13.12%	758	3.00%	2009	152.6004	781	3.20	911,914	10.59	26.83	72.1
238	Warrego Highway	Oakey Biddeston Road to Troys Road	Eastbound (A)	9	9	0.0	16.24	2008	5778	86.88%				13.12%	758	3.00%	2009	152.6004	781	3.20	911,914	26.83	10.59	72.1
239	Warrego Highway	Oakey Biddeston Road to Dalby Cecil Plains Road	Westbound (G)	9	9	0.0	53.99	2008	2344	78.01%				21.99%	515	3.00%	2009	152.6004	531	3.20	619,969	26.83	80.82	79.6
240	Warrego Highway	Dalby Cecil Plains Road to Oakey Biddeston Road	Eastbound (A)	9	9	0.0	53.99	2008	2344	78.01%				21.99%	515	3.00%	2009	152.6004	531	3.20	619,969	80.82	26.83	79.6
241	Warrego Highway	Dalby Cecil Plains Road to Cunningham Street	Westbound (G)	9	9	0.0	3.37	2008	3080	78.24%				21.76%	670	3.00%	2009	152.6004	690	3.20	806,156	80.82	84.19	106.4
242	Warrego Highway	Cunningham Street to Dalby Cecil Plains Road	Eastbound (A)	9	9	0.0	3.37	2008	3080	78.24%				21.76%	670	3.00%	2009	152.6004	690	3.20	806,156	84.19	80.82	106.4
243	Warrego Highway	Cunningham Street to Rail Line	Eastbound (A)	11	9	-2.0	1.09	2008	3596	83.92%				16.08%	578	3.00%	2009	152.6004	596	3.20	695,545	0.00	1.09	122
244	Warrego Highway	Rail Line to Cunningham Street	Westbound (G)	11	9	-2.0	1.09	2008	3596	83.92%				16.08%	578	3.00%	2009	152.6004	596	3.20	695,545	1.09	0.00	122
245	Warrego Highway	Rail Line to Macalister Bell Road	Eastbound (A)	12	9	-3.0	24.03	2008	1273	75.72%				24.28%	309	3.00%	2009	152.6004	318	3.20	371,841	1.09	25.12	72.6
246	Warrego Highway	Macalister Bell Road to Rail Line	Westbound (G)	12	9	-3.0	24.03	2008	1273	75.72%				24.28%	309	3.00%	2009	152.6004	318	3.20	371,841	25.12	1.09	72.6
247	Warrego Highway	Macalister Bell Road to Warra Kogan Road	Eastbound (A)	10	9	-1.0	20.08	2008	1134	72.73%				27.17%	308	3.00%	2009	152.6004	317	3.20	370,666	25.12	45.20	112.1
248	Warrego Highway	Warra Kogan Road to Macalister Bell Road	Westbound (G)	10	9	-1.0	20.08	2008	1134	72.73%				27.17%	308	3.00%	2009	152.6004	317	3.20	370,666	45.20	25.12	112.1
249	Warrego Highway	Warra Kogan Road to Glasson Street	Eastbound (A)	12	9	-3.0	34.98	2008	1056	72.05%				27.95%	295	3.00%	2009	152.6004	304	3.20	354,912	45.20	80.18	100.9
250	Warrego Highway	Glasson Street to Warra Kogan Road	Westbound (G)	12	9	-3.0	34.98	2008	1056	72.05%				27.95%	295	3.00%	2009	152.6004	304	3.20	354,912	80.18	45.20	100.9
251	Warrego Highway	Glasson Street to Auburn Road	Eastbound (A)	12	9	-3.0	2.98	2008	1336	79.59%				20.41%	273	3.00%	2009	152.6004	281	3.20	328,042	80.18	83.16	82.3
252	Warrego Highway	Auburn Road to Glasson Street	Westbound (G)	12	9	-3.0	2.98	2008	1336	79.59%				20.41%	273	3.00%	2009	152.6004	281	3.20	328,042	83.16	80.18	82.3
253	Warrego Highway	Auburn Road to Goombi	Eastbound (A)	11	9	-2.0	23.20	2008	1085	74.24%				25.76%	279	3.00%	2009	152.6004	288	3.20	336,245	83.16	106.36	73.1
254	Warrego Highway	Goombi to Auburn Road	Westbound (G)	11	9	-2.0	23.20	2008	1085	74.24%				25.76%	279	3.00%	2009	152.6004	288	3.20	336,245	106.36	83.16	73.1
255	Warrego Highway	Goombi to Leichhardt Highway	Eastbound (A)	13	8	-5.0	20.39	2008	1000	94.66%				5.34%	53	3.00%	2009	152.6004	55	3.20	64,210	106.36	126.75	62.6
256	Warrego Highway	Leichhardt Highway to Goombi	Westbound (G)	13	8	-5.0	20.39	2008	1000	94.66%				5.34%	53	3.00%	2009	152.6004	55	3.20	64,210	126.75	106.36	62.6
257	Bajool-Port Alma Road	Bruve Highway to End Point	Eastbound (G)	6	8	2.0	25.24	2008	120	65.30%	6.00%	18.21%	10.49%	34.70%	42	1.00%	2009	Cumulative	42	3.20	49,122	0	25.24	96.4
258	Bajool-Port Alma Road	End Point to Bruce Highway	Westbound (A)	6	8	2.0	25.24	2008	120	61.26%	8.53%	19.32%	10.89%	38.74%	46	1.00%	2009	Cumulative	47	3.20	54,841	25.24	0	96.4
259	Capricorn Highway	Bruce Highway to Gavial Gracemere Road	Eastbound (A)	3.6	8	4.5	5.69	2008	7,219	89.90%	6.11%	2.35%	1.64%	10.10%	729	3.00%	2009	Cumulative	751	3.20	877,159	0	5.69	80
260	Capricorn Highway	Gavial Gracemere Road to Bruce Highway	Westbound (G)	3.6	8	4.5	5.69	2008	7,270	89.89%	6.11%	2.35%	1.67%	10.11%	735	3.00%	2009	Cumulative	757	3.20	884,231	5.69	0	80
261	Capricorn Highway	Gavial Gracemere Road to Kabra Road	Eastbound (A)	3.6	8	4.5	7.68	2008	2,327	78.44%	11.40%	5.38%	4.78%	21.56%	502	3.00%	2010	Cumulative	532	3.20	621,674	5.69	13.367	80
262	Capricorn Highway	Kabra Road to Gavial Gracemere Road	Westbound (G)	3.6	8	4.5	7.68	2008	2,348	80.78%	8.88%	5.30%	5.04%	19.22%	451	3.00%	2011	Cumulative	493	3.20	575,978	13.367	5.69	80
263	Capricorn Highway	Kabra Road to Powerstation Road	Eastbound (A)	3.6	8	4.5	4.49	2008	2,008	96.73%	1.53%	0.86%	0.88%	6.27%	126	3.00%	2012	Cumulative	142	3.20	165,510	13.367	17.856	80
264	Capricorn Highway	Powerstation Road to Kabra Road	Westbound (G)	3.6	8	4.5	4.49	2008	2,037	97.27%	1.22%	0.73%	0.78%	2.73%	56	3.00%	2013	Cumulative	64	3.20	75,298	17.856	13.367	80
265	Capricorn Highway	Powerstation Road to Leichhardt Highway	Eastbound (A)	3.6	8	4.5	33.76	2008	1,611	83.16%	7.68%	4.18%	4.98%	16.84%	271	3.00%	2014	Cumulative	324	3.20	378,359	17.856	51.62	80
266	Capricorn Highway	Leichhardt Highway to Powerstation Road	Westbound (G)	3.6	8	4.5	33.76	2008	1,739	80.63%	8.77%	4.85%	5.75%	19.37%	337	3.00%	2015	Cumulative	414	3.20	483,874	51.62	17.856	80
267	Capricorn Highway	Leichhardt Highway to End Point	Eastbound (A)	3.6	8	4.5	21.73	2008	1,381	80.44%	8.29%	4.63%	6.64%	19.56%	270	3.00%	2009	Cumulative	278	3.20	324,969	51.62	73.35	80
268	Capricorn Highway	End Point to Leichhardt Highway	Westbound (G)	3.6	8	4.5	21.73	2008	1,418	83.36%	6.98%	3.90%	5.76%	16.64%	236	3.00%	2009	Cumulative	243	3.20	283,864	73.35	51.62	80
269	Jackson-Wandoan Road	Warrego Highway Intersection to Grid	Northbound (A)	6	8	2.0	69.00	2008	33					21.45%	7	3.00%	2009	Cumulative	7	3.20	8,516	0	69	87
270	Jackson-Wandoan Road	Grid to18D/Dulacca North Intersection	Southbound (G)	6	8	2.0	69.00	2008	33					21.45%	7	3.00%	2009	Cumulative	7	3.20	8,516	69	0	87
271	Jackson-Wandoan Road	Grid to Leichardt Highway	Eastbound (A)	5	8	3.0	12.00	2008	66					20.56%	14	3.00%	2009	Cumulative	14	3.20	16,325	69	81	128
272	Jackson-Wandoan Road	Leichardt Highway to Grid	Westbound (G)	5	8	3.0	12.00	2008	66					20.56%	14	3.00%	2009	Cumulative	14	3.20	16,325	81	69	128
273	Bruce Highway (10D)	Miriam Vale CH. 98.8 to CH. 112	Northbound (A)	8	10	2.0	13.20	2007	2,484					23.28%	578	3.00%	2009	13.97669	613	2.90	649,381	98.8	112	70
274	Bruce Highway (10D)	CH. 112 to Miriam Vale CH. 98.8	Southbound (G)	8	10	2.0	13.20	2007	2,484					23.28%	578	3.00%	2009	13.97669	613	2.90	649,381	112	98.8	70
275	Bruce Highway (10D)	CH. 112 to Benaraby CH. 147.1	Northbound (A)	10	10	0.0	35.10	2007	2,484					23.28%	578	3.00%	2009	13.97669	613	2.90	649,381	112	147.1	64
276	Bruce Highway (10D)	Benaraby CH. 147.1 o CH. 112	Southbound (G)	10	10	0.0	35.10	2007	2,484					23.28%	578	3.00%	2009	13.97669	613	2.90	649,381	147.1	112	64

Background Parameters

No.	Road	Section	Direction	Start Chainage	End Chainage	Count Year	Total Volume (vpd)	Heavy Vehicle %	Additional AADT 2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
1	Dawson Highway 46A	Gladstone-Mt Larcom Road to Breslin Street	Southbound (G)	0.0	1.5	2006	7,010	3.87%	0	0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	Dawson Highway 46A	Gladstone-Mt Larcom Road to Breslin Street	Northbound (A)	1.5	0.0	2006	5,977	2.25%	0	0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	Dawson Highway 46A	Breslin Street to Blain Drive	Southbound (G)	1.5	2.2	2006	10,836	2.56%	0	0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	Dawson Highway 46A	Breslin Street to Blain Drive	Northbound (A)	2.2	1.5	2006	9,912	3.47%	0	0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	Dawson Highway 46A	Blain Drive to Philip Street	Southbound (G)	2.2	3.1	2006	12,269	3.57%	0	0	290	361	361	131	131	161	161	161	161	161	145	140	140	140	140	140	140	140	140	140	140	0	0	0	0
6	Dawson Highway 46A	Blain Drive to Philip Street	Northbound (A)	3.1	2.2	2006	11,949	8.09%	0	0	290	361	361	131	131	161	161	161	161	161	145	140	140	140	140	140	140	140	140	140	140	0	0	0	0
7	Dawson Highway 46A	Philip Street to Penda Avenue	Southbound (G)	3.1	4.4	2006	13,377	3.24%	0	0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	Dawson Highway 46A	Philip Street to Penda Avenue	Northbound (A)	4.4	3.1	2006	14,257	3.64%	0	0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	Dawson Highway 46A	Penda Avenue to Chapman Drive	Southbound (G)	4.4	5.2	2006	10,630	2.31%	0	0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	Dawson Highway 46A	Penda Avenue to Chapman Drive	Northbound (A)	5.2	4.4	2006	9,914	3.63%	0	0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	Dawson Highway 46A	Chapman Drive to Don Young Drive	Southbound (G)	5.2	8.4	2006	2,020	5.90%	0	0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	Dawson Highway 46A	Chapman Drive to Don Young Drive	Northbound (A)	8.4	5.2	2006	2,971	5.77%	0	0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	Dawson Highway 46A	Don Young Drive to Harvey Road	Southbound (G)	8.4	10.3	2006	2,820	5.90%	0	0	230	230	230	0.4	0.4	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	0	0	0	0	0	0	0	0
14	Dawson Highway 46A	Don Young Drive to Harvey Road	Northbound (A)	10.3	8.4	2006	2,971	5.77%	0	0	230	230	230	0.4	0.4	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	0	0	0	0	0	0	0	0
15	Dawson Highway 46A	Harvey Road to Bruce Highway	Southbound (G)	10.3	19.0	2006	2,137	7.96%	0	0	230	230	230	0.4	0.4	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	0	0	0	0	0	0	0	0
16	Dawson Highway 46A	Harvey Road to Bruce Highway	Northbound (A)	19.0	10.3	2006	2,112	7.93%	0	0	230	230	230	0.4	0.4	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	0	0	0	0	0	0	0	0
17	Dawson Highway 46A	Bruce Highway to Drynan Drive	Southbound (G)	19.0	21.8	2006	2,354	8.98%	0	0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	Dawson Highway 46A	Bruce Highway to Drynan Drive	Northbound (A)	21.8	19.0	2006	2,353	9.34%	0	0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	Dawson Highway 46A	Drynan Drive to Gladstone-Monto Road	Westbound (G)	21.8	25.7	2006	827	12.35%	0	0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	Dawson Highway 46A	Drynan Drive to Gladstone-Monto Road	Eastbound (A)	25.7	21.8	2006	827	13.45%	0	0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	Dawson Highway 46A	Gladstone-Monto Road to Access to Pipeline Ca	Westbound (G)	25.7	49.0	2006	464	18.99%	0	0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	Dawson Highway 46A	Access to Pipeline Camp 4 to Gladstone-Monto I	Eastbound (A)	49.0	25.7	2006	465	18.28%	0	0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	Dawson Highway 46A	Access to Pipline Camp 4 to New point 1	Westbound (G)	49.0	72.5	2006	464	18.99%	0	0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	Dawson Highway 46A	Access to Pipline Camp 4 to New point 1	Eastbound (A)	72.5	49.0	2006	465	18.28%	0	0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	Dawson Highway 46A	New to CSC/BSC Border	Westbound (G)	72.5	76.6	2006	464	18.99%	0	0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	Dawson Highway 46A	New to CSC/BSC Border	Eastbound (A)	76.6	72.5	2006	465	18.28%	0	0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	Dawson Highway 46A	CSC/BSC Border to New point 2	Westbound (G)	76.6	85.0	2006	464	18.99%	0	0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28–273	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
274	Bruce Highway (10D)	CH. 112 to Miriam Vale CH. 98.8	Southbound (G)	112	98.8	2007	2,484	23.28%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
275	Bruce Highway (10D)	CH. 112 to Benaraby CH. 147.1	Northbound (A)	112	147.1	2007	2,484	23.28%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
276	Bruce Highway (10D)	Benaraby CH. 147.1 o CH. 112	Southbound (G)	147.1	112	2007	2,484	23.28%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Background Parameters

Road	Section	Direction	Additional ESA's
[illegible]	[illegible]	[illegible]	[illegible]

Background Parameters

Road	Section	Direction	Additional HV
[illegible]	[illegible]	[illegible]	[illegible]

Background Parameters

Road	Section	Direction	Start Chainage	End Chainage	Count Year	Heavy Vehicle %	Total Heavy Vehicle volume	ESA/Heavy Vehicle Ratio	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Dawson Highway 46A	Gladstone-Mt Larcom Road to Breslin Street	Southbound (G)	0.0	1.5	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0
Dawson Highway 46A	Gladstone-Mt Larcom Road to Breslin Street	Northbound (A)	1.5	0.0	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0
Dawson Highway 46A	Breslin Street to Blain Drive	Southbound (G)	1.5	2.2	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0
Dawson Highway 46A	Breslin Street to Blain Drive	Northbound (A)	2.2	1.5	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0
Dawson Highway 46A	Blain Drive to Philip Street	Southbound (G)	2.2	3.1	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0
Dawson Highway 46A	Blain Drive to Philip Street	Northbound (A)	3.1	2.2	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0
Dawson Highway 46A	Philip Street to Penda Avenue	Southbound (G)	3.1	4.4	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0
Dawson Highway 46A	Philip Street to Penda Avenue	Northbound (A)	4.4	3.1	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0
Dawson Highway 46A	Penda Avenue to Chapman Drive	Southbound (G)	4.4	5.2	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0
Dawson Highway 46A	Penda Avenue to Chapman Drive	Northbound (A)	5.2	4.4	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0
Dawson Highway 46A	Chapman Drive to Don Young Drive	Southbound (G)	5.2	8.4	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0
Dawson Highway 46A	Chapman Drive to Don Young Drive	Northbound (A)	8.4	5.2	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0
Dawson Highway 46A	Don Young Drive to Harvey Road	Southbound (G)	8.4	10.3	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0
Dawson Highway 46A	Don Young Drive to Harvey Road	Northbound (A)	10.3	8.4	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0
Dawson Highway 46A	Harvey Road to Bruce Highway	Southbound (G)	10.3	19.0	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0
Dawson Highway 46A	Harvey Road to Bruce Highway	Northbound (A)	19.0	10.3	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0
Dawson Highway 46A	Bruce Highway to Drynan Drive	Southbound (G)	19.0	21.8	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0
Dawson Highway 46A	Bruce Highway to Drynan Drive	Northbound (A)	21.8	19.0	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0
Dawson Highway 46A	Drynan Drive to Gladstone-Monto Road	Westbound (G)	21.8	25.7	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0
Dawson Highway 46A	Drynan Drive to Gladstone-Monto Road	Eastbound (A)	25.7	21.8	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0
Dawson Highway 46A	Gladstone-Monto Road to Access to Pipeline Ca	Westbound (G)	25.7	49.0	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0
Dawson Highway 46A	Access to Pipeline Camp 4 to Gladstone-Monto	Eastbound (A)	49.0	25.7	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0
Dawson Highway 46A	Access to Pipline Camp 4 to New point 1	Westbound (G)	49.0	72.5	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0
Dawson Highway 46A	Access to Pipline Camp 4 to New point 1	Eastbound (A)	72.5	49.0	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0
Dawson Highway 46A	New to CSC/BSC Border	Westbound (G)	72.5	76.6	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0
Dawson Highway 46A	New to CSC/BSC Border	Eastbound (A)	76.6	72.5	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0
Dawson Highway 46A	CSC/BSC Border to New point 2	Westbound (G)	76.6	85.0	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0
Dawson Highway 46A	CSC/BSC Border to New point 2	Eastbound (A)	85.0	76.6	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0
Dawson Highway 46A	New point 2 to Argoon Road	Westbound (G)	85.0	101.3	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0
Dawson Highway 46A	New point 2 to Argoon Road	Eastbound (A)	101.3	85.0	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0
Dawson Highway 46A	Agoon Road to Callide Dam Road	Westbound (G)	101.3	114.0	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0

#	Road	Section	Direction	Start Chainage	End Chainage	Count Year	Heavy Vehicle %	Total Heavy Vehicle volume	ESA/Heavy Vehicle Ratio
274	Bruce Highway (10D)	CH. 112 to Miriam Vale CH. 98.8	Southbound (G)	112	98.8	2007	0.00%	0	0.00
275	Bruce Highway (10D)	CH. 112 to Benaraby CH. 147.1	Northbound (A)	112	147.1	2007	0.00%	0	0.00
276	Bruce Highway (10D)	Benaraby CH. 147.1 o CH. 112	Southbound (G)	147.1	112	2007	0.00%	0	0.00

Background Parameters

	Road	Section	Direction	Start Chainage	End Chainage	Count Year	Total Volume (vpd)	Heavy Vehicle %	Additional AADT 2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
1	Dawson Highway 46A	Gladstone-Mt Larcom Road to Breslin Street	Southbound (G)	0.0	1.5	2006	7,010	3.87%																						
2	Dawson Highway 46A	Gladstone-Mt Larcom Road to Breslin Street	Northbound (A)	1.5	0.0	2006	5,977	2.25%																						
3	Dawson Highway 46A	Breslin Street to Blain Drive	Southbound (G)	1.5	2.2	2006	10,836	2.56%																						
4	Dawson Highway 46A	Breslin Street to Blain Drive	Northbound (A)	2.2	1.5	2006	9,912	3.47%																						
5	Dawson Highway 46A	Blain Drive to Philip Street	Southbound (G)	2.2	3.1	2006	12,269	3.57%																						
6	Dawson Highway 46A	Blain Drive to Philip Street	Northbound (A)	3.1	2.2	2006	11,949	8.09%																						
7	Dawson Highway 46A	Philip Street to Penda Avenue	Southbound (G)	3.1	4.4	2006	13,377	3.24%																						
8	Dawson Highway 46A	Philip Street to Penda Avenue	Northbound (A)	4.4	3.1	2006	14,257	3.64%																						
9	Dawson Highway 46A	Penda Avenue to Chapman Drive	Southbound (G)	4.4	5.2	2006	10,630	2.31%																						
10	Dawson Highway 46A	Penda Avenue to Chapman Drive	Northbound (A)	5.2	4.4	2006	9,914	3.63%																						
11	Dawson Highway 46A	Chapman Drive to Don Young Drive	Southbound (G)	5.2	8.4	2006	2,020	5.90%																						
12	Dawson Highway 46A	Chapman Drive to Don Young Drive	Northbound (A)	8.4	5.2	2006	2,971	5.77%																						
13	Dawson Highway 46A	Don Young Drive to Harvey Road	Southbound (G)	8.4	10.3	2006	2,820	5.90%																						
14	Dawson Highway 46A	Don Young Drive to Harvey Road	Northbound (A)	10.3	8.4	2006	2,971	5.77%																						
15	Dawson Highway 46A	Harvey Road to Bruce Highway	Southbound (G)	10.3	19.0	2006	2,137	7.96%																						
16	Dawson Highway 46A	Harvey Road to Bruce Highway	Northbound (A)	19.0	10.3	2006	2,112	7.93%																						
17	Dawson Highway 46A	Bruce Highway to Drynan Drive	Southbound (G)	19.0	21.8	2006	2,354	8.98%																						
18	Dawson Highway 46A	Bruce Highway to Drynan Drive	Northbound (A)	21.8	19.0	2006	2,353	9.34%																						
19	Dawson Highway 46A	Drynan Drive to Gladstone-Monto Road	Westbound (G)	21.8	25.7	2006	827	12.35%																						
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

...ground Parameters ESA 1.98

...d	Section	Direction	Start Chainage	End Chainage	Count Year	Heavy Vehicle %	Total Heavy Vehicle volume	ESA/Heavy Vehicle Ratio
Dawson Highway 46A	Gladstone-Mt Larcom Road to Breslin Street	Southbound (G)	0.0	1.5	2006	0.00%	0	0.00
Dawson Highway 46A	Gladstone-Mt Larcom Road to Breslin Street	Northbound (A)	1.5	0.0	2006	0.00%	0	0.00
Dawson Highway 46A	Breslin Street to Blain Drive	Southbound (G)	1.5	2.2	2006	0.00%	0	0.00
Dawson Highway 46A	Breslin Street to Blain Drive	Northbound (A)	2.2	1.5	2006	0.00%	0	0.00
Dawson Highway 46A	Blain Drive to Philip Street	Southbound (G)	2.2	3.1	2006	0.00%	0	0.00
Dawson Highway 46A	Blain Drive to Philip Street	Northbound (A)	3.1	2.2	2006	0.00%	0	0.00
Dawson Highway 46A	Philip Street to Penda Avenue	Southbound (G)	3.1	4.4	2006	0.00%	0	0.00
Dawson Highway 46A	Philip Street to Penda Avenue	Northbound (A)	4.4	3.1	2006	0.00%	0	0.00
Dawson Highway 46A	Penda Avenue to Chapman Drive	Southbound (G)	4.4	5.2	2006	0.00%	0	0.00
Dawson Highway 46A	Penda Avenue to Chapman Drive	Northbound (A)	5.2	4.4	2006	0.00%	0	0.00
Dawson Highway 46A	Chapman Drive to Don Young Drive	Southbound (G)	5.2	8.4	2006	0.00%	0	0.00
Dawson Highway 46A	Chapman Drive to Don Young Drive	Northbound (A)	8.4	5.2	2006	0.00%	0	0.00
Dawson Highway 46A	Don Young Drive to Harvey Road	Southbound (G)	8.4	10.3	2006	0.00%	0	0.00
Dawson Highway 46A	Don Young Drive to Harvey Road	Northbound (A)	10.3	8.4	2006	0.00%	0	0.00
Dawson Highway 46A	Harvey Road to Bruce Highway	Southbound (G)	10.3	19.0	2006	0.00%	0	0.00
Dawson Highway 46A	Harvey Road to Bruce Highway	Northbound (A)	19.0	10.3	2006	0.00%	0	0.00
Dawson Highway 46A	Bruce Highway to Drynan Drive	Southbound (G)	19.0	21.8	2006	0.00%	0	0.00
Dawson Highway 46A	Bruce Highway to Drynan Drive	Northbound (A)	21.8	19.0	2006	0.00%	0	0.00
Dawson Highway 46A	Drynan Drive to Gladstone-Monto Road	Westbound (G)	21.8	25.7	2006	0.00%	0	0.00
Dawson Highway 46A	Drynan Drive to Gladstone-Monto Road	Eastbound (A)	25.7	21.8	2006	0.00%	0	0.00
Dawson Highway 46A	Gladstone-Monto Road to Access to Pipeline Ca	Westbound (G)	25.7	49.0	2006	0.00%	0	0.00
Dawson Highway 46A	Access to Pipeline Camp 4 to Gladstone-Monto	Eastbound (A)	49.0	25.7	2006	0.00%	0	0.00
Dawson Highway 46A	Access to Pipline Camp 4 to New point 1	Westbound (G)	49.0	72.5	2006	0.00%	0	0.00
Dawson Highway 46A	Access to Pipline Camp 4 to New point 1	Eastbound (A)	72.5	49.0	2006	0.00%	0	0.00
Dawson Highway 46A	New to CSC/BSC Border	Westbound (G)	72.5	76.6	2006	0.00%	0	0.00
Dawson Highway 46A	New to CSC/BSC Border	Eastbound (A)	76.6	72.5	2006	0.00%	0	0.00
Dawson Highway 46A	CSC/BSC Border to New point 2	Westbound (G)	76.6	85.0	2006	0.00%	0	0.00
Dawson Highway 46A	CSC/BSC Border to New point 2	Eastbound (A)	85.0	76.6	2006	0.00%	0	0.00
Dawson Highway 46A	New point 2 to Argoon Road	Westbound (G)	85.0	101.3	2006	0.00%	0	0.00
Dawson Highway 46A	New point 2 to Argoon Road	Eastbound (A)	101.3	85.0	2006	0.00%	0	0.00
Dawson Highway 46A	Agoon Road to Callide Dam Road	Westbound (G)	101.3	114.0	2006	0.00%	0	0.00
Dawson Highway 46A	Agoon Road to Callide Dam Road	Eastbound (A)	114.0	101.3	2006	0.00%	0	0.00
Dawson Highway 46A	Callide Dam Road to Tognalini - Baldwin Road	Westbound (G)	114.0	117.1	2006	0.00%	0	0.00
Dawson Highway 46A	Callide Dam Road to Tognalini - Baldwin Road	Eastbound (A)	117.1	114.0	2006	0.00%	0	0.00
Dawson Highway 46A	Tognalini - Baldwin Road to Biloela	Westbound (G)	117.1	120.0	2006	0.00%	0	0.00
Dawson Highway 46A	Tognalini - Baldwin Road to Biloela	Eastbound (A)	120.0	117.1	2006	0.00%	0	0.00
Dawson Highway 46B	Biloela to Crowsdale Camboon Road	Westbound (G)	0	6.8	2007	0.00%	0	0.00
Dawson Highway 46B	Crewsdale Camboon Road to Bioela	Eastbound (A)	6.8	0	2007	0.00%	0	0.00
Dawson Highway 46B	Crowsdale Camboon Road to Point 1	Westbound (G)	6.8	10	2007	0.00%	0	0.00
Dawson Highway 46B	Point 1 to Crowsdale Camboon Road	Eastbound (A)	10	6.8	2007	0.00%	0	0.00
Dawson Highway 46B	Point 1 to Greycliffe Road	Westbound (G)	10	26.8	2007	0.00%	0	0.00
Dawson Highway 46B	Greycliffe Road to Point 1	Eastbound (A)	26.8	10	2007	0.00%	0	0.00
Dawson Highway 46B	Grecliffe Road to Banana	Westbound (G)	45.7	26.8	2007	0.00%	0	0.00
Dawson Highway 46B	Banana to Greycliffe Road	Eastbound (A)	26.8	45.7	2007	0.00%	0	0.00
Dawson Highway 46C	Banana to Moura Mine	Westbound (G)	0	7.8	2007	0.00%	0	0.00
Dawson Highway 46C	Moura Mine to Banana	Eastbound (A)	7.8	0	2007	0.00%	0	0.00
Dawson Highway 46C	Moura Mine to Moura Township	Westbound (G)	7.8	19	2007	0.00%	0	0.00
Dawson Highway 46C	Moura Township to Moura Mine	Eastbound (A)	19	7.8	2007	0.00%	0	0.00
Dawson Highway 46C	Moura Township to CH. 30	Westbound (G)	19	30	2007	0.00%	0	0.00
Dawson Highway 46C	CH. 30 to Moura Township	Eastbound (A)	30	19	2007	0.00%	0	0.00
Dawson Highway 46C	CH. 30 to CH. 41	Westbound (G)	30	41	2007	0.00%	0	0.00
Bruce Highway (10D)	Miriam Vale CH. 98.8 to CH. 112	Northbound (A)	98.8	112	2007	0.00%	0	0.00
Bruce Highway (10D)	CH. 112 to Miriam Vale CH. 98.8	Southbound (G)	112	98.8	2007	0.00%	0	0.00
Bruce Highway (10D)	CH. 112 to Benaraby CH. 147.1	Northbound (A)	112	147.1	2007	0.00%	0	0.00
Bruce Highway (10D)	Benaraby CH. 147.1 o CH. 112	Southbound (G)	147.1	112	2007	0.00%	0	0.00

Road	Section	Direction	Start Chainage	End Chainage	Count Year	Heavy Vehicle %	Total Heavy Vehicle volume	ESA/Heavy Vehicle Ratio
273 Bruce Highway (10D)	Miriam Vale CH. 98.8 to CH. 112	Northbound (A)	98.8	112	2007	0.00%	0	0.00
274 Bruce Highway (10D)	CH. 112 to Miriam Vale CH. 98.8	Southbound (G)	112	98.8	2007	0.00%	0	0.00
275 Bruce Highway (10D)	CH. 112 to Benaraby CH. 147.1	Northbound (A)	112	147.1	2007	0.00%	0	0.00
276 Bruce Highway (10D)	Benaraby CH. 147.1 o CH. 112	Southbound (G)	147.1	112	2007	0.00%	0	0.00

Background Parameters

Additional AADT

Road		Section	Direction	Start Chainage	End Chainage	Count Year	Total Volume (vpd)	Heavy Vehicle %	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
1	Dawson Highway 46A	Gladstone-Mt Larcom Road to Breslin Street	Southbound (G)	0.0	1.5	2006	7,010	3.87%																											
2	Dawson Highway 46A	Gladstone-Mt Larcom Road to Breslin Street	Northbound (A)	1.5	0.0	2006	5,977	2.25%																											
3	Dawson Highway 46A	Breslin Street to Blain Drive	Southbound (G)	1.5	2.2	2006	10,836	2.56%																											
4	Dawson Highway 46A	Breslin Street to Blain Drive	Northbound (A)	2.2	1.5	2006	9,912	3.47%																											
5	Dawson Highway 46A	Blain Drive to Philip Street	Southbound (G)	2.2	3.1	2006	12,269	3.57%			60	131	131	131	131	161	161	161	161	161	145	140	140	140	140	140	140	140	140	140	140				
6	Dawson Highway 46A	Blain Drive to Philip Street	Northbound (A)	3.1	2.2	2006	11,949	8.09%			60	131	131	131	131	161	161	161	161	161	145	140	140	140	140	140	140	140	140	140	140				
7	Dawson Highway 46A	Philip Street to Penda Avenue	Southbound (G)	3.1	4.4	2006	13,377	3.24%																											
8	Dawson Highway 46A	Philip Street to Penda Avenue	Northbound (A)	4.4	3.1	2006	14,257	3.64%																											
9	Dawson Highway 46A	Penda Avenue to Chapman Drive	Southbound (G)	4.4	5.2	2006	10,630	2.31%																											
10	Dawson Highway 46A	Penda Avenue to Chapman Drive	Northbound (A)	5.2	4.4	2006	9,914	3.63%																											
11	Dawson Highway 46A	Chapman Drive to Don Young Drive	Southbound (G)	5.2	8.4	2006	2,020	5.90%																											
12	Dawson Highway 46A	Chapman Drive to Don Young Drive	Northbound (A)	8.4	5.2	2006	2,971	5.77%																											
13	Dawson Highway 46A	Don Young Drive to Harvey Road	Southbound (G)	8.4	10.3	2006	2,820	5.90%																											
14	Dawson Highway 46A	Don Young Drive to Harvey Road	Northbound (A)	10.3	8.4	2006	2,971	5.77%																											
15	Dawson Highway 46A	Harvey Road to Bruce Highway	Southbound (G)	10.3	19.0	2006	2,137	7.96%																											
16	Dawson Highway 46A	Harvey Road to Bruce Highway	Northbound (A)	19.0	10.3	2006	2,112	7.93%																											
17	Dawson Highway 46A	Bruce Highway to Drynan Drive	Southbound (G)	19.0	21.8	2006	2,354	8.98%																											
18	Dawson Highway 46A	Bruce Highway to Drynan Drive	Northbound (A)	21.8	19.0	2006	2,353	9.34%																											
19	Dawson Highway 46A	Drynan Drive to Gladstone-Monto Road	Westbound (G)	21.8	25.7	2006	827	12.35%																											
20	Dawson Highway 46A	Drynan Drive to Gladstone-Monto Road	Eastbound (A)	25.7	21.8	2006	827	13.45%																											
21	Dawson Highway 46A	Gladstone-Monto Road to Access to Pipeline Ca	Westbound (G)	25.7	49.0	2006	464	18.99%																											
22	Dawson Highway 46A	Access to Pipeline Camp 4 to Gladstone-Monto I	Eastbound (A)	49.0	25.7	2006	465	18.28%																											
23	Dawson Highway 46A	Access to Pipline Camp 4 to New point 1	Westbound (G)	49.0	72.5	2006	464	18.99%																											
24	Dawson Highway 46A	Access to Pipline Camp 4 to New point 1	Eastbound (A)	72.5	49.0	2006	465	18.28%																											
25	Dawson Highway 46A	New to CSC/BSC Border	Westbound (G)	72.5	76.6	2006	464	18.99%																											
26	Dawson Highway 46A	New to CSC/BSC Border	Eastbound (A)	76.6	72.5	2006	465	18.28%																											
27	Dawson Highway 46A	CSC/BSC Border to New point 2	Westbound (G)	76.6	85.0	2006	464	18.99%																											
28	Dawson Highway 46A	CSC/BSC Border to New point 2	Eastbound (A)	85.0	76.6	2006	465	18.28%																											
29	Dawson Highway 46A	New point 2 to Argoon Road	Westbound (G)	85.0	101.3	2006	464	18.99%																											
30	Dawson Highway 46A	New point 2 to Argoon Road	Eastbound (A)	101.3	85.0	2006	465	18.28%																											
31	Dawson Highway 46A	Agoon Road to Callide Dam Road	Westbound (G)	101.3	114.0	2006	431	18.17%																											
32	Dawson Highway 46A	Agoon Road to Callide Dam Road	Eastbound (A)	114.0	101.3	2006	435	17.46%																											
33	Dawson Highway 46A	Callide Dam Road to Tognalini - Baldwin Road	Westbound (G)	114.0	117.1	2006	634	15.96%																											
34	Dawson Highway 46A	Callide Dam Road to Tognalini - Baldwin Road	Eastbound (A)	117.1	114.0	2006	651	14.82%																											
35	Dawson Highway 46A	Tognalini - Baldwin Road to Biloela	Westbound (G)	117.1	120.0	2006	3,579	5.79%																											
36	Dawson Highway 46A	Tognalini - Baldwin Road to Biloela	Eastbound (A)	120.0	117.1	2006	3,668	5.56%																											
37	Dawson Highway 46B	Biloela to Crowsdale Camboon Road	Westbound (G)	0	6.8	2007	878	15.53%																											
38	Dawson Highway 46B	Crewsdale Camboon Road to Bioela	Eastbound (A)	6.8	0	2007	878	15.53%																											
39	Dawson Highway 46B	Crowsdale Camboon Road to Point 1	Westbound (G)	6.8	10	2007	878	15.53%																											
40	Dawson Highway 46B	Point 1 to Crowsdale Camboon Road	Eastbound (A)	10	6.8	2007	878	15.53%																											
41	Dawson Highway 46B	Point 1 to Greycliffe Road	Westbound (G)	10	26.8	2007	878	15.53%																											
42	Dawson Highway 46B	[illegible]	[illegible]	[illegible]	10	2007	878	15.53%																											
43	Dawson Highway 46B	[illegible]	[illegible]	[illegible]	26.8	2007	619	16.89%																											
44	Dawson Highway 46B	[illegible]	[illegible]	[illegible]	45.7	2007	619	16.89%																											
45	Dawson Highway 46C	[illegible]	[illegible]	[illegible]	7.8	2007	653	17.42%																											
46	Dawson Highway 46C	[illegible]	[illegible]	[illegible]	0	2007	653	17.42%																											
47	Dawson Highway 46C	[illegible]	[illegible]	[illegible]	19	2007	830	14.20%																											
48	Dawson Highway 46C	[illegible]	[illegible]	[illegible]	7.8	2007	830	14.20%																											
49	Dawson Highway 46C	[illegible]	[illegible]	[illegible]	30	2007	187	21.71%																											
50	Dawson Highway 46C	[illegible]	[illegible]	[illegible]	19	2007	187	21.71%																											
51	Dawson Highway 46C	[illegible]	[illegible]	[illegible]	41	2007	187	21.71%																											
52	Dawson Highway 46C	[illegible]	[illegible]	[illegible]	30	2007	187	21.71%																											
53	Dawson Highway 46C	[illegible]	[illegible]	[illegible]	45	2007	187	21.71%																											
54	Dawson Highway 46C	[illegible]	[illegible]	[illegible]	41	2007	187	21.71%																											
55	Gladstone-Mt Larcom Rd	[illegible]	[illegible]	[illegible]	1.4	2006	4,458	11.38%																											
56	Gladstone-Mt Larcom Rd	[illegible]	[illegible]	[illegible]	0	2006	4,200	12.44%																											
57	Gladstone-Mt Larcom Rd	[illegible]	[illegible]	[illegible]	3.3	2006	2,943	16.57%																											
58	Gladstone-Mt Larcom Rd	[illegible]	[illegible]	[illegible]	1.4	2006	2,760	17.26%																											
59	Gladstone-Mt Larcom Rd	[illegible]	[illegible]	[illegible]	3.9	2006	3,828	14.69%			136	271	271	271	271	313	313	313	313	313	269	249	249	249	249	249	249	249	249	249	249				
60	Gladstone-Mt Larcom Rd	[illegible]	[illegible]	[illegible]	3.3	2006	3,798	16.18%			136	271	271	271	271	313	313	313	313	313	269	249	249	249	249	249	249	249	249	249	249				
61	Gladstone-Mt Larcom Rd	[illegible]	[illegible]	[illegible]	4.6	2006	3,828	14.69%			245	520	520	520	520	625	625	625	625	625	560	531	531	531	531	531	531	531	531	531	531				
62	Gladstone-Mt Larcom Rd	[illegible]	[illegible]	[illegible]	3.9	2006	3,798	16.18%			245	520	520	520	520	625	625	625	625	625	560	531	531	531	531	531	531	531	531	531	531				
63	Gladstone-Mt Larcom Rd	[illegible]	[illegible]	[illegible]	9.8	2006	2,578	17.08%			84	93	93	93	93	100	100	100	100	100	103	61	61	61	61	61	61	61	61	61	61				
64	Gladstone-Mt Larcom Rd	[illegible]	[illegible]	[illegible]	4.6	2006	2,622	17.44%			84	93	93	93	93	100	100	100	100	100	103	61	61	61	61	61	61	61	61	61	61				
65	Gladstone-Mt Larcom Rd	[illegible]	[illegible]	[illegible]	12.3	2006	2,578	17.08%			84	93	93	93	93	100	100	100	100	100	103	61	61	61	61	61	61	61	61	61	61				
66	Gladstone-Mt Larcom Rd	[illegible]	[illegible]	[illegible]	9.8	2006	2,622	17.44%			84	93	93	93	93	100	100	100	100	100	103	61	61	61	61	61	61	61	61	61	61				
67	Gladstone-Mt Larcom Rd	[illegible]	[illegible]	[illegible]	16.3	2006	1,346	19.93%			84	93	93	93	93	100	100	100	100	100	103	61	61	61	61	61	61	61	61	61	61				
68	Gladstone-Mt Larcom Rd	[illegible]	[illegible]	[illegible]	12.3	2006	1,401	21.66%			84	93	93	93	93	100	100	100	100	100	103	61	61	61	61	61	61	61	61	61	61				
69	Gladstone-Mt Larcom Rd	[illegible]	[illegible]	[illegible]	19	2006	1,346	19.93%			30	41	41	41	41	44	44	44	44	44	41	30	30	30	30	30	30	30	30	30	30				
70	Gladstone-Mt Larcom Rd	[illegible]	[illegible]	[illegible]	16.3	2006	1,401	21.66%			30	41	41	41	41	44	44	44	44	44	41	30	30	30	30	30	30	30	30	30	30				
71	Gladstone-Mt Larcom Rd	[illegible]	[illegible]	[illegible]	32.1	2006	1,346	19.93%			28	40	40	40	40	44	44	44	44	44	41	30	30	30	30	30	30	30	30	30	30				
72	Gladstone-Mt Larcom Rd	[illegible]	[illegible]	[illegible]	19	2006	1,401	21.66%			28	40	40	40	40	44	44	44	44	44	41	30	30	30	30	30	30	30	30	30	30				
73	Carnarvon Highway 24A	[illegible]	[illegible]	[illegible]	10.0	2007	152	19.45%																											
74	Carnarvon Highway 24A	[illegible]	[illegible]	[illegible]	0.0	2007	152	19.45%																											
75	Carnarvon Highway 24A	[illegible]	[illegible]	[illegible]	40.0	2007	90	32.77%																											
76	Carnarvon Highway 24A	[illegible]	[illegible]	[illegible]	10.0	2007	90	32.77%																											
77	Carnarvon Highway 24A	[illegible]	[illegible]	[illegible]	74.0	2007	111	25.03%																											
78	Carnarvon Highway 24A	[illegible]	[illegible]	[illegible]	40.0	2007	111	25.03%																											
79	Carnarvon Highway 24A	[illegible]	[illegible]	[illegible]	111.0	2007	173	24.49%																											
80	Carnarvon Highway 24A	[illegible]	[illegible]	[illegible]	74.0	2007	173	24.49%																											
81	Carnarvon Highway 24A	[illegible]	[illegible]	[illegible]	118.0	2007	512	17.44%																											
82	Carnarvon Highway 24A	[illegible]	[illegible]	[illegible]	111.0	2007	512	17.44%																											
83	Carnarvon Highway 24B	[illegible]	[illegible]	[illegible]	4	2007	662	12.56%																											
84	Carnarvon Highway 24B	[illegible]	[illegible]	[illegible]	0	2007	662	12.56%																											
85	Carnarvon Highway 24B	[illegible]	[illegible]	[illegible]	9	2007	396	19.65%																											
86	Carnarvon Highway 24B	[illegible]	[illegible]	[illegible]	4	2007	396	19.65%																											
87	Carnarvon Highway 24B	[illegible]	[illegible]	[illegible]	56	2007	132	28.39%																											
88	Carnarvon Highway 24B	[illegible]	[illegible]	[illegible]	9	2007	132	28.39%																											
89	Carnarvon Highway 24B	[illegible]	[illegible]	[illegible]	116	2007	111	30.96%																											

Background Parameters — ESA 1.98 — Additional CL3 50% Loaded HV's (2008–2034)

Road	Section	Direction	Start Chainage	End Chainage	Count Year	Heavy Vehicle %	Total Heavy Vehicle volume	ESA/Heavy Vehicle Ratio
Dawson Highway 46A	Gladstone-Mt Larcom Road to Breslin Street	Southbound (G)	0.0	1.5	2006	0.00%	0	0.00
Dawson Highway 46A	Gladstone-Mt Larcom Road to Breslin Street	Northbound (A)	1.5	0.0	2006	0.00%	0	0.00
Dawson Highway 46A	Breslin Street to Blain Drive	Southbound (G)	1.5	2.2	2006	0.00%	0	0.00
Dawson Highway 46A	Breslin Street to Blain Drive	Northbound (A)	2.2	1.5	2006	0.00%	0	0.00
Dawson Highway 46A	Blain Drive to Philip Street	Southbound (G)	2.2	3.1	2006	0.00%	0	0.00
Dawson Highway 46A	Blain Drive to Philip Street	Northbound (A)	3.1	2.2	2006	0.00%	0	0.00
Dawson Highway 46A	Philip Street to Penda Avenue	Southbound (G)	3.1	4.4	2006	0.00%	0	0.00
Dawson Highway 46A	Philip Street to Penda Avenue	Northbound (A)	4.4	3.1	2006	0.00%	0	0.00
Dawson Highway 46A	Penda Avenue to Chapman Drive	Southbound (G)	4.4	5.2	2006	0.00%	0	0.00
Dawson Highway 46A	Penda Avenue to Chapman Drive	Northbound (A)	5.2	4.4	2006	0.00%	0	0.00
Dawson Highway 46A	Chapman Drive to Don Young Drive	Southbound (G)	5.2	8.4	2006	0.00%	0	0.00
Dawson Highway 46A	Chapman Drive to Don Young Drive	Northbound (A)	8.4	5.2	2006	0.00%	0	0.00
Dawson Highway 46A	Don Young Drive to Harvey Road	Southbound (G)	8.4	10.3	2006	0.00%	0	0.00
Dawson Highway 46A	Don Young Drive to Harvey Road	Northbound (A)	10.3	8.4	2006	0.00%	0	0.00
Dawson Highway 46A	Harvey Road to Bruce Highway	Southbound (G)	10.3	19.0	2006	0.00%	0	0.00
Dawson Highway 46A	Harvey Road to Bruce Highway	Northbound (A)	19.0	10.3	2006	0.00%	0	0.00
Dawson Highway 46A	Bruce Highway to Drynan Drive	Southbound (G)	19.0	21.8	2006	0.00%	0	0.00
Dawson Highway 46A	Bruce Highway to Drynan Drive	Northbound (A)	21.8	19.0	2006	0.00%	0	0.00
Dawson Highway 46A	Drynan Drive to Gladstone-Monto Road	Westbound (G)	21.8	25.7	2006	0.00%	0	0.00
Dawson Highway 46A	Drynan Drive to Gladstone-Monto Road	Eastbound (A)	25.7	21.8	2006	0.00%	0	0.00
Dawson Highway 46A	Gladstone-Monto Road to Access to Pipeline Ca	Westbound (G)	25.7	49.0	2006	0.00%	0	0.00
Dawson Highway 46A	Access to Pipeline Camp 4 to Gladstone-Monto	Eastbound (A)	49.0	25.7	2006	0.00%	0	0.00
Dawson Highway 46A	Access to Pipline Camp 4 to New point 1	Westbound (G)	49.0	72.5	2006	0.00%	0	0.00
Dawson Highway 46A	Access to Pipline Camp 4 to New point 1	Eastbound (A)	72.5	49.0	2006	0.00%	0	0.00
Dawson Highway 46A	New to CSC/BSC Border	Westbound (G)	72.5	76.6	2006	0.00%	0	0.00
Dawson Highway 46A	New to CSC/BSC Border	Eastbound (A)	76.6	72.5	2006	0.00%	0	0.00
Dawson Highway 46A	CSC/BSC Border to New point 2	Westbound (G)	76.6	85.0	2006	0.00%	0	0.00
Dawson Highway 46A	CSC/BSC Border to New point 2	Eastbound (A)	85.0	76.6	2006	0.00%	0	0.00
Dawson Highway 46A	New point 2 to Argoon Road	Westbound (G)	85.0	101.3	2006	0.00%	0	0.00
Dawson Highway 46A	New point 2 to Argoon Road	Eastbound (A)	101.3	85.0	2006	0.00%	0	0.00
Dawson Highway 46A	Agoon Road to Callide Dam Road	Westbound (G)	101.3	114.0	2006	0.00%	0	0.00
Dawson Highway 46A	Agoon Road to Callide Dam Road	Eastbound (A)	114.0	101.3	2006	0.00%	0	0.00
Dawson Highway 46A	Callide Dam Road to Tognalini - Baldwin Road	Westbound (G)	114.0	117.1	2006	0.00%	0	0.00
Dawson Highway 46A	Callide Dam Road to Tognalini - Baldwin Road	Eastbound (A)	117.1	114.0	2006	0.00%	0	0.00
Dawson Highway 46A	Tognalini - Baldwin Road to Biloela	Westbound (G)	117.1	120.0	2006	0.00%	0	0.00
Dawson Highway 46A	Tognalini - Baldwin Road to Biloela	Eastbound (A)	120.0	117.1	2006	0.00%	0	0.00
Dawson Highway 46B	Biloela to Crowsdale Camboon Road	Westbound (G)	0	6.8	2007	0.00%	0	0.00
Dawson Highway 46B	Crewsdale Camboon Road to Bioela	Eastbound (A)	6.8	0	2007	0.00%	0	0.00
Dawson Highway 46B	Crowsdale Camboon Road to Point 1	Westbound (G)	6.8	10	2007	0.00%	0	0.00
Dawson Highway 46B	Point 1 to Crowsdale Camboon Road	Eastbound (A)	10	6.8	2007	0.00%	0	0.00
Dawson Highway 46B	Point 1 to Greycliffe Road	Westbound (G)	10	26.8	2007	0.00%	0	0.00
Dawson Highway 46B	Greycliffe Road to Point 1	Eastbound (A)	26.8	10	2007	0.00%	0	0.00
Dawson Highway 46B	Grecliffe Road to Banana	Westbound (G)	45.7	26.8	2007	0.00%	0	0.00
Dawson Highway 46B	Banana to Greycliffe Road	Eastbound (A)	26.8	45.7	2007	0.00%	0	0.00
Dawson Highway 46C	Banana to Moura Mine	Westbound (G)	0	7.8	2007	0.00%	0	0.00
Dawson Highway 46C	Moura Mine to Banana	Eastbound (A)	7.8	0	2007	0.00%	0	0.00
Dawson Highway 46C	Moura Mine to Moura Township	Westbound (G)	7.8	19	2007	0.00%	0	0.00
Dawson Highway 46C	Moura Township to Moura Mine	Eastbound (A)	19	7.8	2007	0.00%	0	0.00
Dawson Highway 46C	Moura Township to CH. 30	Westbound (G)	19	30	2007	0.00%	0	0.00
Dawson Highway 46C	CH. 30 to Moura Township	Eastbound (A)	30	19	2007	0.00%	0	0.00
Dawson Highway 46C	CH. 30 to CH. 41	Westbound (G)	30	41	2007	0.00%	0	0.00
Dawson Highway 46C	CH. 41 to CH. 30	Eastbound (A)	41	30	2007	0.00%	0	0.00
Dawson Highway 46C	CH. 41 to District Boundary	Westbound (G)	41	45	2007	0.00%	0	0.00
Dawson Highway 46C	Boundary to CH. 41	Eastbound (A)	45	41	2007	0.00%	0	0.00
Gladstone-Mt Larcom Rd	Dawspn Highway to Hilderbrand Street	Westbound (G)	0	1.4	2006	0.00%	0	0.00
Gladstone-Mt Larcom Rd	Dawspn Highway to Hilderbrand Street	Eastbound (A)	1.4	0	2006	0.00%	0	0.00
Gladstone-Mt Larcom Rd	Hilderbrand Street to Blain Drive	Westbound (G)	1.4	3.3	2006	0.00%	0	0.00
Gladstone-Mt Larcom Rd	Hilderbrand Street to Blain Drive	Eastbound (A)	3.3	1.4	2006	0.00%	0	0.00
Gladstone-Mt Larcom Rd	Blain Drive to Red Rover Road	Westbound (G)	3.3	3.9	2006	0.00%	0	0.00
Gladstone-Mt Larcom Rd	Blain Drive to Red Rover Road	Eastbound (A)	3.9	3.3	2006	0.00%	0	0.00
Gladstone-Mt Larcom Rd	Red Rover Road to Power Station	Westbound (G)	3.9	4.6	2006	0.00%	0	0.00
Gladstone-Mt Larcom Rd	Red Rover Road to Power Station	Eastbound (A)	4.6	3.9	2006	0.00%	0	0.00
Gladstone-Mt Larcom Rd	Power Station to Reid Road	Westbound (G)	4.6	9.8	2006	0.00%	0	0.00
Gladstone-Mt Larcom Rd	Power Station to Reid Road	Eastbound (A)	9.8	4.6	2006	0.00%	0	0.00
Gladstone-Mt Larcom Rd	Reid Road to Landing Road	Westbound (G)	9.8	12.3	2006	0.00%	0	0.00
Gladstone-Mt Larcom Rd	Reid Road to Landing Road	Eastbound (A)	12.3	9.8	2006	0.00%	0	0.00
Gladstone-Mt Larcom Rd	Landing Road to Targinnie Road	Westbound (G)	12.3	16.3	2006	0.00%	0	0.00
Gladstone-Mt Larcom Rd	Landing Road to Targinnie Road	Eastbound (A)	16.3	12.3	2006	0.00%	0	0.00
Gladstone-Mt Larcom Rd	Targinnie Road to Quarry Road	Westbound (G)	16.3	19	2006	0.00%	0	0.00
Gladstone-Mt Larcom Rd	Targinnie Road to Quarry Road	Eastbound (A)	19	16.3	2006	0.00%	0	0.00
Gladstone-Mt Larcom Rd	Quarry Road to Bruce Highway	Westbound (G)	19	32.1	2006	0.00%	0	0.00
Gladstone-Mt Larcom Rd	Quarry Road to Bruce Highway	Eastbound (A)	32.1	19	2006	0.00%	0	0.00
Carnarvon Highway 24A	CH. 0.00 (NSW border) to CH. 10	Northbound (G)	0.0	10.0	2007	0.00%	0	0.00
Carnarvon Highway 24A	CH. 10 to CH. 0.0 (NSW border)	Southbound (A)	10.0	0.0	2007	0.00%	0	0.00
Carnarvon Highway 24A	CH. 10m to CH. 40 (Thallon)	Northbound (G)	10.0	40.0	2007	0.00%	0	0.00
Carnarvon Highway 24A	CH. 40 (Thallon) to CH. 10	Southbound (A)	40.0	10.0	2007	0.00%	0	0.00
Carnarvon Highway 24A	CH. 40 (Thallon) to CH. 74 (Ningdigully)	Northbound (G)	40.0	74.0	2007	0.00%	0	0.00
Carnarvon Highway 24A	CH. 74 (Nindigully) to CH. 40 (Thallon)	Southbound (A)	74.0	40.0	2007	0.00%	0	0.00
Carnarvon Highway 24A	CH. 74 (Nindigully) to CH. 111	Northbound (G)	74.0	111.0	2007	0.00%	0	0.00
Carnarvon Highway 24A	CH. 111 to CH.74 (Nindigully)	Southbound (A)	111.0	74.0	2007	0.00%	0	0.00
Carnarvon Highway 24A	CH. 111 to St George	Northbound (G)	111.0	118.0	2007	0.00%	0	0.00
Carnarvon Highway 24A	St George to CH. 111	Southbound (A)	118.0	111.0	2007	0.00%	0	0.00
Carnarvon Highway 24B	CH. 0.00 (St George) to CH. 4	Northbound (G)	0	4	2007	0.00%	0	0.00
Carnarvon Highway 24B	CH. 4 to CH. 0.0 (St George)	Southbound (A)	4	0	2007	0.00%	0	0.00
Carnarvon Highway 24B	CH. 4m to CH. 9	Northbound (G)	4	9	2007	0.00%	0	0.00
Carnarvon Highway 24B	CH. 9 to CH. 56	Southbound (A)	9	4	2007	0.00%	0	0.00
Carnarvon Highway 24B	CH. 9 to CH. 4	Northbound (G)	9	56	2007	0.00%	0	0.00
Carnarvon Highway 24B	CH. 56 to CH. 9	Southbound (A)	56	9	2007	0.00%	0	0.00
Carnarvon Highway 24B	CH. 56 to CH. 116 (Surat)	Northbound (G)	56	116	2007	0.00%	0	0.00
Carnarvon Highway 24B	CH. 116 (Surat) to CH. 56	Southbound (A)	116	56	2007	0.00%	0	0.00
Carnarvon Highway 24C	CH. 0.00 (Surat) to CH. 33	Northbound (G)	0	33	2007	0.00%	0	0.00
Carnarvon Highway 24C	CH. 33 to CH. 0.0 (Surat)	Southbound (A)	33	0	2007	0.00%	0	0.00
Carnarvon Highway 24C	CH. 33m to CH. 73 (Roma)	Northbound (G)	33	73	2007	0.00%	0	0.00
Carnarvon Highway 24C	CH. 73 (Roma) to CH. 33	Southbound (A)	73	33	2007	0.00%	0	0.00
Carnarvon Highway 24D	CH. 0.00 (Roma) to CH. 3	Northbound (G)	0	3	2007	0.00%	0	0.00
Carnarvon Highway 24D	CH. 3 to CH. 0.0 (Roma)	Southbound (A)	3	0	2007	0.00%	0	0.00
Carnarvon Highway 24D	CH. 3m to CH. 18 Roma - Taroom Road	Northbound (G)	3	18	2007	0.00%	0	0.00
Carnarvon Highway 24D	CH. 18 Roma - Taroom Road to CH. 3	Southbound (A)	18	3	2007	0.00%	0	0.00
Carnarvon Highway 24D	Roma - Taroom Road to Injune	Northbound (G)	18	90	2007	0.00%	0	0.00
Carnarvon Highway 24D	Injune to Roma - Taroom Road	Southbound (A)	90	18	2007	0.00%	0	0.00
Carnarvon Highway 24E	CH. 0.00 (Injune) to Fairview Field Access CH25.	Northbound (G)	0	25	2007	0.00%	0	0.00
Carnarvon Highway 24E	Fairview Field Access CH. 25.00 to CH. 0.0 (Injur	Southbound (A)	25	0	2007	0.00%	0	0.00
Carnarvon Highway 24E	Fairview Field Access to CH. 69 Boundary with E	Northbound (G)	25	69	2007	0.00%	0	0.00
Carnarvon Highway 24E	CH. 69 to Fairview Field Access	Southbound (A)	69	25	2007	0.00%	0	0.00
Carnarvon Highway 24E	CH. 69 to CH. 86 Access to Camp 1	Northbound (G)	69	86	2007	0.00%	0	0.00
Carnarvon Highway 24E	CH. 86 Access to Camp 1 to CH. 69	Southbound (A)	86	69	2007	0.00%	0	0.00
Carnarvon Highway 24E	CH. 86 Access to Camp 1 to CH. 111	Northbound (G)	86	111	2007	0.00%	0	0.00
Carnarvon Highway 24E	CH. 111 to CH. 86 Access to Camp 1	Southbound (A)	111	86	2007	0.00%	0	0.00
Carnarvon Highway 24E	CH. 111 to CH.172 (Rollestone)	Northbound (G)	111	172	2007	0.00%	0	0.00
Carnarvon Highway 24E	CH. 172 (Rollestone) to CH.111	Southbound (A)	172	111	2007	0.00%	0	0.00
Leichhardt Highway 26A	CH. 00 Capicorn Highway to Burnett Highway	Southbound (G)	0.0	25.7	2007	0.00%	0	0.00
Leichhardt Highway 26A	Burnett Highway to Capicorn Highway	Northbound (A)	25.7	0.0	2007	0.00%	0	0.00
Leichhardt Highway 26A	Burnett Highway to CH. 51.1	Southbound (G)	25.7	51.1	2007	0.00%	0	0.00
Leichhardt Highway 26A	CH. 51.1 to Burnett Highway	Northbound (A)	51.1	25.7	2007	0.00%	0	0.00
Leichhardt Highway 26A	CH. 51.1 to CH. 62.6	Southbound (G)	51.1	62.6	2007	0.00%	0	0.00
Leichhardt Highway 26A	CH. 62.6 to CH. 51.1	Northbound (A)	62.6	51.1	2007	0.00%	0	0.00
Leichhardt Highway 26A	CH. 62.6 to CH. 86.0 Fairview Road	Southbound (G)	62.6	86.0	2007	0.00%	0	0.00
Leichhardt Highway 26A	CH. 86.0 Fairview Road to CH. 62.6	Northbound (A)	86.0	62.6	2007	0.00%	0	0.00
Leichhardt Highway 26A	CH. 86.0 Fairview Road to CH. 88.0	Southbound (G)	86.0	88.0	2007	0.00%	0	0.00
Leichhardt Highway 26A	CH. 88.0 to CH.86.0	Northbound (A)	88.0	86.0	2007	0.00%	0	0.00
Leichhardt Highway 26A	CH. 88.0 to CH. 99.0 (Camp 3)	Southbound (G)	88.0	99.0	2007	0.00%	0	0.00
Leichhardt Highway 26A	CH. 99.0 (Camp 3) to CH. 88.0	Northbound (A)	99.0	88.0	2007	0.00%	0	0.00
Leichhardt Highway 26A	CH. 99.0 to Banana CH. 105.2	Southbound (G)	99.0	105.2	2007	0.00%	0	0.00
Leichhardt Highway 26A	Banana CH. 105.2 to CH. 99.0	Northbound (A)	105.2	99.0	2007	0.00%	0	0.00
Leichhardt Highway 26A	Banana CH. 105.2 to CH. 117.0	Southbound (G)	105.2	117.0	2007	0.00%	0	0.00
Leichhardt Highway 26A	CH. 117.0 to Banana CH. 105.2	Northbound (A)	117.0	105.2	2007	0.00%	0	0.00
Leichhardt Highway 26A	CH. 117.0 to CH. 124.0	Southbound (G)	117.0	124.0	2007	0.00%	0	0.00
Leichhardt Highway 26A	CH. 124.0 to CH. 117.0	Northbound (A)	124.0	117.0	2007	0.00%	0	0.00
Leichhardt Highway 26A	Theodore CH. 162.3 to CH.124.0	Westbound (G)	124.0	162.3	2007	0.00%	0	0.00
Leichhardt Highway 26A	CH.124.0 to Theodore CH. 162.4	Eastbound (A)	162.3	124.0	2007	0.00%	0	0.00
Leichhardt Highway 26A	Theodore CH. 162.3 to CH. 124.0	Westbound (G)	162.3	170.3	2007	0.00%	0	0.00
Leichhardt Highway 26A	Theodore CH. 162.3 to Glenmoral Roundstone R	Eastbound (A)	170.3	162.3	2007	0.00%	0	0.00
Leichhardt Highway 26A	Glenmoral Roundstone Road to Isla Delusion Ro	Westbound (G)	170.3	184.0	2007	0.00%	0	0.00
Leichhardt Highway 26A	Isla Delusion Road to Glenmoral Roundstone Ro	Eastbound (A)	184.0	170.3	2007	0.00%	0	0.00
Leichhardt Highway 26A	Isla Delusion Road to District Boundary	Westbound (G)	184.0	192.2	2007	0.00%	0	0.00
Leichhardt Highway 26A	District Boundary to Isla Delusion Road	Eastbound (A)	192.2	184	2007	0.00%	0	0.00
Bruce Highway	Gladstone-Beraraby Road to Dawson Highway	Westbound (G)	0	11.6	2006	0.00%	0	0.00
Bruce Highway	Gladstone-Beraraby Road to Dawson Highway	Eastbound (A)	11.6	0	2006	0.00%	0	0.00
Bruce Highway	Dawson Highway to Calliope River Road	Westbound (G)	11.6	18.7	2006	0.00%	0	0.00
Bruce Highway	Dawson Highway to Calliope River Road	Eastbound (A)	18.7	11.6	2006	0.00%	0	0.00
Bruce Highway	Calliope River Road to Gladstone Mt-Larcom Roa	Westbound (G)	18.7	45.4	2006	0.00%	0	0.00
Bruce Highway	Calliope River Road to Gladstone Mt-Larcom Roa	Eastbound (A)	45.4	18.7	2006	0.00%	0	0.00
Bruce Highway	Gladstone-Mt Larcom Road to Bajool Port Alma R	Westbound (G)	45.4	85.3	2006	0.00%	0	0.00
Bruce Highway	Gladstone-Mt Larcom Road to Bajool Port Alma R	Eastbound (A)	85.3	45.4	2006	0.00%	0	0.00
Bruce Highway	Bajool Port Alma Road to Gavial-Gracemere Roa	Westbound (G)	85.3	109	2006	0.00%	0	0.00
Bruce Highway	Bajool Port Alma Road to Gavial-Gracemere Roa	Eastbound (A)	109	85.3	2006	0.00%	0	0.00
Bruce Highway	Gavial-Gracemere Road to Burnett Highway	Westbound (G)	109	114.4	2006	0.00%	0	0.00
Bruce Highway	Gavial-Gracemere Road to Burnett Highway	Eastbound (A)	114.4	109	2006	0.00%	0	0.00
Bruce Highway	Burnett Highway to Capricorn Highway	Westbound (G)	114.4	117	2006	0.00%	0	0.00
Bruce Highway	Burnett Highway to Capricorn Highway	Eastbound (A)	117	114.4	2006	0.00%	0	0.00
Bruce Highway	Capricorn Highway to Stanley Street	Westbound (G)	117	119.736	2006	0.00%	0	0.00
Bruce Highway	Capricorn Highway to Stanley Street	Eastbound (A)	119.736	117	2006	0.00%	0	0.00
Gladstone - Benaraby Roa	CH.0.0 Dawson Highway CH. 0.00 to Sun valley	Southbound (G)	0	0.645	2007	0.00%	0	0.00
Gladstone - Benaraby Roa	Sun Valley Road CH. 0.645 to Dawson Highway	Northbound (A)	0.645	0	2007	0.00%	0	0.00
Gladstone - Benaraby Roa	CH. 0.645 to Glenlyon Road CH. 2.159	Southbound (G)	0.645	2.159	2007	0.00%	0	0.00
Gladstone - Benaraby Roa	Glenlyon Road CH. 2.159 to CH. 0.645	Northbound (A)	2.159	0.645	2007	0.00%	0	0.00
Gladstone - Benaraby Roa	Glenlyon Road CH. 2.159 to French Street CH. 3	Southbound (G)	2.159	3.4	2007	0.00%	0	0.00
Gladstone - Benaraby Roa	French Street CH. 3.40 to Glenlyon Road CH. 2.1	Northbound (A)	3.4	2.159	2007	0.00%	0	0.00
Gladstone - Benaraby Roa	French Street CH. 3.40 to Glen Eden Drive CH. 5	Southbound (G)	3.4	5.7	2007	0.00%	0	0.00
Gladstone - Benaraby Roa	Glen Eden Drive CH. 5.70 to French Street CH. 3	Northbound (A)	5.7	3.4	2007	0.00%	0	0.00
Gladstone - Benaraby Roa	Glen Eden Drive CH. 5.70 to South Trees Drive C	Southbound (G)	5.7	7.3	2007	0.00%	0	0.00
Gladstone - Benaraby Roa	South Trees Drive CH. 5.70 to Glen Eden Drive C	Northbound (A)	7.3	5.7	2007	0.00%	0	0.00
Gladstone - Benaraby Roa	South Trees Drive CH. 7.30 to Boyne Island Roa	Southbound (G)	7.3	16.039	2007	0.00%	0	0.00
[illegible]								
Warrego Highway	Dalby Cecil Plains Road to Cunningham Street	Westbound (G)	80.82	84.19	2008	0.00%	0	0.00
Warrego Highway	Cunningham Street to Dalby Cecil Plains Road	Eastbound (A)	84.19	80.82	2008	0.00%	0	0.00
Warrego Highway	Cunningham Street to Rail Line	Eastbound (A)	0.00	1.09	2008	0.00%	0	0.00
Warrego Highway	Rail Line to Cunningham Street	Westbound (G)	1.09	0.00	2008	0.00%	0	0.00
Warrego Highway	Rail Line to Macalister Bell Road	Eastbound (A)	1.09	25.12	2008	0.00%	0	0.00
Warrego Highway	Macalister Bell Road to Rail Line	Westbound (G)	25.12	1.09	2008	0.00%	0	0.00
Warrego Highway	Macalister Bell Road to Warra Kogan Road	Eastbound (A)	25.12	45.20	2008	0.00%	0	0.00
Warrego Highway	Warra Kogan Road to Macalister Bell Road	Westbound (G)	45.20	25.12	2008	0.00%	0	0.00
Warrego Highway	Warra Kogan Road to Glasson Street	Eastbound (A)	45.20	80.18	2008	0.00%	0	0.00
Warrego Highway	Glasson Street to Warra Kogan Road	Westbound (G)	80.18	45.20	2008	0.00%	0	0.00
Warrego Highway	Glasson Street to Auburn Road	Eastbound (A)	80.18	83.16	2008	0.00%	0	0.00
Warrego Highway	Auburn Road to Glasson Street	Westbound (G)	83.16	80.18	2008	0.00%	0	0.00
Warrego Highway	Auburn Road to Goombi	Eastbound (A)	83.16	106.36	2008	0.00%	0	0.00
Warrego Highway	Goombi to Auburn Road	Westbound (G)	106.36	83.16	2008	0.00%	0	0.00
Warrego Highway	Goombi to Leichhardt Highway	Eastbound (A)	106.36	126.75	2008	0.00%	0	0.00
Warrego Highway	Leichhardt Highway to Goombi	Westbound (G)	126.75	106.36	2008	0.00%	0	0.00
Bajool-Port Alma Road	Bruve Highway to End Point	Eastbound (G)	0	25.24	2008	0.00%	0	0.00
Bajool-Port Alma Road	End Point to Bruce Highway	Westbound (A)	25.24	0	2008	0.00%	0	0.00
Capricorn Highway	Bruce Highway to Gavial Gracemere Road	Eastbound (A)	0	5.69	2008	0.00%	0	0.00
Capricorn Highway	Gavial Gracemere Road to Bruce Highway	Westbound (G)	5.69	0	2008	0.00%	0	0.00
Capricorn Highway	Gavial Gracemere Road to Kabra Road	Eastbound (A)	5.69	13.367	2008	0.00%	0	0.00
Capricorn Highway	Kabra Road to Gavial Gracemere Road	Westbound (G)	13.367	5.69	2008	0.00%	0	0.00
Capricorn Highway	Kabra Road to Powerstation Road	Eastbound (A)	13.367	17.856	2008	0.00%	0	0.00
Capricorn Highway	Powerstation Road to Kabra Road	Westbound (G)	17.856	13.367	2008	0.00%	0	0.00
Capricorn Highway	Powerstation Road to Leichhardt Highway	Eastbound (A)	17.856	51.62	2008	0.00%	0	0.00
Capricorn Highway	Leichhardt Highway to Powerstation Road	Westbound (G)	51.62	17.856	2008	0.00%	0	0.00
Capricorn Highway	Leichhardt Highway to End Point	Eastbound (A)	51.62	73.35	2008	0.00%	0	0.00
Capricorn Highway	End Point to Leichhardt Highway	Westbound (G)	73.35	51.62	2008	0.00%	0	0.00
Jackson-Wandoan Road	Warrego Highway Intersection to Grid	Northbound (A)	0	69	2008	0.00%	0	0.00
Jackson-Wandoan Road	Grid to18D/Dulacca North Intersection	Southbound (G)	69	0	2008	0.00%	0	0.00
Jackson-Wandoan Road	Grid to Leichardt Highway	Eastbound (A)	69	81	2008	0.00%	0	0.00
Jackson-Wandoan Road	Leichardt Highway to Grid	Westbound (G)	81	69	2008	0.00%	0	0.00
Bruce Highway (10D)	Miriam Vale CH. 98.8 to CH. 112	Northbound (A)	98.8	112	2007	0.00%	0	0.00
Bruce Highway (10D)	CH. 112 to Miriam Vale CH. 98.8	Southbound (G)	112	98.8	2007	0.00%	0	0.00
Bruce Highway (10D)	CH. 112 to Benaraby CH. 147.1	Northbound (A)	112	147.1	2007	0.00%	0	0.00
Bruce Highway (10D)	Benaraby CH. 147.1 o CH. 112	Southbound (G)	147.1	112	2007	0.00%	0	0.00

Background Parameters

	Road	Section	Direction	Start Chainage	End Chainage	Count Year	Total Volume (vpd)	Heavy Vehicle %	2008	2009	2010	2011	2012
1	Dawson Highway 46A	Gladstone-Mt Larcom Road to Breslin Street	Southbound (G)	0.0	1.5	2006	7,010	3.87%					
2	Dawson Highway 46A	Gladstone-Mt Larcom Road to Breslin Street	Northbound (A)	1.5	0.0	2006	5,977	2.25%					
3	Dawson Highway 46A	Breslin Street to Blain Drive	Southbound (G)	1.5	2.2	2006	10,836	2.56%					
4	Dawson Highway 46A	Breslin Street to Blain Drive	Northbound (A)	2.2	1.5	2006	9,912	3.47%					
5	Dawson Highway 46A	Blain Drive to Philip Street	Southbound (G)	2.2	3.1	2006	12,269	3.57%					
6	Dawson Highway 46A	Blain Drive to Philip Street	Northbound (A)	3.1	2.2	2006	11,949	8.09%					
7	Dawson Highway 46A	Philip Street to Penda Avenue	Southbound (G)	3.1	4.4	2006	13,377	3.24%					
8	Dawson Highway 46A	Philip Street to Penda Avenue	Northbound (A)	4.4	3.1	2006	14,257	3.64%					
9	Dawson Highway 46A	Penda Avenue to Chapman Drive	Southbound (G)	4.4	5.2	2006	10,630	2.31%					
10	Dawson Highway 46A	Penda Avenue to Chapman Drive	Northbound (A)	5.2	4.4	2006	9,914	3.63%					
11	Dawson Highway 46A	Chapman Drive to Don Young Drive	Southbound (G)	5.2	8.4	2006	2,020	5.90%					
12	Dawson Highway 46A	Chapman Drive to Don Young Drive	Northbound (A)	8.4	5.2	2006	2,971	5.77%					
13	Dawson Highway 46A	Don Young Drive to Harvey Road	Southbound (G)	8.4	10.3	2006	2,820	5.90%		0	0	0	0
14	Dawson Highway 46A	Don Young Drive to Harvey Road	Northbound (A)	10.3	8.4	2006	2,971	5.77%		0	0	0	0
15	Dawson Highway 46A	Harvey Road to Bruce Highway	Southbound (G)	10.3	19.0	2006	2,137	7.96%		0	0	0	0
16	Dawson Highway 46A	Harvey Road to Bruce Highway	Northbound (A)	19.0	10.3	2006	2,112	7.93%		0	0	0	0
17	Dawson Highway 46A	Bruce Highway to Drynan Drive	Southbound (G)	19.0	21.8	2006	2,354	8.98%					
18	Dawson Highway 46A	Bruce Highway to Drynan Drive	Northbound (A)	21.8	19.0	2006	2,353	9.34%					
19	Dawson Highway 46A	Drynan Drive to Gladstone-Monto Road	Westbound (G)	21.8	25.7	2006	827	12.35%					
20	Dawson Highway 46A	Drynan Drive to Gladstone-Monto Road	Eastbound (A)	25.7	21.8	2006	827	13.45%					
21	Dawson Highway 46A	Gladstone-Monto Road to Access to Pipeline Ca	Westbound (G)	25.7	49.0	2006	464	18.99%					
22	Dawson Highway 46A	Access to Pipeline Camp 4 to Gladstone-Monto R	Eastbound (A)	49.0	25.7	2006	465	18.28%					
23	Dawson Highway 46A	Access to Pipline Camp 4 to New point 1	Westbound (G)	49.0	72.5	2006	464	18.99%					
24	Dawson Highway 46A	Access to Pipline Camp 4 to New point 1	Eastbound (A)	72.5	49.0	2006	465	18.28%					
25	Dawson Highway 46A	New to CSC/BSC Border	Westbound (G)	72.5	76.6	2006	464	18.99%					
26	Dawson Highway 46A	New to CSC/BSC Border	Eastbound (A)	76.6	72.5	2006	465	18.28%					
27	Dawson Highway 46A	CSC/BSC Border to New point 2	Westbound (G)	76.6	85.0	2006	464	18.99%					
28	Dawson Highway 46A	CSC/BSC Border to New point 2	Eastbound (A)	85.0	76.6	2006	465	18.28%					
29	Dawson Highway 46A	New point 2 to Argoon Road	Westbound (G)	85.0	101.3	2006	464	18.99%					
30	Dawson Highway 46A	New point 2 to Argoon Road	Eastbound (A)	101.3	85.0	2006	465	18.28%					
31	Dawson Highway 46A	Agoon Road to Callide Dam Road	Westbound (G)	101.3	114.0	2006	431	18.17%					
32	Dawson Highway 46A	Agoon Road to Callide Dam Road	Eastbound (A)	114.0	101.3	2006	435	17.46%					
33	Dawson Highway 46A	Callide Dam Road to Tognalini - Baldwin Road	Westbound (G)	114.0	117.1	2006	634	15.96%					
34	Dawson Highway 46A	Callide Dam Road to Tognalini - Baldwin Road	Eastbound (A)	117.1	114.0	2006	651	14.82%					
35	Dawson Highway 46A	Tognalini - Baldwin Road to Biloela	Westbound (G)	117.1	120.0	2006	3,579	5.79%					
36	Dawson Highway 46A	Tognalini - Baldwin Road to Biloela	Eastbound (A)	120.0	117.1	2006	3,668	5.56%					
37	Dawson Highway 46B	Biloela to Crowsdale Camboon Road	Westbound (G)	0	6.8	2007	878	15.53%					
38	Dawson Highway 46B	Crewsdale Camboon Road to Bioela	Eastbound (A)	6.8	0	2007	878	15.53%					
39	Dawson Highway 46B	Crowsdale Camboon Road to Point 1	Westbound (G)	6.8	10	2007	878	15.53%					
40	Dawson Highway 46B	Point 1 to Crowsdale Camboon Road	Eastbound (A)	10	6.8	2007	878	15.53%					
41	Dawson Highway 46B	Point 1 to Greycliffe Road	Westbound (G)	10	26.8	2007	878	15.53%					
42	Dawson Highway 46B	Greycliffe Road to Point 1	Eastbound (A)	26.8	10	2007	878	15.53%					
43	Dawson Highway 46B	Grecliffe Road to Banana	Westbound (G)	45.7	26.8	2007	619	16.89%					
44	Dawson Highway 46B	Banana to Greycliffe Road	Eastbound (A)	26.8	45.7	2007	619	16.89%					
45	Dawson Highway 46C	Banana to Moura Mine	Westbound (G)	0	7.8	2007	653	17.42%					
46	Dawson Highway 46C	Moura Mine to Banana	Eastbound (A)	7.8	0	2007	653	17.42%					
47	Dawson Highway 46C	Moura Mine to Moura Township	Westbound (G)	7.8	19	2007	830	14.20%					
48	Dawson Highway 46C	Moura Township to Moura Mine	Eastbound (A)	19	7.8	2007	830	14.20%					
49	Dawson Highway 46C	Moura Township to CH. 30	Westbound (G)	19	30	2007	187	21.71%					
50	Dawson Highway 46C	CH. 30 to Moura Township	Eastbound (A)	30	19	2007	187	21.71%					
51	Dawson Highway 46C	CH. 30 to CH. 41	Westbound (G)	30	41	2007	187	21.71%					
52	Dawson Highway 46C	CH. 41 to CH. 30	Eastbound (A)	41	30	2007	187	21.71%					
53	Dawson Highway 46C	CH. 41 to District Boundary	Westbound (G)	41	45	2007	187	21.71%					
54	Dawson Highway 46C	Boundary to CH. 41	Eastbound (A)	45	41	2007	187	21.71%					
55	Gladstone-Mt Larcom Rd	Dawspn Highway to Hilderbrand Street	Westbound (G)	0	1.4	2006	4,458	11.38%					
56	Gladstone-Mt Larcom Rd	Dawspn Highway to Hilderbrand Street	Eastbound (A)	1.4	0	2006	4,200	12.44%					
57	Gladstone-Mt Larcom Rd	Hilderbrand Street to Blain Drive	Westbound (G)	1.4	3.3	2006	2,943	16.57%					
58	Gladstone-Mt Larcom Rd	Hilderbrand Street to Blain Drive	Eastbound (A)	3.3	1.4	2006	2,760	17.26%					
59	Gladstone-Mt Larcom Rd	Blain Drive to Red Rover Road	Westbound (G)	3.3	3.9	2006	3,828	14.69%		488	599	599	942
60	Gladstone-Mt Larcom Rd	Blain Drive to Red Rover Road	Eastbound (A)	3.9	3.3	2006	3,798	16.18%		488	599	599	942
61	Gladstone-Mt Larcom Rd	Red Rover Road to Power Station	Westbound (G)	3.9	4.6	2006	3,828	14.69%		212	634	634	846
62	Gladstone-Mt Larcom Rd	Red Rover Road to Power Station	Eastbound (A)	4.6	3.9	2006	3,798	16.18%		212	634	634	846
63	Gladstone-Mt Larcom Rd	Power Station to Reid Road	Westbound (G)	4.6	9.8	2006	2,578	17.08%		212	634	634	846
64	Gladstone-Mt Larcom Rd	Power Station to Reid Road	Eastbound (A)	9.8	4.6	2006	2,622	17.44%		212	634	634	846
65	Gladstone-Mt Larcom Rd	Reid Road to Landing Road	Westbound (G)	9.8	12.3	2006	2,578	17.08%		450	121	121	689
66	Gladstone-Mt Larcom Rd	Reid Road to Landing Road	Eastbound (A)	12.3	9.8	2006	2,622	17.44%		450	121	121	689
67	Gladstone-Mt Larcom Rd	Landing Road to Targinnie Road	Westbound (G)	12.3	16.3	2006	1,346	19.93%		480	117	117	715
68	Gladstone-Mt Larcom Rd	Landing Road to Targinnie Road	Eastbound (A)	16.3	12.3	2006	1,401	21.66%		480	117	117	715
69	Gladstone-Mt Larcom Rd	Targinnie Road to Quarry Road	Westbound (G)	16.3	19	2006	1,346	19.93%		48	47	47	86
70	Gladstone-Mt Larcom Rd	Targinnie Road to Quarry Road	Eastbound (A)	19	16.3	2006	1,401	21.66%		48	47	47	86
71	Gladstone-Mt Larcom Rd	Quarry Road to Bruce Highway	Westbound (G)	19	32.1	2006	1,346	19.93%		48	47	47	86

Background Parameters — ESA 1.98 — Additional CL3 50% Loaded HV's

Road	Section	Direction	Start Chainage	End Chainage	Count Year	Heavy Vehicle %	Total Heavy Vehicle volume	ESA/Heavy Vehicle Ratio	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Dawson Highway 46A	Gladstone-Mt Larcom Road to Breslin Street	Southbound (G)	0.0	1.5	2006	0.00%	0	0.00																											
Dawson Highway 46A	Gladstone-Mt Larcom Road to Breslin Street	Northbound (A)	1.5	0.0	2006	0.00%	0	0.00																											
Dawson Highway 46A	Breslin Street to Blain Drive	Southbound (G)	1.5	2.2	2006	0.00%	0	0.00																											
Dawson Highway 46A	Breslin Street to Blain Drive	Northbound (A)	2.2	1.5	2006	0.00%	0	0.00																											
Dawson Highway 46A	Blain Drive to Philip Street	Southbound (G)	2.2	3.1	2006	0.00%	0	0.00																											
Dawson Highway 46A	Blain Drive to Philip Street	Northbound (A)	3.1	2.2	2006	0.00%	0	0.00																											
Dawson Highway 46A	Philip Street to Penda Avenue	Southbound (G)	3.1	4.4	2006	0.00%	0	0.00																											
Dawson Highway 46A	Philip Street to Penda Avenue	Northbound (A)	4.4	3.1	2006	0.00%	0	0.00																											
Dawson Highway 46A	Penda Avenue to Chapman Drive	Southbound (G)	4.4	5.2	2006	0.00%	0	0.00																											
Dawson Highway 46A	Penda Avenue to Chapman Drive	Northbound (A)	5.2	4.4	2006	0.00%	0	0.00																											
Dawson Highway 46A	Chapman Drive to Don Young Drive	Southbound (G)	5.2	8.4	2006	0.00%	0	0.00																											
Dawson Highway 46A	Chapman Drive to Don Young Drive	Northbound (A)	8.4	5.2	2006	0.00%	0	0.00																											
Dawson Highway 46A	Don Young Drive to Harvey Road	Southbound (G)	8.4	10.3	2006	0.00%	0	0.00																											
Dawson Highway 46A	Don Young Drive to Harvey Road	Northbound (A)	10.3	8.4	2006	0.00%	0	0.00																											
Dawson Highway 46A	Harvey Road to Bruce Highway	Southbound (G)	10.3	19.0	2006	0.00%	0	0.00																											
Dawson Highway 46A	Harvey Road to Bruce Highway	Northbound (A)	19.0	10.3	2006	0.00%	0	0.00																											
Dawson Highway 46A	Bruce Highway to Drynan Drive	Southbound (G)	19.0	21.8	2006	0.00%	0	0.00																											
Dawson Highway 46A	Bruce Highway to Drynan Drive	Northbound (A)	21.8	19.0	2006	0.00%	0	0.00																											
Dawson Highway 46A	Drynan Drive to Gladstone-Monto Road	Westbound (G)	21.8	25.7	2006	0.00%	0	0.00																											
Dawson Highway 46A	Drynan Drive to Gladstone-Monto Road	Eastbound (A)	25.7	21.8	2006	0.00%	0	0.00																											
Dawson Highway 46A	Gladstone-Monto Road to Access to Pipeline Ca	Westbound (G)	25.7	49.0	2006	0.00%	0	0.00																											
[illegible]																																			
Bruce Highway (10D)	Miriam Vale CH. 98.8 to CH. 112	Northbound (A)	98.8	112	2007	0.00%	0	0.00																											
Bruce Highway (10D)	CH. 112 to Miriam Vale CH. 98.8	Southbound (G)	112	98.8	2007	0.00%	0	0.00																											
Bruce Highway (10D)	CH. 112 to Benaraby CH. 147.1	Northbound (A)	112	147.1	2007	0.00%	0	0.00																											
Bruce Highway (10D)	Benaraby CH. 147.1 o CH. 112	Southbound (G)	147.1	112	2007	0.00%	0	0.00																											

Background Parameters — ESA 5.1 — Additional CL6 100% Loaded HV's

[illegible]

Background Parameters — ESA 0.51 — Additional CL6 0% Loaded HV's

[illegible]

Background Parameters — Additional AADT

#	Road	Section	Direction	Start Chainage	End Chainage	Count Year	Total Volume	Heavy Vehicle %	###	###	###	###	2012	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	###	Pipeline	Field	Plant
1	Dawson Highway 46A	Gladstone-Mt Larcom Road to Breslin Street	Southbound (G)	0.0	1.5	2006	[illegible]	[illegible]		0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			230		
2	Dawson Highway 46A	Gladstone-Mt Larcom Road to Breslin Street	Northbound (A)	1.5	0.0	2006	[illegible]	[illegible]		0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			230		
3	Dawson Highway 46A	Breslin Street to Blain Drive	Southbound (G)	1.5	2.2	2006	[illegible]	[illegible]		0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			230		
4	Dawson Highway 46A	Breslin Street to Blain Drive	Northbound (A)	2.2	1.5	2006	[illegible]	[illegible]		0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			230		
5	Dawson Highway 46A	Blain Drive to Philip Street	Southbound (G)	2.2	3.1	2006	[illegible]	[illegible]		0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			230		
6	Dawson Highway 46A	Blain Drive to Philip Street	Northbound (A)	3.1	2.2	2006	[illegible]	[illegible]		0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			230		
7	Dawson Highway 46A	Philip Street to Penda Avenue	Southbound (G)	3.1	4.4	2006	[illegible]	[illegible]		0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			230		
8	Dawson Highway 46A	Philip Street to Penda Avenue	Northbound (A)	4.4	3.1	2006	[illegible]	[illegible]		0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			230		
9	Dawson Highway 46A	Penda Avenue to Chapman Drive	Southbound (G)	4.4	5.2	2006	[illegible]	[illegible]		0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			230		
10	Dawson Highway 46A	Penda Avenue to Chapman Drive	Northbound (A)	5.2	4.4	2006	[illegible]	[illegible]		0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			230		
11	Dawson Highway 46A	Chapman Drive to Don Young Drive	Southbound (G)	5.2	8.4	2006	[illegible]	[illegible]		0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			230		
12	Dawson Highway 46A	Chapman Drive to Don Young Drive	Northbound (A)	8.4	5.2	2006	[illegible]	[illegible]		0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			230		
13	Dawson Highway 46A	Don Young Drive to Harvey Road	Southbound (G)	8.4	10.3	2006	[illegible]	[illegible]		0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			230		
14	Dawson Highway 46A	Don Young Drive to Harvey Road	Northbound (A)	10.3	8.4	2006	[illegible]	[illegible]		0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			230		
15	Dawson Highway 46A	Harvey Road to Bruce Highway	Southbound (G)	10.3	19.0	2006	[illegible]	[illegible]		0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			230		
16	Dawson Highway 46A	Harvey Road to Bruce Highway	Northbound (A)	19.0	10.3	2006	[illegible]	[illegible]		0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			230		
17	Dawson Highway 46A	Bruce Highway to Drynan Drive	Southbound (G)	19.0	21.8	2006	[illegible]	[illegible]		0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			230		
18	Dawson Highway 46A	Bruce Highway to Drynan Drive	Northbound (A)	21.8	19.0	2006	[illegible]	[illegible]		0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			230		
19	Dawson Highway 46A	Drynan Drive to Gladstone-Monto Road	Westbound (G)	21.8	25.7	2006	[illegible]	[illegible]		0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			230		
20	Dawson Highway 46A	Drynan Drive to Gladstone-Monto Road	Eastbound (A)	25.7	21.8	2006	[illegible]	[illegible]		0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			230		
21	Dawson Highway 46A	Gladstone-Monto Road to Access to Pipeline Camp	Westbound (G)	25.7	49.0	2006	[illegible]	[illegible]		0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			230		
22	Dawson Highway 46A	Access to Pipeline Camp 4 to Gladstone-Monto Ro	Eastbound (A)	49.0	25.7	2006	[illegible]	[illegible]		0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			230		
23	Dawson Highway 46A	Access to Pipline Camp 4 to New point 1	Westbound (G)	49.0	72.5	2006	[illegible]	[illegible]		0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			230		
24	Dawson Highway 46A	Access to Pipline Camp 4 to New point 1	Eastbound (A)	72.5	49.0	2006	[illegible]	[illegible]		0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			230		
25	Dawson Highway 46A	New to CSC/BSC Border	Westbound (G)	72.5	76.6	2006	[illegible]	[illegible]		0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			230		
26	Dawson Highway 46A	New to CSC/BSC Border	Eastbound (A)	76.6	72.5	2006	[illegible]	[illegible]		0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			230		
27	Dawson Highway 46A	CSC/BSC Border to New point 2	Westbound (G)	76.6	85.0	2006	[illegible]	[illegible]		0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			230		
28	Dawson Highway 46A	CSC/BSC Border to New point 2	Eastbound (A)	85.0	76.6	2006	[illegible]	[illegible]		0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			230		
29	Dawson Highway 46A	New point 2 to Argoon Road	Westbound (G)	85.0	101.3	2006	[illegible]	[illegible]		0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			230		
30	Dawson Highway 46A	New point 2 to Argoon Road	Eastbound (A)	101.3	85.0	2006	[illegible]	[illegible]		0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			230		
31	Dawson Highway 46A	Agoon Road to Callide Dam Road	Westbound (G)	101.3	114.0	2006	[illegible]	[illegible]		0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			230		
32	Dawson Highway 46A	Agoon Road to Callide Dam Road	Eastbound (A)	114.0	101.3	2006	[illegible]	[illegible]		0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			230		
33	Dawson Highway 46A	Callide Dam Road to Tognalini - Baldwin Road	Westbound (G)	114.0	117.1	2006	[illegible]	[illegible]		0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			230		
34	Dawson Highway 46A	Callide Dam Road to Tognalini - Baldwin Road	Eastbound (A)	117.1	114.0	2006	[illegible]	[illegible]		0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			230		
35	Dawson Highway 46A	Tognalini - Baldwin Road to Biloela	Westbound (G)	117.1	120.0	2006	[illegible]	[illegible]		0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			230		
36	Dawson Highway 46A	Tognalini - Baldwin Road to Biloela	Eastbound (A)	120.0	117.1	2006	[illegible]	[illegible]		0	230	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			230		
37	Dawson Highway 46B	Biloela to Crowsdale Camboon Road	Westbound (G)	0	6.8	2007	[illegible]	[illegible]		0	136	136	136	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			136		
38	Dawson Highway 46B	Crewsdale Camboon Road to Bioela	Eastbound (A)	6.8	0	2007	[illegible]	[illegible]		0	136	136	136	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			136		
39	Dawson Highway 46B	Crowsdale Camboon Road to Point 1	Westbound (G)	6.8	10	2007	[illegible]	[illegible]		0	136	136	136	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			136		
40	Dawson Highway 46B	Point 1 to Crowsdale Camboon Road	Eastbound (A)	10	6.8	2007	[illegible]	[illegible]		0	136	136	136	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			136		
41	Dawson Highway 46B	Point 1 to Greycliffe Road	Westbound (G)	10	26.8	2007	[illegible]	[illegible]		0	136	136	136	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			136		
42	Dawson Highway 46B	Greycliffe Road to Point 1	Eastbound (A)	26.8	10	2007	[illegible]	[illegible]		0	136	136	136	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			136		
43	Dawson Highway 46B	Grecliffe Road to Banana	Westbound (G)	45.7	26.8	2007	[illegible]	[illegible]		0	136	136	136	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			136		
44	Dawson Highway 46B	Banana to Greycliffe Road	Eastbound (A)	26.8	45.7	2007	[illegible]	[illegible]		0	136	136	136	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			136		
45	Dawson Highway 46C	Banana to Moura Mine	Westbound (G)	0	7.8	2007	[illegible]	[illegible]		0	114	114	114	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			114		
46	Dawson Highway 46C	Moura Mine to Banana	Eastbound (A)	7.8	0	2007	[illegible]	[illegible]		0	114	114	114	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			114		
47	Dawson Highway 46C	Moura Mine to Moura Township	Westbound (G)	7.8	19	2007	[illegible]	[illegible]		0	114	114	114	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			114		
48	Dawson Highway 46C	Moura Township to Moura Mine	Eastbound (A)	19	7.8	2007	[illegible]	[illegible]		0	114	114	114	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			114		
49	Dawson Highway 46C	Moura Township to CH. 30	Westbound (G)	19	30	2007	[illegible]	[illegible]		0	114	114	114	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			114		
50	Dawson Highway 46C	CH. 30 to Moura Township	Eastbound (A)	30	19	2007	[illegible]	[illegible]		0	114	114	114	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			114		
51	Dawson Highway 46C	CH. 30 to CH. 41	Westbound (G)	30	41	2007	[illegible]	[illegible]		0	114	114	114	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			114		
52	Dawson Highway 46C	CH. 41 to CH. 30	Eastbound (A)	41	30	2007	[illegible]	[illegible]		0	114	114	114	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			114		
53	Dawson Highway 46C	CH. 41 to District Boundary	Westbound (G)	41	45	2007	[illegible]	[illegible]		0	114	114	114	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			114		
54	Dawson Highway 46C	Boundary to CH. 41	Eastbound (A)	45	41	2007	[illegible]	[illegible]		0	114	114	114	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			114		
55	Gladstone-Mt Larcom Rd	Dawspn Highway to Hilderbrand Street	Westbound (G)	0	1.4	2006	[illegible]	[illegible]		0	316	316	316	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			316		
56	Gladstone-Mt Larcom Rd	Dawspn Highway to Hilderbrand Street	Eastbound (A)	1.4	0	2006	[illegible]	[illegible]		0	316	316	316	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			316		
57	Gladstone-Mt Larcom Rd	Hilderbrand Street to Blain Drive	Westbound (G)	1.4	3.3	2006	[illegible]	[illegible]		0	316	316	316	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			316		
58	Gladstone-Mt Larcom Rd	Hilderbrand Street to Blain Drive	Eastbound (A)	3.3	1.4	2006	[illegible]	[illegible]		0	316	316	316	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			316		
59	Gladstone-Mt Larcom Rd	Blain Drive to Red Rover Road	Westbound (G)	3.3	3.9	2006	[illegible]	[illegible]		488	915	915	1258	942	942	701	701	701	701	701	701	701	701	701	701	701	701									316		
60	Gladstone-Mt Larcom Rd	Blain Drive to Red Rover Road	Eastbound (A)	3.9	3.3	2006	[illegible]	[illegible]		488	915	915	1258	942	942	701	701	701	701	701	701	701	701	701	701	701	701									316		
61	Gladstone-Mt Larcom Rd	Red Rover Road to Power Station	Westbound (G)	3.9	4.6	2006	[illegible]	[illegible]		0	316	316	316	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			316		
62	Gladstone-Mt Larcom Rd	Red Rover Road to Power Station	Eastbound (A)	4.6	3.9	2006	[illegible]	[illegible]		0	316	316	316	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			316		
63	Gladstone-Mt Larcom Rd	Power Station to Reid Road	Westbound (G)	4.6	9.8	2006	[illegible]	[illegible]		450	437	437	1005	689	689	176	176	176	176	176	176	176	176	176	176	176	176									316		
64	Gladstone-Mt Larcom Rd	Power Station to Reid Road	Eastbound (A)	9.8	4.6	2006	[illegible]	[illegible]		450	437	437	1005	689	689	176	176	176	176	176	176	176	176	176	176	176	176									316		
65	Gladstone-Mt Larcom Rd	Reid Road to Landing Road	Westbound (G)	9.8	12.3	2006	[illegible]	[illegible]		0	316	316	316	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			316		
66	Gladstone-Mt Larcom Rd	Reid Road to Landing Road	Eastbound (A)	12.3	9.8	2006	[illegible]	[illegible]		0	316	316	316	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			316		
67	Gladstone-Mt Larcom Rd	Landing Road to Targinnie Road	Westbound (G)	12.3	16.3	2006	[illegible]	[illegible]		480	433	433	1031	715	715	152	152	152	152	152	152	152	152	152	152	152	152									316		
68	Gladstone-Mt Larcom Rd	Landing Road to Targinnie Road	Eastbound (A)	16.3	12.3	2006	[illegible]	[illegible]		480	433	433	1031	715	715	152	152	152	152	152	152	152	152	152	152	152	152									316		
69	Gladstone-Mt Larcom Rd	Targinnie Road to Quarry Road	Westbound (G)	16.3	19	2006	[illegible]	[illegible]		0	316	316	316	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			316		
70	Gladstone-Mt Larcom Rd	Targinnie Road to Quarry Road	Eastbound (A)	19	16.3	2006	[illegible]	[illegible]		0	316	316	316	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			316		
71	Gladstone-Mt Larcom Rd	Quarry Road to Bruce Highway	Westbound (G)	19	32.1	2006	[illegible]	[illegible]		0	316	316	316	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			316		
72	Gladstone-Mt Larcom Rd	Quarry Road to Bruce Highway	Eastbound (A)	32.1	19	2006	[illegible]	[illegible]		0	316	316	316	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			316		
73	Carnarvon Highway 24A	CH. 0.00 (NSW border) to CH. 10	Northbound (G)	0.0	10.0	2007	[illegible]	[illegible]																														
74	Carnarvon Highway 24A	CH. 10 to CH. 0.0 (NSW border)	Southbound (A)	10.0	0.0	2007	[illegible]	[illegible]																														
75	Carnarvon Highway 24A	CH. 10m to CH. 40 (Thallon)	Northbound (G)	10.0	40.0	2007	[illegible]	[illegible]																														
76	Carnarvon Highway 24A	CH. 40 (Thallon) to CH. 10	Southbound (A)	40.0	10.0	2007	[illegible]	[illegible]																														
77	Carnarvon Highway 24A	CH. 40 (Thallon) to CH. 74 (Ningdigully)	Northbound (G)	40.0	74.0	2007	[illegible]	[illegible]																														
78	Carnarvon Highway 24A	CH. 74 (Nindigully) to CH. 40 (Thallon)	Southbound (A)	74.0	40.0	2007	[illegible]	[illegible]																														
79	Carnarvon Highway 24A	CH. 74 (Nindigully) to CH. 111	Northbound (G)	74.0	111.0	2007	[illegible]	[illegible]																														
80	Carnarvon Highway 24A	CH. 111 to CH.74 (Nindigully)	Southbound (A)	111.0	74.0	2007	[illegible]	[illegible]																														
81	Carnarvon Highway 24A	CH. 111 to St George	Northbound (G)	111.0	118.0	2007	[illegible]	[illegible]																														
82	Carnarvon Highway 24A	St George to CH. 111	Southbound (A)	118.0	111.0	2007	[illegible]	[illegible]																														
83	Carnarvon Highway 24B	CH. 0.00 (St George) to CH. 4	Northbound (G)	0	4	2007	[illegible]	[illegible]																														
84	Carnarvon Highway 24B	CH. 4 to CH. 0.0 (St George)	Southbound (A)	4	0	2007	[illegible]	[illegible]																														
85	Carnarvon Highway 24B	CH. 4m to CH. 9	Northbound (G)	4	9	2007	[illegible]	[illegible]																														
86	Carnarvon Highway 24B	CH. 9 to CH. 56	Southbound (A)	9	4	2007	[illegible]	[illegible]																														
87	Carnarvon Highway 24B	CH. 9 to CH. 4	Northbound (G)	9	56	2007	[illegible]	[illegible]																														
88	Carnarvon Highway 24B	CH. 56 to CH. 9	Southbound (A)	56	9	2007	[illegible]	[illegible]																														
89	Carnarvon Highway 24B	CH. 56 to CH. 116 (Surat)	Northbound (G)	56	116	2007	[illegible]	[illegible]																														
90	Carnarvon Highway 24B	CH. 116 (Surat) to CH. 56	Southbound (A)	116	56	2007	[illegible]	[illegible]																														
91	Carnarvon Highway 24C	CH. 0.00 (Surat) to CH. 33	Northbound (G)	0	33	2007	[illegible]	[illegible]																														
92	Carnarvon Highway 24C	CH. 33 to CH. 0.0 (Surat)	Southbound (A)	33	0	2007	[illegible]	[illegible]																														
93	Carnarvon Highway 24C	CH. 33m to CH. 73 (Roma)	Northbound (G)	33	73	2007	[illegible]	[illegible]																														
94	Carnarvon Highway 24C	CH. 73 (Roma) to CH. 33	Southbound (A)	73	33	2007	[illegible]	[illegible]																														
95	Carnarvon Highway 24D	CH. 0.00 (Roma) to CH. 3	Northbound (G)	0	3	2007	[illegible]	[illegible]		0	208	208	208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			208		
96	Carnarvon Highway 24D	CH. 3 to CH. 0.0 (Roma)	Southbound (A)	3	0	2007	[illegible]	[illegible]		0	208	208	208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			208		
97	Carnarvon Highway 24D	CH. 3m to CH. 18 Roma - Taroom Road	Northbound (G)	3	18	2007	[illegible]	[illegible]		0	208	208	208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			208		
98	Carnarvon Highway 24D	CH. 18 Roma - Taroom Road to CH. 3	Southbound (A)	18	3	2007	[illegible]	[illegible]		0	208	208	208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			208		
99	Carnarvon Highway 24D	Roma - Taroom Road to Injune	Northbound (G)	18	90	2007	[illegible]	[illegible]		0	208	208	208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			208		
100	Carnarvon Highway 24D	Injune to Roma - Taroom Road	Southbound (A)	90	18	2007	[illegible]	[illegible]		0	208	208	208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			208		
101	Carnarvon Highway 24E	CH. 0.00 (Injune) to Fairview Field Access CH25.0(	Northbound (G)	0	25	2007	[illegible]	[illegible]		0	208	208	208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			208		
102	Carnarvon Highway 24E	Fairview Field Access CH. 25.00 to CH. 0.0 (Injune	Southbound (A)	25	0	2007	[illegible]	[illegible]		0	208	208	208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			208		
103	Carnarvon Highway 24E	Fairview Field Access to CH. 69 Boundary with Em	Northbound (G)	25	69	2007	[illegible]	[illegible]		0	208	208	208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			208		
104	Carnarvon Highway 24E	CH. 69 to Fairview Field Access	Southbound (A)	69	25	2007	[illegible]	[illegible]		0	208	208	208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			208		
105	Carnarvon Highway 24E	CH. 69 to CH. 86 Access to Camp 1	Northbound (G)	69	86	2007	[illegible]	[illegible]		0	208	208	208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			208		
106	Carnarvon Highway 24E	CH. 86 Access to Camp 1 to CH. 69	Southbound (A)	86	69	2007	[illegible]	[illegible]		0	208	208	208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			208		
107	Carnarvon Highway 24E	CH. 86 Access to Camp 1 to CH. 111	Northbound (G)	86	111	2007	[illegible]	[illegible]		0	208	208	208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			208		
108	Carnarvon Highway 24E	CH. 111 to CH. 86 Access to Camp 1	Southbound (A)	111	86	2007	[illegible]	[illegible]		0	208	208	208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			208		
109	Carnarvon Highway 24E	CH. 111 to CH.172 (Rollestone)	Northbound (G)	111	172	2007	[illegible]	[illegible]		0	208	208	208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			208		
110	Carnarvon Highway 24E	CH. 172 (Rollestone) to CH.111	Southbound (A)	172	111	2007	[illegible]	[illegible]		0	208	208	208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			208		
111	Leichhardt Highway 26A	CH. 00 Capicorn Highway to Burnett Highway	Southbound (G)	0.0	25.7	2007	[illegible]	[illegible]																														
112	Leichhardt Highway 26A	Burnett Highway to Capicorn Highway	Northbound (A)	25.7	0.0	2007	[illegible]	[illegible]																														
113	Leichhardt Highway 26A	Burnett Highway to CH. 51.1	Southbound (G)	25.7	51.1	2007	[illegible]	[illegible]																														
114	Leichhardt Highway 26A	CH. 51.1 to Burnett Highway	Northbound (A)	51.1	25.7	2007	[illegible]	[illegible]																														
115	Leichhardt Highway 26A	CH. 51.1 to CH. 62.6	Southbound (G)	51.1	62.6	2007	[illegible]	[illegible]																														
116	Leichhardt Highway 26A	CH. 62.6 to CH. 51.1	Northbound (A)	62.6	51.1	2007	[illegible]	[illegible]																														
117	Leichhardt Highway 26A	CH. 62.6 to CH. 86.0 Fairview Road	Southbound (G)	62.6	86.0	2007	[illegible]	[illegible]																														
118	Leichhardt Highway 26A	CH. 86.0 Fairview Road to CH. 62.6	Northbound (A)	86.0	62.6	2007	[illegible]	[illegible]																														
119	Leichhardt Highway 26A	CH. 86.0 Fairview Road to CH. 88.0	Southbound (G)	86.0	88.0	2007	[illegible]	[illegible]																														
120	Leichhardt Highway 26A	CH. 88.0 to CH.86.0	Northbound (A)	88.0	86.0	2007	[illegible]	[illegible]																														
121	Leichhardt Highway 26A	CH. 88.0 to CH. 99.0 (Camp 3)	Southbound (G)	88.0	99.0	2007	[illegible]	[illegible]																														
122	Leichhardt Highway 26A	CH. 99.0 (Camp 3) to CH. 88.0	Northbound (A)	99.0	88.0	2007	[illegible]	[illegible]																														
123	Leichhardt Highway 26A	CH. 99.0 to Banana CH. 105.2	Southbound (G)	99.0	105.2	2007	[illegible]	[illegible]		720	910	910	910	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720			190	720	
124	Leichhardt Highway 26A	Banana CH. 105.2 to CH. 99.0	Northbound (A)	105.2	99.0	2007	[illegible]	[illegible]		720	910	910	910	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720			190	720	
125	Leichhardt Highway 26A	Banana CH. 105.2 to CH. 117.0	Southbound (G)	105.2	117.0	2007	[illegible]	[illegible]		720	910	910	910	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720			190	720	
126	Leichhardt Highway 26A	CH. 117.0 to Banana CH. 105.2	Northbound (A)	117.0	105.2	2007	[illegible]	[illegible]		720	910	910	910	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720			190	720	
127	Leichhardt Highway 26A	CH. 117.0 to CH. 124.0	Southbound (G)	117.0	124.0	2007	[illegible]	[illegible]		720	910	910	910	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720			190	720	
128	Leichhardt Highway 26A	CH. 124.0 to CH. 117.0	Northbound (A)	124.0	117.0	2007	[illegible]	[illegible]		720	910	910	910	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720			190	720	
129	Leichhardt Highway 26A	Theodore CH. 162.3 to CH.124.0	Westbound (G)	124.0	162.3	2007	[illegible]	[illegible]		720	910	910	910	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720			190	720	
130	Leichhardt Highway 26A	CH.124.0 to Theodore CH. 162.4	Eastbound (A)	162.3	124.0	2007	[illegible]	[illegible]		720	910	910	910	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720			190	720	
131	Leichhardt Highway 26A	Theodore CH. 162.3 to CH. 124.0	Westbound (G)	162.3	170.3	2007	[illegible]	[illegible]		720	910	910	910	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720			190	720	
132	Leichhardt Highway 26A	Theodore CH. 162.3 to Glenmoral Roundstone Roa	Eastbound (A)	170.3	162.3	2007	[illegible]	[illegible]		720	910	910	910	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720			190	720	
133	Leichhardt Highway 26A	Glenmoral Roundstone Road to Isla Delusion Road	Westbound (G)	170.3	184.0	2007	[illegible]	[illegible]		720	910	910	910	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720			190	720	
134	Leichhardt Highway 26A	Isla Delusion Road to Glenmoral Roundstone Road	Eastbound (A)	184.0	170.3	2007	[illegible]	[illegible]		720	910	910	910	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720			190	720	
135	Leichhardt Highway 26A	Isla Delusion Road to District Boundary	Westbound (G)	184.0	192.2	2007	[illegible]	[illegible]		720	910	910	910	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720			190	720	
136	Leichhardt Highway 26A	District Boundary to Isla Delusion Road	Eastbound (A)	192.2	184	2007	[illegible]	[illegible]		720	910	910	910	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720			190	720	
137	Bruce Highway	Gladstone-Beraraby Road to Dawson Highway	Westbound (G)	0	11.6	2006	[illegible]	[illegible]		0	368	368	368	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			368		
138	Bruce Highway	Gladstone-Beraraby Road to Dawson Highway	Eastbound (A)	11.6	0	2006	[illegible]	[illegible]		0	368	368	368	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			368		
139	Bruce Highway	Dawson Highway to Calliope River Road	Westbound (G)	11.6	18.7	2006	[illegible]	[illegible]		0	368	368	368	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			368		
140	Bruce Highway	Dawson Highway to Calliope River Road	Eastbound (A)	18.7	11.6	2006	[illegible]	[illegible]		0	368	368	368	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			368		
141	Bruce Highway	Calliope River Road to Gladstone Mt-Larcom Road	Westbound (G)	18.7	45.4	2006	[illegible]	[illegible]		0	368	368	368	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			368		
142	Bruce Highway	Calliope River Road to Gladstone Mt-Larcom Road	Eastbound (A)	45.4	18.7	2006	[illegible]	[illegible]		0	368	368	368	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			368		

Background Parameters — Additional ESA's (18% / 71% / 24% above 2010 / 2011 / 2012; 17 above Pipeline, 23 above Field)

#	Road	Section	Direction	Start Chainage	End Chainage	Count Year	Heavy Vehicle %	Total Heavy Vehicle volume	ESA/Heavy Vehicle Ratio	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	Pipeline ESA	Rate	Field ESA	Rate	Plant ESA	Rate
1	Dawson Highway 46A	Gladstone-Mt Larcom Road to Breslin Street	Southbound (G)	0.0	1.5	2006	3.87%	271	3.20		0	18268	48233	21598	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			56600	3.2		3.2	8280	
2	Dawson Highway 46A	Gladstone-Mt Larcom Road to Breslin Street	Northbound (A)	1.5	0.0	2006	2.25%	134	3.20		0	12858	42823	16188	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			56600	3.2		3.2	2870	
3	Dawson Highway 46A	Breslin Street to Blain Drive	Southbound (G)	1.5	2.2	2006	2.56%	277	3.20		0	18268	48233	21598	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			56600	3.2		3.2	8280	
4	Dawson Highway 46A	Breslin Street to Blain Drive	Northbound (A)	2.2	1.5	2006	3.47%	344	3.20		0	15798	45763	19128	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			56600	3.2		3.2	5810	
5	Dawson Highway 46A	Blain Drive to Philip Street	Southbound (G)	2.2	3.1	2006	3.57%	438	3.20		0	18268	48233	21598	8280	0	0	0	0	4140	4140	4140	0	0	0	0	0	0	0	0	0	0	0	0			56600	3.2		3.2	8280	
6	Dawson Highway 46A	Blain Drive to Philip Street	Northbound (A)	3.1	2.2	2006	8.09%	967	3.20		0	12858	42823	16188	2870	0	0	0	0	1435	1435	1435	0	0	0	0	0	0	0	0	0	0	0	0			56600	3.2		3.2	2870	
7	Dawson Highway 46A	Philip Street to Penda Avenue	Southbound (G)	3.1	4.4	2006	3.24%	433	3.20		0	18268	48233	21598	8280	0	0	0	0	4140	4140	4140	0	0	0	0	0	0	0	0	0	0	0	0			56600	3.2		3.2	8280	
8	Dawson Highway 46A	Philip Street to Penda Avenue	Northbound (A)	4.4	3.1	2006	3.64%	519	3.20		0	12858	42823	16188	2870	0	0	0	0	1435	1435	1435	0	0	0	0	0	0	0	0	0	0	0	0			56600	3.2		3.2	2870	
9	Dawson Highway 46A	Penda Avenue to Chapman Drive	Southbound (G)	4.4	5.2	2006	2.31%	246	3.20		0	18268	48233	21598	8280	0	0	0	0	4140	4140	4140	0	0	0	0	0	0	0	0	0	0	0	0			56600	3.2		3.2	8280	
10	Dawson Highway 46A	Penda Avenue to Chapman Drive	Northbound (A)	5.2	4.4	2006	3.63%	360	3.20		0	15798	45763	19128	5810	0	0	0	0	2905	2905	2905	0	0	0	0	0	0	0	0	0	0	0	0			56600	3.2		3.2	5810	
11	Dawson Highway 46A	Chapman Drive to Don Young Drive	Southbound (G)	5.2	8.4	2006	5.90%	119	3.20		0	17528	47493	20858	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			56600	3.2		3.2	7540	
12	Dawson Highway 46A	Chapman Drive to Don Young Drive	Northbound (A)	8.4	5.2	2006	5.77%	171	3.20		0	12118	42083	15448	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			56600	3.2		3.2	2130	
13	Dawson Highway 46A	Don Young Drive to Harvey Road	Southbound (G)	8.4	10.3	2006	5.90%	166	3.20		0	17528	47493	20858	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			56600	3.2		3.2	7540	
14	Dawson Highway 46A	Don Young Drive to Harvey Road	Northbound (A)	10.3	8.4	2006	5.77%	171	3.20		0	12118	42083	15448	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			56600	3.2		3.2	2130	
15	Dawson Highway 46A	Harvey Road to Bruce Highway	Southbound (G)	10.3	19.0	2006	7.96%	170	3.20		0	17528	47493	20858	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			56600	3.2		3.2	7540	
16	Dawson Highway 46A	Harvey Road to Bruce Highway	Northbound (A)	19.0	10.3	2006	7.93%	167	3.20		0	12118	42083	15448	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			56600	3.2		3.2	2130	
17	Dawson Highway 46A	Bruce Highway to Drynan Drive	Southbound (G)	19.0	21.8	2006	8.98%	211	3.20		0	9988	39953	13318	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			56600	3.2		3.2		
18	Dawson Highway 46A	Bruce Highway to Drynan Drive	Northbound (A)	21.8	19.0	2006	9.34%	220	3.20		0	9988	39953	13318	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			56600	3.2		3.2		
19	Dawson Highway 46A	Drynan Drive to Gladstone-Monto Road	Westbound (G)	21.8	25.7	2006	12.35%	102	3.20		0	10253	41012	13671	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			58100	3.2		3.2		
20	Dawson Highway 46A	Drynan Drive to Gladstone-Monto Road	Eastbound (A)	25.7	21.8	2006	13.45%	111	3.20		0	10253	41012	13671	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			58100	3.2		3.2		
21	Dawson Highway 46A	Gladstone-Monto Road to Access to Pipeline Camp	Westbound (G)	25.7	49.0	2006	18.99%	88	3.20		0	10659	42635	14212	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			60400	3.2		3.2		
22	Dawson Highway 46A	Access to Pipeline Camp 4 to Gladstone-Monto Ro	Eastbound (A)	49.0	25.7	2006	18.28%	85	3.20		0	10659	42635	14212	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			60400	3.2		3.2		
23	Dawson Highway 46A	Access to Pipline Camp 4 to New point 1	Westbound (G)	49.0	72.5	2006	18.99%	88	3.20		0	10324	41294	13765	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			58500	3.2		3.2		
24	Dawson Highway 46A	Access to Pipline Camp 4 to New point 1	Eastbound (A)	72.5	49.0	2006	18.28%	85	3.20		0	10324	41294	13765	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			58500	3.2		3.2		
25	Dawson Highway 46A	New to CSC/BSC Border	Westbound (G)	72.5	76.6	2006	18.99%	88	3.20		0	10059	40235	13412	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			57000	3.2		3.2		
26	Dawson Highway 46A	New to CSC/BSC Border	Eastbound (A)	76.6	72.5	2006	18.28%	85	3.20		0	10059	40235	13412	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			57000	3.2		3.2		
27	Dawson Highway 46A	CSC/BSC Border to New point 2	Westbound (G)	76.6	85.0	2006	18.99%	88	3.20		0	8506	34024	11341	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			48200	3.2		3.2		
28	Dawson Highway 46A	CSC/BSC Border to New point 2	Eastbound (A)	85.0	76.6	2006	18.28%	85	3.20		0	8506	34024	11341	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			48200	3.2		3.2		
29	Dawson Highway 46A	New point 2 to Argoon Road	Westbound (G)	85.0	101.3	2006	18.99%	88	3.20		0	8506	34024	11341	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			48200	3.2		3.2		
30	Dawson Highway 46A	New point 2 to Argoon Road	Eastbound (A)	101.3	85.0	2006	18.28%	85	3.20		0	8506	34024	11341	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			48200	3.2		3.2		
31	Dawson Highway 46A	Agoon Road to Callide Dam Road	Westbound (G)	101.3	114.0	2006	18.17%	78	3.20		0	8506	34024	11341	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			48200	3.2		3.2		
32	Dawson Highway 46A	Agoon Road to Callide Dam Road	Eastbound (A)	114.0	101.3	2006	17.46%	76	3.20		0	8506	34024	11341	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			48200	3.2		3.2		
33	Dawson Highway 46A	Callide Dam Road to Tognalini - Baldwin Road	Westbound (G)	114.0	117.1	2006	15.96%	101	3.20		0	861	3445	1148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			4880	3.2		3.2		
34	Dawson Highway 46A	Callide Dam Road to Tognalini - Baldwin Road	Eastbound (A)	117.1	114.0	2006	14.82%	96	3.20		0	861	3445	1148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			4880	3.2		3.2		
35	Dawson Highway 46A	Tognalini - Baldwin Road to Biloela	Westbound (G)	117.1	120.0	2006	5.79%	207	3.20		0	861	3445	1148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			4880	3.2		3.2		
36	Dawson Highway 46A	Tognalini - Baldwin Road to Biloela	Eastbound (A)	120.0	117.1	2006	5.56%	204	3.20		0	861	3445	1148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			4880	3.2		3.2		
37	Dawson Highway 46B	Biloela to Crowsdale Camboon Road	Westbound (G)	0	6.8	2007	15.53%	136	3.20		0	861	3445	1148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			4880	3.2		3.2		
38	Dawson Highway 46B	Crewsdale Camboon Road to Bioela	Eastbound (A)	6.8	0	2007	15.53%	136	3.20		0	861	3445	1148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			4880	3.2		3.2		
39	Dawson Highway 46B	Crowsdale Camboon Road to Point 1	Westbound (G)	6.8	10	2007	15.53%	136	3.20		0	861	3445	1148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			4880	3.2		3.2		
40	Dawson Highway 46B	Point 1 to Crowsdale Camboon Road	Eastbound (A)	10	6.8	2007	15.53%	136	3.20		0	861	3445	1148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			4880	3.2		3.2		
41	Dawson Highway 46B	Point 1 to Greycliffe Road	Westbound (G)	10	26.8	2007	15.53%	136	3.20		0	861	3445	1148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			4880	3.2		3.2		
42	Dawson Highway 46B	Greycliffe Road to Point 1	Eastbound (A)	26.8	10	2007	15.53%	136	3.20		0	861	3445	1148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			4880	3.2		3.2		
43	Dawson Highway 46B	Grecliffe Road to Banana	Westbound (G)	45.7	26.8	2007	16.89%	105	3.20		0	861	3445	1148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			4880	3.2		3.2		
44	Dawson Highway 46B	Banana to Greycliffe Road	Eastbound (A)	26.8	45.7	2007	[illegible]	[illegible]	[illegible]		0	861	3445	1148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			4880	3.2		3.2		
45	Dawson Highway 46C	Banana to Moura Mine	Westbound (G)	0	7.8	2007	[illegible]	[illegible]	[illegible]		0	861	3445	1148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			4880	3.2		3.2		
46	Dawson Highway 46C	Moura Mine to Banana	Eastbound (A)	7.8	0	2007	[illegible]	[illegible]	[illegible]		0	861	3445	1148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			4880	3.2		3.2		
47	Dawson Highway 46C	Moura Mine to Moura Township	Westbound (G)	7.8	19	2007	[illegible]	[illegible]	[illegible]		0	861	3445	1148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			4880	3.2		3.2		
48	Dawson Highway 46C	Moura Township to Moura Mine	Eastbound (A)	19	7.8	2007	[illegible]	[illegible]	[illegible]		0	861	3445	1148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			4880	3.2		3.2		
49	Dawson Highway 46C	Moura Township to CH. 30	Westbound (G)	19	30	2007	[illegible]	[illegible]	[illegible]		0	861	3445	1148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			4880	3.2		3.2		
50	Dawson Highway 46C	CH. 30 to Moura Township	Eastbound (A)	30	19	2007	[illegible]	[illegible]	[illegible]		0	861	3445	1148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			4880	3.2		3.2		
51	Dawson Highway 46C	CH. 30 to CH. 41	Westbound (G)	30	41	2007	[illegible]	[illegible]	[illegible]		0	861	3445	1148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			4880	3.2		3.2		
52	Dawson Highway 46C	CH. 41 to CH. 30	Eastbound (A)	41	30	2007	[illegible]	[illegible]	[illegible]		0	861	3445	1148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			4880	3.2		3.2		
53	Dawson Highway 46C	CH. 41 to District Boundary	Westbound (G)	41	45	2007	[illegible]	[illegible]	[illegible]		0	861	3445	1148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			4880	3.2		3.2		
54	Dawson Highway 46C	Boundary to CH. 41	Eastbound (A)	45	41	2007	[illegible]	[illegible]	[illegible]		0	861	3445	1148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			4880	3.2		3.2		
55	Gladstone-Mt Larcom Rd	Dawspn Highway to Hilderbrand Street	Westbound (G)	0	1.4	2006	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		3.2	5130	
56	Gladstone-Mt Larcom Rd	Dawspn Highway to Hilderbrand Street	Eastbound (A)	1.4	0	2006	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		3.2	907	
57	Gladstone-Mt Larcom Rd	Hilderbrand Street to Blain Drive	Westbound (G)	1.4	3.3	2006	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		3.2	5130	
58	Gladstone-Mt Larcom Rd	Hilderbrand Street to Blain Drive	Eastbound (A)	3.3	1.4	2006	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		3.2	907	
59	Gladstone-Mt Larcom Rd	Blain Drive to Red Rover Road	Westbound (G)	3.3	3.9	2006	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		3.2	5130	
60	Gladstone-Mt Larcom Rd	Blain Drive to Red Rover Road	Eastbound (A)	3.9	3.3	2006	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		3.2	907	
61	Gladstone-Mt Larcom Rd	Red Rover Road to Power Station	Westbound (G)	3.9	4.6	2006	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		3.2	5130	
62	Gladstone-Mt Larcom Rd	Red Rover Road to Power Station	Eastbound (A)	4.6	3.9	2006	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		3.2	907	
63	Gladstone-Mt Larcom Rd	Power Station to Reid Road	Westbound (G)	4.6	9.8	2006	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		3.2	3800	
64	Gladstone-Mt Larcom Rd	Power Station to Reid Road	Eastbound (A)	9.8	4.6	2006	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		3.2	775	
65	Gladstone-Mt Larcom Rd	Reid Road to Landing Road	Westbound (G)	9.8	12.3	2006	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		3.2	3800	
66	Gladstone-Mt Larcom Rd	Reid Road to Landing Road	Eastbound (A)	12.3	9.8	2006	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		3.2	775	
67	Gladstone-Mt Larcom Rd	Landing Road to Targinnie Road	Westbound (G)	12.3	16.3	2006	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		3.2	3800	
68	Gladstone-Mt Larcom Rd	Landing Road to Targinnie Road	Eastbound (A)	16.3	12.3	2006	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		3.2	775	
69	Gladstone-Mt Larcom Rd	Targinnie Road to Quarry Road	Westbound (G)	16.3	19	2006	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		3.2	3800	
70	Gladstone-Mt Larcom Rd	Targinnie Road to Quarry Road	Eastbound (A)	19	16.3	2006	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		3.2	775	
71	Gladstone-Mt Larcom Rd	Quarry Road to Bruce Highway	Westbound (G)	19	32.1	2006	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		3.2	3800	
72	Gladstone-Mt Larcom Rd	Quarry Road to Bruce Highway	Eastbound (A)	32.1	19	2006	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		3.2	775	
73	Carnarvon Highway 24A	CH. 0.00 (NSW border) to CH. 10	Northbound (G)	0.0	10.0	2007	[illegible]	[illegible]	[illegible]		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
74	Carnarvon Highway 24A	CH. 10 to CH. 0.0 (NSW border)	Southbound (A)	10.0	0.0	2007	[illegible]	[illegible]	[illegible]		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
75	Carnarvon Highway 24A	CH. 10m to CH. 40 (Thallon)	Northbound (G)	10.0	40.0	2007	[illegible]	[illegible]	[illegible]		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
76	Carnarvon Highway 24A	CH. 40 (Thallon) to CH. 10	Southbound (A)	40.0	10.0	2007	[illegible]	[illegible]	[illegible]		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
77	Carnarvon Highway 24A	CH. 40 (Thallon) to CH. 74 (Ningdigully)	Northbound (G)	40.0	74.0	2007	[illegible]	[illegible]	[illegible]		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
78	Carnarvon Highway 24A	CH. 74 (Nindigully) to CH. 40 (Thallon)	Southbound (A)	74.0	40.0	2007	[illegible]	[illegible]	[illegible]		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
79	Carnarvon Highway 24A	CH. 74 (Nindigully) to CH. 111	Northbound (G)	74.0	111.0	2007	[illegible]	[illegible]	[illegible]		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
80	Carnarvon Highway 24A	CH. 111 to CH.74 (Nindigully)	Southbound (A)	111.0	74.0	2007	[illegible]	[illegible]	[illegible]		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
81	Carnarvon Highway 24A	CH. 111 to St George	Northbound (G)	111.0	118.0	2007	[illegible]	[illegible]	[illegible]		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
82	Carnarvon Highway 24A	St George to CH. 111	Southbound (A)	118.0	111.0	2007	[illegible]	[illegible]	[illegible]		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
83	Carnarvon Highway 24B	CH. 0.00 (St George) to CH. 4	Northbound (G)	0	4	2007	[illegible]	[illegible]	[illegible]		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
84	Carnarvon Highway 24B	CH. 4 to CH. 0.0 (St George)	Southbound (A)	4	0	2007	[illegible]	[illegible]	[illegible]		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
85	Carnarvon Highway 24B	CH. 4m to CH. 9	Northbound (G)	4	9	2007	[illegible]	[illegible]	[illegible]		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
86	Carnarvon Highway 24B	CH. 9 to CH. 56	Southbound (A)	9	4	2007	[illegible]	[illegible]	[illegible]		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
87	Carnarvon Highway 24B	CH. 9 to CH. 4	Northbound (G)	9	56	2007	[illegible]	[illegible]	[illegible]		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
88	Carnarvon Highway 24B	CH. 56 to CH. 9	Southbound (A)	56	9	2007	[illegible]	[illegible]	[illegible]		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
89	Carnarvon Highway 24B	CH. 56 to CH. 116 (Surat)	Northbound (G)	56	116	2007	[illegible]	[illegible]	[illegible]		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
90	Carnarvon Highway 24B	CH. 116 (Surat) to CH. 56	Southbound (A)	116	56	2007	[illegible]	[illegible]	[illegible]		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
91	Carnarvon Highway 24C	CH. 0.00 (Surat) to CH. 33	Northbound (G)	0	33	2007	[illegible]	[illegible]	[illegible]		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
92	Carnarvon Highway 24C	CH. 33 to CH. 0.0 (Surat)	Southbound (A)	33	0	2007	[illegible]	[illegible]	[illegible]		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
93	Carnarvon Highway 24C	CH. 33m to CH. 73 (Roma)	Northbound (G)	33	73	2007	[illegible]	[illegible]	[illegible]		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
94	Carnarvon Highway 24C	CH. 73 (Roma) to CH. 33	Southbound (A)	73	33	2007	[illegible]	[illegible]	[illegible]		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
95	Carnarvon Highway 24D	CH. 0.00 (Roma) to CH. 3	Northbound (G)	0	3	2007	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		3.49		
96	Carnarvon Highway 24D	CH. 3 to CH. 0.0 (Roma)	Southbound (A)	3	0	2007	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		3.49		
97	Carnarvon Highway 24D	CH. 3m to CH. 18 Roma - Taroom Road	Northbound (G)	3	18	2007	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		3.67		
98	Carnarvon Highway 24D	CH. 18 Roma - Taroom Road to CH. 3	Southbound (A)	18	3	2007	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		3.67		
99	Carnarvon Highway 24D	Roma - Taroom Road to Injune	Northbound (G)	18	90	2007	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		4		
100	Carnarvon Highway 24D	Injune to Roma - Taroom Road	Southbound (A)	90	18	2007	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		4		
101	Carnarvon Highway 24E	CH. 0.00 (Injune) to Fairview Field Access CH25.0(	Northbound (G)	0	25	2007	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		3.2		
102	Carnarvon Highway 24E	Fairview Field Access CH. 25.00 to CH. 0.0 (Injune	Southbound (A)	25	0	2007	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		3.2		
103	Carnarvon Highway 24E	Fairview Field Access to CH. 69 Boundary with Em	Northbound (G)	25	69	2007	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		3.2		
104	Carnarvon Highway 24E	CH. 69 to Fairview Field Access	Southbound (A)	69	25	2007	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		3.2		
105	Carnarvon Highway 24E	CH. 69 to CH. 86 Access to Camp 1	Northbound (G)	69	86	2007	[illegible]	[illegible]	[illegible]		0	861	3445	1148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			4880	3.2		3.2		
106	Carnarvon Highway 24E	CH. 86 Access to Camp 1 to CH. 69	Southbound (A)	86	69	2007	[illegible]	[illegible]	[illegible]		0	861	3445	1148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			4880	3.2		3.2		
107	Carnarvon Highway 24E	CH. 86 Access to Camp 1 to CH. 111	Northbound (G)	86	111	2007	[illegible]	[illegible]	[illegible]		0	861	3445	1148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			4880	3.2		3.2		
108	Carnarvon Highway 24E	CH. 111 to CH. 86 Access to Camp 1	Southbound (A)	111	86	2007	[illegible]	[illegible]	[illegible]		0	861	3445	1148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			4880	3.2		3.2		
109	Carnarvon Highway 24E	CH. 111 to CH.172 (Rollestone)	Northbound (G)	111	172	2007	[illegible]	[illegible]	[illegible]		0	861	3445	1148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			4880	3.2		3.2		
110	Carnarvon Highway 24E	CH. 172 (Rollestone) to CH.111	Southbound (A)	172	111	2007	[illegible]	[illegible]	[illegible]		0	861	3445	1148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			4880	3.2		3.2		
111	Leichhardt Highway 26A	CH. 00 Capicorn Highway to Burnett Highway	Southbound (G)	0.0	25.7	2007	[illegible]	[illegible]	[illegible]		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
112	Leichhardt Highway 26A	Burnett Highway to Capicorn Highway	Northbound (A)	25.7	0.0	2007	[illegible]	[illegible]	[illegible]		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
113	Leichhardt Highway 26A	Burnett Highway to CH. 51.1	Southbound (G)	25.7	51.1	2007	[illegible]	[illegible]	[illegible]		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
114	Leichhardt Highway 26A	CH. 51.1 to Burnett Highway	Northbound (A)	51.1	25.7	2007	[illegible]	[illegible]	[illegible]		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
115	Leichhardt Highway 26A	CH. 51.1 to CH. 62.6	Southbound (G)	51.1	62.6	2007	[illegible]	[illegible]	[illegible]		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
116	Leichhardt Highway 26A	CH. 62.6 to CH. 51.1	Northbound (A)	62.6	51.1	2007	[illegible]	[illegible]	[illegible]		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
117	Leichhardt Highway 26A	CH. 62.6 to CH. 86.0 Fairview Road	Southbound (G)	62.6	86.0	2007	[illegible]	[illegible]	[illegible]		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
118	Leichhardt Highway 26A	CH. 86.0 Fairview Road to CH. 62.6	Northbound (A)	86.0	62.6	2007	[illegible]	[illegible]	[illegible]		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
119	Leichhardt Highway 26A	CH. 86.0 Fairview Road to CH. 88.0	Southbound (G)	86.0	88.0	2007	[illegible]	[illegible]	[illegible]		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
120	Leichhardt Highway 26A	CH. 88.0 to CH.86.0	Northbound (A)	88.0	86.0	2007	[illegible]	[illegible]	[illegible]		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
121	Leichhardt Highway 26A	CH. 88.0 to CH. 99.0 (Camp 3)	Southbound (G)	88.0	99.0	2007	[illegible]	[illegible]	[illegible]		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
122	Leichhardt Highway 26A	CH. 99.0 (Camp 3) to CH. 88.0	Northbound (A)	99.0	88.0	2007	[illegible]	[illegible]	[illegible]		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
123	Leichhardt Highway 26A	CH. 99.0 to Banana CH. 105.2	Southbound (G)	99.0	105.2	2007	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		3.39		
124	Leichhardt Highway 26A	Banana CH. 105.2 to CH. 99.0	Northbound (A)	105.2	99.0	2007	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		3.39		
125	Leichhardt Highway 26A	Banana CH. 105.2 to CH. 117.0	Southbound (G)	105.2	117.0	2007	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		3.39		
126	Leichhardt Highway 26A	CH. 117.0 to Banana CH. 105.2	Northbound (A)	117.0	105.2	2007	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		3.39		
127	Leichhardt Highway 26A	CH. 117.0 to CH. 124.0	Southbound (G)	117.0	124.0	2007	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		3.39		
128	Leichhardt Highway 26A	CH. 124.0 to CH. 117.0	Northbound (A)	124.0	117.0	2007	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		3.39		
129	Leichhardt Highway 26A	Theodore CH. 162.3 to CH.124.0	Westbound (G)	124.0	162.3	2007	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		3.39		
130	Leichhardt Highway 26A	CH.124.0 to Theodore CH. 162.4	Eastbound (A)	162.3	124.0	2007	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		3.39		
131	Leichhardt Highway 26A	Theodore CH. 162.3 to CH. 124.0	Westbound (G)	162.3	170.3	2007	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		3.72		
132	Leichhardt Highway 26A	Theodore CH. 162.3 to Glenmoral Roundstone Roa	Eastbound (A)	170.3	162.3	2007	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		3.72		
133	Leichhardt Highway 26A	Glenmoral Roundstone Road to Isla Delusion Road	Westbound (G)	170.3	184.0	2007	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		3.65		
134	Leichhardt Highway 26A	Isla Delusion Road to Glenmoral Roundstone Road	Eastbound (A)	184.0	170.3	2007	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		3.65		
135	Leichhardt Highway 26A	Isla Delusion Road to District Boundary	Westbound (G)	184.0	192.2	2007	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		3.78		
136	Leichhardt Highway 26A	District Boundary to Isla Delusion Road	Eastbound (A)	192.2	184	2007	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		3.78		
137	Bruce Highway	Gladstone-Beraraby Road to Dawson Highway	Westbound (G)	0	11.6	2006	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		3.11	7540	
138	Bruce Highway	Gladstone-Beraraby Road to Dawson Highway	Eastbound (A)	11.6	0	2006	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		3.11	2130	
139	Bruce Highway	Dawson Highway to Calliope River Road	Westbound (G)	11.6	18.7	2006	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		3.08	7540	
140	Bruce Highway	Dawson Highway to Calliope River Road	Eastbound (A)	18.7	11.6	2006	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		3.08	2130	
141	Bruce Highway	Calliope River Road to Gladstone Mt-Larcom Road	Westbound (G)	18.7	45.4	2006	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		3.08		
142	Bruce Highway	Calliope River Road to Gladstone Mt-Larcom Road	Eastbound (A)	45.4	18.7	2006	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		3.08		

Background Parameters — Additional HV (ESA 3.2)

#	Road	Section	Direction	Start Chainage	End Chainage	Count Year	Heavy Vehicle %	Total Heavy Vehicle volume	ESA/Heavy Vehicle Ratio	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
1	Dawson Highway 46A	Gladstone-Mt Larcom Road to Breslin Street	Southbound (G)	0.0	1.5	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	Dawson Highway 46A	Gladstone-Mt Larcom Road to Breslin Street	Northbound (A)	1.5	0.0	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	Dawson Highway 46A	Breslin Street to Blain Drive	Southbound (G)	1.5	2.2	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	Dawson Highway 46A	Breslin Street to Blain Drive	Northbound (A)	2.2	1.5	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	Dawson Highway 46A	Blain Drive to Philip Street	Southbound (G)	2.2	3.1	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	Dawson Highway 46A	Blain Drive to Philip Street	Northbound (A)	3.1	2.2	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	Dawson Highway 46A	Philip Street to Penda Avenue	Southbound (G)	3.1	4.4	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	Dawson Highway 46A	Philip Street to Penda Avenue	Northbound (A)	4.4	3.1	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	Dawson Highway 46A	Penda Avenue to Chapman Drive	Southbound (G)	4.4	5.2	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	Dawson Highway 46A	Penda Avenue to Chapman Drive	Northbound (A)	5.2	4.4	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	Dawson Highway 46A	Chapman Drive to Don Young Drive	Southbound (G)	5.2	8.4	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	Dawson Highway 46A	Chapman Drive to Don Young Drive	Northbound (A)	8.4	5.2	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	Dawson Highway 46A	Don Young Drive to Harvey Road	Southbound (G)	8.4	10.3	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	Dawson Highway 46A	Don Young Drive to Harvey Road	Northbound (A)	10.3	8.4	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	Dawson Highway 46A	Harvey Road to Bruce Highway	Southbound (G)	10.3	19.0	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	Dawson Highway 46A	Harvey Road to Bruce Highway	Northbound (A)	19.0	10.3	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	Dawson Highway 46A	Bruce Highway to Drynan Drive	Southbound (G)	19.0	21.8	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	Dawson Highway 46A	Bruce Highway to Drynan Drive	Northbound (A)	21.8	19.0	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	Dawson Highway 46A	Drynan Drive to Gladstone-Monto Road	Westbound (G)	21.8	25.7	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	Dawson Highway 46A	Drynan Drive to Gladstone-Monto Road	Eastbound (A)	25.7	21.8	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	Dawson Highway 46A	Gladstone-Monto Road to Access to Pipeline Camp	Westbound (G)	25.7	49.0	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	Dawson Highway 46A	Access to Pipeline Camp 4 to Gladstone-Monto Ro	Eastbound (A)	49.0	25.7	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	Dawson Highway 46A	Access to Pipline Camp 4 to New point 1	Westbound (G)	49.0	72.5	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	Dawson Highway 46A	Access to Pipline Camp 4 to New point 1	Eastbound (A)	72.5	49.0	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	Dawson Highway 46A	New to CSC/BSC Border	Westbound (G)	72.5	76.6	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	Dawson Highway 46A	New to CSC/BSC Border	Eastbound (A)	76.6	72.5	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	Dawson Highway 46A	CSC/BSC Border to New point 2	Westbound (G)	76.6	85.0	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28	Dawson Highway 46A	CSC/BSC Border to New point 2	Eastbound (A)	85.0	76.6	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29	Dawson Highway 46A	New point 2 to Argoon Road	Westbound (G)	85.0	101.3	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	Dawson Highway 46A	New point 2 to Argoon Road	Eastbound (A)	101.3	85.0	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31	Dawson Highway 46A	Agoon Road to Callide Dam Road	Westbound (G)	101.3	114.0	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32	Dawson Highway 46A	Agoon Road to Callide Dam Road	Eastbound (A)	114.0	101.3	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33	Dawson Highway 46A	Callide Dam Road to Tognalini - Baldwin Road	Westbound (G)	114.0	117.1	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
34	Dawson Highway 46A	Callide Dam Road to Tognalini - Baldwin Road	Eastbound (A)	117.1	114.0	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35	Dawson Highway 46A	Tognalini - Baldwin Road to Biloela	Westbound (G)	117.1	120.0	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36	Dawson Highway 46A	Tognalini - Baldwin Road to Biloela	Eastbound (A)	120.0	117.1	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37	Dawson Highway 46B	Biloela to Crowsdale Camboon Road	Westbound (G)	0	6.8	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
38	Dawson Highway 46B	Crewsdale Camboon Road to Bioela	Eastbound (A)	6.8	0	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
39	Dawson Highway 46B	Crowsdale Camboon Road to Point 1	Westbound (G)	6.8	10	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40	Dawson Highway 46B	Point 1 to Crowsdale Camboon Road	Eastbound (A)	10	6.8	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41	Dawson Highway 46B	Point 1 to Greycliffe Road	Westbound (G)	10	26.8	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
42	Dawson Highway 46B	Greycliffe Road to Point 1	Eastbound (A)	26.8	10	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43	Dawson Highway 46B	Grecliffe Road to Banana	Westbound (G)	45.7	26.8	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
44	Dawson Highway 46B	Banana to Greycliffe Road	Eastbound (A)	26.8	45.7	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
45	Dawson Highway 46C	Banana to Moura Mine	Westbound (G)	0	7.8	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
46	Dawson Highway 46C	Moura Mine to Banana	Eastbound (A)	7.8	0	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
47	Dawson Highway 46C	Moura Mine to Moura Township	Westbound (G)	7.8	19	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
48	Dawson Highway 46C	Moura Township to Moura Mine	Eastbound (A)	19	7.8	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
49	Dawson Highway 46C	Moura Township to CH. 30	Westbound (G)	19	30	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50	Dawson Highway 46C	CH. 30 to Moura Township	Eastbound (A)	30	19	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
51	Dawson Highway 46C	CH. 30 to CH. 41	Westbound (G)	30	41	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
52	Dawson Highway 46C	CH. 41 to CH. 30	Eastbound (A)	41	30	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
53	Dawson Highway 46C	CH. 41 to District Boundary	Westbound (G)	41	45	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
54	Dawson Highway 46C	Boundary to CH. 41	Eastbound (A)	45	41	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
55	Gladstone-Mt Larcom Rd	Dawspn Highway to Hilderbrand Street	Westbound (G)	0	1.4	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
56	Gladstone-Mt Larcom Rd	Dawspn Highway to Hilderbrand Street	Eastbound (A)	1.4	0	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57	Gladstone-Mt Larcom Rd	Hilderbrand Street to Blain Drive	Westbound (G)	1.4	3.3	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
58	Gladstone-Mt Larcom Rd	Hilderbrand Street to Blain Drive	Eastbound (A)	3.3	1.4	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
59	Gladstone-Mt Larcom Rd	Blain Drive to Red Rover Road	Westbound (G)	3.3	3.9	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60	Gladstone-Mt Larcom Rd	Blain Drive to Red Rover Road	Eastbound (A)	3.9	3.3	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
61	Gladstone-Mt Larcom Rd	Red Rover Road to Power Station	Westbound (G)	3.9	4.6	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
62	Gladstone-Mt Larcom Rd	Red Rover Road to Power Station	Eastbound (A)	4.6	3.9	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
63	Gladstone-Mt Larcom Rd	Power Station to Reid Road	Westbound (G)	4.6	9.8	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
64	Gladstone-Mt Larcom Rd	Power Station to Reid Road	Eastbound (A)	9.8	4.6	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
65	Gladstone-Mt Larcom Rd	Reid Road to Landing Road	Westbound (G)	9.8	12.3	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
66	Gladstone-Mt Larcom Rd	Reid Road to Landing Road	Eastbound (A)	12.3	9.8	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
67	Gladstone-Mt Larcom Rd	Landing Road to Targinnie Road	Westbound (G)	12.3	16.3	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
68	Gladstone-Mt Larcom Rd	Landing Road to Targinnie Road	Eastbound (A)	16.3	12.3	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
69	Gladstone-Mt Larcom Rd	Targinnie Road to Quarry Road	Westbound (G)	16.3	19	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
70	Gladstone-Mt Larcom Rd	Targinnie Road to Quarry Road	Eastbound (A)	19	16.3	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71	Gladstone-Mt Larcom Rd	Quarry Road to Bruce Highway	Westbound (G)	19	32.1	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
72	Gladstone-Mt Larcom Rd	Quarry Road to Bruce Highway	Eastbound (A)	32.1	19	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
73	Carnarvon Highway 24A	CH. 0.00 (NSW border) to CH. 10	Northbound (G)	0.0	10.0	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
74	Carnarvon Highway 24A	CH. 10 to CH. 0.0 (NSW border)	Southbound (A)	10.0	0.0	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
75	Carnarvon Highway 24A	CH. 10m to CH. 40 (Thallon)	Northbound (G)	10.0	40.0	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
76	Carnarvon Highway 24A	CH. 40 (Thallon) to CH. 10	Southbound (A)	40.0	10.0	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
77	Carnarvon Highway 24A	CH. 40 (Thallon) to CH. 74 (Ningdigully)	Northbound (G)	40.0	74.0	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
78	Carnarvon Highway 24A	CH. 74 (Nindigully) to CH. 40 (Thallon)	Southbound (A)	74.0	40.0	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
79	Carnarvon Highway 24A	CH. 74 (Nindigully) to CH. 111	Northbound (G)	74.0	111.0	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
80	Carnarvon Highway 24A	CH. 111 to CH.74 (Nindigully)	Southbound (A)	111.0	74.0	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81	Carnarvon Highway 24A	CH. 111 to St George	Northbound (G)	111.0	118.0	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
82	Carnarvon Highway 24A	St George to CH. 111	Southbound (A)	118.0	111.0	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
83	Carnarvon Highway 24B	CH. 0.00 (St George) to CH. 4	Northbound (G)	0	4	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
84	Carnarvon Highway 24B	CH. 4 to CH. 0.0 (St George)	Southbound (A)	4	0	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
85	Carnarvon Highway 24B	CH. 4m to CH. 9	Northbound (G)	4	9	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
86	Carnarvon Highway 24B	CH. 9 to CH. 56	Southbound (A)	9	4	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
87	Carnarvon Highway 24B	CH. 9 to CH. 4	Northbound (G)	9	56	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
88	Carnarvon Highway 24B	CH. 56 to CH. 9	Southbound (A)	56	9	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
89	Carnarvon Highway 24B	CH. 56 to CH. 116 (Surat)	Northbound (G)	56	116	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
90	Carnarvon Highway 24B	CH. 116 (Surat) to CH. 56	Southbound (A)	116	56	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
91	Carnarvon Highway 24C	CH. 0.00 (Surat) to CH. 33	Northbound (G)	0	33	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
92	Carnarvon Highway 24C	CH. 33 to CH. 0.0 (Surat)	Southbound (A)	33	0	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
93	Carnarvon Highway 24C	CH. 33m to CH. 73 (Roma)	Northbound (G)	33	73	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
94	Carnarvon Highway 24C	CH. 73 (Roma) to CH. 33	Southbound (A)	73	33	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
95	Carnarvon Highway 24D	CH. 0.00 (Roma) to CH. 3	Northbound (G)	0	3	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
96	Carnarvon Highway 24D	CH. 3 to CH. 0.0 (Roma)	Southbound (A)	3	0	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
97	Carnarvon Highway 24D	CH. 3m to CH. 18 Roma - Taroom Road	Northbound (G)	3	18	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
98	Carnarvon Highway 24D	CH. 18 Roma - Taroom Road to CH. 3	Southbound (A)	18	3	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99	Carnarvon Highway 24D	Roma - Taroom Road to Injune	Northbound (G)	18	90	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100	Carnarvon Highway 24D	Injune to Roma - Taroom Road	Southbound (A)	90	18	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
101	Carnarvon Highway 24E	CH. 0.00 (Injune) to Fairview Field Access CH25.0(	Northbound (G)	0	25	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
102	Carnarvon Highway 24E	Fairview Field Access CH. 25.00 to CH. 0.0 (Injune	Southbound (A)	25	0	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
103	Carnarvon Highway 24E	Fairview Field Access to CH. 69 Boundary with Em	Northbound (G)	25	69	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
104	Carnarvon Highway 24E	CH. 69 to Fairview Field Access	Southbound (A)	69	25	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
105	Carnarvon Highway 24E	CH. 69 to CH. 86 Access to Camp 1	Northbound (G)	69	86	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
106	Carnarvon Highway 24E	CH. 86 Access to Camp 1 to CH. 69	Southbound (A)	86	69	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
107	Carnarvon Highway 24E	CH. 86 Access to Camp 1 to CH. 111	Northbound (G)	86	111	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
108	Carnarvon Highway 24E	CH. 111 to CH. 86 Access to Camp 1	Southbound (A)	111	86	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
109	Carnarvon Highway 24E	CH. 111 to CH.172 (Rollestone)	Northbound (G)	111	172	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
110	Carnarvon Highway 24E	CH. 172 (Rollestone) to CH.111	Southbound (A)	172	111	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
111	Leichhardt Highway 26A	CH. 00 Capicorn Highway to Burnett Highway	Southbound (G)	0.0	25.7	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
112	Leichhardt Highway 26A	Burnett Highway to Capicorn Highway	Northbound (A)	25.7	0.0	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
113	Leichhardt Highway 26A	Burnett Highway to CH. 51.1	Southbound (G)	25.7	51.1	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
114	Leichhardt Highway 26A	CH. 51.1 to Burnett Highway	Northbound (A)	51.1	25.7	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
115	Leichhardt Highway 26A	CH. 51.1 to CH. 62.6	Southbound (G)	51.1	62.6	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
116	Leichhardt Highway 26A	CH. 62.6 to CH. 51.1	Northbound (A)	62.6	51.1	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
117	Leichhardt Highway 26A	CH. 62.6 to CH. 86.0 Fairview Road	Southbound (G)	62.6	86.0	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
118	Leichhardt Highway 26A	CH. 86.0 Fairview Road to CH. 62.6	Northbound (A)	86.0	62.6	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
119	Leichhardt Highway 26A	CH. 86.0 Fairview Road to CH. 88.0	Southbound (G)	86.0	88.0	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
120	Leichhardt Highway 26A	CH. 88.0 to CH.86.0	Northbound (A)	88.0	86.0	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
121	Leichhardt Highway 26A	CH. 88.0 to CH. 99.0 (Camp 3)	Southbound (G)	88.0	99.0	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
122	Leichhardt Highway 26A	CH. 99.0 (Camp 3) to CH. 88.0	Northbound (A)	99.0	88.0	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
123	Leichhardt Highway 26A	CH. 99.0 to Banana CH. 105.2	Southbound (G)	99.0	105.2	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
124	Leichhardt Highway 26A	Banana CH. 105.2 to CH. 99.0	Northbound (A)	105.2	99.0	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
125	Leichhardt Highway 26A	Banana CH. 105.2 to CH. 117.0	Southbound (G)	105.2	117.0	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
126	Leichhardt Highway 26A	CH. 117.0 to Banana CH. 105.2	Northbound (A)	117.0	105.2	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
127	Leichhardt Highway 26A	CH. 117.0 to CH. 124.0	Southbound (G)	117.0	124.0	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
128	Leichhardt Highway 26A	CH. 124.0 to CH. 117.0	Northbound (A)	124.0	117.0	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
129	Leichhardt Highway 26A	Theodore CH. 162.3 to CH.124.0	Westbound (G)	124.0	162.3	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
130	Leichhardt Highway 26A	CH.124.0 to Theodore CH. 162.4	Eastbound (A)	162.3	124.0	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
131	Leichhardt Highway 26A	Theodore CH. 162.3 to CH. 124.0	Westbound (G)	162.3	170.3	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
132	Leichhardt Highway 26A	Theodore CH. 162.3 to Glenmoral Roundstone Roa	Eastbound (A)	170.3	162.3	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
133	Leichhardt Highway 26A	Glenmoral Roundstone Road to Isla Delusion Road	Westbound (G)	170.3	184.0	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
134	Leichhardt Highway 26A	Isla Delusion Road to Glenmoral Roundstone Road	Eastbound (A)	184.0	170.3	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
135	Leichhardt Highway 26A	Isla Delusion Road to District Boundary	Westbound (G)	184.0	192.2	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
136	Leichhardt Highway 26A	District Boundary to Isla Delusion Road	Eastbound (A)	192.2	184	2007	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
137	Bruce Highway	Gladstone-Beraraby Road to Dawson Highway	Westbound (G)	0	11.6	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
138	Bruce Highway	Gladstone-Beraraby Road to Dawson Highway	Eastbound (A)	11.6	0	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
139	Bruce Highway	Dawson Highway to Calliope River Road	Westbound (G)	11.6	18.7	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
140	Bruce Highway	Dawson Highway to Calliope River Road	Eastbound (A)	18.7	11.6	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
141	Bruce Highway	Calliope River Road to Gladstone Mt-Larcom Road	Westbound (G)	18.7	45.4	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
142	Bruce Highway	Calliope River Road to Gladstone Mt-Larcom Road	Eastbound (A)	45.4	18.7	2006	0.00%	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

143	Bruce Highway	Gladstone-Mt Larcom Road to Bajool Port A	Westbound (G)	45.4	85.3	2006	2,272	23.73%
144	Bruce Highway	Gladstone-Mt Larcom Road to Bajool Port A	Eastbound (A)	85.3	45.4	2006	2,283	25.48%
145	Bruce Highway	Bajool Port Alma Road to Gavial-Gracemere	Westbound (G)	85.3	109	2006	2,574	23.33%
146	Bruce Highway	Bajool Port Alma Road to Gavial-Gracemere	Eastbound (A)	109	85.3	2006	2,563	23.48%
147	Bruce Highway	Gavial-Gracemere Road to Burnett Highway	Westbound (G)	109	114.4	2006	2,515	26.86%
148	Bruce Highway	Gavial-Gracemere Road to Burnett Highway	Eastbound (A)	114.4	109	2006	2,471	27.43%
149	Bruce Highway	Burnett Highway to Capricorn Highway	Westbound (G)	114.4	117	2006	3,138	22.25%
150	Bruce Highway	Burnett Highway to Capricorn Highway	Eastbound (A)	117	114.4	2006	3,112	23.07%
151	Bruce Highway	Capricorn Highway to Stanley Street	Westbound (G)	117	119.736	2006	9,245	11.30%
152	Bruce Highway	Capricorn Highway to Stanley Street	Eastbound (A)	119.736	117	2006	8,839	11.46%
153	Gladstone - Benaraby Road	CH.0.0 Dawson Highway CH. 0.00 to Sun v	Southbound (G)	0	0.645	2007	10,070	3.83%
154	Gladstone - Benaraby Road	Sun Valley Road CH. 0.645 to Dawson High	Northbound (A)	0.645	0	2007	9,769	3.48%
155	Gladstone - Benaraby Road	CH. 0.645 to Glenlyon Road CH. 2.159	Southbound (G)	0.645	2.159	2007	6,784	4.02%
156	Gladstone - Benaraby Road	Glenlyon Road CH. 2.159 to CH. 0.645	Northbound (A)	2.159	0.645	2007	7,007	4.02%
157	Gladstone - Benaraby Road	Glenlyon Road CH. 2.159 to French Street (	Southbound (G)	2.159	3.4	2007	4,435	6.94%
158	Gladstone - Benaraby Road	French Street CH. 3.40 to Glenlyon Road C	Northbound (A)	3.4	2.159	2007	4,861	7.05%
159	Gladstone - Benaraby Road	French Street CH. 3.40 to Glen Eden Drive	Southbound (G)	3.4	5.7	2007	4,435	6.94%
160	Gladstone - Benaraby Road	Glen Eden Drive CH. 5.70 to French Street	Northbound (A)	5.7	3.4	2007	4,861	7.05%
161	Gladstone - Benaraby Road	Glen Eden Drive CH. 5.70 to South Trees D	Southbound (G)	5.7	7.3	2007	4,435	6.94%
162	Gladstone - Benaraby Road	South Trees Drive CH. 5.70 to Glen Eden D	Northbound (A)	7.3	5.7	2007	4,861	7.05%
163	Gladstone - Benaraby Road	South Trees Drive CH. 7.30 to Boyne Island	Southbound (G)	7.3	16.039	2007	4,435	6.94%
164	Gladstone - Benaraby Road	Boyne Island Drive CH. 16.039 to South Tre	Northbound (A)	16.039	7.3	2007	4,861	7.05%
165	Gladstone - Benaraby Road	Boyne Island Road CH. 16.039 to Bruce Hig	Southbound (G)	16.039	19.21	2007	1,934	12.71%
166	Gladstone - Benaraby Road	Bruce Highway CH. 19.21 to Boyne Island R	Northbound (A)	19.21	16.039	2007	2,031	12.09%
167	Burnett Highway 41D	CH.0.0 District Boundary to CH.65.0	Southbound (G)	0.0	65.0	2007	335	17.66%
168	Burnett Highway 41D	CH.65.0 to District Boundary CH.0.0	Northbound (A)	65.0	0.0	2007	335	17.66%
169	Burnett Highway 41D	CH.65.0 to Hinton's Lane CH.85.5	Southbound (G)	65.0	85.5	2007	335	17.66%
170	Burnett Highway 41D	Hinton's Lane CH.85.5 to CH.65.0	Northbound (A)	85.5	65.0	2007	335	17.66%
171	Burnett Highway 41D	Hinton's Lane CH.85.5 to Sara Lane CH.92.	Southbound (G)	85.5	92.0	2007	907	10.69%
172	Burnett Highway 41D	Sara Lane CH.92.0 to Hinton's Lane CH.85.	Northbound (A)	92.0	85.5	2007	907	10.69%
173	Burnett Highway 41D	Sara Lane CH.92.0 to Dawson Highway CH	Southbound (G)	92.0	93.8	2007	1184	9.54%
174	Burnett Highway 41D	Dawson Highway CH.93.8 to Sara Lane CH	Northbound (A)	93.8	92.0	2007	1184	9.54%
175	Burnett Highway 41E	Dawson Highway CH.93.8 to CH.18.5	Southbound (G)	0.0	18.5	2007	566	14.35%
176	Burnett Highway 41E	CH.18.5 to Dawson Highway CH.93.8	Northbound (A)	18.5	0.0	2007	566	14.35%
177	Burnett Highway 41E	CH.18.5 to Jambin Rail Crossing CH.27.2	Southbound (G)	18.5	27.2	2007	566	14.35%
178	Burnett Highway 41E	Jambin Rail Crossing CH.27.2 to CH.18.5	Northbound (A)	27.2	18.5	2007	566	14.35%
179	Burnett Highway 41E	Jambin Rail Crossing CH.27.2 to Goovigen	Southbound (G)	27.2	35.5	2007	566	14.35%
180	Burnett Highway 41E	Goovigen Connection Road CH.35.5 to Jam	Northbound (A)	35.5	27.2	2007	566	14.35%
181	Burnett Highway 41E	Goovigen Connection Road CH.35.5 to Tohl	Southbound (G)	35.5	38.9	2007	417	16.93%
182	Burnett Highway 41E	Tohlinn Road (South) CH.38.9 to Goovigen	Northbound (A)	38.9	35.5	2007	417	16.93%
183	Burnett Highway 41E	Tomlin Road (South) CH.38.9 to Tomlin Rd	Southbound (G)	38.9	53.4	2007	417	16.93%
184	Burnett Highway 41E	Tomlin Rd (North) CH.53.4 to Tomlin Road	Northbound (A)	53.4	38.9	2007	417	16.93%
185	Burnett Highway 41E	Tomlin Rd (North) CH.53.4 to Leichhardt Hi	Westbound (G)	53.4	71.8	2007	417	16.93%
186	Burnett Highway 41E	Leichhardt Highway CH.71.8 to Tohlinn Roa	Eastbound (A)	71.8	53.4	2007	417	16.93%
187	Burnett Highway 41E	Leichhardt Highway CH.71.8 to School Grou	Westbound (G)	71.8	101.4	2007	446	8.21%
188	Burnett Highway 41E	School Grounds CH.101.4 to Leichhardt Hig	Eastbound (A)	101.4	71.8	2007	446	8.21%
189	Burnett Highway 41E	School Grounds CH.101.4 to Gordon Street	Westbound (G)	101.4	102.8	2007	1220	4.95%
190	Burnett Highway 41E	Gordon Street CH.102.8 to School Grounds CH.101.4	Eastbound (A)	102.8	101.4	2007	1220	4.95%
191	Dawson Highway 46C	Boundary to Fitzroy Development 85A Inters	Westbound (G)	45.05	73.9	2007	134	26.27%
192	Dawson Highway 46C	Fitzroy Dev. 85A Intersection to Broundary	Eastbound (A)	73.9	45.05	2007	134	26.27%
193	Dawson Highway 46C	Fitzroy Dev. 85A Intersection to Duaringa/W	Westbound (G)	73.9	80.5	2007	125	14.20%
194	Dawson Highway 46C	Duaringa/Woorabinda Intersection to Fitzroy	Eastbound (A)	80.5	73.9	2007	125	14.20%
195	Dawson Highway 46C	Duaringa/Woorabinda Intersection to Woora	Westbound (G)	80.5	83.6	2007	125	28.52%
196	Dawson Highway 46C	Woorabinda/Duaringa to Duaringa/Woorabin	Eastbound (A)	83.6	80.5	2007	125	28.52%
197	Dawson Highway 46C	Woorabinda/Duaringa to 46C/85B Intersecti	Westbound (G)	83.6	92.4	2007	125	28.52%
198	Dawson Highway 46C	46C/85B Intersection to Woorabinda/Duarin	Eastbound (A)	92.4	83.6	2007	125	28.52%
199	Dawson Highway 46C	46C/85B Intersection to Prospect Creek Cul	Westbound (G)	92.4	101.4	2007	104	29.80%
200	Dawson Highway 46C	Prospect Creek Culvert to 46C/85B Intersec	Eastbound (A)	101.4	92.4	2007	104	29.80%
201	Dawson Highway 46C	Prospect Creek Culvert to Duaringa/Bauhini	Westbound (G)	101.4	123.6	2007	104	29.80%
202	Dawson Highway 46C	Duaringa/Bauhinia Intersection to Prospect (	Eastbound (A)	123.6	101.4	2007	104	29.80%
203	Dawson Highway 46C	Duaringa/Bauhinia Intersection to KM 137.5	Westbound (G)	123.6	137.5	2007	104	29.80%
204	Dawson Highway 46C	KM 137.5 to Duaringa/Bauhinia Intersection	Eastbound (A)	123.6	137.5	2007	104	29.80%
205	Dawson Highway 46C	KM 137.5 to Rolleston	Westbound (G)	137.5	168	2007	104	29.80%
206	Dawson Highway 46C	Rollston to KM 137.5	Eastbound (A)	168	137.5	2007	104	29.80%
207	Leichhardt Highway 26A	District Boundary to 26A/85A intersection	Westbound (G)	192.2	239.0	2008	227	35.41%
208	Leichhardt Highway 26A	26A/84A intersection to District Boundary	Eastbound (A)	239.0	192.2	2008	227	35.41%
209	Leichhardt Highway 26A	26A/85A intersection to Taroom	Westbound (G)	239.0	256.0	2008	261	35.46%
210	Leichhardt Highway 26A	Taroom to 26A/84A intersection	Eastbound (A)	256.0	239	2008	261	35.46%
211	Leichhardt Highway 26B	Taroom to KM35.00	Westbound (G)	0.0	35.0	2008	327	28.89%
212	Leichhardt Highway 26B	KM35.00 to Taroom	Eastbound (A)	35.0	0	2008	327	28.89%
213	Leichhardt Highway 26B	KM35.00 to Jackson-Wandoan Road	Westbound (G)	35.0	61.0	2008	327	28.89%
214	Leichhardt Highway 26B	Jackson-Wandoan Road to KM35.00	Eastbound (A)	61.0	35	2008	327	28.89%
215	Leichhardt Highway 26B	Jackson-Wandoan Road to Miles	Westbound (G)	61.0	127.6	2008	319	31.86%
216	Leichhardt Highway 26B	Miles to Jackson-Wandoan Road	Eastbound (A)	127.6	61	2008	319	31.86%
217	Warrego Highway	Miles to 18D/Dulacca North Intersetcion	Westbound (G)	0	43	2008	745	25.91%
218	Warrego Highway	18D/Dulacca North Intersection to Miles	Eastbound (A)	43	0	2008	745	25.91%
219	Warrego Highway	18D/Dulacca North Intersection to 18D/3441	Westbound (G)	43	101	2008	616	28.00%
220	Warrego Highway	18D/3441 Intersection to 18D/Dulacca North	Eastbound (A)	101	43	2008	616	28.00%
221	Warrego Highway	18D/3441 Intersection to KM135.5	Westbound (G)	101	135	2008	781	25.61%
222	Warrego Highway	KM135.5 to 18D/3441 Intersection	Eastbound (A)	135	101	2008	781	25.61%
223	Warrego Highway	KM135.5 to Roma	Westbound (G)	135	141.2	2008	781	18.97%
224	Warrego Highway	Roma to KM135.5	Eastbound (A)	141.2	135	2008	781	18.97%
225	Warrego Highway	Ruthven Street to Peachy Street	Westbound (G)	0.00	0.99	2008	12826	15.69 %
226	Warrego Highway	Peachy Street to Ruthven Street	Eastbound (A)	0.99	0.00	2008	12826	15.69 %
227	Warrego Highway	Peachy Street to Fifth Avenue	Westbound (G)	0.99	2.21	2008	11295	17.34 %
228	Warrego Highway	Fifth Avenue to Peachy Street	Eastbound (A)	2.21	0.99	2008	11295	17.34 %
229	Warrego Highway	Fifth Avenue to Higgins Street	Westbound (G)	2.21	3.74	2008	8288	19.73 %
230	Warrego Highway	Higgins Street to Fifth Avenue	Eastbound (A)	3.74	2.21	2008	8288	19.73 %
231	Warrego Highway	Higgins Street to Park Street	Westbound (G)	3.74	4.52	2008	5309	7.81 %
232	Warrego Highway	Park Street to Higgins Street	Eastbound (A)	4.52	3.74	2008	5309	7.81 %
233	Warrego Highway	Park Street to Airport	Westbound (G)	4.52	6.63	2008	7898	7.95 %
234	Warrego Highway	Airport to Park Street	Eastbound (A)	6.63	4.52	2008	7898	7.95 %
235	Warrego Highway	Airport to Troys Road	Westbound (G)	6.63	10.59	2008	6061	10.20 %
236	Warrego Highway	Troys Road to Airport	Eastbound (A)	10.59	6.63	2008	6061	10.20 %
237	Warrego Highway	Troys Road to Oakey Biddeston Road	Westbound (G)	10.59	26.83	2008	5778	13.12 %
238	Warrego Highway	Oakey Biddeston Road to Troys Road	Eastbound (A)	26.83	10.59	2008	5778	13.12 %
239	Warrego Highway	Oakey Biddeston Road to Dalby Cecil Plains	Westbound (G)	26.83	80.82	2008	2344	21.99 %
240	Warrego Highway	Dalby Cecil Plains Road to Oakey Biddeston	Eastbound (A)	80.82	26.83	2008	2344	21.99 %
241	Warrego Highway	Dalby Cecil Plains Road to Cunningham Str	Westbound (G)	80.82	84.19	2008	3080	21.76 %
242	Warrego Highway	Cunningham Street to Dalby Cecil Plains Ro	Eastbound (A)	84.19	80.82	2008	3080	21.76 %
243	Warrego Highway	Cunningham Street to Rail Line	Eastbound (A)	0.00	1.09	2008	3596	16.08%
244	Warrego Highway	Rail Line to Cunningham Street	Westbound (G)	1.09	0.00	2008	3596	16.08%
245	Warrego Highway	Rail Line to Macalister Bell Road	Eastbound (A)	1.09	25.12	2008	1273	24.28%
246	Warrego Highway	Macalister Bell Road to Rail Line	Westbound (G)	25.12	1.09	2008	1273	24.28%
247	Warrego Highway	Macalister Bell Road to Warra Kogan Road	Eastbound (A)	25.12	45.20	2008	1134	27.17%
248	Warrego Highway	Warra Kogan Road to Macalister Bell Road	Westbound (G)	45.20	25.12	2008	1134	27.17%
249	Warrego Highway	Warra Kogan Road to Glasson Street	Eastbound (A)	45.20	80.18	2008	1056	27.95%
250	Warrego Highway	Glasson Street to Warra Kogan Road	Westbound (G)	80.18	45.20	2008	1056	27.95%
251	Warrego Highway	Glasson Street to Auburn Road	Eastbound (A)	80.18	83.16	2008	1336	20.41%
252	Warrego Highway	Auburn Road to Glasson Street	Westbound (G)	83.16	80.18	2008	1336	20.41%
253	Warrego Highway	Auburn Road to Goombi	Eastbound (A)	83.16	106.36	2008	1085	25.76%
254	Warrego Highway	Goombi to Auburn Road	Westbound (G)	106.36	83.16	2008	1085	25.76%
255	Warrego Highway	Goombi to Leichhardt Highway	Eastbound (A)	106.36	126.75	2008	1000	5.34%
256	Warrego Highway	Leichhardt Highway to Goombi	Westbound (G)	126.75	106.36	2008	1000	5.34%
257	Bajool-Port Alma Road	Bruve Highway to End Point	Eastbound (G)	0	25.24	2008	120	34.70%
258	Bajool-Port Alma Road	End Point to Bruce Highway	Westbound (A)	25.24	0	2008	120	38.74%
259	Capricorn Highway	Bruce Highway to Gavial Gracemere Road	Eastbound (A)	0	5.69	2008	7,219	10.10%
260	Capricorn Highway	Gavial Gracemere Road to Bruce Highway	Westbound (G)	5.69	0	2008	7,270	10.11%
261	Capricorn Highway	Gavial Gracemere Road to Kabra Road	Eastbound (A)	5.69	13.367	2008	2,327	21.56%
262	Capricorn Highway	Kabra Road to Gavial Gracemere Road	Westbound (G)	13.367	5.69	2008	2,348	19.22%
263	Capricorn Highway	Kabra Road to Powerstation Road	Eastbound (A)	13.367	17.856	2008	2,008	6.27%
264	Capricorn Highway	Powerstation Road to Kabra Road	Westbound (G)	17.856	13.367	2008	2,037	2.73%
265	Capricorn Highway	Powerstation Road to Leichhardt Highway	Eastbound (A)	17.856	51.62	2008	1,611	16.84%
266	Capricorn Highway	Leichhardt Highway to Powerstation Road	Westbound (G)	51.62	17.856	2008	1,739	19.37%
267	Capricorn Highway	Leichhardt Highway to End Point	Eastbound (A)	51.62	73.35	2008	1,381	19.56%
268	Capricorn Highway	End Point to Leichhardt Highway	Westbound (G)	73.35	51.62	2008	1,418	16.64%
269	Jackson-Wandoan Road	Warrego Highway Intersection to Grid	Northbound (A)	0	69	2008	33	21.45%
270	Jackson-Wandoan Road	Grid to18D/Dulacca North Intersection	Southbound (G)	69	0	2008	33	21.45%
271	Jackson-Wandoan Road	Grid to Leichardt Highway	Eastbound (A)	69	81	2008	66	20.56%
272	Jackson-Wandoan Road	Leichardt Highway to Grid	Westbound (G)	81	69	2008	66	20.56%
273	Bruce Highway (10D)	Miriam Vale CH. 98.8 to CH. 112	Northbound (A)	98.8	112	2008	2,484	23.28%
274	Bruce Highway (10D)	CH. 112 to Miriam Vale CH. 98.8	Southbound (G)	112	98.8	2007	2,484	23.28%
275	Bruce Highway (10D)	CH. 112 to Benaraby CH. 147.1	Northbound (A)	112	147.1	2007	2,484	23.28%
276	Bruce Highway (10D)	Benaraby CH. 147.1 o CH. 112	Southbound (G)	147.1	112	2007	2,484	23.28%

ground Parameters — ESA 1.98 — Additional CL3 50% Loaded HV's

Road	Section	Direction	Start Chainage	End Chainage	Count Year	Heavy Vehicle %	Total Heavy Vehicle volume	ESA/Heavy Vehicle Ratio	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Dawson Highway 46A	Gladstone-Mt Larcom Road to Breslin Street	Southbound (G)	0.0	1.5	2006	0.00%	0	0.00																											
Dawson Highway 46A	Gladstone-Mt Larcom Road to Breslin Street	Northbound (A)	1.5	0.0	2006	0.00%	0	0.00																											
Dawson Highway 46A	Breslin Street to Blain Drive	Southbound (G)	1.5	2.2	2006	0.00%	0	0.00																											
Dawson Highway 46A	Breslin Street to Blain Drive	Northbound (A)	2.2	1.5	2006	0.00%	0	0.00																											
Dawson Highway 46A	Blain Drive to Philip Street	Southbound (G)	2.2	3.1	2006	0.00%	0	0.00																											
Dawson Highway 46A	Blain Drive to Philip Street	Northbound (A)	3.1	2.2	2006	0.00%	0	0.00																											
Dawson Highway 46A	Philip Street to Penda Avenue	Southbound (G)	3.1	4.4	2006	0.00%	0	0.00																											
Dawson Highway 46A	Philip Street to Penda Avenue	Northbound (A)	4.4	3.1	2006	0.00%	0	0.00																											
Dawson Highway 46A	Penda Avenue to Chapman Drive	Southbound (G)	4.4	5.2	2006	0.00%	0	0.00																											
Dawson Highway 46A	Penda Avenue to Chapman Drive	Northbound (A)	5.2	4.4	2006	0.00%	0	0.00																											
Dawson Highway 46A	Chapman Drive to Don Young Drive	Southbound (G)	5.2	8.4	2006	0.00%	0	0.00																											
Dawson Highway 46A	Chapman Drive to Don Young Drive	Northbound (A)	8.4	5.2	2006	0.00%	0	0.00																											
Dawson Highway 46A	Don Young Drive to Harvey Road	Southbound (G)	8.4	10.3	2006	0.00%	0	0.00																											
Dawson Highway 46A	Don Young Drive to Harvey Road	Northbound (A)	10.3	8.4	2006	0.00%	0	0.00																											
Dawson Highway 46A	Harvey Road to Bruce Highway	Southbound (G)	10.3	19.0	2006	0.00%	0	0.00																											
Dawson Highway 46A	Harvey Road to Bruce Highway	Northbound (A)	19.0	10.3	2006	0.00%	0	0.00																											
Dawson Highway 46A	Bruce Highway to Drynan Drive	Southbound (G)	19.0	21.8	2006	0.00%	0	0.00																											
Dawson Highway 46A	Bruce Highway to Drynan Drive	Northbound (A)	21.8	19.0	2006	0.00%	0	0.00																											
Dawson Highway 46A	Drynan Drive to Gladstone-Monto Road	Westbound (G)	21.8	25.7	2006	0.00%	0	0.00																											
Dawson Highway 46A	Drynan Drive to Gladstone-Monto Road	Eastbound (A)	25.7	21.8	2006	0.00%	0	0.00																											
Dawson Highway 46A	Gladstone-Monto Road to Access to Pipeline Camp	Westbound (G)	25.7	49.0	2006	0.00%	0	0.00																											
Dawson Highway 46A	Access to Pipeline Camp 4 to Gladstone-Monto Ro	Eastbound (A)	49.0	25.7	2006	0.00%	0	0.00																											
Dawson Highway 46A	Access to Pipline Camp 4 to New point 1	Westbound (G)	49.0	72.5	2006	0.00%	0	0.00																											
Dawson Highway 46A	Access to Pipline Camp 4 to New point 1	Eastbound (A)	72.5	49.0	2006	0.00%	0	0.00																											
Dawson Highway 46A	New to CSC/BSC Border	Westbound (G)	72.5	76.6	2006	0.00%	0	0.00																											
Dawson Highway 46A	New to CSC/BSC Border	Eastbound (A)	76.6	72.5	2006	0.00%	0	0.00																											
Dawson Highway 46A	CSC/BSC Border to New point 2	Westbound (G)	76.6	85.0	2006	0.00%	0	0.00																											
Dawson Highway 46A	CSC/BSC Border to New point 2	Eastbound (A)	85.0	76.6	2006	0.00%	0	0.00																											
Dawson Highway 46A	New point 2 to Argoon Road	Westbound (G)	85.0	101.3	2006	0.00%	0	0.00																											
Dawson Highway 46A	New point 2 to Argoon Road	Eastbound (A)	101.3	85.0	2006	0.00%	0	0.00																											
Dawson Highway 46A	Agoon Road to Callide Dam Road	Westbound (G)	101.3	114.0	2006	0.00%	0	0.00																											
Dawson Highway 46A	Agoon Road to Callide Dam Road	Eastbound (A)	114.0	101.3	2006	0.00%	0	0.00																											
Dawson Highway 46A	Callide Dam Road to Tognalini - Baldwin Road	Westbound (G)	114.0	117.1	2006	0.00%	0	0.00																											
Dawson Highway 46A	Callide Dam Road to Tognalini - Baldwin Road	Eastbound (A)	117.1	114.0	2006	0.00%	0	0.00																											
Dawson Highway 46A	Tognalini - Baldwin Road to Biloela	Westbound (G)	117.1	120.0	2006	0.00%	0	0.00																											
Dawson Highway 46A	Tognalini - Baldwin Road to Biloela	Eastbound (A)	120.0	117.1	2006	0.00%	0	0.00																											
Dawson Highway 46B	Biloela to Crowsdale Camboon Road	Westbound (G)	0	6.8	2007	0.00%	0	0.00																											
Dawson Highway 46B	Crewsdale Camboon Road to Bioela	Eastbound (A)	6.8	0	2007	0.00%	0	0.00																											
Dawson Highway 46B	Crowsdale Camboon Road to Point 1	Westbound (G)	6.8	10	2007	0.00%	0	0.00																											
Dawson Highway 46B	Point 1 to Crowsdale Camboon Road	Eastbound (A)	10	6.8	2007	0.00%	0	0.00																											
Dawson Highway 46B	Point 1 to Greycliffe Road	Westbound (G)	10	26.8	2007	0.00%	0	0.00																											
Dawson Highway 46B	Greycliffe Road to Point 1	Eastbound (A)	26.8	10	2007	0.00%	0	0.00																											
Dawson Highway 46B	Grecliffe Road to Banana	Westbound (G)	45.7	26.8	2007	0.00%	0	0.00																											
Dawson Highway 46B	Banana to Greycliffe Road	Eastbound (A)	26.8	45.7	2007	0.00%	0	0.00																											
Dawson Highway 46C	Banana to Moura Mine	Westbound (G)	0	7.8	2007	0.00%	0	0.00																											
Dawson Highway 46C	Moura Mine to Banana	Eastbound (A)	7.8	0	2007	0.00%	0	0.00																											
Dawson Highway 46C	Moura Mine to Moura Township	Westbound (G)	7.8	19	2007	0.00%	0	0.00																											
Dawson Highway 46C	Moura Township to Moura Mine	Eastbound (A)	19	7.8	2007	0.00%	0	0.00																											
Dawson Highway 46C	Moura Township to CH. 30	Westbound (G)	19	30	2007	0.00%	0	0.00																											
Dawson Highway 46C	CH. 30 to Moura Township	Eastbound (A)	30	19	2007	0.00%	0	0.00																											
Dawson Highway 46C	CH. 30 to CH. 41	Westbound (G)	30	41	2007	0.00%	0	0.00																											
Dawson Highway 46C	CH. 41 to CH. 30	Eastbound (A)	41	30	2007	0.00%	0	0.00																											
Dawson Highway 46C	CH. 41 to District Boundary	Westbound (G)	41	45	2007	0.00%	0	0.00																											
Dawson Highway 46C	Boundary to CH. 41	Eastbound (A)	45	41	2007	0.00%	0	0.00																											
Gladstone-Mt Larcom Rd	Dawson Highway to Hilderbrand Street	Westbound (G)	0	1.4	2006	0.00%	0	0.00																											
Gladstone-Mt Larcom Rd	Dawson Highway to Hilderbrand Street	Eastbound (A)	1.4	0	2006	0.00%	0	0.00																											
Gladstone-Mt Larcom Rd	Hilderbrand Street to Blain Drive	Westbound (G)	1.4	3.5	2006	0.00%	0	0.00																											
Gladstone-Mt Larcom Rd	Hilderbrand Street to Blain Drive	Eastbound (A)	3.5	1.4	2006	0.00%	0	0.00																											
Gladstone-Mt Larcom Rd	Blain Drive to Red Rover Road	Westbound (G)	3.5	3.9	2006	0.00%	0	0.00																											
Gladstone-Mt Larcom Rd	Blain Drive to Red Rover Road	Eastbound (A)	3.9	3.5	2006	0.00%	0	0.00																											
Gladstone-Mt Larcom Rd	Red Rover Road to Power Station	Westbound (G)	3.9	4.6	2006	0.00%	0	0.00																											
Gladstone-Mt Larcom Rd	Red Rover Road to Power Station	Eastbound (A)	4.6	3.9	2006	0.00%	0	0.00																											
Gladstone-Mt Larcom Rd	Power Station to Red Road	Westbound (G)	4.6	8.6	2006	0.00%	0	0.00																											
Gladstone-Mt Larcom Rd	Power Station to Red Road	Eastbound (A)	8.6	4.6	2006	0.00%	0	0.00																											
Gladstone-Mt Larcom Rd	Red Road to Landing Road	Westbound (G)	8.6	12.3	2006	0.00%	0	0.00																											
Gladstone-Mt Larcom Rd	Red Road to Landing Road	Eastbound (A)	12.3	8.6	2006	0.00%	0	0.00																											
Gladstone-Mt Larcom Rd	Landing Road to Targinnie Road	Westbound (G)	12.3	16.3	2006	0.00%	0	0.00																											
Gladstone-Mt Larcom Rd	Landing Road to Targinnie Road	Eastbound (A)	16.3	12.3	2006	0.00%	0	0.00																											
Gladstone-Mt Larcom Rd	Targinnie Road to Quarry Road	Westbound (G)	16.3	19	2006	0.00%	0	0.00																											
Gladstone-Mt Larcom Rd	Targinnie Road to Quarry Road	Eastbound (A)	19	16.3	2006	0.00%	0	0.00																											
Gladstone-Mt Larcom Rd	Quarry Road to Bruce Highway	Westbound (G)	19	32.1	2006	0.00%	0	0.00																											
Gladstone-Mt Larcom Rd	Quarry Road to Bruce Highway	Eastbound (A)	32.1	19	2006	0.00%	0	0.00																											
Carnarvon Highway 24A	CH. 0.00 (NSW border) to CH. 10	Northbound (G)	0.0	10.0	2007	0.00%	0	0.00																											
Carnarvon Highway 24A	CH. 10 to CH. 0.0 (NSW border)	Southbound (A)	10.0	0.0	2007	0.00%	0	0.00																											
Carnarvon Highway 24A	CH. 10m to CH. 40 (Thallon)	Northbound (G)	10.0	40.0	2007	0.00%	0	0.00																											
Carnarvon Highway 24A	CH. 40 (Thallon) to CH. 10	Southbound (A)	40.0	10.0	2007	0.00%	0	0.00																											
Carnarvon Highway 24A	CH. 40 (Thallon) to CH. 74 (Nindigully)	Northbound (G)	40.0	74.0	2007	0.00%	0	0.00																											
Carnarvon Highway 24A	CH. 74 (Nindigully) to CH. 40 (Thallon)	Southbound (A)	74.0	40.0	2007	0.00%	0	0.00																											
Carnarvon Highway 24A	CH. 74 (Nindigully) to CH. 111	Northbound (G)	74.0	111.0	2007	0.00%	0	0.00																											
Carnarvon Highway 24A	CH. 111 to CH 74 (Nindigully)	Southbound (A)	111.0	74.0	2007	0.00%	0	0.00																											
Carnarvon Highway 24A	CH. 111 to St George	Northbound (G)	111.0	116.0	2007	0.00%	0	0.00																											
Carnarvon Highway 24A	St George to CH. 111	Southbound (A)	116.0	111.0	2007	0.00%	0	0.00																											
Carnarvon Highway 24B	CH. 0.00 (St George) to CH. 4	Northbound (G)	0	4	2007	0.00%	0	0.00																											
Carnarvon Highway 24B	CH. 4 to CH. 0.0 (St George)	Southbound (A)	4	0	2007	0.00%	0	0.00																											
Carnarvon Highway 24B	CH. 4m to CH. 9	Northbound (G)	4	9	2007	0.00%	0	0.00																											
Carnarvon Highway 24B	CH. 9 to CH. 4	Southbound (A)	9	4	2007	0.00%	0	0.00																											
Carnarvon Highway 24B	CH. 9 to CH. 56	Northbound (G)	9	56	2007	0.00%	0	0.00																											
Carnarvon Highway 24B	CH. 56 to CH. 9	Southbound (A)	56	9	2007	0.00%	0	0.00																											
Carnarvon Highway 24B	CH. 56 to CH. 116 (Surat)	Northbound (G)	56	116	2007	0.00%	0	0.00																											
Carnarvon Highway 24B	CH. 116 (Surat) to CH. 56	Southbound (A)	116	56	2007	0.00%	0	0.00																											
Carnarvon Highway 24C	CH. 0.00 (Surat) to CH. 20	Northbound (G)	0	20	2007	0.00%	0	0.00																											
Carnarvon Highway 24C	CH. 20 to CH. 0.0 (Surat)	Southbound (A)	20	0	2007	0.00%	0	0.00																											
Carnarvon Highway 24C	CH. 20m to CH. 75 (Roma)	Northbound (G)	20	75	2007	0.00%	0	0.00																											
Carnarvon Highway 24C	CH. 75 (Roma) to CH. 20	Southbound (A)	75	20	2007	0.00%	0	0.00																											
Carnarvon Highway 24D	CH. 0.00 (Roma) to CH. 5	Northbound (G)	0	5	2007	0.00%	0	0.00																											
Carnarvon Highway 24D	CH. 5 to CH. 0.0 (Roma)	Southbound (A)	5	0	2007	0.00%	0	0.00																											
Carnarvon Highway 24D	CH. 5m to CH. 16 Roma - Taroom Road	Northbound (G)	5	16	2007	0.00%	0	0.00																											
Carnarvon Highway 24D	CH. 16 Roma - Taroom Road to CH. 5	Southbound (A)	16	5	2007	0.00%	0	0.00																											
Carnarvon Highway 24D	Roma - Taroom Road to Injune	Northbound (G)	16	90	2007	0.00%	0	0.00																											
Carnarvon Highway 24D	Injune to Roma - Taroom Road	Southbound (A)	90	16	2007	0.00%	0	0.00																											
Carnarvon Highway 24E	CH. 0.00 (Injune) to Fairview Field Access (CH25.00)	Northbound (G)	0	25	2007	0.00%	0	0.00																											
Carnarvon Highway 24E	Fairview Field Access CH. 25.00 to CH. 0.0 (Injune)	Southbound (A)	25	0	2007	0.00%	0	0.00																											
Carnarvon Highway 24E	Fairview Field Access to CH. 69 Boundary with Em	Northbound (G)	25	69	2007	0.00%	0	0.00																											
Carnarvon Highway 24E	CH. 69 to Fairview Field Access	Southbound (A)	69	25	2007	0.00%	0	0.00																											
Carnarvon Highway 24E	CH. 69 to CH. 86 Access to Camp 1	Northbound (G)	69	86	2007	0.00%	0	0.00																											
Carnarvon Highway 24E	CH. 86 Access to Camp 1 to CH. 69	Southbound (A)	86	69	2007	0.00%	0	0.00																											
Carnarvon Highway 24E	CH. 86 Access to Camp 1 to CH. 111	Northbound (G)	86	111	2007	0.00%	0	0.00																											
Carnarvon Highway 24E	CH. 111 to CH. 86 Access to Camp 1	Southbound (A)	111	86	2007	0.00%	0	0.00																											
Carnarvon Highway 24E	CH. 111 to CH. 172 (Rolleston)	Northbound (G)	111	172	2007	0.00%	0	0.00																											
Carnarvon Highway 24E	CH. 172 (Rolleston) to CH. 111	Southbound (A)	172	111	2007	0.00%	0	0.00																											
Leichhardt Highway 26A	CH. 00 Capricorn Highway to Burnett Highway	Southbound (G)	0.0	25.7	2007	0.00%	0	0.00																											
Leichhardt Highway 26A	Burnett Highway to Capricorn Highway	Northbound (A)	25.7	0.0	2007	0.00%	0	0.00																											
Leichhardt Highway 26A	Burnett Highway to CH. 51.1	Southbound (G)	25.7	51.1	2007	0.00%	0	0.00																											
Leichhardt Highway 26A	CH. 51.1 to Burnett Highway	Northbound (A)	51.1	25.7	2007	0.00%	0	0.00																											
Leichhardt Highway 26A	CH. 51.1 to CH. 62.6	Southbound (G)	51.1	62.6	2007	0.00%	0	0.00																											
Leichhardt Highway 26A	CH. 62.6 to CH. 51.1	Northbound (A)	62.6	51.1	2007	0.00%	0	0.00																											
Leichhardt Highway 26A	CH. 62.6 to CH. 86.0 Fairview Road	Southbound (G)	62.6	86.0	2007	0.00%	0	0.00																											
Leichhardt Highway 26A	CH. 86.0 Fairview Road to CH. 62.6	Northbound (A)	86.0	62.6	2007	0.00%	0	0.00																											
Leichhardt Highway 26A	CH. 86.0 Fairview Road to CH. 88.0	Southbound (G)	86.0	88.0	2007	0.00%	0	0.00																											
Leichhardt Highway 26A	CH. 88.0 to CH 86.0	Northbound (A)	88.0	86.0	2007	0.00%	0	0.00																											
Leichhardt Highway 26A	CH. 88.0 to CH. 99.0 (Camp 3)	Southbound (G)	88.0	99.0	2007	0.00%	0	0.00																											
Leichhardt Highway 26A	CH. 99.0 (Camp 3) to CH. 88.0	Northbound (A)	99.0	88.0	2007	0.00%	0	0.00																											
Leichhardt Highway 26A	CH. 99.0 to Banana CH. 105.2	Southbound (G)	99.0	105.2	2007	0.00%	0	0.00																											
Leichhardt Highway 26A	Banana CH. 105.2 to CH. 99.0	Northbound (A)	105.2	99.0	2007	0.00%	0	0.00																											
Leichhardt Highway 26A	Banana CH. 105.2 to CH. 117.0	Southbound (G)	105.2	117.0	2007	0.00%	0	0.00																											
Leichhardt Highway 26A	CH. 117.0 to Banana CH. 105.2	Northbound (A)	117.0	105.2	2007	0.00%	0	0.00																											
Leichhardt Highway 26A	CH. 117.0 to CH. 124.0	Southbound (G)	117.0	124.0	2007	0.00%	0	0.00																											
Leichhardt Highway 26A	CH. 124.0 to CH. 117.0	Northbound (A)	124.0	117.0	2007	0.00%	0	0.00																											
Leichhardt Highway 26A	Theodore CH. 162.3 to CH.124.0	Westbound (G)	124.0	162.3	2007	0.00%	0	0.00																											
Leichhardt Highway 26A	CH.124.0 to Theodore CH. 162.4	Eastbound (A)	162.3	124.0	2007	0.00%	0	0.00																											
Leichhardt Highway 26A	Theodore CH. 162.3 to CH. 124.0	Westbound (G)	162.3	170.3	2007	0.00%	0	0.00																											
Leichhardt Highway 26A	Theodore CH. 162.3 to Glenmoral Roundstone Roa	Eastbound (A)	170.3	162.3	2007	0.00%	0	0.00																											
Leichhardt Highway 26A	Glenmoral Roundstone Road to Isla Delusion Road	Westbound (G)	170.3	184.0	2007	0.00%	0	0.00																											
Leichhardt Highway 26A	Isla Delusion Road to Glenmoral Roundstone Road	Eastbound (A)	184.0	170.3	2007	0.00%	0	0.00																											
Leichhardt Highway 26A	Isla Delusion Road to District Boundary	Westbound (G)	184.0	192.2	2007	0.00%	0	0.00																											
Leichhardt Highway 26A	District Boundary to Isla Delusion Road	Eastbound (A)	192.2	184	2007	0.00%	0	0.00																											
Bruce Highway	Gladstone-Beraraby Road to Dawson Highway	Westbound (G)	0	11.6	2006	0.00%	0	0.00																											
Bruce Highway	Gladstone-Beraraby Road to Dawson Highway	Eastbound (A)	11.6	0	2006	0.00%	0	0.00																											
Bruce Highway	Dawson Highway to Calliope River Road	Westbound (G)	11.6	18.7	2006	0.00%	0	0.00																											
Bruce Highway	Dawson Highway to Calliope River Road	Eastbound (A)	18.7	11.6	2006	0.00%	0	0.00																											
Bruce Highway	Calliope River Road to Gladstone Mt-Larcom Road	Westbound (G)	18.7	45.4	2006	0.00%	0	0.00																											
Bruce Highway	Calliope River Road to Gladstone Mt-Larcom Road	Eastbound (A)	45.4	18.7	2006	0.00%	0	0.00																											

Background Parameters — ESA 5.1 — Additional CL9 100% Loaded HV's

	Road	Section	Direction	Start Chainage	End Chainage	Count Year	Heavy Vehicle %	Total Heavy Vehicle volume	ESA/Heavy Vehicle Ratio	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
1	Dawson Highway 46A	Gladstone-Mt Larcom Road to Breslin Street	Southbound (G)	0.0	1.5	2006	0.00%	0	0.00																											
2	Dawson Highway 46A	Gladstone-Mt Larcom Road to Breslin Street	Northbound (A)	1.5	0.0	2006	0.00%	0	0.00																											
3	Dawson Highway 46A	Breslin Street to Blain Drive	Southbound (G)	1.5	2.2	2006	0.00%	0	0.00																											
4	Dawson Highway 46A	Breslin Street to Blain Drive	Northbound (A)	2.2	1.5	2006	0.00%	0	0.00																											
5	Dawson Highway 46A	Blain Drive to Philip Street	Southbound (G)	2.2	3.1	2006	0.00%	0	0.00																											
6	Dawson Highway 46A	Blain Drive to Philip Street	Northbound (A)	3.1	2.2	2006	0.00%	0	0.00																											
7	Dawson Highway 46A	Philip Street to Penda Avenue	Southbound (G)	3.1	4.4	2006	0.00%	0	0.00																											
8	Dawson Highway 46A	Philip Street to Penda Avenue	Northbound (A)	4.4	3.1	2006	0.00%	0	0.00																											
9	Dawson Highway 46A	Penda Avenue to Chapman Drive	Southbound (G)	4.4	5.2	2006	0.00%	0	0.00																											
10	Dawson Highway 46A	Penda Avenue to Chapman Drive	Northbound (A)	5.2	4.4	2006	0.00%	0	0.00																											
11	Dawson Highway 46A	Chapman Drive to Don Young Drive	Southbound (G)	5.2	8.4	2006	0.00%	0	0.00																											
12	Dawson Highway 46A	Chapman Drive to Don Young Drive	Northbound (A)	8.4	5.2	2006	0.00%	0	0.00																											
13	Dawson Highway 46A	Don Young Drive to Harvey Road	Southbound (G)	8.4	10.3	2006	0.00%	0	0.00																											
14	Dawson Highway 46A	Don Young Drive to Harvey Road	Northbound (A)	10.3	8.4	2006	0.00%	0	0.00																											
15	Dawson Highway 46A	Harvey Road to Bruce Highway	Southbound (G)	10.3	19.0	2006	0.00%	0	0.00																											
16	Dawson Highway 46A	Harvey Road to Bruce Highway	Northbound (A)	19.0	10.3	2006	0.00%	0	0.00																											
17	Dawson Highway 46A	Bruce Highway to Drynan Drive	Southbound (G)	19.0	21.8	2006	0.00%	0	0.00																											
18	Dawson Highway 46A	Bruce Highway to Drynan Drive	Northbound (A)	21.8	19.0	2006	0.00%	0	0.00																											
19	Dawson Highway 46A	Drynan Drive to Gladstone-Monto Road	Westbound (G)	21.8	25.7	2006	0.00%	0	0.00																											
20	Dawson Highway 46A	Drynan Drive to Gladstone-Monto Road	Eastbound (A)	25.7	21.8	2006	0.00%	0	0.00																											
21	Dawson Highway 46A	Gladstone-Monto Road to Access to Pipeline Camp	Westbound (G)	25.7	49.0	2006	0.00%	0	0.00																											
22	Dawson Highway 46A	Access to Pipeline Camp 4 to Gladstone-Monto Ro	Eastbound (A)	49.0	25.7	2006	0.00%	0	0.00																											
23	Dawson Highway 46A	Access to Pipline Camp 4 to New point 1	Westbound (G)	49.0	72.5	2006	0.00%	0	0.00																											
24	Dawson Highway 46A	Access to Pipline Camp 4 to New point 1	Eastbound (A)	72.5	49.0	2006	0.00%	0	0.00																											
25	Dawson Highway 46A	New to CSC/BSC Border	Westbound (G)	72.5	76.6	2006	0.00%	0	0.00																											
26	Dawson Highway 46A	New to CSC/BSC Border	Eastbound (A)	76.6	72.5	2006	0.00%	0	0.00																											
27	Dawson Highway 46A	CSC/BSC Border to New point 2	Westbound (G)	76.6	85.0	2006	0.00%	0	0.00																											
28	Dawson Highway 46A	CSC/BSC Border to New point 2	Eastbound (A)	85.0	76.6	2006	0.00%	0	0.00																											
29	Dawson Highway 46A	New point 2 to Argoon Road	Westbound (G)	85.0	101.3	2006	0.00%	0	0.00																											
30	Dawson Highway 46A	New point 2 to Argoon Road	Eastbound (A)	101.3	85.0	2006	0.00%	0	0.00																											
31	Dawson Highway 46A	Agoon Road to Callide Dam Road	Westbound (G)	101.3	114.0	2006	0.00%	0	0.00																											
32	Dawson Highway 46A	Agoon Road to Callide Dam Road	Eastbound (A)	114.0	101.3	2006	0.00%	0	0.00																											
33	Dawson Highway 46A	Callide Dam Road to Tognalini - Baldwin Road	Westbound (G)	114.0	117.1	2006	0.00%	0	0.00																											
34	Dawson Highway 46A	Callide Dam Road to Tognalini - Baldwin Road	Eastbound (A)	117.1	114.0	2006	0.00%	0	0.00																											
35	Dawson Highway 46A	Tognalini - Baldwin Road to Biloela	Westbound (G)	117.1	120.0	2006	0.00%	0	0.00																											
36	Dawson Highway 46A	Tognalini - Baldwin Road to Biloela	Eastbound (A)	120.0	117.1	2006	0.00%	0	0.00																											
37	Dawson Highway 46B	Biloela to Crowsdale Camboon Road	Westbound (G)	0	6.8	2007	0.00%	0	0.00																											
38	Dawson Highway 46B	Crewsdale Camboon Road to Bioela	Eastbound (A)	6.8	0	2007	0.00%	0	0.00																											
39	Dawson Highway 46B	Crowsdale Camboon Road to Point 1	Westbound (G)	6.8	10	2007	0.00%	0	0.00																											
40	Dawson Highway 46B	Point 1 to Crowsdale Camboon Road	Eastbound (A)	10	6.8	2007	0.00%	0	0.00																											
41	Dawson Highway 46B	Point 1 to Greycliffe Road	Westbound (G)	10	26.8	2007	0.00%	0	0.00																											
42	Dawson Highway 46B	Greycliffe Road to Point 1	Eastbound (A)	26.8	10	2007	0.00%	0	0.00																											
43	Dawson Highway 46B	Grecliffe Road to Banana	Westbound (G)	45.7	26.8	2007	0.00%	0	0.00																											
44	Dawson Highway 46B	Banana to Greycliffe Road	Eastbound (A)	26.8	45.7	2007	0.00%	0	0.00																											
45	Dawson Highway 46C	Banana to Moura Mine	Westbound (G)	0	7.8	2007	0.00%	0	0.00																											
46	Dawson Highway 46C	Moura Mine to Banana	Eastbound (A)	7.8	0	2007	0.00%	0	0.00																											
47	Dawson Highway 46C	Moura Mine to Moura Township	Westbound (G)	7.8	19	2007	0.00%	0	0.00																											
48	Dawson Highway 46C	Moura Township to Moura Mine	Eastbound (A)	19	7.8	2007	0.00%	0	0.00																											
49	Dawson Highway 46C	Moura Township to CH. 30	Westbound (G)	19	30	2007	0.00%	0	0.00																											
50	Dawson Highway 46C	CH. 30 to Moura Township	Eastbound (A)	30	19	2007	0.00%	0	0.00																											
51	Dawson Highway 46C	CH. 30 to CH. 41	Westbound (G)	30	41	2007	0.00%	0	0.00																											
52	Dawson Highway 46C	CH. 41 to CH. 30	Eastbound (A)	41	30	2007	0.00%	0	0.00																											
53	Dawson Highway 46C	CH. 41 to District Boundary	Westbound (G)	41	45	2007	0.00%	0	0.00																											
54	Dawson Highway 46C	Boundary to CH. 41	Eastbound (A)	45	41	2007	0.00%	0	0.00																											
55	Gladstone-Mt Larcom Rd	Dawson Highway to Hilderbrand Street	Westbound (G)	0	1.4	2006	0.00%	0	0.00																											
56	Gladstone-Mt Larcom Rd	Dawson Highway to Hilderbrand Street	Eastbound (A)	1.4	0	2006	0.00%	0	0.00																											
57	Gladstone-Mt Larcom Rd	Hilderbrand Street to Blain Drive	Westbound (G)	1.4	3.5	2006	0.00%	0	0.00																											
58	Gladstone-Mt Larcom Rd	Hilderbrand Street to Blain Drive	Eastbound (A)	3.5	1.4	2006	0.00%	0	0.00																											
59	Gladstone-Mt Larcom Rd	Blain Drive to Red Rover Road	Westbound (G)	3.5	3.9	2006	0.00%	0	0.00																											
60	Gladstone-Mt Larcom Rd	Blain Drive to Red Rover Road	Eastbound (A)	3.9	3.5	2006	0.00%	0	0.00																											
61	Gladstone-Mt Larcom Rd	Red Rover Road to Power Station	Westbound (G)	3.9	4.6	2006	0.00%	0	0.00																											
62	Gladstone-Mt Larcom Rd	Red Rover Road to Power Station	Eastbound (A)	4.6	3.9	2006	0.00%	0	0.00																											
63	Gladstone-Mt Larcom Rd	Power Station to Red Road	Westbound (G)	4.6	8.6	2006	0.00%	0	0.00																											
64	Gladstone-Mt Larcom Rd	Power Station to Red Road	Eastbound (A)	8.6	4.6	2006	0.00%	0	0.00																											
65	Gladstone-Mt Larcom Rd	Red Road to Landing Road	Westbound (G)	8.6	12.3	2006	0.00%	0	0.00																											
66	Gladstone-Mt Larcom Rd	Red Road to Landing Road	Eastbound (A)	12.3	8.6	2006	0.00%	0	0.00																											
67	Gladstone-Mt Larcom Rd	Landing Road to Targinnie Road	Westbound (G)	12.3	16.3	2006	0.00%	0	0.00																											
68	Gladstone-Mt Larcom Rd	Landing Road to Targinnie Road	Eastbound (A)	16.3	12.3	2006	0.00%	0	0.00																											
69	Gladstone-Mt Larcom Rd	Targinnie Road to Quarry Road	Westbound (G)	16.3	19	2006	0.00%	0	0.00																											
70	Gladstone-Mt Larcom Rd	Targinnie Road to Quarry Road	Eastbound (A)	19	16.3	2006	0.00%	0	0.00																											
71	Gladstone-Mt Larcom Rd	Quarry Road to Bruce Highway	Westbound (G)	19	32.1	2006	0.00%	0	0.00																											
72	Gladstone-Mt Larcom Rd	Quarry Road to Bruce Highway	Eastbound (A)	32.1	19	2006	0.00%	0	0.00																											
73	Carnarvon Highway 24A	CH. 0.00 (NSW border) to CH. 10	Northbound (G)	0.0	10.0	2007	0.00%	0	0.00																											
74	Carnarvon Highway 24A	CH. 10 to CH. 0.0 (NSW border)	Southbound (A)	10.0	0.0	2007	0.00%	0	0.00																											
75	Carnarvon Highway 24A	CH. 10m to CH. 40 (Thallon)	Northbound (G)	10.0	40.0	2007	0.00%	0	0.00																											
76	Carnarvon Highway 24A	CH. 40 (Thallon) to CH. 10	Southbound (A)	40.0	10.0	2007	0.00%	0	0.00																											
77	Carnarvon Highway 24A	CH. 40 (Thallon) to CH. 74 (Nindigully)	Northbound (G)	40.0	74.0	2007	0.00%	0	0.00																											
78	Carnarvon Highway 24A	CH. 74 (Nindigully) to CH. 40 (Thallon)	Southbound (A)	74.0	40.0	2007	0.00%	0	0.00																											
79	Carnarvon Highway 24A	CH. 74 (Nindigully) to CH. 111	Northbound (G)	74.0	111.0	2007	0.00%	0	0.00																											
80	Carnarvon Highway 24A	CH. 111 to CH 74 (Nindigully)	Southbound (A)	111.0	74.0	2007	0.00%	0	0.00																											
81	Carnarvon Highway 24A	CH. 111 to St George	Northbound (G)	111.0	116.0	2007	0.00%	0	0.00																											
82	Carnarvon Highway 24A	St George to CH. 111	Southbound (A)	116.0	111.0	2007	0.00%	0	0.00																											
83	Carnarvon Highway 24B	CH. 0.00 (St George) to CH. 4	Northbound (G)	0	4	2007	0.00%	0	0.00																											
84	Carnarvon Highway 24B	CH. 4 to CH. 0.0 (St George)	Southbound (A)	4	0	2007	0.00%	0	0.00																											
85	Carnarvon Highway 24B	CH. 4m to CH. 9	Northbound (G)	4	9	2007	0.00%	0	0.00																											
86	Carnarvon Highway 24B	CH. 9 to CH. 4	Southbound (A)	9	4	2007	0.00%	0	0.00																											
87	Carnarvon Highway 24B	CH. 9 to CH. 56	Northbound (G)	9	56	2007	0.00%	0	0.00																											
88	Carnarvon Highway 24B	CH. 56 to CH. 9	Southbound (A)	56	9	2007	0.00%	0	0.00																											
89	Carnarvon Highway 24B	CH. 56 to CH. 116 (Surat)	Northbound (G)	56	116	2007	0.00%	0	0.00																											
90	Carnarvon Highway 24B	CH. 116 (Surat) to CH. 56	Southbound (A)	116	56	2007	0.00%	0	0.00																											
91	Carnarvon Highway 24C	CH. 0.00 (Surat) to CH. 20	Northbound (G)	0	20	2007	0.00%	0	0.00																											
92	Carnarvon Highway 24C	CH. 20 to CH. 0.0 (Surat)	Southbound (A)	20	0	2007	0.00%	0	0.00																											
93	Carnarvon Highway 24C	CH. 20m to CH. 75 (Roma)	Northbound (G)	20	75	2007	0.00%	0	0.00																											
94	Carnarvon Highway 24C	CH. 75 (Roma) to CH. 20	Southbound (A)	75	20	2007	0.00%	0	0.00																											
95	Carnarvon Highway 24D	CH. 0.00 (Roma) to CH. 5	Northbound (G)	0	5	2007	0.00%	0	0.00																											
96	Carnarvon Highway 24D	CH. 5 to CH. 0.0 (Roma)	Southbound (A)	5	0	2007	0.00%	0	0.00																											
97	Carnarvon Highway 24D	CH. 5m to CH. 16 Roma - Taroom Road	Northbound (G)	5	16	2007	0.00%	0	0.00																											
98	Carnarvon Highway 24D	CH. 16 Roma - Taroom Road to CH. 5	Southbound (A)	16	5	2007	0.00%	0	0.00																											
99	Carnarvon Highway 24D	Roma - Taroom Road to Injune	Northbound (G)	16	90	2007	0.00%	0	0.00																											
100	Carnarvon Highway 24D	Injune to Roma - Taroom Road	Southbound (A)	90	16	2007	0.00%	0	0.00																											
101	Carnarvon Highway 24E	CH. 0.00 (Injune) to Fairview Field Access (CH25.00)	Northbound (G)	0	25	2007	0.00%	0	0.00																											
102	Carnarvon Highway 24E	Fairview Field Access CH. 25.00 to CH. 0.0 (Injune)	Southbound (A)	25	0	2007	0.00%	0	0.00																											
103	Carnarvon Highway 24E	Fairview Field Access to CH. 69 Boundary with Em	Northbound (G)	25	69	2007	0.00%	0	0.00																											
104	Carnarvon Highway 24E	CH. 69 to Fairview Field Access	Southbound (A)	69	25	2007	0.00%	0	0.00																											
105	Carnarvon Highway 24E	CH. 69 to CH. 86 Access to Camp 1	Northbound (G)	69	86	2007	0.00%	0	0.00																											
106	Carnarvon Highway 24E	CH. 86 Access to Camp 1 to CH. 69	Southbound (A)	86	69	2007	0.00%	0	0.00																											
107	Carnarvon Highway 24E	CH. 86 Access to Camp 1 to CH. 111	Northbound (G)	86	111	2007	0.00%	0	0.00																											
108	Carnarvon Highway 24E	CH. 111 to CH. 86 Access to Camp 1	Southbound (A)	111	86	2007	0.00%	0	0.00																											
109	Carnarvon Highway 24E	CH. 111 to CH. 172 (Rolleston)	Northbound (G)	111	172	2007	0.00%	0	0.00																											
110	Carnarvon Highway 24E	CH. 172 (Rolleston) to CH. 111	Southbound (A)	172	111	2007	0.00%	0	0.00																											
111	Leichhardt Highway 26A	CH. 00 Capricorn Highway to Burnett Highway	Southbound (G)	0.0	25.7	2007	0.00%	0	0.00																											
112	Leichhardt Highway 26A	Burnett Highway to Capricorn Highway	Northbound (A)	25.7	0.0	2007	0.00%	0	0.00																											
113	Leichhardt Highway 26A	Burnett Highway to CH. 51.1	Southbound (G)	25.7	51.1	2007	0.00%	0	0.00																											
114	Leichhardt Highway 26A	CH. 51.1 to Burnett Highway	Northbound (A)	51.1	25.7	2007	0.00%	0	0.00																											
115	Leichhardt Highway 26A	CH. 51.1 to CH. 62.6	Southbound (G)	51.1	62.6	2007	0.00%	0	0.00																											
116	Leichhardt Highway 26A	CH. 62.6 to CH. 51.1	Northbound (A)	62.6	51.1	2007	0.00%	0	0.00																											
117	Leichhardt Highway 26A	CH. 62.6 to CH. 86.0 Fairview Road	Southbound (G)	62.6	86.0	2007	0.00%	0	0.00																											
118	Leichhardt Highway 26A	CH. 86.0 Fairview Road to CH. 62.6	Northbound (A)	86.0	62.6	2007	0.00%	0	0.00																											
119	Leichhardt Highway 26A	CH. 86.0 Fairview Road to CH. 88.0	Southbound (G)	86.0	88.0	2007	0.00%	0	0.00																											
120	Leichhardt Highway 26A	CH. 88.0 to CH 86.0	Northbound (A)	88.0	86.0	2007	0.00%	0	0.00																											
121	Leichhardt Highway 26A	CH. 88.0 to CH. 99.0 (Camp 3)	Southbound (G)	88.0	99.0	2007	0.00%	0	0.00																											
122	Leichhardt Highway 26A	CH. 99.0 (Camp 3) to CH. 88.0	Northbound (A)	99.0	88.0	2007	0.00%	0	0.00																											
123	Leichhardt Highway 26A	CH. 99.0 to Banana CH. 105.2	Southbound (G)	99.0	105.2	2007	0.00%	0	0.00																											
124	Leichhardt Highway 26A	Banana CH. 105.2 to CH. 99.0	Northbound (A)	105.2	99.0	2007	0.00%	0	0.00																											
125	Leichhardt Highway 26A	Banana CH. 105.2 to CH. 117.0	Southbound (G)	105.2	117.0	2007	0.00%	0	0.00																											
126	Leichhardt Highway 26A	CH. 117.0 to Banana CH. 105.2	Northbound (A)	117.0	105.2	2007	0.00%	0	0.00																											
127	Leichhardt Highway 26A	CH. 117.0 to CH. 124.0	Southbound (G)	117.0	124.0	2007	0.00%	0	0.00																											
128	Leichhardt Highway 26A	CH. 124.0 to CH. 117.0	Northbound (A)	124.0	117.0	2007	0.00%	0	0.00																											
129	Leichhardt Highway 26A	Theodore CH. 162.3 to CH.124.0	Westbound (G)	124.0	162.3	2007	0.00%	0	0.00																											
130	Leichhardt Highway 26A	CH.124.0 to Theodore CH. 162.4	Eastbound (A)	162.3	124.0	2007	0.00%	0	0.00																											
131	Leichhardt Highway 26A	Theodore CH. 162.3 to CH. 124.0	Westbound (G)	162.3	170.3	2007	0.00%	0	0.00																											
132	Leichhardt Highway 26A	Theodore CH. 162.3 to Glenmoral Roundstone Roa	Eastbound (A)	170.3	162.3	2007	0.00%	0	0.00																											
133	Leichhardt Highway 26A	Glenmoral Roundstone Road to Isla Delusion Road	Westbound (G)	170.3	184.0	2007	0.00%	0	0.00																											
134	Leichhardt Highway 26A	Isla Delusion Road to Glenmoral Roundstone Road	Eastbound (A)	184.0	170.3	2007	0.00%	0	0.00																											
135	Leichhardt Highway 26A	Isla Delusion Road to District Boundary	Westbound (G)	184.0	192.2	2007	0.00%	0	0.00																											
136	Leichhardt Highway 26A	District Boundary to Isla Delusion Road	Eastbound (A)	192.2	184	2007	0.00%	0	0.00																											
137	Bruce Highway	Gladstone-Beraraby Road to Dawson Highway	Westbound (G)	0	11.6	2006	0.00%	0	0.00																											
138	Bruce Highway	Gladstone-Beraraby Road to Dawson Highway	Eastbound (A)	11.6	0	2006	0.00%	0	0.00																											
139	Bruce Highway	Dawson Highway to Calliope River Road	Westbound (G)	11.6	18.7	2006	0.00%	0	0.00																											
140	Bruce Highway	Dawson Highway to Calliope River Road	Eastbound (A)	18.7	11.6	2006	0.00%	0	0.00																											
141	Bruce Highway	Calliope River Road to Gladstone Mt-Larcom Road	Westbound (G)	18.7	45.4	2006	0.00%	0	0.00																											
142	Bruce Highway	Calliope River Road to Gladstone Mt-Larcom Road	Eastbound (A)	45.4	18.7	2006	0.00%	0	0.00																											

Background Parameters — ESA 0.51 — Additional CL9 0% Loaded HV's

	Road	Section	Direction	Start Chainage	End Chainage	Count Year	Heavy Vehicle %	Total Heavy Vehicle volume	ESA/Heavy Vehicle Ratio	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
1	Dawson Highway 46A	Gladstone-Mt Larcom Road to Breslin Street	Southbound (G)	0.0	1.5	2006	0.00%	0	0.00																											
2	Dawson Highway 46A	Gladstone-Mt Larcom Road to Breslin Street	Northbound (A)	1.5	0.0	2006	0.00%	0	0.00																											
3	Dawson Highway 46A	Breslin Street to Blain Drive	Southbound (G)	1.5	2.2	2006	0.00%	0	0.00																											
4	Dawson Highway 46A	Breslin Street to Blain Drive	Northbound (A)	2.2	1.5	2006	0.00%	0	0.00																											
5	Dawson Highway 46A	Blain Drive to Philip Street	Southbound (G)	2.2	3.1	2006	0.00%	0	0.00																											
6	Dawson Highway 46A	Blain Drive to Philip Street	Northbound (A)	3.1	2.2	2006	0.00%	0	0.00																											
7	Dawson Highway 46A	Philip Street to Penda Avenue	Southbound (G)	3.1	4.4	2006	0.00%	0	0.00																											
8	Dawson Highway 46A	Philip Street to Penda Avenue	Northbound (A)	4.4	3.1	2006	0.00%	0	0.00																											
9	Dawson Highway 46A	Penda Avenue to Chapman Drive	Southbound (G)	4.4	5.2	2006	0.00%	0	0.00																											
10	Dawson Highway 46A	Penda Avenue to Chapman Drive	Northbound (A)	5.2	4.4	2006	0.00%	0	0.00																											
11	Dawson Highway 46A	Chapman Drive to Don Young Drive	Southbound (G)	5.2	8.4	2006	0.00%	0	0.00																											
12	Dawson Highway 46A	Chapman Drive to Don Young Drive	Northbound (A)	8.4	5.2	2006	0.00%	0	0.00																											
13	Dawson Highway 46A	Don Young Drive to Harvey Road	Southbound (G)	8.4	10.3	2006	0.00%	0	0.00																											
14	Dawson Highway 46A	Don Young Drive to Harvey Road	Northbound (A)	10.3	8.4	2006	0.00%	0	0.00																											
15	Dawson Highway 46A	Harvey Road to Bruce Highway	Southbound (G)	10.3	19.0	2006	0.00%	0	0.00																											
16	Dawson Highway 46A	Harvey Road to Bruce Highway	Northbound (A)	19.0	10.3	2006	0.00%	0	0.00																											
17	Dawson Highway 46A	Bruce Highway to Drynan Drive	Southbound (G)	19.0	21.8	2006	0.00%	0	0.00																											
18	Dawson Highway 46A	Bruce Highway to Drynan Drive	Northbound (A)	21.8	19.0	2006	0.00%	0	0.00																											
19	Dawson Highway 46A	Drynan Drive to Gladstone-Monto Road	Westbound (G)	21.8	25.7	2006	0.00%	0	0.00																											
20	Dawson Highway 46A	Drynan Drive to Gladstone-Monto Road	Eastbound (A)	25.7	21.8	2006	0.00%	0	0.00																											
21	Dawson Highway 46A	Gladstone-Monto Road to Access to Pipeline Camp	Westbound (G)	25.7	49.0	2006	0.00%	0	0.00																											
22	Dawson Highway 46A	Access to Pipeline Camp 4 to Gladstone-Monto Ro	Eastbound (A)	49.0	25.7	2006	0.00%	0	0.00																											
23	Dawson Highway 46A	Access to Pipline Camp 4 to New point 1	Westbound (G)	49.0	72.5	2006	0.00%	0	0.00																											
24	Dawson Highway 46A	Access to Pipline Camp 4 to New point 1	Eastbound (A)	72.5	49.0	2006	0.00%	0	0.00																											
25	Dawson Highway 46A	New to CSC/BSC Border	Westbound (G)	72.5	76.6	2006	0.00%	0	0.00																											
26	Dawson Highway 46A	New to CSC/BSC Border	Eastbound (A)	76.6	72.5	2006	0.00%	0	0.00																											
27	Dawson Highway 46A	CSC/BSC Border to New point 2	Westbound (G)	76.6	85.0	2006	0.00%	0	0.00																											
28	Dawson Highway 46A	CSC/BSC Border to New point 2	Eastbound (A)	85.0	76.6	2006	0.00%	0	0.00																											
29	Dawson Highway 46A	New point 2 to Argoon Road	Westbound (G)	85.0	101.3	2006	0.00%	0	0.00																											
30	Dawson Highway 46A	New point 2 to Argoon Road	Eastbound (A)	101.3	85.0	2006	0.00%	0	0.00																											
31	Dawson Highway 46A	Agoon Road to Callide Dam Road	Westbound (G)	101.3	114.0	2006	0.00%	0	0.00																											
32	Dawson Highway 46A	Agoon Road to Callide Dam Road	Eastbound (A)	114.0	101.3	2006	0.00%	0	0.00																											
33	Dawson Highway 46A	Callide Dam Road to Tognalini - Baldwin Road	Westbound (G)	114.0	117.1	2006	0.00%	0	0.00																											
34	Dawson Highway 46A	Callide Dam Road to Tognalini - Baldwin Road	Eastbound (A)	117.1	114.0	2006	0.00%	0	0.00																											
35	Dawson Highway 46A	Tognalini - Baldwin Road to Biloela	Westbound (G)	117.1	120.0	2006	0.00%	0	0.00																											
36	Dawson Highway 46A	Tognalini - Baldwin Road to Biloela	Eastbound (A)	120.0	117.1	2006	0.00%	0	0.00																											
37	Dawson Highway 46B	Biloela to Crowsdale Camboon Road	Westbound (G)	0	6.8	2007	0.00%	0	0.00																											
38	Dawson Highway 46B	Crewsdale Camboon Road to Bioela	Eastbound (A)	6.8	0	2007	0.00%	0	0.00																											
39	Dawson Highway 46B	Crowsdale Camboon Road to Point 1	Westbound (G)	6.8	10	2007	0.00%	0	0.00																											
40	Dawson Highway 46B	Point 1 to Crowsdale Camboon Road	Eastbound (A)	10	6.8	2007	0.00%	0	0.00																											
41	Dawson Highway 46B	Point 1 to Greycliffe Road	Westbound (G)	10	26.8	2007	0.00%	0	0.00																											
42	Dawson Highway 46B	Greycliffe Road to Point 1	Eastbound (A)	26.8	10	2007	0.00%	0	0.00																											
43	Dawson Highway 46B	Grecliffe Road to Banana	Westbound (G)	45.7	26.8	2007	0.00%	0	0.00																											
44	Dawson Highway 46B	Banana to Greycliffe Road	Eastbound (A)	26.8	45.7	2007	0.00%	0	0.00																											
45	Dawson Highway 46C	Banana to Moura Mine	Westbound (G)	0	7.8	2007	0.00%	0	0.00																											
46	Dawson Highway 46C	Moura Mine to Banana	Eastbound (A)	7.8	0	2007	0.00%	0	0.00																											
47	Dawson Highway 46C	Moura Mine to Moura Township	Westbound (G)	7.8	19	2007	0.00%	0	0.00																											
48	Dawson Highway 46C	Moura Township to Moura Mine	Eastbound (A)	19	7.8	2007	0.00%	0	0.00																											
49	Dawson Highway 46C	Moura Township to CH. 30	Westbound (G)	19	30	2007	0.00%	0	0.00																											
50	Dawson Highway 46C	CH. 30 to Moura Township	Eastbound (A)	30	19	2007	0.00%	0	0.00																											
51	Dawson Highway 46C	CH. 30 to CH. 41	Westbound (G)	30	41	2007	0.00%	0	0.00																											
52	Dawson Highway 46C	CH. 41 to CH. 30	Eastbound (A)	41	30	2007	0.00%	0	0.00																											
53	Dawson Highway 46C	CH. 41 to District Boundary	Westbound (G)	41	45	2007	0.00%	0	0.00																											
54	Dawson Highway 46C	Boundary to CH. 41	Eastbound (A)	45	41	2007	0.00%	0	0.00																											
55	Gladstone-Mt Larcom Rd	Dawson Highway to Hilderbrand Street	Westbound (G)	0	1.4	2006	0.00%	0	0.00																											
56	Gladstone-Mt Larcom Rd	Dawson Highway to Hilderbrand Street	Eastbound (A)	1.4	0	2006	0.00%	0	0.00																											
57	Gladstone-Mt Larcom Rd	Hilderbrand Street to Blain Drive	Westbound (G)	1.4	3.5	2006	0.00%	0	0.00																											
58	Gladstone-Mt Larcom Rd	Hilderbrand Street to Blain Drive	Eastbound (A)	3.5	1.4	2006	0.00%	0	0.00																											
59	Gladstone-Mt Larcom Rd	Blain Drive to Red Rover Road	Westbound (G)	3.5	3.9	2006	0.00%	0	0.00																											
60	Gladstone-Mt Larcom Rd	Blain Drive to Red Rover Road	Eastbound (A)	3.9	3.5	2006	0.00%	0	0.00																											
61	Gladstone-Mt Larcom Rd	Red Rover Road to Power Station	Westbound (G)	3.9	4.6	2006	0.00%	0	0.00																											
62	Gladstone-Mt Larcom Rd	Red Rover Road to Power Station	Eastbound (A)	4.6	3.9	2006	0.00%	0	0.00																											
63	Gladstone-Mt Larcom Rd	Power Station to Red Road	Westbound (G)	4.6	8.6	2006	0.00%	0	0.00																											
64	Gladstone-Mt Larcom Rd	Power Station to Red Road	Eastbound (A)	8.6	4.6	2006	0.00%	0	0.00																											
65	Gladstone-Mt Larcom Rd	Red Road to Landing Road	Westbound (G)	8.6	12.3	2006	0.00%	0	0.00																											
66	Gladstone-Mt Larcom Rd	Red Road to Landing Road	Eastbound (A)	12.3	8.6	2006	0.00%	0	0.00																											
67	Gladstone-Mt Larcom Rd	Landing Road to Targinnie Road	Westbound (G)	12.3	16.3	2006	0.00%	0	0.00																											
68	Gladstone-Mt Larcom Rd	Landing Road to Targinnie Road	Eastbound (A)	16.3	12.3	2006	0.00%	0	0.00																											
69	Gladstone-Mt Larcom Rd	Targinnie Road to Quarry Road	Westbound (G)	16.3	19	2006	0.00%	0	0.00																											
70	Gladstone-Mt Larcom Rd	Targinnie Road to Quarry Road	Eastbound (A)	19	16.3	2006	0.00%	0	0.00																											
71	Gladstone-Mt Larcom Rd	Quarry Road to Bruce Highway	Westbound (G)	19	32.1	2006	0.00%	0	0.00																											
72	Gladstone-Mt Larcom Rd	Quarry Road to Bruce Highway	Eastbound (A)	32.1	19	2006	0.00%	0	0.00																											
73	Carnarvon Highway 24A	CH. 0.00 (NSW border) to CH. 10	Northbound (G)	0.0	10.0	2007	0.00%	0	0.00																											
74	Carnarvon Highway 24A	CH. 10 to CH. 0.0 (NSW border)	Southbound (A)	10.0	0.0	2007	0.00%	0	0.00																											
75	Carnarvon Highway 24A	CH. 10m to CH. 40 (Thallon)	Northbound (G)	10.0	40.0	2007	0.00%	0	0.00																											
76	Carnarvon Highway 24A	CH. 40 (Thallon) to CH. 10	Southbound (A)	40.0	10.0	2007	0.00%	0	0.00																											
77	Carnarvon Highway 24A	CH. 40 (Thallon) to CH. 74 (Nindigully)	Northbound (G)	40.0	74.0	2007	0.00%	0	0.00																											
78	Carnarvon Highway 24A	CH. 74 (Nindigully) to CH. 40 (Thallon)	Southbound (A)	74.0	40.0	2007	0.00%	0	0.00																											
79	Carnarvon Highway 24A	CH. 74 (Nindigully) to CH. 111	Northbound (G)	74.0	111.0	2007	0.00%	0	0.00																											
80	Carnarvon Highway 24A	CH. 111 to CH 74 (Nindigully)	Southbound (A)	111.0	74.0	2007	0.00%	0	0.00																											
81	Carnarvon Highway 24A	CH. 111 to St George	Northbound (G)	111.0	116.0	2007	0.00%	0	0.00																											
82	Carnarvon Highway 24A	St George to CH. 111	Southbound (A)	116.0	111.0	2007	0.00%	0	0.00																											
83	Carnarvon Highway 24B	CH. 0.00 (St George) to CH. 4	Northbound (G)	0	4	2007	0.00%	0	0.00																											
84	Carnarvon Highway 24B	CH. 4 to CH. 0.0 (St George)	Southbound (A)	4	0	2007	0.00%	0	0.00																											
85	Carnarvon Highway 24B	CH. 4m to CH. 9	Northbound (G)	4	9	2007	0.00%	0	0.00																											
86	Carnarvon Highway 24B	CH. 9 to CH. 4	Southbound (A)	9	4	2007	0.00%	0	0.00																											
87	Carnarvon Highway 24B	CH. 9 to CH. 56	Northbound (G)	9	56	2007	0.00%	0	0.00																											
88	Carnarvon Highway 24B	CH. 56 to CH. 9	Southbound (A)	56	9	2007	0.00%	0	0.00																											
89	Carnarvon Highway 24B	CH. 56 to CH. 116 (Surat)	Northbound (G)	56	116	2007	0.00%	0	0.00																											
90	Carnarvon Highway 24B	CH. 116 (Surat) to CH. 56	Southbound (A)	116	56	2007	0.00%	0	0.00																											
91	Carnarvon Highway 24C	CH. 0.00 (Surat) to CH. 20	Northbound (G)	0	20	2007	0.00%	0	0.00																											
92	Carnarvon Highway 24C	CH. 20 to CH. 0.0 (Surat)	Southbound (A)	20	0	2007	0.00%	0	0.00																											
93	Carnarvon Highway 24C	CH. 20m to CH. 75 (Roma)	Northbound (G)	20	75	2007	0.00%	0	0.00																											
94	Carnarvon Highway 24C	CH. 75 (Roma) to CH. 20	Southbound (A)	75	20	2007	0.00%	0	0.00																											
95	Carnarvon Highway 24D	CH. 0.00 (Roma) to CH. 5	Northbound (G)	0	5	2007	0.00%	0	0.00																											
96	Carnarvon Highway 24D	CH. 5 to CH. 0.0 (Roma)	Southbound (A)	5	0	2007	0.00%	0	0.00																											
97	Carnarvon Highway 24D	CH. 5m to CH. 16 Roma - Taroom Road	Northbound (G)	5	16	2007	0.00%	0	0.00																											
98	Carnarvon Highway 24D	CH. 16 Roma - Taroom Road to CH. 5	Southbound (A)	16	5	2007	0.00%	0	0.00																											
99	Carnarvon Highway 24D	Roma - Taroom Road to Injune	Northbound (G)	16	90	2007	0.00%	0	0.00																											
100	Carnarvon Highway 24D	Injune to Roma - Taroom Road	Southbound (A)	90	16	2007	0.00%	0	0.00																											
101	Carnarvon Highway 24E	CH. 0.00 (Injune) to Fairview Field Access (CH25.00)	Northbound (G)	0	25	2007	0.00%	0	0.00																											
102	Carnarvon Highway 24E	Fairview Field Access CH. 25.00 to CH. 0.0 (Injune)	Southbound (A)	25	0	2007	0.00%	0	0.00																											
103	Carnarvon Highway 24E	Fairview Field Access to CH. 69 Boundary with Em	Northbound (G)	25	69	2007	0.00%	0	0.00																											
104	Carnarvon Highway 24E	CH. 69 to Fairview Field Access	Southbound (A)	69	25	2007	0.00%	0	0.00																											
105	Carnarvon Highway 24E	CH. 69 to CH. 86 Access to Camp 1	Northbound (G)	69	86	2007	0.00%	0	0.00																											
106	Carnarvon Highway 24E	CH. 86 Access to Camp 1 to CH. 69	Southbound (A)	86	69	2007	0.00%	0	0.00																											
107	Carnarvon Highway 24E	CH. 86 Access to Camp 1 to CH. 111	Northbound (G)	86	111	2007	0.00%	0	0.00																											
108	Carnarvon Highway 24E	CH. 111 to CH. 86 Access to Camp 1	Southbound (A)	111	86	2007	0.00%	0	0.00																											
109	Carnarvon Highway 24E	CH. 111 to CH. 172 (Rolleston)	Northbound (G)	111	172	2007	0.00%	0	0.00																											
110	Carnarvon Highway 24E	CH. 172 (Rolleston) to CH. 111	Southbound (A)	172	111	2007	0.00%	0	0.00																											
111	Leichhardt Highway 26A	CH. 00 Capricorn Highway to Burnett Highway	Southbound (G)	0.0	25.7	2007	0.00%	0	0.00																											
112	Leichhardt Highway 26A	Burnett Highway to Capricorn Highway	Northbound (A)	25.7	0.0	2007	0.00%	0	0.00																											
113	Leichhardt Highway 26A	Burnett Highway to CH. 51.1	Southbound (G)	25.7	51.1	2007	0.00%	0	0.00																											
114	Leichhardt Highway 26A	CH. 51.1 to Burnett Highway	Northbound (A)	51.1	25.7	2007	0.00%	0	0.00																											
115	Leichhardt Highway 26A	CH. 51.1 to CH. 62.6	Southbound (G)	51.1	62.6	2007	0.00%	0	0.00																											
116	Leichhardt Highway 26A	CH. 62.6 to CH. 51.1	Northbound (A)	62.6	51.1	2007	0.00%	0	0.00																											
117	Leichhardt Highway 26A	CH. 62.6 to CH. 86.0 Fairview Road	Southbound (G)	62.6	86.0	2007	0.00%	0	0.00																											
118	Leichhardt Highway 26A	CH. 86.0 Fairview Road to CH. 62.6	Northbound (A)	86.0	62.6	2007	0.00%	0	0.00																											
119	Leichhardt Highway 26A	CH. 86.0 Fairview Road to CH. 88.0	Southbound (G)	86.0	88.0	2007	0.00%	0	0.00																											
120	Leichhardt Highway 26A	CH. 88.0 to CH 86.0	Northbound (A)	88.0	86.0	2007	0.00%	0	0.00																											
121	Leichhardt Highway 26A	CH. 88.0 to CH. 99.0 (Camp 3)	Southbound (G)	88.0	99.0	2007	0.00%	0	0.00																											
122	Leichhardt Highway 26A	CH. 99.0 (Camp 3) to CH. 88.0	Northbound (A)	99.0	88.0	2007	0.00%	0	0.00																											
123	Leichhardt Highway 26A	CH. 99.0 to Banana CH. 105.2	Southbound (G)	99.0	105.2	2007	0.00%	0	0.00																											
124	Leichhardt Highway 26A	Banana CH. 105.2 to CH. 99.0	Northbound (A)	105.2	99.0	2007	0.00%	0	0.00																											
125	Leichhardt Highway 26A	Banana CH. 105.2 to CH. 117.0	Southbound (G)	105.2	117.0	2007	0.00%	0	0.00																											
126	Leichhardt Highway 26A	CH. 117.0 to Banana CH. 105.2	Northbound (A)	117.0	105.2	2007	0.00%	0	0.00																											
127	Leichhardt Highway 26A	CH. 117.0 to CH. 124.0	Southbound (G)	117.0	124.0	2007	0.00%	0	0.00																											
128	Leichhardt Highway 26A	CH. 124.0 to CH. 117.0	Northbound (A)	124.0	117.0	2007	0.00%	0	0.00																											
129	Leichhardt Highway 26A	Theodore CH. 162.3 to CH.124.0	Westbound (G)	124.0	162.3	2007	0.00%	0	0.00																											
130	Leichhardt Highway 26A	CH.124.0 to Theodore CH. 162.4	Eastbound (A)	162.3	124.0	2007	0.00%	0	0.00																											
131	Leichhardt Highway 26A	Theodore CH. 162.3 to CH. 124.0	Westbound (G)	162.3	170.3	2007	0.00%	0	0.00																											
132	Leichhardt Highway 26A	Theodore CH. 162.3 to Glenmoral Roundstone Roa	Eastbound (A)	170.3	162.3	2007	0.00%	0	0.00																											
133	Leichhardt Highway 26A	Glenmoral Roundstone Road to Isla Delusion Road	Westbound (G)	170.3	184.0	2007	0.00%	0	0.00																											
134	Leichhardt Highway 26A	Isla Delusion Road to Glenmoral Roundstone Road	Eastbound (A)	184.0	170.3	2007	0.00%	0	0.00																											
135	Leichhardt Highway 26A	Isla Delusion Road to District Boundary	Westbound (G)	184.0	192.2	2007	0.00%	0	0.00																											
136	Leichhardt Highway 26A	District Boundary to Isla Delusion Road	Eastbound (A)	192.2	184	2007	0.00%	0	0.00																											
137	Bruce Highway	Gladstone-Beraraby Road to Dawson Highway	Westbound (G)	0	11.6	2006	0.00%	0	0.00																											
138	Bruce Highway	Gladstone-Beraraby Road to Dawson Highway	Eastbound (A)	11.6	0	2006	0.00%	0	0.00																											
139	Bruce Highway	Dawson Highway to Calliope River Road	Westbound (G)	11.6	18.7	2006	0.00%	0	0.00																											
140	Bruce Highway	Dawson Highway to Calliope River Road	Eastbound (A)	18.7	11.6	2006	0.00%	0	0.00																											
141	Bruce Highway	Calliope River Road to Gladstone Mt-Larcom Road	Westbound (G)	18.7	45.4	2006	0.00%	0	0.00																											
142	Bruce Highway	Calliope River Road to Gladstone Mt-Larcom Road	Eastbound (A)	45.4	18.7	2006	0.00%	0	0.00																											

Bruce Highway	Gladstone-Mt Larcom Road to Bajool Port Alma Ro	Westbound (G)	45.4	85.3	2006	0.00%	0	0.00
Bruce Highway	Gladstone-Mt Larcom Road to Bajool Port Alma Ro	Eastbound (A)	85.3	45.4	2006	0.00%	0	0.00
Bruce Highway	Bajool Port Alma Road to Gavial-Gracemere Road	Westbound (G)	85.3	109	2006	0.00%	0	0.00
Bruce Highway	Bajool Port Alma Road to Gavial-Gracemere Road	Eastbound (A)	109	85.3	2006	0.00%	0	0.00
Bruce Highway	Gavial-Gracemere Road to Burnett Highway	Westbound (G)	109	114.4	2006	0.00%	0	0.00
Bruce Highway	Gavial-Gracemere Road to Burnett Highway	Eastbound (A)	114.4	109	2006	0.00%	0	0.00
Bruce Highway	Burnett Highway to Capricorn Highway	Westbound (G)	114.4	117	2006	0.00%	0	0.00
Bruce Highway	Burnett Highway to Capricorn Highway	Eastbound (A)	117	114.4	2006	0.00%	0	0.00
Bruce Highway	Capricorn Highway to Stanley Street	Westbound (G)	117	119.736	2006	0.00%	0	0.00
Bruce Highway	Capricorn Highway to Stanley Street	Eastbound (A)	119.736	117	2006	0.00%	0	0.00
Gladstone - Benaraby Road	CH.0.0 Dawson Highway CH. 0.00 to Sun valley Ro	Southbound (G)	0	0.645	2007	0.00%	0	0.00
Gladstone - Benaraby Road	Sun Valley Road CH. 0.645 to Dawson Highway CH	Northbound (A)	0.645	0	2007	0.00%	0	0.00
Gladstone - Benaraby Road	CH. 0.645 to Glenlyon Road CH. 2.159	Southbound (G)	0.645	2.159	2007	0.00%	0	0.00
Gladstone - Benaraby Road	Glenlyon Road CH. 2.159 to CH. 0.645	Northbound (A)	2.159	0.645	2007	0.00%	0	0.00
Gladstone - Benaraby Road	Glenlyon Road CH. 2.159 to French Street CH. 3.4	Southbound (G)	2.159	3.4	2007	0.00%	0	0.00
Gladstone - Benaraby Road	French Street CH. 3.40 to Glenlyon Road CH. 2.15	Northbound (A)	3.4	2.159	2007	0.00%	0	0.00
Gladstone - Benaraby Road	French Street CH. 3.40 to Glen Eden Drive CH. 5.7	Southbound (G)	3.4	5.7	2007	0.00%	0	0.00
Gladstone - Benaraby Road	Glen Eden Drive CH. 5.70 to French Street CH. 3.4	Northbound (A)	5.7	3.4	2007	0.00%	0	0.00
Gladstone - Benaraby Road	Glen Eden Drive CH. 5.70 to South Trees Drive CH	Southbound (G)	5.7	7.3	2007	0.00%	0	0.00
Gladstone - Benaraby Road	South Trees Drive CH. 5.70 to Glen Eden Drive CH	Northbound (A)	7.3	5.7	2007	0.00%	0	0.00
Gladstone - Benaraby Road	South Trees Drive CH. 7.30 to Boyne Island Road C	Southbound (G)	7.3	16.039	2007	0.00%	0	0.00
Gladstone - Benaraby Road	Boyne Island Drive CH. 16.039 to South Trees Driv	Northbound (A)	16.039	7.3	2007	0.00%	0	0.00
Gladstone - Benaraby Road	Boyne Island Road CH. 16.039 to Bruce Highway C	Southbound (G)	16.039	19.21	2007	0.00%	0	0.00
Gladstone - Benaraby Road	Bruce Highway CH. 19.21 to Boyne Island Road CH	Northbound (A)	19.21	16.039	2007	0.00%	0	0.00
Burnett Highway 41D	CH.0.0 District Boundary to CH.65.0	Southbound (G)	0.0	65.0	2007	0.00%	0	0.00
Burnett Highway 41D	CH.65.0 to District Boundary CH.0.0	Northbound (A)	65.0	0.0	2007	0.00%	0	0.00
Burnett Highway 41D	CH.65.0 to Hinton's Lane CH.85.5	Southbound (G)	65.0	85.5	2007	0.00%	0	0.00
Burnett Highway 41D	Hinton's Lane CH.85.5 to CH.65.0	Northbound (A)	85.5	65.0	2007	0.00%	0	0.00
Burnett Highway 41D	Hinton's Lane CH.85.5 to Sara Lane CH.92.0	Southbound (G)	85.5	92.0	2007	0.00%	0	0.00
Burnett Highway 41D	Sara Lane CH.92.0 to Hinton's Lane CH.85.5	Northbound (A)	92.0	85.5	2007	0.00%	0	0.00
Burnett Highway 41D	Sara Lane CH.92.0 to Dawson Highway CH.93.8	Southbound (G)	92.0	93.8	2007	0.00%	0	0.00
Burnett Highway 41D	Dawson Highway CH.93.8 to Sara Lane CH.92.0	Northbound (A)	93.8	92.0	2007	0.00%	0	0.00
Burnett Highway 41E	Dawson Highway CH.93.8 to CH.18.5	Southbound (G)	0.0	18.5	2007	0.00%	0	0.00
Burnett Highway 41E	CH.18.5 to Dawson Highway CH.93.8	Northbound (A)	18.5	0.0	2007	0.00%	0	0.00
Burnett Highway 41E	CH.18.5 to Jambin Rail Crossing CH.27.2	Southbound (G)	18.5	27.2	2007	0.00%	0	0.00
Burnett Highway 41E	Jambin Rail Crossing CH.27.2 to CH.18.5	Northbound (A)	27.2	18.5	2007	0.00%	0	0.00
Burnett Highway 41E	Jambin Rail Crossing CH.27.2 to Goovigen Connec	Southbound (G)	27.2	35.5	2007	0.00%	0	0.00
Burnett Highway 41E	Goovigen Connection Road CH.35.5 to Jambin Rail	Northbound (A)	35.5	27.2	2007	0.00%	0	0.00
Burnett Highway 41E	Goovigen Connection Road CH.35.5 to Tohlinn Roa	Southbound (G)	35.5	38.9	2007	0.00%	0	0.00
Burnett Highway 41E	Tohlinn Road (South) CH.38.9 to Goovigen Connec	Northbound (A)	38.9	35.5	2007	0.00%	0	0.00
Burnett Highway 41E	Tomlin Road (South) CH.38.9 to Tomlin Rd (North)	Southbound (G)	38.9	53.4	2007	0.00%	0	0.00
Burnett Highway 41E	Tomlin Rd (North) CH.53.4 to Tomlin Road (South)	Northbound (A)	53.4	38.9	2007	0.00%	0	0.00
Burnett Highway 41E	Tomlin Rd (North) CH.53.4 to Leichhardt Highway (	Westbound (G)	53.4	71.8	2007	0.00%	0	0.00
Burnett Highway 41E	Leichhardt Highway CH.71.8 to Tohlinn Road (Sout	Eastbound (A)	71.8	53.4	2007	0.00%	0	0.00
Burnett Highway 41E	Leichhardt Highway CH.71.8 to School Grounds CH	Westbound (G)	71.8	101.4	2007	0.00%	0	0.00
Burnett Highway 41E	School Grounds CH.101.4 to Leichhardt Highway C	Eastbound (A)	101.4	71.8	2007	0.00%	0	0.00
Burnett Highway 41E	School Grounds CH.101.4 to Gordon Street CH.102	Westbound (G)	101.4	102.8	2007	0.00%	0	0.00
Burnett Highway 41E	Gordon Street CH.102.8 to School Grounds CH.101.4	Eastbound (A)	102.8	101.4	2007	0.00%	0	0.00
Dawson Highway 46C	Boundary to Fitzroy Development 85A Intersection	Westbound (G)	45.05	73.9	2007	0.00%	0	0.00
Dawson Highway 46C	Fitzroy Dev. 85A Intersection to Broundary	Eastbound (A)	73.9	45.05	2007	0.00%	0	0.00
Dawson Highway 46C	Fitzroy Dev. 85A Intersection to Duaringa/Woorabin	Westbound (G)	73.9	80.5	2007	0.00%	0	0.00
Dawson Highway 46C	Duaringa/Woorabinda Intersection to Fitzroy Dev. 8	Eastbound (A)	80.5	73.9	2007	0.00%	0	0.00
Dawson Highway 46C	Duaringa/Woorabinda Intersection to Woorabinda/D	Westbound (G)	80.5	83.6	2007	0.00%	0	0.00
Dawson Highway 46C	Woorabinda/Duaringa to Duaringa/Woorabinda Inte	Eastbound (A)	83.6	80.5	2007	0.00%	0	0.00
Dawson Highway 46C	Woorabinda/Duaringa to 46C/85B Intersection	Westbound (G)	83.6	92.4	2007	0.00%	0	0.00
Dawson Highway 46C	46C/85B Intersection to Woorabinda/Duaringa	Eastbound (A)	92.4	83.6	2007	0.00%	0	0.00
Dawson Highway 46C	46C/85B Intersection to Prospect Creek Culvert	Westbound (G)	92.4	101.4	2007	0.00%	0	0.00
Dawson Highway 46C	Prospect Creek Culvert to 46C/85B Intersection	Eastbound (A)	101.4	92.4	2007	0.00%	0	0.00
Dawson Highway 46C	Prospect Creek Culvert to Duaringa/Bauhinia Inters	Westbound (G)	101.4	123.6	2007	0.00%	0	0.00
Dawson Highway 46C	Duaringa/Bauhinia Intersection to Prospect Creek C	Eastbound (A)	123.6	101.4	2007	0.00%	0	0.00
Dawson Highway 46C	Duaringa/Bauhinia Intersection to KM 137.5	Westbound (G)	123.6	137.5	2007	0.00%	0	0.00
Dawson Highway 46C	KM 137.5 to Duaringa/Bauhinia Intersection	Eastbound (A)	123.6	137.5	2007	0.00%	0	0.00
Dawson Highway 46C	KM 137.5 to Rolleston	Westbound (G)	137.5	168	2007	0.00%	0	0.00
Dawson Highway 46C	Rollston to KM 137.5	Eastbound (A)	168	137.5	2007	0.00%	0	0.00
Leichhardt Highway 26A	District Boundary to 26A/85A intersection	Westbound (G)	192.2	239.0	2008	0.00%	0	0.00
Leichhardt Highway 26A	26A/84A intersection to District Boundary	Eastbound (A)	239.0	192.2	2008	0.00%	0	0.00
Leichhardt Highway 26A	26A/85A intersection to Taroom	Westbound (G)	239.0	256.0	2008	0.00%	0	0.00
Leichhardt Highway 26A	Taroom to 26A/84A intersection	Eastbound (A)	256.0	239	2008	0.00%	0	0.00
Leichhardt Highway 26B	Taroom to KM35.00	Westbound (G)	0.0	35.0	2008	0.00%	0	0.00
Leichhardt Highway 26B	KM35.00 to Taroom	Eastbound (A)	35.0	0	2008	0.00%	0	0.00
Leichhardt Highway 26B	KM35.00 to Jackson-Wandoan Road	Westbound (G)	35.0	61.0	2008	0.00%	0	0.00
Leichhardt Highway 26B	Jackson-Wandoan Road to KM35.00	Eastbound (A)	61.0	35	2008	0.00%	0	0.00
Leichhardt Highway 26B	Jackson-Wandoan Road to Miles	Westbound (G)	61.0	127.6	2008	0.00%	0	0.00
Leichhardt Highway 26B	Miles to Jackson-Wandoan Road	Eastbound (A)	127.6	61	2008	0.00%	0	0.00
Warrego Highway	Miles to 18D/Dulacca North Intersetcion	Westbound (G)	0	43	2008	0.00%	0	0.00
Warrego Highway	18D/Dulacca North Intersection to Miles	Eastbound (A)	43	0	2008	0.00%	0	0.00
Warrego Highway	18D/Dulacca North Intersection to 18D/3441 Interse	Westbound (G)	43	101	2008	0.00%	0	0.00
Warrego Highway	18D/3441 Intersection to 18D/Dulacca North Interse	Eastbound (A)	101	43	2008	0.00%	0	0.00
Warrego Highway	18D/3441 Intersection to KM135.5	Westbound (G)	101	135	2008	0.00%	0	0.00
Warrego Highway	KM135.5 to 18D/3441 Intersection	Eastbound (A)	135	101	2008	0.00%	0	0.00
Warrego Highway	KM135.5 to Roma	Westbound (G)	135	141.2	2008	0.00%	0	0.00
Warrego Highway	Roma to KM135.5	Eastbound (A)	141.2	135	2008	0.00%	0	0.00
Warrego Highway	Ruthven Street to Peachy Street	Westbound (G)	0.00	0.99	2008	0.00 %	0	0.00
Warrego Highway	Peachy Street to Ruthven Street	Eastbound (A)	0.99	0.00	2008	0.00 %	0	0.00
Warrego Highway	Peachy Street to Fifth Avenue	Westbound (G)	0.99	2.21	2008	0.00 %	0	0.00
Warrego Highway	Fifth Avenue to Peachy Street	Eastbound (A)	2.21	0.99	2008	0.00 %	0	0.00
Warrego Highway	Fifth Avenue to Higgins Street	Westbound (G)	2.21	3.74	2008	0.00 %	0	0.00
Warrego Highway	Higgins Street to Fifth Avenue	Eastbound (A)	3.74	2.21	2008	0.00 %	0	0.00
Warrego Highway	Higgins Street to Park Street	Westbound (G)	3.74	4.52	2008	0.00 %	0	0.00
Warrego Highway	Park Street to Higgins Street	Eastbound (A)	4.52	3.74	2008	0.00 %	0	0.00
Warrego Highway	Park Street to Airport	Westbound (G)	4.52	6.63	2008	0.00 %	0	0.00
Warrego Highway	Airport to Park Street	Eastbound (A)	6.63	4.52	2008	0.00 %	0	0.00
Warrego Highway	Airport to Troys Road	Westbound (G)	6.63	10.59	2008	0.00 %	0	0.00
Warrego Highway	Troys Road to Airport	Eastbound (A)	10.59	6.63	2008	0.00 %	0	0.00
Warrego Highway	Troys Road to Oakey Biddeston Road	Westbound (G)	10.59	26.83	2008	0.00 %	0	0.00
Warrego Highway	Oakey Biddeston Road to Troys Road	Eastbound (A)	26.83	10.59	2008	0.00 %	0	0.00
Warrego Highway	Oakey Biddeston Road to Dalby Cecil Plains Road	Westbound (G)	26.83	80.82	2008	0.00 %	0	0.00
Warrego Highway	Dalby Cecil Plains Road to Oakey Biddeston Road	Eastbound (A)	80.82	26.83	2008	0.00 %	0	0.00
Warrego Highway	Dalby Cecil Plains Road to Cunningham Street	Westbound (G)	80.82	84.19	2008	0.00 %	0	0.00
Warrego Highway	Cunningham Street to Dalby Cecil Plains Road	Eastbound (A)	84.19	80.82	2008	0.00 %	0	0.00
Warrego Highway	Cunningham Street to Rail Line	Eastbound (A)	0.00	1.09	2008	0.00%	0	0.00
Warrego Highway	Rail Line to Cunningham Street	Westbound (G)	1.09	0.00	2008	0.00%	0	0.00
Warrego Highway	Rail Line to Macalister Bell Road	Eastbound (A)	1.09	25.12	2008	0.00%	0	0.00
Warrego Highway	Macalister Bell Road to Rail Line	Westbound (G)	25.12	1.09	2008	0.00%	0	0.00
Warrego Highway	Macalister Bell Road to Warra Kogan Road	Eastbound (A)	25.12	45.20	2008	0.00%	0	0.00
Warrego Highway	Warra Kogan Road to Macalister Bell Road	Westbound (G)	45.20	25.12	2008	0.00%	0	0.00
Warrego Highway	Warra Kogan Road to Glasson Street	Eastbound (A)	45.20	80.18	2008	0.00%	0	0.00
Warrego Highway	Glasson Street to Warra Kogan Road	Westbound (G)	80.18	45.20	2008	0.00%	0	0.00
Warrego Highway	Glasson Street to Auburn Road	Eastbound (A)	80.18	83.16	2008	0.00%	0	0.00
Warrego Highway	Auburn Road to Glasson Street	Westbound (G)	83.16	80.18	2008	0.00%	0	0.00
Warrego Highway	Auburn Road to Goombi	Eastbound (A)	83.16	106.36	2008	0.00%	0	0.00
Warrego Highway	Goombi to Auburn Road	Westbound (G)	106.36	83.16	2008	0.00%	0	0.00
Warrego Highway	Goombi to Leichhardt Highway	Eastbound (A)	106.36	126.75	2008	0.00%	0	0.00
Warrego Highway	Leichhardt Highway to Goombi	Westbound (G)	126.75	106.36	2008	0.00%	0	0.00
Bajool-Port Alma Road	Bruve Highway to End Point	Eastbound (G)	0	25.24	2008	0.00%	0	0.00
Bajool-Port Alma Road	End Point to Bruce Highway	Westbound (A)	25.24	0	2008	0.00%	0	0.00
Capricorn Highway	Bruce Highway to Gavial Gracemere Road	Eastbound (A)	0	5.69	2008	0.00%	0	0.00
Capricorn Highway	Gavial Gracemere Road to Bruce Highway	Westbound (G)	5.69	0	2008	0.00%	0	0.00
Capricorn Highway	Gavial Gracemere Road to Kabra Road	Eastbound (A)	5.69	13.367	2008	0.00%	0	0.00
Capricorn Highway	Kabra Road to Gavial Gracemere Road	Westbound (G)	13.367	5.69	2008	0.00%	0	0.00
Capricorn Highway	Kabra Road to Powerstation Road	Eastbound (A)	13.367	17.856	2008	0.00%	0	0.00
Capricorn Highway	Powerstation Road to Kabra Road	Westbound (G)	17.856	13.367	2008	0.00%	0	0.00
Capricorn Highway	Powerstation Road to Leichhardt Highway	Eastbound (A)	17.856	51.62	2008	0.00%	0	0.00
Capricorn Highway	Leichhardt Highway to Powerstation Road	Westbound (G)	51.62	17.856	2008	0.00%	0	0.00
Capricorn Highway	Leichhardt Highway to End Point	Eastbound (A)	51.62	73.35	2008	0.00%	0	0.00
Capricorn Highway	End Point to Leichhardt Highway	Westbound (G)	73.35	51.62	2008	0.00%	0	0.00
Jackson-Wandoan Road	Warrego Highway Intersection to Grid	Northbound (A)	0	69	2008	0.00%	0	0.00
Jackson-Wandoan Road	Grid to18D/Dulacca North Intersection	Southbound (G)	69	0	2008	0.00%	0	0.00
Jackson-Wandoan Road	Grid to Leichardt Highway	Eastbound (A)	69	81	2008	0.00%	0	0.00
Jackson-Wandoan Road	Leichardt Highway to Grid	Westbound (G)	81	69	2008	0.00%	0	0.00
Bruce Highway (10D)	Miriam Vale CH. 98.8 to CH. 112	Northbound (A)	98.8	112	2007	0.00%	0	0.00
Bruce Highway (10D)	CH. 112 to Miriam Vale CH. 98.8	Southbound (G)	112	98.8	2007	0.00%	0	0.00
Bruce Highway (10D)	CH. 112 to Benaraby CH. 147.1	Northbound (A)	112	147.1	2007	0.00%	0	0.00
Bruce Highway (10D)	Benaraby CH. 147.1 o CH. 112	Southbound (G)	147.1	112	2007	0.00%	0	0.00

143	Bruce Highway	Gladstone-Mt Larcom Road to Bajool Port Alma Ro	Westbound (G)	45.4	85.3	2006	0.00%	0	0.00
144	Bruce Highway	Gladstone-Mt Larcom Road to Bajool Port Alma Ro	Eastbound (A)	85.3	45.4	2006	0.00%	0	0.00
145	Bruce Highway	Bajool Port Alma Road to Gavial-Gracemere Road	Westbound (G)	85.3	109	2006	0.00%	0	0.00
146	Bruce Highway	Bajool Port Alma Road to Gavial-Gracemere Road	Eastbound (A)	109	85.3	2006	0.00%	0	0.00
147	Bruce Highway	Gavial-Gracemere Road to Burnett Highway	Westbound (G)	109	114.4	2006	0.00%	0	0.00
148	Bruce Highway	Gavial-Gracemere Road to Burnett Highway	Eastbound (A)	114.4	109	2006	0.00%	0	0.00
149	Bruce Highway	Burnett Highway to Capricorn Highway	Westbound (G)	114.4	117	2006	0.00%	0	0.00
150	Bruce Highway	Burnett Highway to Capricorn Highway	Eastbound (A)	117	114.4	2006	0.00%	0	0.00
151	Bruce Highway	Capricorn Highway to Stanley Street	Westbound (G)	117	119.736	2006	0.00%	0	0.00
152	Bruce Highway	Capricorn Highway to Stanley Street	Eastbound (A)	119.736	117	2006	0.00%	0	0.00
153	Gladstone - Benaraby Road	CH.0.0 Dawson Highway CH. 0.00 to Sun valley Ro	Southbound (G)	0	0.645	2007	0.00%	0	0.00
154	Gladstone - Benaraby Road	Sun Valley Road CH. 0.645 to Dawson Highway CH	Northbound (A)	0.645	0	2007	0.00%	0	0.00
155	Gladstone - Benaraby Road	CH. 0.645 to Glenlyon Road CH. 2.159	Southbound (G)	0.645	2.159	2007	0.00%	0	0.00
156	Gladstone - Benaraby Road	Glenlyon Road CH. 2.159 to CH. 0.645	Northbound (A)	2.159	0.645	2007	0.00%	0	0.00
157	Gladstone - Benaraby Road	Glenlyon Road CH. 2.159 to French Street CH. 3.4	Southbound (G)	2.159	3.4	2007	0.00%	0	0.00
158	Gladstone - Benaraby Road	French Street CH. 3.40 to Glenlyon Road CH. 2.15	Northbound (A)	3.4	2.159	2007	0.00%	0	0.00
159	Gladstone - Benaraby Road	French Street CH. 3.40 to Glen Eden Drive CH. 5.7	Southbound (G)	3.4	5.7	2007	0.00%	0	0.00
160	Gladstone - Benaraby Road	Glen Eden Drive CH. 5.70 to French Street CH. 3.4	Northbound (A)	5.7	3.4	2007	0.00%	0	0.00
161	Gladstone - Benaraby Road	Glen Eden Drive CH. 5.70 to South Trees Drive CH	Southbound (G)	5.7	7.3	2007	0.00%	0	0.00
162	Gladstone - Benaraby Road	South Trees Drive CH. 5.70 to Glen Eden Drive CH	Northbound (A)	7.3	5.7	2007	0.00%	0	0.00
163	Gladstone - Benaraby Road	South Trees Drive CH. 7.30 to Boyne Island Road C	Southbound (G)	7.3	16.039	2007	0.00%	0	0.00
164	Gladstone - Benaraby Road	Boyne Island Drive CH. 16.039 to South Trees Driv	Northbound (A)	16.039	7.3	2007	0.00%	0	0.00
165	Gladstone - Benaraby Road	Boyne Island Road CH. 16.039 to Bruce Highway C	Southbound (G)	16.039	19.21	2007	0.00%	0	0.00
166	Gladstone - Benaraby Road	Bruce Highway CH. 19.21 to Boyne Island Road CH	Northbound (A)	19.21	16.039	2007	0.00%	0	0.00
167	Burnett Highway 41D	CH.0.0 District Boundary to CH.65.0	Southbound (G)	0.0	65.0	2007	0.00%	0	0.00
168	Burnett Highway 41D	CH.65.0 to District Boundary CH.0.0	Northbound (A)	65.0	0.0	2007	0.00%	0	0.00
169	Burnett Highway 41D	CH.65.0 to Hinton's Lane CH.85.5	Southbound (G)	65.0	85.5	2007	0.00%	0	0.00
170	Burnett Highway 41D	Hinton's Lane CH.85.5 to CH.65.0	Northbound (A)	85.5	65.0	2007	0.00%	0	0.00
171	Burnett Highway 41D	Hinton's Lane CH.85.5 to Sara Lane CH.92.0	Southbound (G)	85.5	92.0	2007	0.00%	0	0.00
172	Burnett Highway 41D	Sara Lane CH.92.0 to Hinton's Lane CH.85.5	Northbound (A)	92.0	85.5	2007	0.00%	0	0.00
173	Burnett Highway 41D	Sara Lane CH.92.0 to Dawson Highway CH.93.8	Southbound (G)	92.0	93.8	2007	0.00%	0	0.00
174	Burnett Highway 41D	Dawson Highway CH.93.8 to Sara Lane CH.92.0	Northbound (A)	93.8	92.0	2007	0.00%	0	0.00
175	Burnett Highway 41E	Dawson Highway CH.93.8 to CH.18.5	Southbound (G)	0.0	18.5	2007	0.00%	0	0.00
176	Burnett Highway 41E	CH.18.5 to Dawson Highway CH.93.8	Northbound (A)	18.5	0.0	2007	0.00%	0	0.00
177	Burnett Highway 41E	CH.18.5 to Jambin Rail Crossing CH.27.2	Southbound (G)	18.5	27.2	2007	0.00%	0	0.00
178	Burnett Highway 41E	Jambin Rail Crossing CH.27.2 to CH.18.5	Northbound (A)	27.2	18.5	2007	0.00%	0	0.00
179	Burnett Highway 41E	Jambin Rail Crossing CH.27.2 to Goovigen Connec	Southbound (G)	27.2	35.5	2007	0.00%	0	0.00
180	Burnett Highway 41E	Goovigen Connection Road CH.35.5 to Jambin Rail	Northbound (A)	35.5	27.2	2007	0.00%	0	0.00
181	Burnett Highway 41E	Goovigen Connection Road CH.35.5 to Tohlinn Roa	Southbound (G)	35.5	38.9	2007	0.00%	0	0.00
182	Burnett Highway 41E	Tohlinn Road (South) CH.38.9 to Goovigen Connec	Northbound (A)	38.9	35.5	2007	0.00%	0	0.00
183	Burnett Highway 41E	Tomlin Road (South) CH.38.9 to Tomlin Rd (North)	Southbound (G)	38.9	53.4	2007	0.00%	0	0.00
184	Burnett Highway 41E	Tomlin Rd (North) CH.53.4 to Tomlin Road (South)	Northbound (A)	53.4	38.9	2007	0.00%	0	0.00
185	Burnett Highway 41E	Tomlin Rd (North) CH.53.4 to Leichhardt Highway (	Westbound (G)	53.4	71.8	2007	0.00%	0	0.00
186	Burnett Highway 41E	Leichhardt Highway CH.71.8 to Tohlinn Road (Sout	Eastbound (A)	71.8	53.4	2007	0.00%	0	0.00
187	Burnett Highway 41E	Leichhardt Highway CH.71.8 to School Grounds CH	Westbound (G)	71.8	101.4	2007	0.00%	0	0.00
188	Burnett Highway 41E	School Grounds CH.101.4 to Leichhardt Highway C	Eastbound (A)	101.4	71.8	2007	0.00%	0	0.00
189	Burnett Highway 41E	School Grounds CH.101.4 to Gordon Street CH.102	Westbound (G)	101.4	102.8	2007	0.00%	0	0.00
190	Burnett Highway 41E	Gordon Street CH.102.8 to School Grounds CH.101.4	Eastbound (A)	102.8	101.4	2007	0.00%	0	0.00
191	Dawson Highway 46C	Boundary to Fitzroy Development 85A Intersection	Westbound (G)	45.05	73.9	2007	0.00%	0	0.00
192	Dawson Highway 46C	Fitzroy Dev. 85A Intersection to Broundary	Eastbound (A)	73.9	45.05	2007	0.00%	0	0.00
193	Dawson Highway 46C	Fitzroy Dev. 85A Intersection to Duaringa/Woorabin	Westbound (G)	73.9	80.5	2007	0.00%	0	0.00
194	Dawson Highway 46C	Duaringa/Woorabinda Intersection to Fitzroy Dev. 8	Eastbound (A)	80.5	73.9	2007	0.00%	0	0.00
195	Dawson Highway 46C	Duaringa/Woorabinda Intersection to Woorabinda/D	Westbound (G)	80.5	83.6	2007	0.00%	0	0.00
196	Dawson Highway 46C	Woorabinda/Duaringa to Duaringa/Woorabinda Inte	Eastbound (A)	83.6	80.5	2007	0.00%	0	0.00
197	Dawson Highway 46C	Woorabinda/Duaringa to 46C/85B Intersection	Westbound (G)	83.6	92.4	2007	0.00%	0	0.00
198	Dawson Highway 46C	46C/85B Intersection to Woorabinda/Duaringa	Eastbound (A)	92.4	83.6	2007	0.00%	0	0.00
199	Dawson Highway 46C	46C/85B Intersection to Prospect Creek Culvert	Westbound (G)	92.4	101.4	2007	0.00%	0	0.00
200	Dawson Highway 46C	Prospect Creek Culvert to 46C/85B Intersection	Eastbound (A)	101.4	92.4	2007	0.00%	0	0.00
201	Dawson Highway 46C	Prospect Creek Culvert to Duaringa/Bauhinia Inters	Westbound (G)	101.4	123.6	2007	0.00%	0	0.00
202	Dawson Highway 46C	Duaringa/Bauhinia Intersection to Prospect Creek C	Eastbound (A)	123.6	101.4	2007	0.00%	0	0.00
203	Dawson Highway 46C	Duaringa/Bauhinia Intersection to KM 137.5	Westbound (G)	123.6	137.5	2007	0.00%	0	0.00
204	Dawson Highway 46C	KM 137.5 to Duaringa/Bauhinia Intersection	Eastbound (A)	123.6	137.5	2007	0.00%	0	0.00
205	Dawson Highway 46C	KM 137.5 to Rolleston	Westbound (G)	137.5	168	2007	0.00%	0	0.00
206	Dawson Highway 46C	Rollston to KM 137.5	Eastbound (A)	168	137.5	2007	0.00%	0	0.00
207	Leichhardt Highway 26A	District Boundary to 26A/85A intersection	Westbound (G)	192.2	239.0	2008	0.00%	0	0.00
208	Leichhardt Highway 26A	26A/84A intersection to District Boundary	Eastbound (A)	239.0	192.2	2008	0.00%	0	0.00
209	Leichhardt Highway 26A	26A/85A intersection to Taroom	Westbound (G)	239.0	256.0	2008	0.00%	0	0.00
210	Leichhardt Highway 26A	Taroom to 26A/84A intersection	Eastbound (A)	256.0	239	2008	0.00%	0	0.00
211	Leichhardt Highway 26B	Taroom to KM35.00	Westbound (G)	0.0	35.0	2008	0.00%	0	0.00
212	Leichhardt Highway 26B	KM35.00 to Taroom	Eastbound (A)	35.0	0	2008	0.00%	0	0.00
213	Leichhardt Highway 26B	KM35.00 to Jackson-Wandoan Road	Westbound (G)	35.0	61.0	2008	0.00%	0	0.00
214	Leichhardt Highway 26B	Jackson-Wandoan Road to KM35.00	Eastbound (A)	61.0	35	2008	0.00%	0	0.00
215	Leichhardt Highway 26B	Jackson-Wandoan Road to Miles	Westbound (G)	61.0	127.6	2008	0.00%	0	0.00
216	Leichhardt Highway 26B	Miles to Jackson-Wandoan Road	Eastbound (A)	127.6	61	2008	0.00%	0	0.00
217	Warrego Highway	Miles to 18D/Dulacca North Intersetcion	Westbound (G)	0	43	2008	0.00%	0	0.00
218	Warrego Highway	18D/Dulacca North Intersection to Miles	Eastbound (A)	43	0	2008	0.00%	0	0.00
219	Warrego Highway	18D/Dulacca North Intersection to 18D/3441 Interse	Westbound (G)	43	101	2008	0.00%	0	0.00
220	Warrego Highway	18D/3441 Intersection to 18D/Dulacca North Interse	Eastbound (A)	101	43	2008	0.00%	0	0.00
221	Warrego Highway	18D/3441 Intersection to KM135.5	Westbound (G)	101	135	2008	0.00%	0	0.00
222	Warrego Highway	KM135.5 to 18D/3441 Intersection	Eastbound (A)	135	101	2008	0.00%	0	0.00
223	Warrego Highway	KM135.5 to Roma	Westbound (G)	135	141.2	2008	0.00%	0	0.00
224	Warrego Highway	Roma to KM135.5	Eastbound (A)	141.2	135	2008	0.00%	0	0.00
225	Warrego Highway	Ruthven Street to Peachy Street	Westbound (G)	0.00	0.99	2008	0.00 %	0	0.00
226	Warrego Highway	Peachy Street to Ruthven Street	Eastbound (A)	0.99	0.00	2008	0.00 %	0	0.00
227	Warrego Highway	Peachy Street to Fifth Avenue	Westbound (G)	0.99	2.21	2008	0.00 %	0	0.00
228	Warrego Highway	Fifth Avenue to Peachy Street	Eastbound (A)	2.21	0.99	2008	0.00 %	0	0.00
229	Warrego Highway	Fifth Avenue to Higgins Street	Westbound (G)	2.21	3.74	2008	0.00 %	0	0.00
230	Warrego Highway	Higgins Street to Fifth Avenue	Eastbound (A)	3.74	2.21	2008	0.00 %	0	0.00
231	Warrego Highway	Higgins Street to Park Street	Westbound (G)	3.74	4.52	2008	0.00 %	0	0.00
232	Warrego Highway	Park Street to Higgins Street	Eastbound (A)	4.52	3.74	2008	0.00 %	0	0.00
233	Warrego Highway	Park Street to Airport	Westbound (G)	4.52	6.63	2008	0.00 %	0	0.00
234	Warrego Highway	Airport to Park Street	Eastbound (A)	6.63	4.52	2008	0.00 %	0	0.00
235	Warrego Highway	Airport to Troys Road	Westbound (G)	6.63	10.59	2008	0.00 %	0	0.00
236	Warrego Highway	Troys Road to Airport	Eastbound (A)	10.59	6.63	2008	0.00 %	0	0.00
237	Warrego Highway	Troys Road to Oakey Biddeston Road	Westbound (G)	10.59	26.83	2008	0.00 %	0	0.00
238	Warrego Highway	Oakey Biddeston Road to Troys Road	Eastbound (A)	26.83	10.59	2008	0.00 %	0	0.00
239	Warrego Highway	Oakey Biddeston Road to Dalby Cecil Plains Road	Westbound (G)	26.83	80.82	2008	0.00 %	0	0.00
240	Warrego Highway	Dalby Cecil Plains Road to Oakey Biddeston Road	Eastbound (A)	80.82	26.83	2008	0.00 %	0	0.00
241	Warrego Highway	Dalby Cecil Plains Road to Cunningham Street	Westbound (G)	80.82	84.19	2008	0.00 %	0	0.00
242	Warrego Highway	Cunningham Street to Dalby Cecil Plains Road	Eastbound (A)	84.19	80.82	2008	0.00 %	0	0.00
243	Warrego Highway	Cunningham Street to Rail Line	Eastbound (A)	0.00	1.09	2008	0.00%	0	0.00
244	Warrego Highway	Rail Line to Cunningham Street	Westbound (G)	1.09	0.00	2008	0.00%	0	0.00
245	Warrego Highway	Rail Line to Macalister Bell Road	Eastbound (A)	1.09	25.12	2008	0.00%	0	0.00
246	Warrego Highway	Macalister Bell Road to Rail Line	Westbound (G)	25.12	1.09	2008	0.00%	0	0.00
247	Warrego Highway	Macalister Bell Road to Warra Kogan Road	Eastbound (A)	25.12	45.20	2008	0.00%	0	0.00
248	Warrego Highway	Warra Kogan Road to Macalister Bell Road	Westbound (G)	45.20	25.12	2008	0.00%	0	0.00
249	Warrego Highway	Warra Kogan Road to Glasson Street	Eastbound (A)	45.20	80.18	2008	0.00%	0	0.00
250	Warrego Highway	Glasson Street to Warra Kogan Road	Westbound (G)	80.18	45.20	2008	0.00%	0	0.00
251	Warrego Highway	Glasson Street to Auburn Road	Eastbound (A)	80.18	83.16	2008	0.00%	0	0.00
252	Warrego Highway	Auburn Road to Glasson Street	Westbound (G)	83.16	80.18	2008	0.00%	0	0.00
253	Warrego Highway	Auburn Road to Goombi	Eastbound (A)	83.16	106.36	2008	0.00%	0	0.00
254	Warrego Highway	Goombi to Auburn Road	Westbound (G)	106.36	83.16	2008	0.00%	0	0.00
255	Warrego Highway	Goombi to Leichhardt Highway	Eastbound (A)	106.36	126.75	2008	0.00%	0	0.00
256	Warrego Highway	Leichhardt Highway to Goombi	Westbound (G)	126.75	106.36	2008	0.00%	0	0.00
257	Bajool-Port Alma Road	Bruve Highway to End Point	Eastbound (G)	0	25.24	2008	0.00%	0	0.00
258	Bajool-Port Alma Road	End Point to Bruce Highway	Westbound (A)	25.24	0	2008	0.00%	0	0.00
259	Capricorn Highway	Bruce Highway to Gavial Gracemere Road	Eastbound (A)	0	5.69	2008	0.00%	0	0.00
260	Capricorn Highway	Gavial Gracemere Road to Bruce Highway	Westbound (G)	5.69	0	2008	0.00%	0	0.00
261	Capricorn Highway	Gavial Gracemere Road to Kabra Road	Eastbound (A)	5.69	13.367	2008	0.00%	0	0.00
262	Capricorn Highway	Kabra Road to Gavial Gracemere Road	Westbound (G)	13.367	5.69	2008	0.00%	0	0.00
263	Capricorn Highway	Kabra Road to Powerstation Road	Eastbound (A)	13.367	17.856	2008	0.00%	0	0.00
264	Capricorn Highway	Powerstation Road to Kabra Road	Westbound (G)	17.856	13.367	2008	0.00%	0	0.00
265	Capricorn Highway	Powerstation Road to Leichhardt Highway	Eastbound (A)	17.856	51.62	2008	0.00%	0	0.00
266	Capricorn Highway	Leichhardt Highway to Powerstation Road	Westbound (G)	51.62	17.856	2008	0.00%	0	0.00
267	Capricorn Highway	Leichhardt Highway to End Point	Eastbound (A)	51.62	73.35	2008	0.00%	0	0.00
268	Capricorn Highway	End Point to Leichhardt Highway	Westbound (G)	73.35	51.62	2008	0.00%	0	0.00
269	Jackson-Wandoan Road	Warrego Highway Intersection to Grid	Northbound (A)	0	69	2008	0.00%	0	0.00
270	Jackson-Wandoan Road	Grid to18D/Dulacca North Intersection	Southbound (G)	69	0	2008	0.00%	0	0.00
271	Jackson-Wandoan Road	Grid to Leichardt Highway	Eastbound (A)	69	81	2008	0.00%	0	0.00
272	Jackson-Wandoan Road	Leichardt Highway to Grid	Westbound (G)	81	69	2008	0.00%	0	0.00
273	Bruce Highway (10D)	Miriam Vale CH. 98.8 to CH. 112	Northbound (A)	98.8	112	2007	0.00%	0	0.00
274	Bruce Highway (10D)	CH. 112 to Miriam Vale CH. 98.8	Southbound (G)	112	98.8	2007	0.00%	0	0.00
275	Bruce Highway (10D)	CH. 112 to Benaraby CH. 147.1	Northbound (A)	112	147.1	2007	0.00%	0	0.00
276	Bruce Highway (10D)	Benaraby CH. 147.1 o CH. 112	Southbound (G)	147.1	112	2007	0.00%	0	0.00

143	Bruce Highway	Gladstone-Mt Larcom Road to Bajool Port Alma Ro	Westbound (G)	45.4	85.3	2006	0.00%	0	0.00
144	Bruce Highway	Gladstone-Mt Larcom Road to Bajool Port Alma Ro	Eastbound (A)	85.3	45.4	2006	0.00%	0	0.00
145	Bruce Highway	Bajool Port Alma Road to Gavial-Gracemere Road	Westbound (G)	85.3	109	2006	0.00%	0	0.00
146	Bruce Highway	Bajool Port Alma Road to Gavial-Gracemere Road	Eastbound (A)	109	85.3	2006	0.00%	0	0.00
147	Bruce Highway	Gavial-Gracemere Road to Burnett Highway	Westbound (G)	109	114.4	2006	0.00%	0	0.00
148	Bruce Highway	Gavial-Gracemere Road to Burnett Highway	Eastbound (A)	114.4	109	2006	0.00%	0	0.00
149	Bruce Highway	Burnett Highway to Capricorn Highway	Westbound (G)	114.4	117	2006	0.00%	0	0.00
150	Bruce Highway	Burnett Highway to Capricorn Highway	Eastbound (A)	117	114.4	2006	0.00%	0	0.00
151	Bruce Highway	Capricorn Highway to Stanley Street	Westbound (G)	117	119.736	2006	0.00%	0	0.00
152	Bruce Highway	Capricorn Highway to Stanley Street	Eastbound (A)	119.736	117	2006	0.00%	0	0.00
153	Gladstone - Benaraby Road	CH.0.0 Dawson Highway CH. 0.00 to Sun valley Ro	Southbound (G)	0	0.645	2007	0.00%	0	0.00
154	Gladstone - Benaraby Road	Sun Valley Road CH. 0.645 to Dawson Highway CH	Northbound (A)	0.645	0	2007	0.00%	0	0.00
155	Gladstone - Benaraby Road	CH. 0.645 to Glenlyon Road CH. 2.159	Southbound (G)	0.645	2.159	2007	0.00%	0	0.00
156	Gladstone - Benaraby Road	Glenlyon Road CH. 2.159 to CH. 0.645	Northbound (A)	2.159	0.645	2007	0.00%	0	0.00
157	Gladstone - Benaraby Road	Glenlyon Road CH. 2.159 to French Street CH. 3.4	Southbound (G)	2.159	3.4	2007	0.00%	0	0.00
158	Gladstone - Benaraby Road	French Street CH. 3.40 to Glenlyon Road CH. 2.15	Northbound (A)	3.4	2.159	2007	0.00%	0	0.00
159	Gladstone - Benaraby Road	French Street CH. 3.40 to Glen Eden Drive CH. 5.7	Southbound (G)	3.4	5.7	2007	0.00%	0	0.00
160	Gladstone - Benaraby Road	Glen Eden Drive CH. 5.70 to French Street CH. 3.4	Northbound (A)	5.7	3.4	2007	0.00%	0	0.00
161	Gladstone - Benaraby Road	Glen Eden Drive CH. 5.70 to South Trees Drive CH	Southbound (G)	5.7	7.3	2007	0.00%	0	0.00
162	Gladstone - Benaraby Road	South Trees Drive CH. 5.70 to Glen Eden Drive CH	Northbound (A)	7.3	5.7	2007	0.00%	0	0.00
163	Gladstone - Benaraby Road	South Trees Drive CH. 7.30 to Boyne Island Road C	Southbound (G)	7.3	16.039	2007	0.00%	0	0.00
164	Gladstone - Benaraby Road	Boyne Island Drive CH. 16.039 to South Trees Driv	Northbound (A)	16.039	7.3	2007	0.00%	0	0.00
165	Gladstone - Benaraby Road	Boyne Island Road CH. 16.039 to Bruce Highway C	Southbound (G)	16.039	19.21	2007	0.00%	0	0.00
166	Gladstone - Benaraby Road	Bruce Highway CH. 19.21 to Boyne Island Road CH	Northbound (A)	19.21	16.039	2007	0.00%	0	0.00
167	Burnett Highway 41D	CH.0.0 District Boundary to CH.65.0	Southbound (G)	0.0	65.0	2007	0.00%	0	0.00
168	Burnett Highway 41D	CH.65.0 to District Boundary CH.0.0	Northbound (A)	65.0	0.0	2007	0.00%	0	0.00
169	Burnett Highway 41D	CH.65.0 to Hinton's Lane CH.85.5	Southbound (G)	65.0	85.5	2007	0.00%	0	0.00
170	Burnett Highway 41D	Hinton's Lane CH.85.5 to CH.65.0	Northbound (A)	85.5	65.0	2007	0.00%	0	0.00
171	Burnett Highway 41D	Hinton's Lane CH.85.5 to Sara Lane CH.92.0	Southbound (G)	85.5	92.0	2007	0.00%	0	0.00
172	Burnett Highway 41D	Sara Lane CH.92.0 to Hinton's Lane CH.85.5	Northbound (A)	92.0	85.5	2007	0.00%	0	0.00
173	Burnett Highway 41D	Sara Lane CH.92.0 to Dawson Highway CH.93.8	Southbound (G)	92.0	93.8	2007	0.00%	0	0.00
174	Burnett Highway 41D	Dawson Highway CH.93.8 to Sara Lane CH.92.0	Northbound (A)	93.8	92.0	2007	0.00%	0	0.00
175	Burnett Highway 41E	Dawson Highway CH.93.8 to CH.18.5	Southbound (G)	0.0	18.5	2007	0.00%	0	0.00
176	Burnett Highway 41E	CH.18.5 to Dawson Highway CH.93.8	Northbound (A)	18.5	0.0	2007	0.00%	0	0.00
177	Burnett Highway 41E	CH.18.5 to Jambin Rail Crossing CH.27.2	Southbound (G)	18.5	27.2	2007	0.00%	0	0.00
178	Burnett Highway 41E	Jambin Rail Crossing CH.27.2 to CH.18.5	Northbound (A)	27.2	18.5	2007	0.00%	0	0.00
179	Burnett Highway 41E	Jambin Rail Crossing CH.27.2 to Goovigen Connec	Southbound (G)	27.2	35.5	2007	0.00%	0	0.00
180	Burnett Highway 41E	Goovigen Connection Road CH.35.5 to Jambin Rail	Northbound (A)	35.5	27.2	2007	0.00%	0	0.00
181	Burnett Highway 41E	Goovigen Connection Road CH.35.5 to Tohlinn Roa	Southbound (G)	35.5	38.9	2007	0.00%	0	0.00
182	Burnett Highway 41E	Tohlinn Road (South) CH.38.9 to Goovigen Connec	Northbound (A)	38.9	35.5	2007	0.00%	0	0.00
183	Burnett Highway 41E	Tomlin Road (South) CH.38.9 to Tomlin Rd (North)	Southbound (G)	38.9	53.4	2007	0.00%	0	0.00
184	Burnett Highway 41E	Tomlin Rd (North) CH.53.4 to Tomlin Road (South)	Northbound (A)	53.4	38.9	2007	0.00%	0	0.00
185	Burnett Highway 41E	Tomlin Rd (North) CH.53.4 to Leichhardt Highway (	Westbound (G)	53.4	71.8	2007	0.00%	0	0.00
186	Burnett Highway 41E	Leichhardt Highway CH.71.8 to Tohlinn Road (Sout	Eastbound (A)	71.8	53.4	2007	0.00%	0	0.00
187	Burnett Highway 41E	Leichhardt Highway CH.71.8 to School Grounds CH	Westbound (G)	71.8	101.4	2007	0.00%	0	0.00
188	Burnett Highway 41E	School Grounds CH.101.4 to Leichhardt Highway C	Eastbound (A)	101.4	71.8	2007	0.00%	0	0.00
189	Burnett Highway 41E	School Grounds CH.101.4 to Gordon Street CH.102	Westbound (G)	101.4	102.8	2007	0.00%	0	0.00
190	Burnett Highway 41E	Gordon Street CH.102.8 to School Grounds CH.101.4	Eastbound (A)	102.8	101.4	2007	0.00%	0	0.00
191	Dawson Highway 46C	Boundary to Fitzroy Development 85A Intersection	Westbound (G)	45.05	73.9	2007	0.00%	0	0.00
192	Dawson Highway 46C	Fitzroy Dev. 85A Intersection to Broundary	Eastbound (A)	73.9	45.05	2007	0.00%	0	0.00
193	Dawson Highway 46C	Fitzroy Dev. 85A Intersection to Duaringa/Woorabin	Westbound (G)	73.9	80.5	2007	0.00%	0	0.00
194	Dawson Highway 46C	Duaringa/Woorabinda Intersection to Fitzroy Dev. 8	Eastbound (A)	80.5	73.9	2007	0.00%	0	0.00
195	Dawson Highway 46C	Duaringa/Woorabinda Intersection to Woorabinda/D	Westbound (G)	80.5	83.6	2007	0.00%	0	0.00
196	Dawson Highway 46C	Woorabinda/Duaringa to Duaringa/Woorabinda Inte	Eastbound (A)	83.6	80.5	2007	0.00%	0	0.00
197	Dawson Highway 46C	Woorabinda/Duaringa to 46C/85B Intersection	Westbound (G)	83.6	92.4	2007	0.00%	0	0.00
198	Dawson Highway 46C	46C/85B Intersection to Woorabinda/Duaringa	Eastbound (A)	92.4	83.6	2007	0.00%	0	0.00
199	Dawson Highway 46C	46C/85B Intersection to Prospect Creek Culvert	Westbound (G)	92.4	101.4	2007	0.00%	0	0.00
200	Dawson Highway 46C	Prospect Creek Culvert to 46C/85B Intersection	Eastbound (A)	101.4	92.4	2007	0.00%	0	0.00
201	Dawson Highway 46C	Prospect Creek Culvert to Duaringa/Bauhinia Inters	Westbound (G)	101.4	123.6	2007	0.00%	0	0.00
202	Dawson Highway 46C	Duaringa/Bauhinia Intersection to Prospect Creek C	Eastbound (A)	123.6	101.4	2007	0.00%	0	0.00
203	Dawson Highway 46C	Duaringa/Bauhinia Intersection to KM 137.5	Westbound (G)	123.6	137.5	2007	0.00%	0	0.00
204	Dawson Highway 46C	KM 137.5 to Duaringa/Bauhinia Intersection	Eastbound (A)	123.6	137.5	2007	0.00%	0	0.00
205	Dawson Highway 46C	KM 137.5 to Rolleston	Westbound (G)	137.5	168	2007	0.00%	0	0.00
206	Dawson Highway 46C	Rollston to KM 137.5	Eastbound (A)	168	137.5	2007	0.00%	0	0.00
207	Leichhardt Highway 26A	District Boundary to 26A/85A intersection	Westbound (G)	192.2	239.0	2008	0.00%	0	0.00
208	Leichhardt Highway 26A	26A/84A intersection to District Boundary	Eastbound (A)	239.0	192.2	2008	0.00%	0	0.00
209	Leichhardt Highway 26A	26A/85A intersection to Taroom	Westbound (G)	239.0	256.0	2008	0.00%	0	0.00
210	Leichhardt Highway 26A	Taroom to 26A/84A intersection	Eastbound (A)	256.0	239	2008	0.00%	0	0.00
211	Leichhardt Highway 26B	Taroom to KM35.00	Westbound (G)	0.0	35.0	2008	0.00%	0	0.00
212	Leichhardt Highway 26B	KM35.00 to Taroom	Eastbound (A)	35.0	0	2008	0.00%	0	0.00
213	Leichhardt Highway 26B	KM35.00 to Jackson-Wandoan Road	Westbound (G)	35.0	61.0	2008	0.00%	0	0.00
214	Leichhardt Highway 26B	Jackson-Wandoan Road to KM35.00	Eastbound (A)	61.0	35	2008	0.00%	0	0.00
215	Leichhardt Highway 26B	Jackson-Wandoan Road to Miles	Westbound (G)	61.0	127.6	2008	0.00%	0	0.00
216	Leichhardt Highway 26B	Miles to Jackson-Wandoan Road	Eastbound (A)	127.6	61	2008	0.00%	0	0.00
217	Warrego Highway	Miles to 18D/Dulacca North Intersetcion	Westbound (G)	0	43	2008	0.00%	0	0.00
218	Warrego Highway	18D/Dulacca North Intersection to Miles	Eastbound (A)	43	0	2008	0.00%	0	0.00
219	Warrego Highway	18D/Dulacca North Intersection to 18D/3441 Interse	Westbound (G)	43	101	2008	0.00%	0	0.00
220	Warrego Highway	18D/3441 Intersection to 18D/Dulacca North Interse	Eastbound (A)	101	43	2008	0.00%	0	0.00
221	Warrego Highway	18D/3441 Intersection to KM135.5	Westbound (G)	101	135	2008	0.00%	0	0.00
222	Warrego Highway	KM135.5 to 18D/3441 Intersection	Eastbound (A)	135	101	2008	0.00%	0	0.00
223	Warrego Highway	KM135.5 to Roma	Westbound (G)	135	141.2	2008	0.00%	0	0.00
224	Warrego Highway	Roma to KM135.5	Eastbound (A)	141.2	135	2008	0.00%	0	0.00
225	Warrego Highway	Ruthven Street to Peachy Street	Westbound (G)	0.00	0.99	2008	0.00 %	0	0.00
226	Warrego Highway	Peachy Street to Ruthven Street	Eastbound (A)	0.99	0.00	2008	0.00 %	0	0.00
227	Warrego Highway	Peachy Street to Fifth Avenue	Westbound (G)	0.99	2.21	2008	0.00 %	0	0.00
228	Warrego Highway	Fifth Avenue to Peachy Street	Eastbound (A)	2.21	0.99	2008	0.00 %	0	0.00
229	Warrego Highway	Fifth Avenue to Higgins Street	Westbound (G)	2.21	3.74	2008	0.00 %	0	0.00
230	Warrego Highway	Higgins Street to Fifth Avenue	Eastbound (A)	3.74	2.21	2008	0.00 %	0	0.00
231	Warrego Highway	Higgins Street to Park Street	Westbound (G)	3.74	4.52	2008	0.00 %	0	0.00
232	Warrego Highway	Park Street to Higgins Street	Eastbound (A)	4.52	3.74	2008	0.00 %	0	0.00
233	Warrego Highway	Park Street to Airport	Westbound (G)	4.52	6.63	2008	0.00 %	0	0.00
234	Warrego Highway	Airport to Park Street	Eastbound (A)	6.63	4.52	2008	0.00 %	0	0.00
235	Warrego Highway	Airport to Troys Road	Westbound (G)	6.63	10.59	2008	0.00 %	0	0.00
236	Warrego Highway	Troys Road to Airport	Eastbound (A)	10.59	6.63	2008	0.00 %	0	0.00
237	Warrego Highway	Troys Road to Oakey Biddeston Road	Westbound (G)	10.59	26.83	2008	0.00 %	0	0.00
238	Warrego Highway	Oakey Biddeston Road to Troys Road	Eastbound (A)	26.83	10.59	2008	0.00 %	0	0.00
239	Warrego Highway	Oakey Biddeston Road to Dalby Cecil Plains Road	Westbound (G)	26.83	80.82	2008	0.00 %	0	0.00
240	Warrego Highway	Dalby Cecil Plains Road to Oakey Biddeston Road	Eastbound (A)	80.82	26.83	2008	0.00 %	0	0.00
241	Warrego Highway	Dalby Cecil Plains Road to Cunningham Street	Westbound (G)	80.82	84.19	2008	0.00 %	0	0.00
242	Warrego Highway	Cunningham Street to Dalby Cecil Plains Road	Eastbound (A)	84.19	80.82	2008	0.00 %	0	0.00
243	Warrego Highway	Cunningham Street to Rail Line	Eastbound (A)	0.00	1.09	2008	0.00%	0	0.00
244	Warrego Highway	Rail Line to Cunningham Street	Westbound (G)	1.09	0.00	2008	0.00%	0	0.00
245	Warrego Highway	Rail Line to Macalister Bell Road	Eastbound (A)	1.09	25.12	2008	0.00%	0	0.00
246	Warrego Highway	Macalister Bell Road to Rail Line	Westbound (G)	25.12	1.09	2008	0.00%	0	0.00
247	Warrego Highway	Macalister Bell Road to Warra Kogan Road	Eastbound (A)	25.12	45.20	2008	0.00%	0	0.00
248	Warrego Highway	Warra Kogan Road to Macalister Bell Road	Westbound (G)	45.20	25.12	2008	0.00%	0	0.00
249	Warrego Highway	Warra Kogan Road to Glasson Street	Eastbound (A)	45.20	80.18	2008	0.00%	0	0.00
250	Warrego Highway	Glasson Street to Warra Kogan Road	Westbound (G)	80.18	45.20	2008	0.00%	0	0.00
251	Warrego Highway	Glasson Street to Auburn Road	Eastbound (A)	80.18	83.16	2008	0.00%	0	0.00
252	Warrego Highway	Auburn Road to Glasson Street	Westbound (G)	83.16	80.18	2008	0.00%	0	0.00
253	Warrego Highway	Auburn Road to Goombi	Eastbound (A)	83.16	106.36	2008	0.00%	0	0.00
254	Warrego Highway	Goombi to Auburn Road	Westbound (G)	106.36	83.16	2008	0.00%	0	0.00
255	Warrego Highway	Goombi to Leichhardt Highway	Eastbound (A)	106.36	126.75	2008	0.00%	0	0.00
256	Warrego Highway	Leichhardt Highway to Goombi	Westbound (G)	126.75	106.36	2008	0.00%	0	0.00
257	Bajool-Port Alma Road	Bruve Highway to End Point	Eastbound (G)	0	25.24	2008	0.00%	0	0.00
258	Bajool-Port Alma Road	End Point to Bruce Highway	Westbound (A)	25.24	0	2008	0.00%	0	0.00
259	Capricorn Highway	Bruce Highway to Gavial Gracemere Road	Eastbound (A)	0	5.69	2008	0.00%	0	0.00
260	Capricorn Highway	Gavial Gracemere Road to Bruce Highway	Westbound (G)	5.69	0	2008	0.00%	0	0.00
261	Capricorn Highway	Gavial Gracemere Road to Kabra Road	Eastbound (A)	5.69	13.367	2008	0.00%	0	0.00
262	Capricorn Highway	Kabra Road to Gavial Gracemere Road	Westbound (G)	13.367	5.69	2008	0.00%	0	0.00
263	Capricorn Highway	Kabra Road to Powerstation Road	Eastbound (A)	13.367	17.856	2008	0.00%	0	0.00
264	Capricorn Highway	Powerstation Road to Kabra Road	Westbound (G)	17.856	13.367	2008	0.00%	0	0.00
265	Capricorn Highway	Powerstation Road to Leichhardt Highway	Eastbound (A)	17.856	51.62	2008	0.00%	0	0.00
266	Capricorn Highway	Leichhardt Highway to Powerstation Road	Westbound (G)	51.62	17.856	2008	0.00%	0	0.00
267	Capricorn Highway	Leichhardt Highway to End Point	Eastbound (A)	51.62	73.35	2008	0.00%	0	0.00
268	Capricorn Highway	End Point to Leichhardt Highway	Westbound (G)	73.35	51.62	2008	0.00%	0	0.00
269	Jackson-Wandoan Road	Warrego Highway Intersection to Grid	Northbound (A)	0	69	2008	0.00%	0	0.00
270	Jackson-Wandoan Road	Grid to18D/Dulacca North Intersection	Southbound (G)	69	0	2008	0.00%	0	0.00
271	Jackson-Wandoan Road	Grid to Leichardt Highway	Eastbound (A)	69	81	2008	0.00%	0	0.00
272	Jackson-Wandoan Road	Leichardt Highway to Grid	Westbound (G)	81	69	2008	0.00%	0	0.00
273	Bruce Highway (10D)	Miriam Vale CH. 98.8 to CH. 112	Northbound (A)	98.8	112	2007	0.00%	0	0.00
274	Bruce Highway (10D)	CH. 112 to Miriam Vale CH. 98.8	Southbound (G)	112	98.8	2007	0.00%	0	0.00
275	Bruce Highway (10D)	CH. 112 to Benaraby CH. 147.1	Northbound (A)	112	147.1	2007	0.00%	0	0.00
276	Bruce Highway (10D)	Benaraby CH. 147.1 o CH. 112	Southbound (G)	147.1	112	2007	0.00%	0	0.00

CL3

Link	Section	Direction	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Gladstone-Mt Larcom Rd	Bruce Highway to Targinie Road	Southbound (G)	1095	1460	1095	0	730	1095	1460	1182	117	117	117	117	117	117	117	117	117	117	117
Gladstone-Mt Larcom Rd	Bruce Highway to Targinie Road	Northbound (A)	1095	1460	1095	0	730	1095	1460	1095	0	0	0	0	0	0	0	0	0	0	0
Gladstone-Mt Larcom Rd	Targinie Road to Landing Road	Southbound (G)	9855	13505	9183	77	7012	9932	13582	9232	117	117	117	117	117	117	117	117	117	117	117
Gladstone-Mt Larcom Rd	Targinie Road to Landing Road	Northbound (A)	9855	13505	9183	77	7012	9932	13582	9232	117	117	117	117	117	117	117	117	117	117	117
Gladstone-Mt Larcom Rd	Landing Road to Reid Road	Westbound (G)	8760	12045	8088	77	6282	8837	12122	8052	4	4	4	4	4	4	4	4	4	4	4
Gladstone-Mt Larcom Rd	Landing Road to Reid Road	Eastbound (A)	8760	12045	8088	77	6282	8837	12122	8137	117	117	117	117	117	117	117	117	117	117	117
Gladstone-Mt Larcom Rd	Reid Road to Red Rover Road	Westbound (G)	1095	1460	1097	3	733	1098	1463	1099	4	4	4	4	4	4	4	4	4	4	4
Gladstone-Mt Larcom Rd	Reid Road to Red Rover Road	Eastbound (A)	1095	1460	1097	3	733	1098	1463	1099	4	4	4	4	4	4	4	4	4	4	4
Gladstone-Mt Larcom Rd	Red Rover Road to Blain Drive	Westbound (G)	730	730	367	3	368	733	733	369	4	4	4	4	4	4	4	4	4	4	4
Gladstone-Mt Larcom Rd	Red Rover Road to Blain Drive	Eastbound (A)	730	730	367	3	368	733	733	369	4	4	4	4	4	4	4	4	4	4	4
Gladstone-Mt Larcom Rd	West of Blain Drive	Westbound (G)	730	730	367	3	368	733	733	366	0	0	0	0	0	0	0	0	0	0	0
Gladstone-Mt Larcom Rd	West of Blain Drive	Eastbound (A)	730	730	367	3	368	733	733	369	4	4	4	4	4	4	4	4	4	4	4
Dawson Highway	West of Don Young Dr (Red Rover Rd)	Southbound (G)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dawson Highway	West of Don Young Dr (Red Rover Rd)	Northbound (A)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dawson Highway	North of Bruce Highway	Southbound (G)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dawson Highway	North of Bruce Highway	Northbound (A)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bruce Highway	West of Gladstone Mt-Larcom Road	Westbound (G)	1095	1460	1095	0	730	1095	1460	1095	0	0	0	0	0	0	0	0	0	0	0
Bruce Highway	West of Gladstone Mt-Larcom Road	Eastbound (A)	1095	1460	1095	0	730	1095	1460	1095	0	0	0	0	0	0	0	0	0	0	0

CL9-100

Link	Section	Direction	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Gladstone-Mt Larcom Rd	Bruce Highway to Targinie Road	Southbound (G)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gladstone-Mt Larcom Rd	Bruce Highway to Targinie Road	Northbound (A)	0	0	1596	2128	2128	2128	2128	3694	4216	4216	4216	4216	4216	4216	4216	4216	4216	4216	4216
Gladstone-Mt Larcom Rd	Targinie Road to Landing Road	Southbound (G)	29565	29565	29565	0	29565	29565	29565	29565	0	0	0	0	0	0	0	0	0	0	0
Gladstone-Mt Larcom Rd	Targinie Road to Landing Road	Northbound (A)	0	0	1596	2128	2128	2128	2128	3694	4216	4216	4216	4216	4216	4216	4216	4216	4216	4216	4216
Gladstone-Mt Larcom Rd	Landing Road to Reid Road	Westbound (G)	29565	29565	29776	281	29846	29846	29846	30056	562	562	562	562	562	562	562	562	562	562	562
Gladstone-Mt Larcom Rd	Landing Road to Reid Road	Eastbound (A)	0	0	1864	2485	2485	2485	2485	4378	5009	5009	5009	5009	5009	5009	5009	5009	5009	5009	5009
Gladstone-Mt Larcom Rd	Reid Road to Red Rover Road	Westbound (G)	33215	33215	34011	1061	34276	34276	34276	34554	1432	1432	1432	1432	1432	1432	1432	1432	1432	1432	1432
Gladstone-Mt Larcom Rd	Reid Road to Red Rover Road	Eastbound (A)	3650	3650	8653	6671	10321	10321	10321	13929	11482	11482	11482	11482	11482	11482	11482	11482	11482	11482	11482
Gladstone-Mt Larcom Rd	Red Rover Road to Blain Drive	Westbound (G)	33215	33215	34011	1061	34276	34276	34276	34554	1432	1432	1432	1432	1432	1432	1432	1432	1432	1432	1432
Gladstone-Mt Larcom Rd	Red Rover Road to Blain Drive	Eastbound (A)	3650	3650	8653	6671	10321	10321	10321	13929	11482	11482	11482	11482	11482	11482	11482	11482	11482	11482	11482
Gladstone-Mt Larcom Rd	West of Blain Drive	Westbound (G)	33215	33215	34011	1061	34276	34276	34276	34554	1432	1432	1432	1432	1432	1432	1432	1432	1432	1432	1432
Gladstone-Mt Larcom Rd	West of Blain Drive	Eastbound (A)	3650	3650	8653	6671	10321	10321	10321	13929	11482	11482	11482	11482	11482	11482	11482	11482	11482	11482	11482
Dawson Highway	West of Don Young Dr (Red Rover Rd)	Southbound (G)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dawson Highway	West of Don Young Dr (Red Rover Rd)	Northbound (A)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dawson Highway	North of Bruce Highway	Southbound (G)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dawson Highway	North of Bruce Highway	Northbound (A)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bruce Highway	West of Gladstone Mt-Larcom Road	Westbound (G)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bruce Highway	West of Gladstone Mt-Larcom Road	Eastbound (A)	0	0	1596	2128	2128	2128	2128	3694	4216	4216	4216	4216	4216	4216	4216	4216	4216	4216	4216

CL9-0

Link	Section	Direction	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Gladstone-Mt Larcom Rd	Bruce Highway to Targinie Road	Southbound (G)	0	0	1596	2128	2128	2128	2128	3694	4216	4216	4216	4216	4216	4216	4216	4216	4216	4216	4216
Gladstone-Mt Larcom Rd	Bruce Highway to Targinie Road	Northbound (A)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gladstone-Mt Larcom Rd	Targinie Road to Landing Road	Southbound (G)	0	0	1596	2128	2128	2128	2128	4289	5009	5009	5009	5009	5009	5009	5009	5009	5009	5009	5009
Gladstone-Mt Larcom Rd	Targinie Road to Landing Road	Northbound (A)	29565	29565	29565	0	29565	29565	29565	29986	562	562	562	562	562	562	562	562	562	562	562
Gladstone-Mt Larcom Rd	Landing Road to Reid Road	Westbound (G)	0	0	1864	2485	2485	2485	2485	9233	11482	11482	11482	11482	11482	11482	11482	11482	11482	11482	11482
Gladstone-Mt Larcom Rd	Landing Road to Reid Road	Eastbound (A)	29565	29565	29776	281	29846	29846	29846	30709	1432	1432	1432	1432	1432	1432	1432	1432	1432	1432	1432
Gladstone-Mt Larcom Rd	Reid Road to Red Rover Road	Westbound (G)	0	0	5003	6671	6671	6671	6671	10279	11482	11482	11482	11482	11482	11482	11482	11482	11482	11482	11482
Gladstone-Mt Larcom Rd	Reid Road to Red Rover Road	Eastbound (A)	29565	29565	30361	1061	30626	30626	30626	30904	1432	1432	1432	1432	1432	1432	1432	1432	1432	1432	1432
Gladstone-Mt Larcom Rd	Red Rover Road to Blain Drive	Westbound (G)	0	0	5003	6671	6671	6671	6671	10279	11482	11482	11482	11482	11482	11482	11482	11482	11482	11482	11482
Gladstone-Mt Larcom Rd	Red Rover Road to Blain Drive	Eastbound (A)	29565	29565	30361	1061	30626	30626	30626	30904	1432	1432	1432	1432	1432	1432	1432	1432	1432	1432	1432
Gladstone-Mt Larcom Rd	West of Blain Drive	Westbound (G)	0	0	5003	6671	6671	6671	6671	1668	0	0	0	0	0	0	0	0	0	0	0
Gladstone-Mt Larcom Rd	West of Blain Drive	Eastbound (A)	29565	29565	30361	1061	30626	30626	30626	29830	0	0	0	0	0	0	0	0	0	0	0
Dawson Highway	West of Don Young Dr (Red Rover Rd)	Southbound (G)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dawson Highway	West of Don Young Dr (Red Rover Rd)	Northbound (A)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dawson Highway	North of Bruce Highway	Southbound (G)	0	0	0	0	0	0	0	3162	4216	4216	4216	4216	4216	4216	4216	4216	4216	4216	4216
Dawson Highway	North of Bruce Highway	Northbound (A)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bruce Highway	West of Gladstone Mt-Larcom Road	Westbound (G)	0	0	1596	2128	2128	2128	2128	532	0	0	0	0	0	0	0	0	0	0	0
Bruce Highway	West of Gladstone Mt-Larcom Road	Eastbound (A)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Appendix B Cumulative Dredging Assessment

Appendix B

Port Curtis Dredging - Cumulative Impact Assessment

NOVEMBER 2009

Prepared for

Santos

32 Turbot Street
Brisbane, Qld 4000

42626440

Table of Contents

Tables

Figures

1 Objective

This appendix provides an assessment of the cumulative impacts of the dredging proposed for the GLNG Project in Port Curtis together with that proposed for other industrial developments and reclamation projects currently proposed for the area.

The objective is to provide:

- A description of the dredging required for the GLNG Project and its relationship with other dredging projects in the Port of Curtis;
- A description of the Western Basin Dredging and Disposal Project (WBDDP) which is proposed by the GPC and its relationship with the GLNG Project;
- Details of the disposal of material from the dredging required for the GLNG Project in the reclamation area proposed by GPC as part of the WBDDP; and
- A cumulative impact assessment of the dredging and the disposal of dredge material having regard to the other projects in the Gladstone area, particularly those projects which require dredging to be undertaken in the Port of Gladstone.

Proposed Projects in Port Curtis Requiring Dredging

2.1 GLNG Project

The GLNG Project includes a stand-alone proposal for the dredging and placement of dredge spoil material required for the project. The GLNG Project includes the extension of the existing Targinie Channel to the project's product loading facility and a swing basin. This would involve the removal of approximately 6.8 million m^3 of dredge material. Dredging may also be required to ensure suitability of barge and ferry access to the material offloading facility (MOF) which would be approximately 100,000 m^3 of dredge material.

A plan specific to the GLNG Project has been prepared to manage the project's dredge material if, for some reason, the Western Basin Dredging and Disposal Project (WBDD) proposed by Gladstone Ports Corporation (GPC) is delayed or does not proceed. This plan is to develop a dredge material placement facility south of Laird Point on Curtis Island.

The GLNG Project is seeking approval for both the dredging required for the project and the placement of dredge spoil material at Laird Point. The dredging and material placement forms part of the "significant project" under the *State Development and Public Works Organisation Act 1971 (Qld)* (SDPWO Act). The GLNG Project is a "controlled action" under the *Environmental Protection and Biodiversity Conservation* (EPBC) Act and is being assessed under the bilateral agreement between the Commonwealth and the State of Queensland.

Alternatively, GPC may undertake the development of the dredging and reclamation works required for development of the GLNG Project as one of the first components in the five overall stages of GPC's dredging plans for the WBSDD Project if approved (Section 3.3).

2.2 Queensland Curtis LNG Project

The Queensland Curtis LNG (QCLNG) Project includes a stand-alone proposal for the dredging and placement of dredge spoil material required for the project. The QCLNG Project includes the extension of the existing Targinie Channel from the GLNG Project site to the QCLNG site as well as a swing basin. This would involve the removal of approximately 13.5 million m^3 of dredge material as a stand-alone proposal (without or prior to the GLNG Project's dredging). If the GLNG Project was undertaken first, then only an additional 7.5 million m^3 of material would need to be dredged. In addition, the project's material offloading facility (MOF) will require the dredging of another 3 million m^3 of material.

QCLNG has explored reclamation, ocean disposal and on-land containment as disposal options for material from the proposed dredging requirements for the project. The project's EIS has listed the following disposal options in order of preference:

- MOF Channel
  - The Fisherman's Landing Northern Expansion Project (Section 3.2).
  - The proposed Western Basin Reclamation area to be developed by GPC under its Western Basin Dredge and Disposal Project (Section 3.3).
  - Bunded containment at Laird Point.
- Curtis Spur Channel Dredging and Disposal
  - The Fisherman's Landing Northern Expansion Project (Section 3.2).
  - The proposed Western Basin Reclamation area to be developed by GPC under its Western Basin Dredge and Disposal Project (Section 3.3).

— Disposal in a new offshore disposal site.

It is proposed by QCLNG that GPC may undertake the development of the dredging and reclamation works required for development of the project. The dredging required for QCLNG may constitute one of the first components in the five overall stages of GPC's dredging plans, as described for the WBSDD Project (Section 3.3).

Dredging for the QCLNG Project forms part of the "significant project" declared under the *SDPWO* Act. The QCLNG Project is also a "controlled action" under the EPBC Act. An EIS for the purposes of the EPBC Act and the SDPWO Act was released for public comment on 19 October 2009. Approvals for dredging works under the QCLNG Project EIS may be transferred to GPC to undertake the dredging and reclamation works. Conversely, should GPC's WBSDD Project receive approval prior to the QCLNG Project approval, QGC may withdraw its applications for environmental approvals for its dredging works in favour of the GPC approvals.

2.3 Australia Pacific LNG Project

This project includes a proposed LNG facility on Curtis Island comprising three LNG trains with a total capacity of 16 million tonnes per annum (Mtpa). It also includes a marine jetty containing LNG loading facilities and berths. Depending on its location, it is likely that the project will also require a dredged shipping channel to provide access for LNG tankers as well as an appropriate dredge material placement facility. Laird Point is one possible location for this project. Details of the proposed location and the associated dredging requirements are not yet available pending release of the project's environmental impact statement (EIS).

2.4 Shell Australia LNG Project

This project includes a proposed LNG facility on Curtis Island comprising three LNG trains with a total capacity of 16 Mtpa. It also includes a marine jetty containing LNG loading facilities and berths. It is proposed to be located at Boatshed Point on the southern coast of Curtis Island. It is likely that the project will also require a dredged shipping channel to provide access for LNG tankers as well as an appropriate dredge material placement facility; however that will depend on the location of the project's marine facilities. Details of the proposed location and the associated dredging requirements are not yet available pending release of the project's environmental impact statement (EIS).

2.5 Gladstone LNG Project

The Gladstone LNG Project is a proposed mid-scale LNG facility proposed to be located at Fisherman's Landing with a capacity of 1.5 Mtpa. This project will require shipping access from LNG tankers and it is proposed that the GPC will provide an appropriate access channel to the site as part of its development of the Fisherman's Landing port facility. The project will require a small addition to the dredging proposed to be undertaken by GPC to improve access to its Fisherman's Landing berth facilities. The EIS for this project has been approved by the Queensland Government.

2.6 Wiggins Island Coal Terminal Project

The Wiggins Island Project is a new coal terminal proposed by the GPC. It will have an initial capacity of 25 Mtpa and an upgrade capability to a nominal 70 Mtpa. It will consist of a trestle extending into Port Curtis at Wiggins Island near the mouth of the Calliope River. Shipping access to the proposed berths will require a newly dredged access channel and swing basin. This will require the dredging of 6.3 million m^3 of material which will be disposed of onshore at Wiggins Island to reclaim the proposed coal stockpile area. The EIS for this project has been approved by the Queensland Government.

Gladstone Ports Corporation Projects

3.1 Draft Western Basin Master Plan

The Queensland Department of Infrastructure and Planning (DIP) and the GPC have prepared the draft Port of Gladstone Western Basin Master Plan (Master Plan). The Master Plan sets the direction for the Port of Gladstone, in particular the development of its Western Basin, for the next 30 years. The Master Plan aims to provide certainty to industry that the area will be developed, and this development will be in a co-ordinated manner to facilitate the expansion of the port's facilities.

There are presently two projects being developed by GPC to assist in meeting the Master Plan's strategic objective of developing the inner harbour. The projects are as follows:

- Fisherman's Landing Northern Expansion Project (Northern Expansion Project); and
- Port of Gladstone Western Basin Dredging and Disposal (WBDD) Project.

3.2 Northern Expansion Project

The Northern Expansion Project involves the expansion of the existing Fisherman's Landing reclamation area through the reclamation of approximately 153 ha of additional land adjacent to the existing port facility. Once complete, the reclamation will provide additional land to support the construction of six new wharves and for the development of associated transport, storage, loading and unloading facilities. A bund wall will be constructed and the area will be reclaimed using dredge material from future capital and maintenance dredging programs in Port Curtis. The Northern Expansion Project also involves capital dredging to deepen and widen the Targinie Channel and Fisherman's Landing Swing Basin to provide shipping access to the new wharves.

The Northern Expansion Project is the subject of a separate EIS as a "significant project" under the SDPWO Act.

The EIS for the Northern Expansion Project was released for public comment by the Coordinator-General (CG) on 3 October 2009.

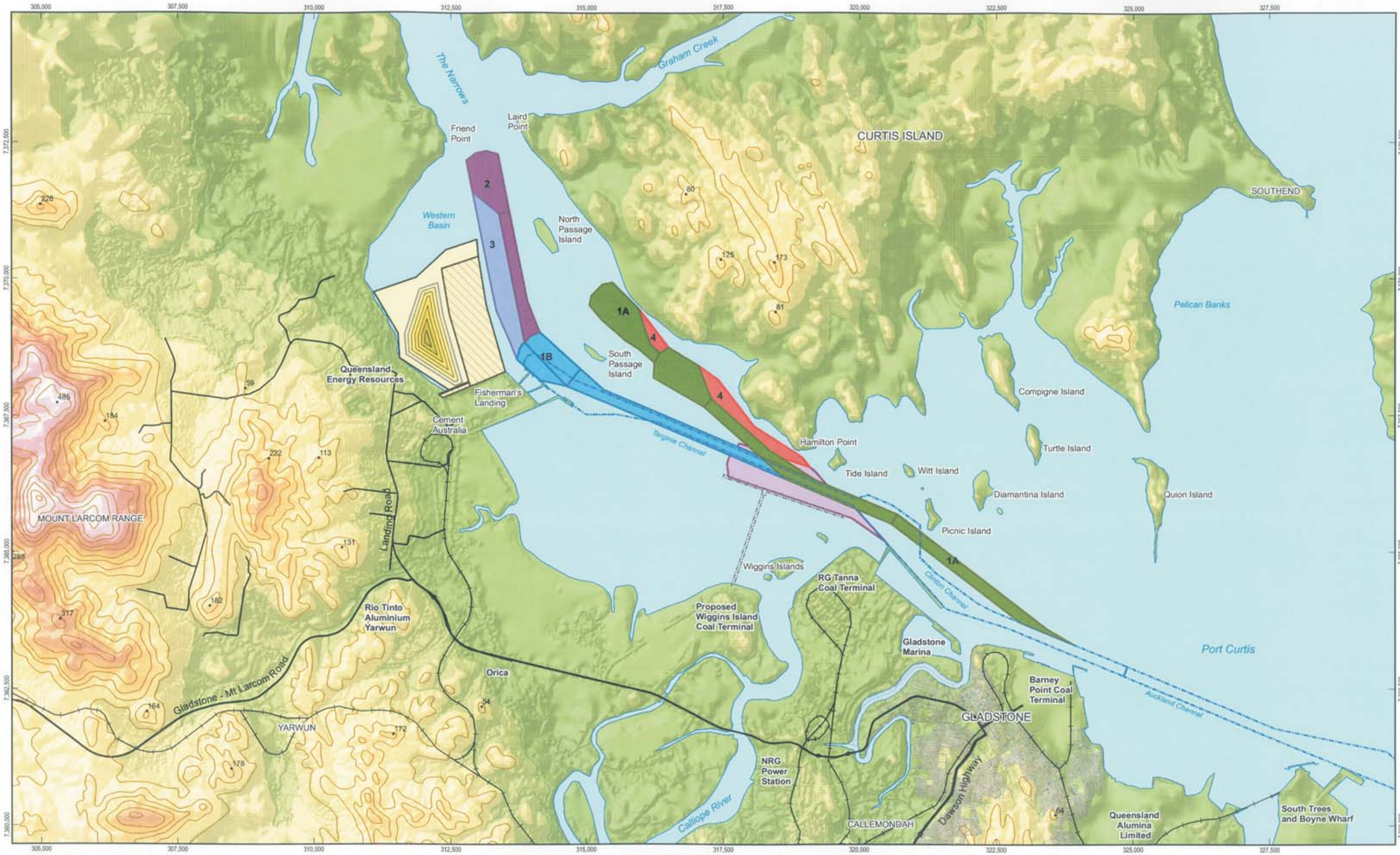
3.3 Western Basin Dredging and Disposal Project

The GPC is proposing to undertake the WBDD Project which seeks to accommodate the long term dredging and dredged material disposal that is required to provide safe and efficient access to the existing and proposed port facilities in the harbour.

The WBDD Project involves seeking approval for dredging and dredged material disposal to support the progressive development of the Port of Gladstone through the provision of shipping access to port facilities which will assist in developing new industries, specifically the LNG industry, to be located in the Gladstone region. The two components of the WBDD Project are as follows:

- The inner harbour dredging associated with deepening and widening of existing channels and swing basins and the creation of new channels, swing basins and berth pockets; and
- The disposal of dredged material from the dredging works in an area adjacent to the existing Fisherman's Landing reclamation and the proposed Northern Expansion.

Figure 3.1 taken from the WBDD Project's EIS depicts the location of the proposed dredging and the dredge material disposal area.



1:65,000 (at A3)

0 0.5 1 1.5 2 2.5

Kilometres

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia
Grid: Map Grid of Australia 1994, Zone 56

N

LEGEND

- Elevation Spot Height (metres ASL)
- Elevation Contour (50m interval)
- Railway
- Major Road
- Western Basin Reclamation Area
- Fisherman's Landing Northern Expansion
- Built Up Area
- Existing Channels, Swing Basins and Berths
- Wiggins Island Coal Terminal (Approved)

Proposed Dredging Stages

- Stage 1A - North China Bay LNG Precinct
- Stage 1B - Fisherman's Landing LNG
- Stage 2 - Laird Point LNG
- Stage 3 - Fisherman's Landing
- Stage 4 - Hamilton Point

Port of Gladstone

Western Basin Dredging and Disposal Project

Location of the Proposed Dredging Stages for the Western Basin Dredging and Disposal Project

Job Number	42-15386
Revision	A
Date	30 Aug 2009

Figure 1-2

G:\42\15386\GIS\WesternBasinProjects\MXDs\42-15386_WB_006_EIS_C1.mxd

Level 4 201 Charlotte Street Brisbane QLD 4000 Australia T +61 7 3316 3000 F +61 7 3316 3333 E bnemail@ghd.com W www.ghd.com

42626440-g-2183.cdr

Figure 3-1

The dredging component of the WBDD Project is proposed to be undertaken by GPC in the following stages:

- **Stage 1A** - **North China Bay Precinct –** this involves the dredging required for the LNG precinct on the western side of Curtis Island to enable up to four LNG Plants. The Stage 1A dredging includes the dredging which would be required for the GLNG Project and the QCLNG Project. It involves the dredging of up to 16 million m^3 of material and placement of the dredged material within the Western Basin Reclamation Area. The likely timing for Stage 1A is between 2011 and 2013;
- **Stage 1B – Fisherman's Landing LNG –** this involves the dredging required to widen the Targinie Channel and extension of the swing basin for the proposed Gladstone LNG plant at the existing Fisherman's Landing facility. It involves the dredging of up to 6.1 million m^3 of material and placement of the dredged material in the Western Basin Reclamation Area. The likely timing of Stage 1B is between 2011 and 2013;
- **Stage 2 – Laird Point –** this involves the dredging required to extend the Targinie Channel and swing basin to facilitate the construction of the Origin/Conoco Phillips LNG facility adjacent to Laird Point. It involves the dredging of up to 4.5 million cubic metres of material and placement of the dredged material in the proposed Western Basin Reclamation Area. The likely timing of Stage 2 is around 2014;
- **Stage 3 – Fisherman's Landing –** this involves dredging required to facilitate the development of additional berthing facilities at Fisherman's Landing. It involves the dredging of up to 5.5 million m^3 of material and placement of the dredged material in the Western Basin Reclamation Area. The likely timing of Stage 3 has not yet been determined but is likely to be beyond 2014; and
- **Stage 4 – Hamilton Point –** this involves dredging required to facilitate development at Hamilton Point and possible second berths for each of the proposed LNG plants at North China Bay. The likely timing of Stage 4 has not yet been determined but is likely to be beyond 2014.

The dredged material disposal component of the WBDD Project involves the establishment of the Western Basin Reclamation Area in an area adjacent to Fisherman's Landing. This will be a bunded area with a footprint of 235 ha and a capacity of 45 million m^3.

The WBDD Project is the subject of a separate EIS as a "significant project" under the SDPWO Act. The project has also been declared to be a "controlled action" by the Minister for the Environment, Water, Heritage and the Arts under the EPBC Act and is being assessed under the bilateral agreement between the Commonwealth and the State of Queensland.

The EIS for the WBDD Project was released for public comment by the CG on 14 November 2009.

Santos has contributed to the preparation of the EIS for the WBDD Project. It is part of a working group consisting of GPC, QGLNG and others which has assisted in identifying and co-ordinating the dredging requirements for the various projects in Port Curtis. Santos and the other project proponents have provided technical and environmental impact assessment information about the respective dredging requirements to facilitate the preparation of the EIS for the WBDD Project.

4 Relationship of GLNG Project to WBDD Project

4.1 GLNG Project Dredging

Santos has included in the GLNG EIS the dredging required for the GLNG Project. The dredging may be carried out by Santos, or by GPC under agreement.

The WBDD Project includes the Western Basin Reclamation Area at Fisherman's Landing which will be used for the dredge material disposal for the GLNG Project if the WBDD Project is approved. If for some reason the WBDD Project is delayed or does not proceed, a plan specific to the GLNG Project has been prepared to manage the project's dredge material by placing it at in a proposed dredge material placement facility at Laird Point on Curtis Island.

The GLNG Project EIS and this Supplementary EIS contains an assessment of the impacts of the dredging required for the project and the Laird Point dredge material placement facility.

The EIS for the WBDD Project contains an assessment of the impacts of dredging required for the GLNG Project and the QCLNG Project as part of Stage 1A and disposal of dredge material in the Western Basin Reclamation Area. The EIS was placed on public exhibition on 15 November 2009. An outline of the environmental impacts of the Stage 1A dredging for the WBDD Project is set out below.

4.2 WBDD Project Dredge Material Placement

If the GPC's WBDD Project is approved and proceeds within an appropriate timeframe, then Santos may decide not to proceed with the project’s dredging and material placement under its own approvals. Santos may rely on the GPC undertaking the dredging and dredge material disposal for the GLNG Project as part of GPC's Stage 1A approvals for the WBDD Project. In this case the GPC would undertake the dredging required for the GLNG Project and dispose of the dredge material at the Western Basin Reclamation Area as part of the WBDDP. The dredging undertaken by GPC may also include the dredging required for the QCLNG Project as part of its Stage 1A approvals.

The EIS for the WBDD Project contains an assessment of the impacts of Stage 1A including the dredging required for both the GLNG Project and the QGLNG Project.

Cumulative Impact Assessment

The purpose of this section is to set out an assessment of the cumulative impacts arising from the GLNG Project in the context of the other dredging projects in the Port of Gladstone. The cumulative impact assessment is based on the following potential dredging scenarios:

- Scenario A – GLNG and QCLNG - Separate Dredging;
- Scenario B – WBDD Project – GPC Combined Dredging; and/or
- Scenario C – WBDD Project – GPC Full Dredging.

5.1 Scenario A: GLNG and QCLNG - Separate Dredging

A major influence on the extent of the cumulative dredging impact from the GLNG and QCLNG Projects will be the timing of the dredging for each project. Should the GLNG Project proceed first then the dredging of 6.8 million m^3 of material would be required. If the QCLNG project should follow, it would extend the GLNG Project channel to its site by a further 7.7 million m^3 of dredging (including MOF). However should the QCLNG Project be first then it would need to dredge the whole channel itself which would require 13.5 million m^3 of dredging.

The impacts of the projects' dredging requirements on the marine habitat of the area are summarised in Table 5.1.

Table 5-1 Direct Cumulative Impact of GLNG and QCLNG Dredging

Project	Area of Habitat Affected (ha)			Percentage of Total in Port Curtis (%)			Dredging	
	Mangrove	Seagrass	Saltmarsh	Mangrove	Seagrass	Saltmarsh	Area (ha)	Volume (M m^3)
GLNG Project	0.5	0	2.8	0.01	0	0.06	101[1]	8.1[1]
Queensland Curtis LNG	2.5	0	11.2	0.04	0	0.25	77[2]	7.7[2]
Cumulative Impacts	3.0	0	14.0	0.06	0	0.36	178[2]	15.8[2]

[1] Significantly less if Queensland Curtis LNG dredging occurs before GLNG dredging

[2] Assumes that Queensland Curtis LNG dredging occurs after the GLNG dredging

As can be seen from Table 5.1, the direct cumulative impacts on marine habitats from the dredging of both the GLNG and QCLNG Projects will be low. There is no seagrass in the area to be dredged and the extent of mangrove and saltmarsh to be disturbed is a very small percentage of the total area existing in Port Curtis.

Both projects have indicated that cutter suction dredges (CSD) are likely to be used to dredge the access channel to both sites. CSDs generate a smaller plume of suspended sediment that the alternative trailing suction hopper dredge (TSHD). Modelling results for the QCLNG Project predicted elevated total suspended solids (TSS) levels for an area around the proposed CSD with an estimated extent of approximately 800 m by 250 m during neap tides, and approximately 400 m by 150 m during spring tides. Outside this area, maximum levels fall to levels in the order of 25 mg/L. When compared with typical background levels for this part of the port it is apparent that, while high, the predicted levels fall within the existing range of variability.

Sampling of sediments in the area to be dredged has shown that their overall quality is such that they are compliant with the requirements of the National Assessment Guidelines for Dredging (NAGD, 2009) and the Draft Guidelines for the Assessment and Management of Contaminated Land in

Queensland 1998 – Environmental Investigation Levels (EIL). Hence mobilisation of sediments from the dredging is not expected to introduce contaminants into the water column.

The increased presence of vessels and frequency of vessel movements during the dredging activities will pose a risk to marine fauna through direct interference from the dredging equipment, from the deployment and retrieval of anchors and chains and the use of propellers and thrusters, and from localised increases in total suspended sediments. However, CSDs provide ample warning to marine fauna of their approach as:

- The dredge moves at a very slow rate;
- The action of the cutter engaging the seabed causes vibration which provide warning to the marine fauna; and
- Dredging typically undercuts the seabed and the material slumps into the cut hence providing further warning to nearby fauna.

The material from the dredging would need to be disposed of. If the WBDD Project proceeds, the material from both the GLNG and QCLNG projects would be placed at the proposed Western Basin reclamation area. The cumulative impacts this are discussed below. If the WBDD Project does not proceed, then Santos proposes to use Laird Point which is assessed in the GLNG EIS. The QC LNG Project would need to find alternative disposal options which may include placement at GPC's proposed Fisherman's Landing northern expansion project.

More details on the cumulative impacts from the dredging proposed by the GLNG and QCLNG projects are provided in their respective EISs (http://www.glng.com.au/Content.aspx?p=90 and http://www.gpcl.com.au/Project_Western_Basin_Dredging_&_Disposal_EIS.html).

5.2 Scenario B: WBDD Project – GPC Combined Dredging

By proposing the WBDD Project the GPC will be able to manage all of the multiple dredging operations proposed for Port Curtis in a coordinated and effective manner. Locating the dredge material placement facility in the one area for all projects limits the extent of the impacts of such facilities to one area and also increases the potential for the ultimate provision of useable land at the end of the project.

A detailed assessment of the cumulative environmental impacts for undertaking the dredging required for the GLNG and Queensland Curtis LNG Projects including the disposal of dredged material in the Western Basin Reclamation Area is provided in the EIS for the WBDD Project (http://www.gpcl.com.au/Project_Western_Basin_Dredging_&_Disposal.html).

Scenario B (GPC Combined Dredging) is defined as Stage 1A of the WBDD Project. The extent of the area affected by Stage 1 A is shown on Figure 3.1. Stage 1A is the North China Bay LNG Precinct and included the combined dredging requirements of both the GLNG and the QCLNG Projects (16 million m^3). The dredged material will be placed in the Western Basin Reclamation Area (WBRA).

The WBDD Project EIS summarises the cumulative impacts of the Stage 1A dredging as including the following:

- Reduced water quality in the vicinity of the dredging operation. The level of impact will vary depending on the type of dredge to be used. A CSD will have a relatively low impact on turbidity and water quality compared to a TSHD. GPC has indicated a preference to use a CSD.

- Modelling results show that predicted elevated TSS levels for an area around the CSD with an estimated extent of approximately 800 m by 250 m during neap tides, and approximately 400 m by 150 m during spring tides. Outside this area, maximum levels fall to levels in the order of 25 mg/L. When compared with typical background levels for this part of the port it is apparent that, while high, the predicted levels fall within the existing range of variability.
- The water quality impacts are temporary and are predicted to return to levels similar to the current status between various capital dredging works stages and at the end of the WBDD Project.
- Sediments in the Stage 1A are uncontaminated and below the relevant guidelines. Hence mobilisation of sediments from the dredging is not expected to introduce contaminants into the water column.
- The dredged channels will result in areas with a lower energy hydrodynamic regime than previously and hence, are likely to experience increased silt deposition that will require regular maintenance dredging to maintain the design depth of the channels / swing basins / berth pockets.
- There will be no seagrass directly affected by the Stage 1A dredging.
- The areas of mangrove and saltmarsh to be directly affected will be small and less than 0.1% and 0.5 % respectively of the total areas in Port Curtis.
- There will be a loss of benthic biota from within the footprint of the areas to be dredged (178 ha) with a resultant reduction in diversity of these taxa in Port Curtis. Areas within the channel are expected to be recolonised post dredging within two to five years, but probably with different species composition.
- Dredging will pose a risk to marine fauna through direct interference from the dredging equipment, from the deployment and retrieval of anchors and chains and the use of propellers and thrusters, and from localised increases in total suspended sediments. However, CSDs provide warning to marine fauna of their approach so that evasive action can be undertaken.
- Noise from dredging activities has the potential to exceed the WBDD Project noise goals by 3 dB during the night time period at one receiver (Tide Island) during neutral weather conditions. Any exceedance of noise goals is likely to be temporary as the dredging vessels will be constantly moving, therefore the location of the noise source will not be in any one location for an extended period of time.

A particular impact on cumulative environmental values will arise from the construction of the Western Basin Reclamation Area (WBRA). The location of the WBRA is depicted in Figure 3.1 and involves the construction of a bund wall and placement of dredge material in a land reclamation area adjacent to Fisherman’s Landing. The WBRA will be large enough to accommodate dredge material from all of the proposed phases of the WBDD Project. The WBDD Project EIS summarises the cumulative impacts of Stage 1A dredge material placement as including the following:

- Construction of the WBRA will result in the direct loss of approximately 236 ha of benthic habitat, 222 ha of which is a known seagrass habitat., Further details of the extent of this impact are described in the WBDD Project EIS. GPC proposes to offsets for these habitat losses.
- Seagrass beds along the western side of Port Curtis and in The Narrows are predicted to be exposed to TSS concentrations that will be below guideline values for seagrass damage.
- Decant discharge during the filling of the WBRA is predicted to result in elevated turbidity in the region of the outfall at sufficient levels to reduce the seabed light climate along the northern bund wall. Seagrass beds further away (e.g. The Narrows and Wiggins Island) will not be affected.
- There is a risk of acidic runoff with increased metals concentration from the WBRA if any potentially acid sulphate soils are allowed to oxidise. Mitigation measures are proposed to be implemented

during bund construction and dredged material placement to ensure that these risks are minimised. A detailed acid sulphate soil management plan will be prepared to manage the implementation of the mitigation measures.

- Only minor effects on the extreme wave climate in the Western Basin area are predicted from the construction of the WBRA.
- Current velocities east of the WBRA are highest for Stage 1A but reduce progressively to Stages 3 and 4 due to the increased capacity provided by the dredged channels.
- Groundwater modelling results indicate that groundwater levels in the coastal strip adjacent to the WBRA may increase by up to 0.8 m due to revised groundwater flow patterns post development. However, model predictions also suggest that for the most part groundwater levels will remain more than 1 m below surface and hence risks of water logging and/or soil salinisation will only be increased in isolated areas totalling around 17.5 ha.

5.3 Scenario C: WBDD Project – GPC Full Dredging

A detailed assessment of the cumulative environmental impacts for undertaking the dredging required for all of the proposed Port Curtis projects including the disposal of dredged material in the Western Basin Reclamation Area is provided in the EIS for the WBDD Project (http://www.gpcl.com.au/Project_Western_Basin_Dredging_&_Disposal.html). It is presented to a greater extent than would be possible for each project separately. The combination of all of the relevant Port Curtis projects is defined as Stages 1-4 of the WBDD Project. The extent of the area affected by Stages 1-4 is shown on Figure 3.1.

Stage 1-4 could result in approximately 36 million m^3 of dredging being required. This material will be placed in the WBRA.

The WBDD Project EIS summarises the cumulative impacts of the Stages 1-4 dredging as being similar to those discussed above for Stage 1A (Section 5.2) but in some cases to differing degrees. The impacts from the development of the WBRA will generally be as described above for Stage 1A as this will be developed to its ultimate footprint for Stage 1A although placement will extend for a longer period. The dredge material will continue to be placed in the WBRA. The dredging impacts will also be similar but will be spread over a larger area of Port Curtis and for a longer period of time.

Phase 1 is expected to extend over 2010-2011 (two year period). Stage 2 is expected to commence in 2012 and require approximately 1 year to complete. Stages 3 and 4 may commence in 2013 and will be undertaken over a period of time to meet market demand.

Table 5-2 is extracted from the WBDD Project EIS and summarises the areas of benthic habitat expected to be directly and indirectly impacted by the Stage 1-4 works.

Table 5-2 Areas of Benthic Habitat Expected to be Directly and Indirectly Impacted by Stage 1-4 Works

Location	Expected Impact	Habitat Type	Total Benthic Area (ha)	Known Seagrass Area (ha)
Reclamation area + bund wall	Direct – habitat removal (not including Fisherman's Landing)	Intertidal and subtidal soft substrate	235.9	221.6
Channel to west of reclamation	Indirect – water quality	Intertidal soft substrate	8.7	3.4
Western Basin residual area	Indirect – water quality + habitat removal	Intertidal and subtidal soft substrate	299.1	274.6

Location	Expected Impact	Habitat Type	Total Benthic Area (ha)	Known Seagrass Area (ha)
Channel to be dredged (all stages, already dredged)	Direct – habitat removal	Subtidal soft and hard substrates	146.4	3.4
Channel to be dredged (all stages, not already dredged)	Direct – habitat removal	Subtidal soft and hard substrates	520.0	33.8
All other areas within Gladstone Harbour predicted as potentially impacted by dredge plume modelling	Potential Indirect Impacts – water quality	Subtidal soft and hard substrates	5,108	1,128
Total Direct Impact			902	258.8
Total Indirect Impact			5,416	1,406
Total Potential Impact			6,318	1,665

Source: WBDD Project EIS

Other cumulative impacts that would apply to the Stage 1-4 development in addition to those described in Section 5.2 include the following:

- In some areas TSHDs may be used. They are predicted to have greater impacts in terms of areal extent during dredging works than the CSDs proposed for Stage 1A. Regions of persistent elevated turbidity are predicted as a consequence of overflows during active dredging and emptying of the hopper adjacent to the eastern bund wall with subsequent rehandling by a dedicated CSD plant with dredge material pumped into the WBRA. In particular, hopper dumping coincident with flood tides will have an impact on the turbidity climate of the Western Basin and to a lesser degree on The Narrows. Increased turbidity reduces the light intensity at the seabed, thereby impacting seagrass beds. Seagrass beds in the vicinity of Wiggins Island are not greatly impacted during ebb tides as the dredge material plumes are primarily confined to the deep water channels with elevated velocities.
- Seagrass beds along the western side of Port Curtis and in The Narrows are predicted to be exposed to total suspended solids (TSS) concentrations that will be below guideline values for seagrass damage. However, if a TSHD is used, TSS guideline concentrations may be exceeded in areas where dredged material needs to be rehandled.
- Some of the sediments in the Stage 1B dredging area have elevated manganese concentrations. However, across all the sediments to be dredged, the manganese concentration is within the guideline values established in the Draft Guidelines for the Assessment and Management of Contaminated Land in Queensland 1998 – Environmental Investigation Levels (EIL).
- Despite the extended dredging programs associated with Stages 1-4, the cumulative impacts on marine water quality will be temporary, and water quality should therefore return to levels similar to the current status in between various capital dredging works stages and at the end of the project.
- The Stages 1-4 dredged channels will provide increased regions within the Western Basin that are in a relatively low energy hydrodynamic regime and hence, are likely to experience significant silt deposition (255,000 m^3/yr) that will require regular maintenance dredging to maintain the design depth of the channels / swing basins / berth pockets. The expected level of maintenance dredging represents a significant increase compared to the current maintenance dredging commitment.
- From a physical coastal processes viewpoint, the potential impacts of the Stage 1-4 development consisting of a large scale reclamation of part of the tidal waterway and extensive new dredged channels, swing basins and berths are summarised as follows:

- Changes in flow and water level conditions adjacent to the WBRA to the north and west, and potentially changes to the rate at which the ebb tide level drops, reducing the time that the tidal flats are dry during the lower parts of the tidal cycle;
- Initial scour of fine silts from the north-eastern corner of the WBRA;
- Increase in maintenance dredging of sand sized sediment in the new dredged channels and swing basins that is commensurate with the existing maintenance commitment; and
- Potentially, a large increase in maintenance dredging to remove fine silts from the new channels and swing basins adjacent to the WBRA and in the turning basins adjacent to Curtis Island.

- The Stages 1-4 noise modelling showed that predicted noise levels from construction activities are below the ambient and background noise levels and comply with the worst case night time site specific criteria of 45 dB(A) for the receiver on Fisherman's Road and 25 dB(A) for the receivers on Targinie Road. Noise from dredging activities has the potential to exceed the project noise goals by 3 dB during the night time period at one receiver (Tide Island) during neutral weather conditions and three receivers (Tide Island, Endeavour Parade/Flinders Parade/Auckland Street/Oaka Lane and the State Marine Park boundary at Friend and Laird Points) by 1 dB during noise enhancing weather conditions. Any exceedance of noise goals is likely to be temporary as the dredging vessels will be constantly moving, therefore the location of the noise source will not be in any one location for an extended period of time.

Mitigation measures proposed to be implemented to manage the cumulative marine impacts from the Stage 1-4 operations have been detailed in the WBDD Project EIS and include the following:

- Development and implementation of an offsets strategy for those habitats directly affected by the project.
- Development and implementation of a reactive dredge management plan to mitigate against impacts on water quality from dredging activities.
- Dredge activities to be restricted to agreed footprint of channel works.
- Development and implementation of a reactive sensitive habitat monitoring program to inform dredging activities and mitigate against potential impacts to these systems from declines in water or sediment quality. This may include development of tolerance limits of sensitive systems prior to dredging commencing.
- Implementation of waste management plans.
- Appropriate design of the reclamation facility to reduce water quality impacts from leaching of material through the bund wall, decant waters and stormwater run-off and to reduce benthic habitat scouring potential around the bund.
- Removal of marine fauna from the WBRA prior to bund closure to avoid fatalities of the animals that previously occupied this footprint.
- Dredge management strategies to avoid impacts upon marine megafauna including use of spotters and turtle exclusion devices.
- Use of soft starts during pile driving activities to minimise potential impacts upon nearby marine fauna.
- Considered use of speed restricted areas and education of the workforce regarding potential for vessel impacts upon marine megafauna to reduce potential for damaging or fatal interactions.

5.4 Matters of National Environmental Significance

The WBDD Project is a controlled action under the provisions of the *Environmental Protection and Biodiversity Conservation Act*. The controlling provisions for the project are as follows:

- Section 12 and 15 A (World Heritage properties);
- Sections 15 B and 15 C (National Heritage places);
- Sections 18 and 18 A (Listed threatened species and communities); and
- Sections 20 and 20 A (Listed migratory species).

Appendix G of the WBDD Project EIS (http://www.gpcl.com.au/Project_Western_Basin_Dredging_&_Disposal.html) provides a detailed assessment of the impacts of the Stage1-4 project on matters of national environmental significance.

The primary impacts identified for the WBDD Project are the removal of benthic habitat (including seagrass meadows, algal beds and macroinvertebrates), decline in water quality associated with construction and dredging events, the flow-on effects to benthic habitats from decline in water quality, and potential impacts to marine megafauna from water quality impacts, loss of habitat and vessel operations.

5.4.1 Effects on World Heritage Properties

Port Curtis is located in the Great Barrier Reef World Heritage Area (GBRWHA) which is a World Heritage property.

The WBDD Project EIS describes the direct, indirect, permanent and temporary impacts on the benthic marine systems within the GBRWHA that are anticipated from construction and operation of the project. These impacts include (from the proposed reclamation area) the permanent removal of 236 ha of intertidal and subtidal habitat within the WBRA including 222 ha of seagrass. The dredging activities include disturbance of 666 ha of benthic habitat (146 ha of which have been previously dredged). In addition a range of temporary impacts are expected as a result of dredging activities including dredge plume impacts, reduced water quality and indirect impacts to marine benthos and noise impacts.

The potential and probable marine ecological impacts have been summarised in the EIS as follows:

- Removal or damage to the benthos and individual organisms from bund construction, dredging and pile driving works including smothering of taxa.
- Removal of foraging and/or nesting habitat for marine turtle species, dugong and coastal dolphins.
- Alteration of benthic habitat type from intertidal to subtidal substrate.
- Damage to individual organisms from direct contact related to construction activities, including trapping within the bund when it is closed.
- Impact to fauna by boat strike from dredges and or construction vessels.
- Disturbance and displacement of marine fauna from increased noise and/or activity during construction and dredging operations.
- Decreases in water quality from dredging, construction, spills of fuel or other hydrocarbons or other pollutants.
- Increased rubbish that may be ingested by or entangle marine fauna.
- Introduction of marine pests to Port Curtis or the Great Barrier Reef Marine Park.
- Alteration of sediment and water quality at the reclamation site by the introduction of contaminants or potential acid sulphate soils.

- Land use change resulting in the loss of benthic primary producer habitat and fisheries resources.
- Interruption of recreational and other vessel traffic movement patterns.
- Decreased water quality and changes to siltation/sedimentation regimes.
- Conflicting demand between commercial and recreational marine activities leading to additive pressures on the adjacent marine systems.
- Impacts on subtidal and intertidal benthos from changes in the hydrodynamic regime resulting in sedimentation, scouring, longer durations of wetting, and increased or decreased flow rates.
- Noise, vibration and light impacts to marine reptiles and mammals.

The dredging and reclamation activities will have both direct and indirect impacts on seagrass and benthic assemblages as listed above and the implementation of the WBDD Project, in addition to current port practices and the proposed LNG projects, will have a cumulative impact on these species and marine fauna which utilise these habitats.

The WBRA is adjacent to the proposed Fisherman's Landing Northern Expansion. The resulting cumulative loss of seagrass in the area (236 ha and 89 ha respectively) could cause a decline in species diversity, removal of species, or reduced use of the area by marine fauna. There are extensive seagrass beds supporting the same or similar seagrass beds and benthic assemblages throughout the wider region. The WBDD Project EIS concludes that the loss of the seagrass beds at the WBRA and Fisherman's Landing Expansion area is not anticipated to affect the presence of these species. It may, however, reduce the prevalence of assemblages within Port Curtis as the carrying capacity of the seagrass meadows in this area is not well understood and may be at its upper limit.

Mitigation measures proposed by the WBDD Project's EIS to manage the above potential and probable impacts include the following:

- Minimisation of the WBRA footprint.
- Creation of habitat to offset habitat loss (this does not include ability to create seagrass habitat).
- Use of fauna spotters, waring noises and equipment soft starts to minimise the potential to strike marine megafauna.
- Appropriate management of the reclamation decant through settlement ponds to minimise water quality impacts from reclamation activities.
- Adoption of lighting that minimises light spill across the water to reduce impacts upon marine fauna.
- Use of designated shipping channels with speed restrictions to minimise disturbance to marine fauna and adjacent benthic habitats.
- Implementation of reactive dredge management plans that adjust dredging activities if impacts to sensitive ecosystem receptors are detected.
- Implementation of long term monitoring for the presence and prevalence of seagrass meadows and the quality of adjacent water bodies to inform the success of reactive dredge management activities.
- Implementation of appropriate onsite waste and pollution management practices to mitigate potential offsite impacts on water and sediment quality and to avoid ingestion by marine fauna of waste products.

The WBDD Project's EIS recognises that while the proposed mitigation measures will reduce the level of impact to the area's World Heritage values, any impacts to the fishery and marine megafauna populations through reductions in available seagrass habitat are of critical concern. It suggests considering the offsetting of these habitat reductions with appropriate investment into the habitats and the communities they support.

5.4.2 Effects on National Heritage Places

Both Balaclava Island and The Narrows are listed as National Heritage places under the EPBC Act.

Impacts to the benthic habitats of The Narrows are expected as a consequence of construction works associated with the WBDD Project. Dredging plumes and hydrodynamic impacts are expected in The Narrows. The presence of the WBRA is expected to result in a slight phase shift (minutes) in the tidal cycle of The Narrows. A slight increase in water levels on the western banks of The Narrows could also occur. Dredge plumes will extend up The Narrows and this will result in a temporary decrease in water quality and changed siltation/sedimentation regimes. These impacts are likely to result in a temporary displacement of marine taxa utilising these habitats; however recovery is expected within 2 to 5 years following cessation of dredging.

A further cumulative impact is the restriction of the migratory pathway for marine animals from Port Curtis to The Narrows. This restriction would be caused by the presence of berths, marine offloading facilities and shipping activities which may constrain marine megafauna movements in these areas.

The direct and indirect impacts together with the proposed mitigation measures listed in Section 5.4.1 above would also apply to the National Heritage Places.

5.4.3 Threatened and Migratory Species

The WBDD Project's EIS describes the threatened and migratory species that occur or are likely to occur in the project area. The threatened and migratory species most likely to be impacted by the project include migratory and marine bird species plus turtles, dugongs and dolphins.

Habitats in the north of the study area are locally important for feeding and roosting shorebirds. However the Gladstone region is not recognised as an area of national or international significance for migratory shorebirds.

Potential impacts to marine megafauna, including turtles, that have been listed in the WBDD Project's EIS include the following:

- Removal or damage to the benthos and individual organisms from bund construction, dredging and pile driving works including smothering of taxa.
- Removal of foraging and/or nesting habitat for marine turtle species, dugong and coastal dolphins.
- Alteration of benthic habitat type from intertidal to subtidal substrate.
- Damage to individual organisms from direct contact related to construction activities, including trapping within the bund when it is closed.
- Impact to fauna by boat strike from dredges and/or construction vessels.
- Disturbance and displacement of marine fauna from increased noise and/or activity during construction and dredging operations.
- Decreases in water quality from dredging, construction, spills of fuel or other hydrocarbons or other pollutants.
- Increased rubbish that may be ingested by or entangle marine fauna.
- Impacts on subtidal and intertidal benthos from changes in the hydrodynamic regime resulting in sedimentation, scouring, longer durations of wetting, and increased or decreased flow rates.

- Noise, vibration and light impacts to marine reptiles and mammals.
- Restriction of movement corridors for marine fauna due to obstruction from reclamation areas, wharves, jetties and shipping activity.

All of these impacts could result in reduced use of the area by mobile marine fauna. This may have flow-on effects for the value of the marine ecosystem within the Gladstone region.

Mitigation measures proposed to be implemented to reduce the above-listed impacts include the following:

- Implementation of reactive dredge management plans that adjust dredging activities if impacts to sensitive ecosystem receptors are detected. This is to be accompanied by extensive water quality and habitat monitoring and the setting of trigger levels so that so that the dredging program can be adjusted as necessary (alterations to duration or location of dredging) to mitigate impacts.
- Removal of fauna prior to bund closure at the WBRA.
- Creation of habitat to offset habitat loss (this does not include ability to create seagrass habitat).
- Use of fauna spotters, warning noises and equipment soft starts to minimise the potential to strike marine megafauna.
- Use of tickler chain or turtle deflector head to avoid interaction with turtles resting on the seabed.
- Consideration of marine turtle nesting (November-February) and inter-nesting behaviours in the dredging schedule.
- Use of soft start for pile driving activities.
- Appropriate management of the reclamation decant through settlement ponds to minimise water quality impacts from reclamation activities.
- Adoption of lighting that minimises light spill across the water and coastal areas to reduce impacts upon marine fauna.
- Use of designated shipping channels with speed restrictions to minimise disturbance to marine fauna and adjacent benthic habitats.
- Implementation of long term monitoring for the presence and prevalence of seagrass meadows and the quality of adjacent water bodies to inform the success of reactive dredge management activities.
- Implementation of appropriate onsite waste and pollution management practices to mitigate potential offsite impacts on water and sediment quality and to avoid ingestion by marine fauna of waste products.

5.5 Conclusion

A detailed assessment of the overall cumulative impacts on the marine ecology is provided in the EIS for the WBDD Project. The level of impact from the various actions on the range of marine components in Port Curtis varies. Dredging will result in the direct disturbance of 666 ha of seabed and benthic habitats and the generation of a dredge plume of reduced water quality. Disposal of the dredged material in the proposed reclamation area will result in the direct loss of 222 ha of seagrass. Indirect impacts include reductions in water quality, changes to the hydrodynamic characteristics of Port Curtis and changes to benthic habitats. The significance of the overall cumulative impact on marine ecology from the proposed dredging and reclamation activities for Port Curtis is assessed as high.

C

Appendix C Cumulative Air Quality Assessment - Gladstone

URS

Report

GLNG Air Quality Assessment - Supplementary Report

NOVEMBER 2009

Prepared for

Santos

32 Turbot Street
Brisbane QLD 4000

42626440

URS

Project Manager:

Jim Barker
Associate Environmental Scientist

URS Australia Pty Ltd

Level 16, 240 Queen Street
Brisbane, QLD 4000
GPO Box 302, QLD 4001
Australia
T: 61 7 3243 2111
F: 61 7 3243 2199

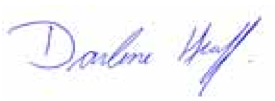
Project Director:

Chris Pigott
Senior Principal

Author:

Dr Li Fitzmaurice
Senior Environmental Scientist

Reviewer:



Dr Darlene Heuff
Senior Associate Scientist

Date:	**November 2009**
Reference:	42626440/01/03
Status:	Final

Document delivery

URS Australia provides this document in either printed format, electronic format or both. URS considers the printed version to be binding. The electronic format is provided for the client's convenience and URS requests that the client ensures the integrity of this electronic information is maintained. Storage of this electronic information should at a minimum comply with the requirements of the Commonwealth Electronic Transactions Act (ETA) 2000.

Where an electronic only version is provided to the client, a signed hard copy of this document is held on file by URS and a copy will be provided if requested.

Table of Contents

Tables

Figures

Abbreviations

Abbreviation	Description
DECC	Department of Environment and Climate Change
DERM	Department of Environment and Resources Management
EPP(Air) 2008	Queensland Environmental Protection (Air) Policy 2008
EIS	Environmental Impact Statement
GAMS	Gladstone Airshed Modelling System
GLNG	Santos' Gladstone LNG Project
LNG	Liquefied Natural Gas
$\mu g/m^3$	Micrograms per cubic metre
NO_x	Oxides of nitrogen
NO_2	Nitrogen dioxide
NSW	New South Whales
%	Percentage
QCLNG	LNG Project proposed by QGC Limited, a wholly-owned subsidiary of BG Group
SO_2	Sulphur dioxide
VOC	Volatile organic compounds

Introduction

This supplementary report has been developed in response to submissions relating to **Section 8.8** and **Appendix S** of the EIS for the Santos Gladstone Liquefied Natural Gas (GLNG) Project that pertain to the air quality assessment of the GLNG facility on Curtis Island, Queensland.

A summary of the major comments addressed in this report include:

- Assess the potential impacts to include all future known industries proposed for the region;
- Include an assessment of the impacts on Tide Island;
- Assess the impacts of volatile organic compound;
- Specify the correct NO_x emission standards of individual units proposed for the project; and
- Specify concentration values of all major emission sources in terms of mg(N)/m3 (dry) at the O_2 reference level.

The focus of the supplementary report is:

- The inclusion of emissions from the proposed Queensland Curtis LNG (QCLNG) facility on Curtis Island and emissions from the expansion of the Rio Tinto Alumina Refinery in Yarwun (formerly the Comalco Alumina Refinery) as part of the background environment. Emissions from the QCLNG facility were made publicly available as part of the QCLNG EIS after the release of the GLNG EIS. Emissions from stage 1 (the current facility) of the Rio Tinto Alumina Refinery were included in the GLNG EIS air quality assessment. This assessment has been extended to include stage 2 (the proposed expansion) of the Rio Tinto Alumina Refinery.
- An assessment of the impact of emissions of volatile organic compounds (VOCs) from the GLNG facility.

1.1 Summary of Project Goals

Presented in Table 1-1 is a summary of the adopted project air quality objectives.

Table 1-1 Project Air Quality Objectives for Criteria Pollutants

Pollutant	Averaging Period	Objective ($\mu g/m^3$)	Jurisdiction	Allowable Exceedances
Sulphur dioxide	1 hour	570	EPP (Air)[1]	1 day/year
	24 hours	230	EPP (Air)[1]	1 day/year
	Annual	57	EPP (Air)[1]	-
		32	EPP (Air)[3]	-
		22	EPP (Air)[2]	-
Nitrogen dioxide	1 hour	250	EPP (Air)[1]	1 day/year
	Annual	62	EPP (Air)[1]	-
		33	EPP (Air)[2]	-
Carbon Monoxide	8 hours	11,000	EPP (Air)[1]	1 day/year
Total suspended particulates	Annual	90	EPP (Air)[1]	-
PM_{10}	24 hours	50	EPP (Air)[1]	5 days/year
Ozone	1 hour	210	EPP (Air)[1]	1 day/year
	4 hour	160	EPP (Air)[1]	1 day/year

[1] EPP (Air) Guideline for human health and wellbeing
[2] EPP (Air) Guideline for ecological health and biodiversity (for forests and natural vegetation).
[3] EPP (Air) Guideline for agriculture

Presented in Table 1-2 is a summary of the adopted project air quality objectives for VOCs.

Table 1-2 Project Air Quality Objectives for Volatile Organic Compounds

Pollutant	Averaging time	Objective (µg/m³)	Jurisdiction
formaldehyde	24 hour	54	EPP (Air)[1]
	30 minutes	110	EPP (Air)[2]
benzene	1 year	10	EPP (Air)[1]
toluene	24 hours	4,100	EPP (Air)[1]
	Annual	410	EPP (Air)[1]
	30 minutes	1,100	EPP (Air)[2]
xylenes	24 hours	1,200	EPP (Air)[1]
	Annual	950	EPP (Air)[1]
1,3-butadiene	24-hour	750	EPP (Air)[1]

[1] EPP (Air) 2008 Guideline for human health and wellbeing.
[2] EPP (Air) 2008 Guideline for protecting aesthetic environment.

1.2 Emission Standards for the GLNG Facility

Table 1-3 provides relevant in-stack emission standards for the GLNG facility (replaces Table 8.8.2 in Section 8.8 of the GLNG EIS). Due to the lack of in-stack emission standards in Queensland, the New South Wales (NSW) standards have been adopted for this project.

Table 1-3 The In-Stack Emission Standards Relevant to the GLNG Facility, Specified in the NSW *Protection of the Environment Operations (Clean Air) Regulation 2002*

Pollutant	Maximum Emission Concentration	Applicable activity	Reference conditions	Applicable GLNG Facility Emission Sources
Nitrogen Oxides	70 mg/m³	Any turbine operating on gas, with capacity less than 30 MW	Dry, 273 K, 101.3 kPa, and 15 % O_2 for gas turbines	refrigeration compressor turbines; power generation turbines
Nitrogen Oxides	350 mg/m³	Any boiler operating on gas	Dry, 273 K, 101.3 kPa, and 3 % O_2 for any fuel burning equipment using gas	regeneration gas heaters; hot oil heaters
Particulate Matter (solid particles)	50 mg/m³	Any activity or plant, except plant for heating metals, crushing, grinding, separating or material handling	Dry, 273 K, 101.3 kPa, and 15 % O_2 for gas turbines, Dry, 273 K, 101.3 kPa, and 3 % O_2 for any fuel burning equipment using gas	All above

Pollutant	Maximum Emission Concentration	Applicable activity	Reference conditions	Applicable GLNG Facility Emission Sources
Carbon Monoxide	125 mg/m^3	Any activity or plant involving combustion except stationary reciprocating internal combustion engine using a gaseous or liquid fuel	Dry, 273 K, 101.3 kPa, and 15 % O_2 for gas turbines, Dry, 273 K, 101.3 kPa, and 3 % O_2 for any fuel burning equipment using gas	All above

Background Air Quality

In reference to the issues raised in the submissions, this section addresses:

- The remodelling of background air quality for NO_2 and SO_2. Modelling of cumulative impacts for other pollutants such as particulate matter and carbon monoxide has not been undertaken as constant background levels based on monitoring data has been used; and
- The background concentrations of VOCs have been estimated from available background air quality monitoring data at Gladstone.

2.1 Sensitive Receptors

In addition to the receptors included in the GLNG EIS, a receptor at Tide Island has been included for the purposes of the EIS Supplement Air Quality Assessment. As shown in Figure 2-1, Tide Island is located in close proximity to the southern tip of Curtis Island, to the south of the GLNG facility. This figure also shows where the proposed QCLNG facility is located.

2.2 Background Industrial Facilities Modelled

In addition to the industries considered as part of the GLNG EIS (refer Appendix S of the GLNG EIS), emissions from two additional sources have been considered for the purposes of the GLNG supplementary air quality assessment:

- Emissions from the QCLNG facility that were made publicly available after the release of the GLNG EIS; and
- Emissions from the expansion (stage 2) of the Rio Tinto Alumina Refinery in Yarwun. Emissions from the stage 1 were included in the GLNG EIS Air Quality Assessment.

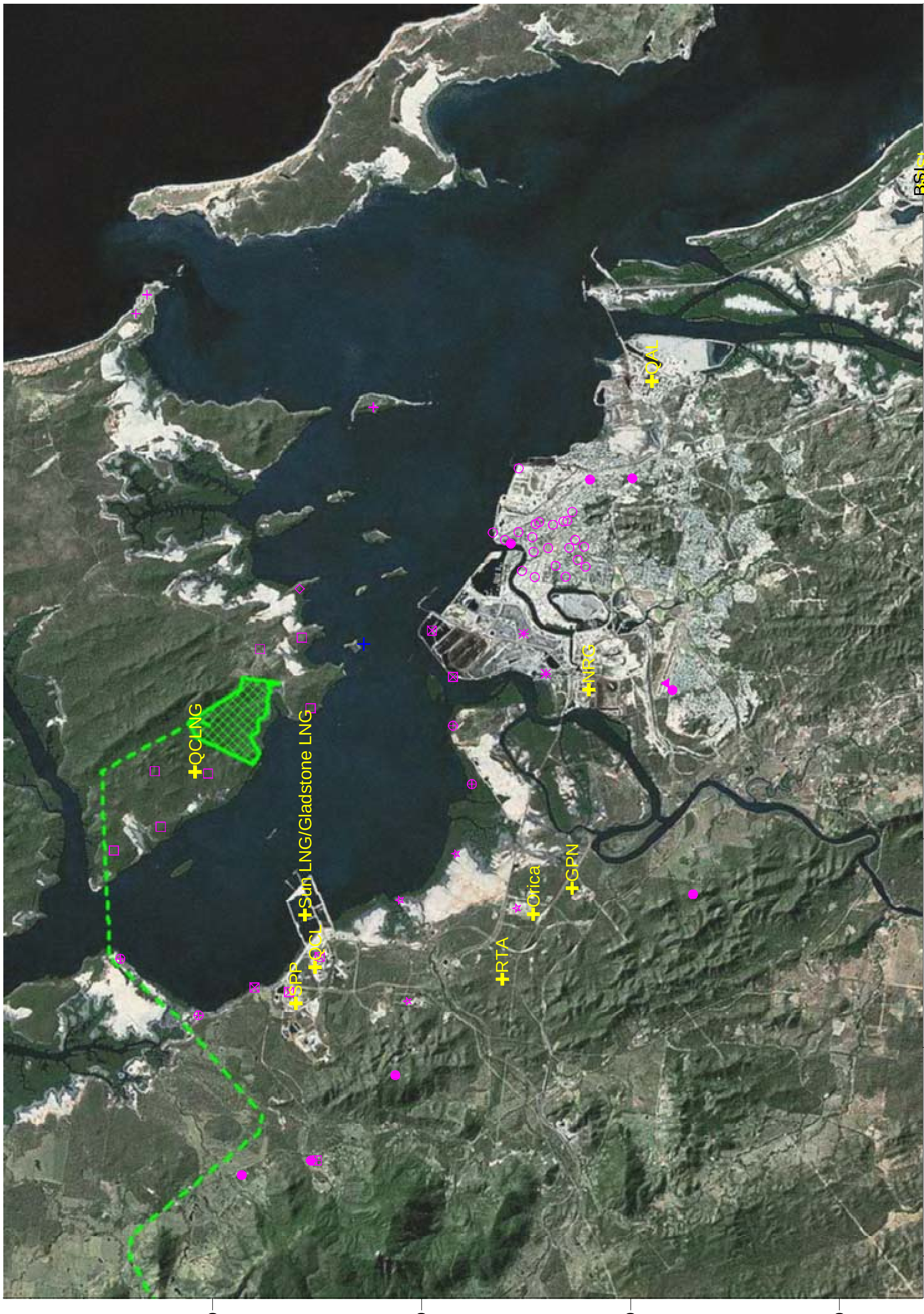
The map in Figure 2-1 illustrates the location of all modelled existing and future proposed industrial facilities for background concentrations of NO_2 and SO_2 including:

- Boyne Smelters Limited (BSL), scaled up by a factor of 40 % to account for the expansion of the smelter since 2001;
- Cement Australia, formerly Queensland Cement Limited (QCL);
- Rio Tinto Aluminium Yarwun, formerly Comalco Alumina Refinery (CAR), including stage 1 (current stage) and stage 2 (proposed expansion) development;
- Gladstone Power Station (NRG);
- Orica Chemical Complex (Orica);
- Queensland Alumina Limited (QAL);
- Queensland Energy Resources, formerly Southern Pacific Petroleum Oil Shale (SPP);
- Gladstone Pacific Nickel Refinery, proposed by Gladstone Pacific Nickel;
- Sun LNG Project, proposed by Sunshine Gas and Sojitz Corp;
- Gladstone LNG Project, proposed by Arrow Energy and LNG Ltd; and
- Queensland Curtis LNG (QCLNG) facility on Curtis Island, proposed by Queensland Gas Company.

Emissions for the QCLNG facility have been taken from Appendix 5.13 of the QCLNG EIS. The emissions for Rio Tinto Alumina Refinery have been provided by the Department of Environment and Resources Management (DERM). All other aspects of the modelling methodologies are the same as those outlined in Appendix S of the GLNG EIS.

2 Background Air Quality

Modelling was conducted using the Gladstone Airshed Modelling System (GAMS) version 2. The reader is directed to the GLNG EIS Section 8.8 or Appendix S for a detailed description of the methodology used to assess background levels of NO_2 and SO_2.



LNG Facility Indicative Site
GLNG GTP (Sep. 2009)

Background Sources (Yellow)

Curtis and Quoin Island Community
Curtis Island Parkland
Curtis Island Industry Precinct
Gladstone

Gladstone Airport
Gladstone Industry
Gladstone Wetland Areas
Clinton Precinct

Yarwun Precinct
Targinie Precinct
EPA monitoring sites
Tide Island

Source: This map may contain data which is sourced and Copyright. Refer to table of Contents for Ownership and Copyright.

Datum: MGA94, Zone 55

Client:	Project:	Title:
LNG / URS	GLADSTONE LNG PROJECT ENVIRONMENTAL IMPACT ASSESSMENT SUPPLEMENT AIR QUALITY IMPACT	SENSITIVE RECEPTOR LOCATIONS AND BACKGROUND INDUSTRIAL SOURCES IN GLADSTONE AREA USED IN AIR QUALITY MODELLING
	Drawn: LF / Approved: JB / Date: 05-11-2009	Figure: **2-1** / Rev B / A4
	Job No: **42626440** /6220 / File: 42626440-g-2075b.srf	

2.3 Emissions

The stage 1 and stage 2 emissions from the Rio Tinto Alumina Refinery in Yarwun are listed in Table 2-1.

Table 2-1 Stack Parameters and Emission Rates for Rio Tinto Alumina Refinery

Source		Unit	UTM Easting (m)	UTM Northing (m)	Base height (m)	Stack height (m)	Stack diameter (m)	Temp (K)	Exit velocity (m/s)	SO2 (g/s)	NOx (g/s)
Stage 1	Boilers	1	311,633	7,363,070	28	120	3	411	20.7	161	93
	Calciners	1	311,941	7,363,355	28	60	2	430	24	1.2	5
		2	311,957	7,363,347	28	60	2	430	24	1.2	5
Stage 2	Boilers	1	311,555	7,363,079	28	120	2.1	343	17.3	10	46.5
	Calciners	1	311,993	7,363,330	28	60	2.4	430	24	1.2	7
		2	312,011	7,363,322	28	60	2.4	430	24	1.2	7
	CoGen	1	311,530	7,363,100	28	50	6	415	23	1.44	45

A summary of the emission source characteristics for the proposed QCLNG facility are presented in Table 2-2, which includes three proposed QCLNG trains with a product capacity of 10 Mtpa.

Table 2-2 Stack Parameters and Emission Rates for the QCLNG Facility at Curtis Island (10 Mtpa capacity)

Source Name	Unit number	UTM easting (m)	UTM northing (m)	Base Height (m)	Stack height (m)	Stack diameter (m)	Temp (K)	Exit velocity (m/s)	NOx (g/s)
Compressor Turbine	1	316599	7370419	11	28.3	3	802	31	3.34
	2	316367	7370194	11	28.3	3	802	31	3.34
	3	316227	7370357	11	28.3	3	802	31	3.34
	4	316610	7370430	11	28.3	3	802	31	3.34
	5	316378	7370204	11	28.3	3	802	31	3.34
	6	316239	7370366	11	28.3	3	802	31	3.34
	7	316618	7370444	11	28.3	3	802	31	3.34
	8	316389	7370214	11	28.3	3	802	31	3.34
	9	316250	7370376	11	28.3	3	802	31	3.34
	10	316630	7370452	11	28.3	3	802	31	3.34
	11	316401	7370223	11	28.3	3	802	31	3.34
	12	316262	7370386	11	28.3	3	802	31	3.34
	13	316641	7370461	11	28.3	3	802	31	3.34
	14	316412	7370233	11	28.3	3	802	31	3.34
	15	316273	7370396	11	28.3	3	802	31	3.34
	16	316653	7370471	11	28.3	3	802	31	3.34
	17	316423	7370243	11	28.3	3	802	31	3.34

	18	316284	7370405	11	28.3	3	802	31	3.34
Power Generator Turbine	1	316466	7370053	11	28.3	3	802	31	2.79
	2	316481	7370066	11	28.3	3	802	31	2.79
	3	316496	7370079	11	28.3	3	802	31	2.79
Regeneration oil heaters	1	316793	7370497	11	37	1	547	22	0.28
	2	316393	7370349	11	37	1	547	22	0.28
	3	316268	7370496	11	37	1	547	22	0.28
Hot oil heater	1	316635	7370255	11	50	2.5	570	17	0.72
	2	316506	7370405	11	50	2.5	570	17	0.72
	3	316367	7370568	11	50	2.5	570	17	0.72
	4	316622	7370270	11	50	2.5	570	17	0.72
	5	316493	7370420	11	50	2.5	570	17	0.72
	6	316354	7370583	11	50	2.5	570	17	0.72
Dry-Gas Flare	1	316304	7369798	11	61.9	0.72	1273	20	0.17
	2	316366	7369638	11	61.9	0.72	1273	20	0.17
Wet-Gas Flare	1	316326	7369676	11	61.9	0.72	1273	20	0.17
	2	316366	7369638	11	61.9	0.72	1273	20	0.17
Marine Flare	1	316191	7369821	11	15.6	0.72	1273	20	0.17

Emissions of SO_2 are not provided in the QCLNG EIS due to the low emission rate of SO_2 from the proposed facility. The NO_x emission rates for sources associated with the QCLNG facility have been extracted from Appendix 5.13 of the QCLNG EIS. For the purposes of estimating background levels of pollutants, emissions from the normal operation of the three proposed QCLNG trains with a product capacity of 10 Mtpa have been modelled.

2.4 Modelling Methodology

The reader is directed to GLNG EIS Section 8.8 and Appendix S for a detailed description of GAMS and the list of industrial facilities modelled for the EIS assessment for background impacts.

Building downwash effects have not been modelled for QCLNG and Rio Tinto Alumina Refinery. This potentially leads to lower ground-level concentrations close to the facilities.

2.5 Background Concentrations of NO_2 and SO_2

Background concentrations of SO_2 and NO_2 at receptor locations are provided in Table 2-3. Included in the table are the relevant EPP (Air) air quality objectives. Results suggest that background levels satisfy the EPP (Air) air quality objectives at all receptor locations.

Table 2-3 Background Concentrations of SO_2 and NO_2 at Sensitive Receptor Locations

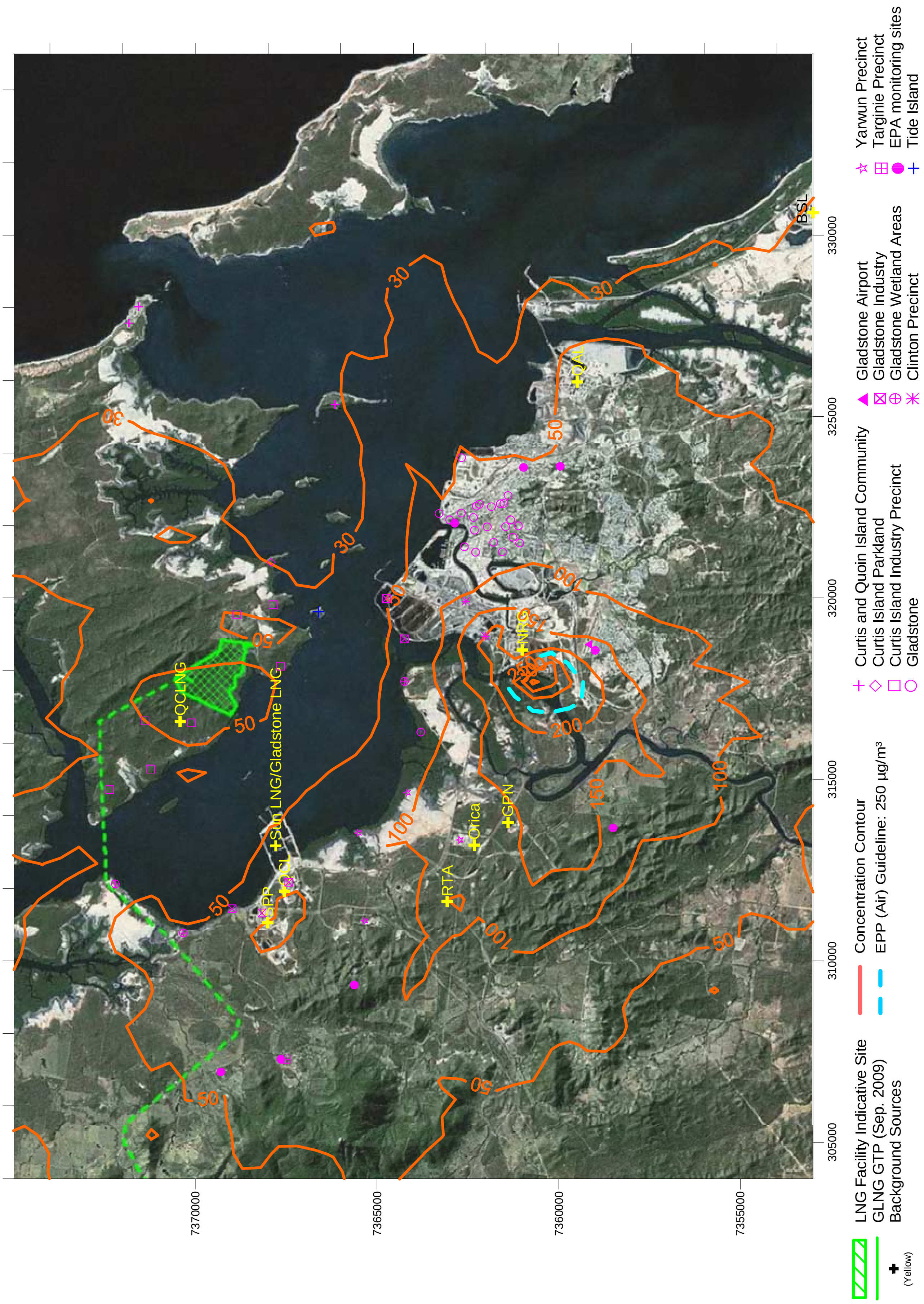
Receptor Group	NO_2 (µg/m³)		SO_2 (µg/m³)		
	1 hour, 99.9th	Annual	1 hour, 99.9th	24 hour	Annual
Curtis Island (South End) & Quoin Island Community	26	0.5	73	19	2.3
Tide Island Community	33	0.8	83	25	2.8
Curtis Island Parkland	30	0.6	72	21	3.1
Curtis Island Industry Precinct	65	1.3	124	27	2.8
Gladstone	82	1.9	172	42	5.9
Gladstone Airport	165	2.9	321	85	7.3
Gladstone Industry	86	3.9	335	73	7.1
Gladstone Wetland areas	83	2.2	280	54	6.2
Clinton Precinct	196	1.9	396	71	5.1
Yarwun Precinct	114	8.3	268	64	19.4
Targinie Precinct	65	2.7	201	39	7.9
EPA monitoring sites	169	4.7	328	83	13.6
EPP (Air) 2008 Guideline	**250**	**62[1] , 33[2]**	**570**	**230**	**57[1], 32[3], 22[2]**

[1] For human health and wellbeing
[2] For the health and biodiversity of ecosystems (protecting forests and natural vegetation)
[3] For protecting agriculture

Contour plots of background concentrations of NO_2 and SO_2 associated with existing and proposed industrial facilities are presented in Figure 2-2 through Figure 2-6.

The 99.9th percentile of 1-hour average ground-level background concentration of NO_2 is presented in Figure 2-2. The annual average ground-level background concentration of NO_2 is presented in Figure 2-3. Figure 2-2 shows that the model-predicted background impacts for 1-hour average NO_2 exceed the EPP (Air) objective of 250 µg/m³, but only in an area very close to an existing industrial facility at Gladstone.

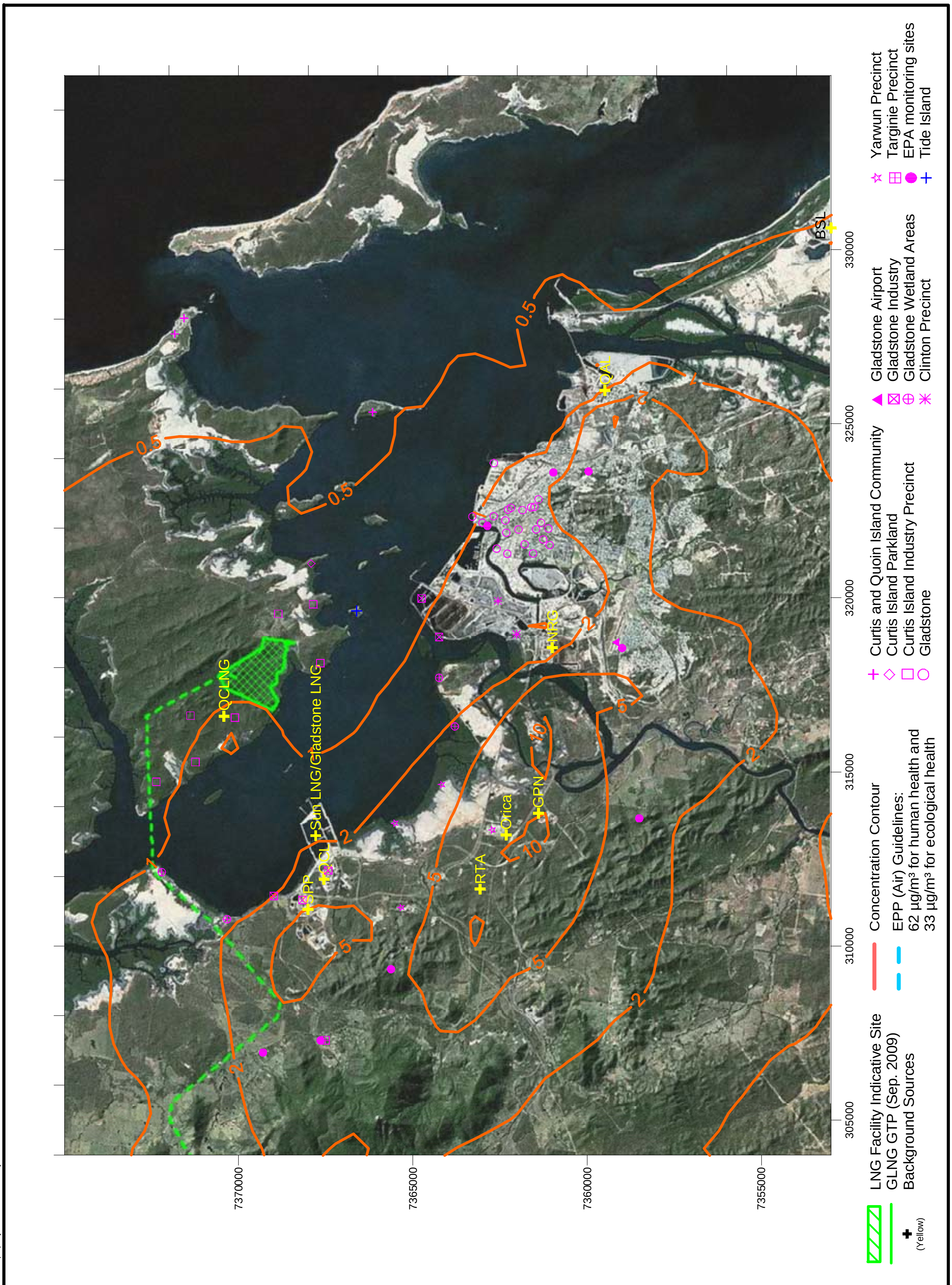
The 99.9th percentile of 1-hour average ground-level background concentration of SO_2 is presented in Figure 2-4. This figure shows that the model-predicted background impacts for 1-hour average SO_2 exceed the EPP (Air) objective of 570 µg/m³, but only in areas very close to several existing industrial facilities at Gladstone. The maximum 24-hour average ground-level background concentration of SO_2 is presented in Figure 2-5 and the annual average concentration is presented in Figure 2-6.



Source: This map may contain data which is sourced and Copyright. Refer to table of Contents for Ownership and Copyright.

Datum: MGA94, Zone 55

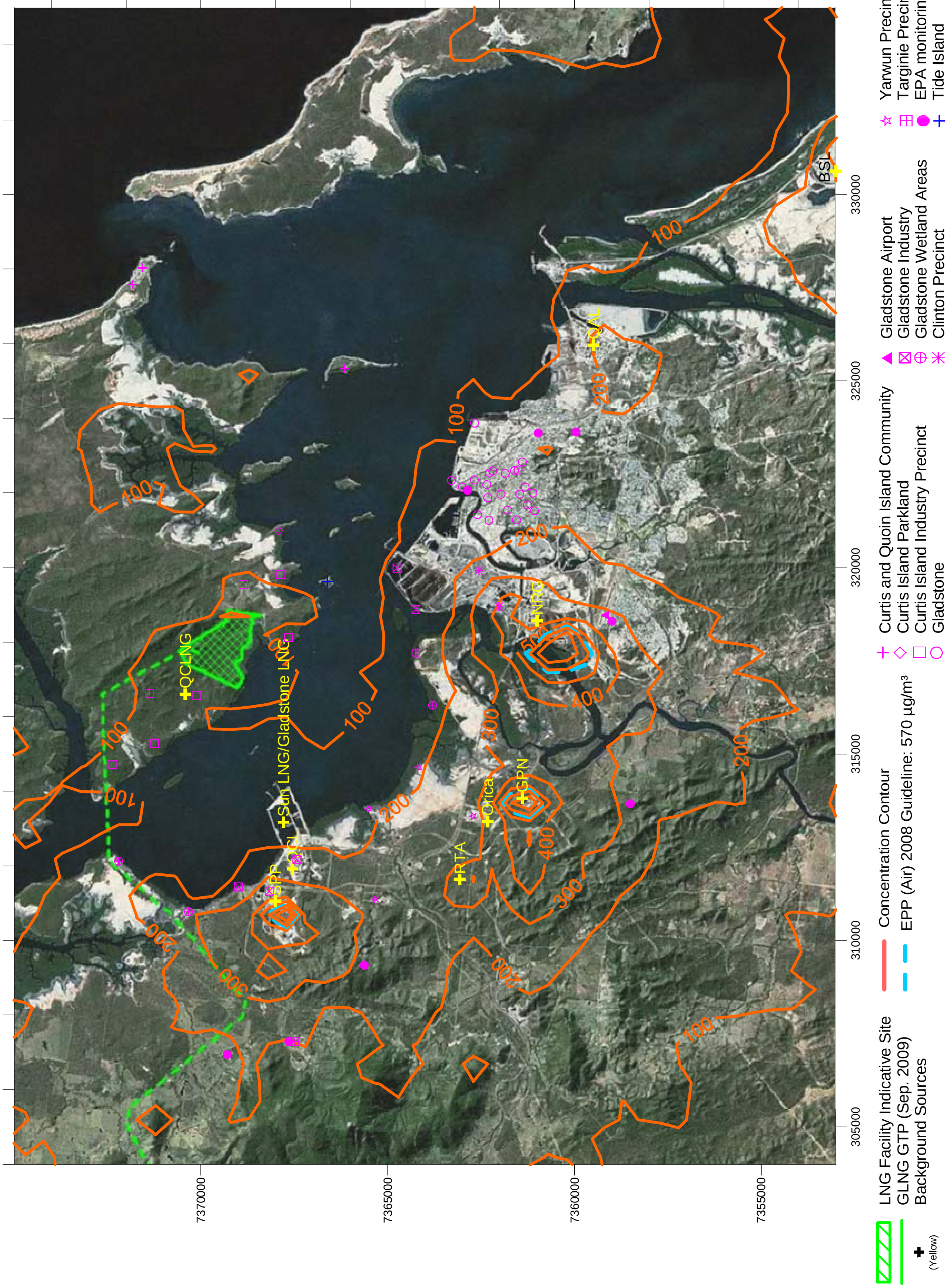
Client:	Project:	Title:
LNG / URS	GLADSTONE LNG PROJECT ENVIRONMENTAL IMPACT ASSESSMENT SUPPLEMENT AIR QUALITY IMPACT	**99.9th PERCENTILE 1 HOUR AVERAGE CONCENTRATION OF NO2 (µg/m³) DUE TO BACKGROUND SOURCES**
	Drawn: LF · Approved: JB · Date: 05-11-2009	Figure: **2-2** · Rev B
	Job No: **42626440**/6220 · File: 42626440-g-2076b.srf	A4



Source: This map may contain data which is sourced and Copyright. Refer to table of Contents for Ownership and Copyright.

Datum: MGA94, Zone 55

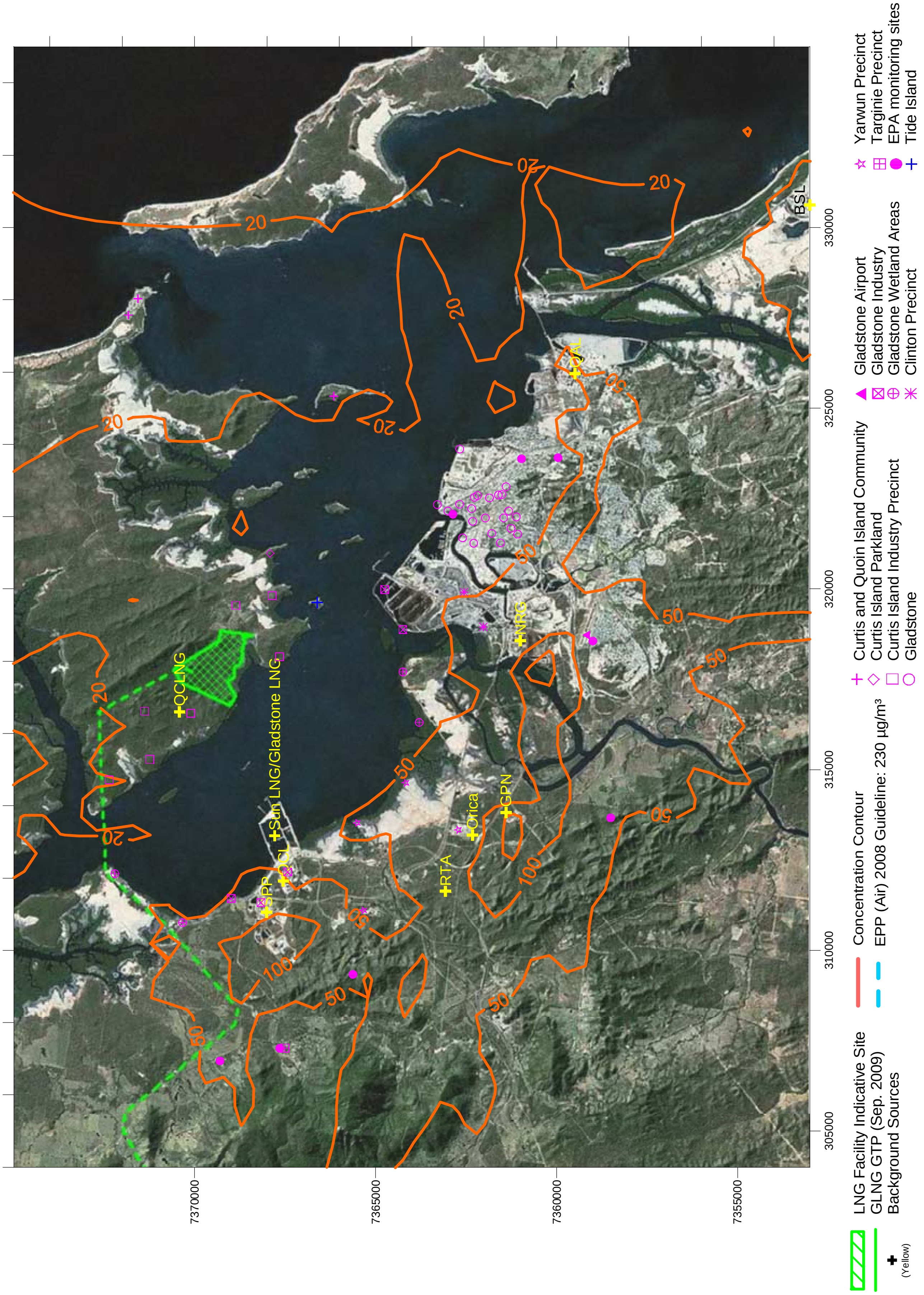
Client: LNG / URS	Project: GLADSTONE LNG PROJECT ENVIRONMENTAL IMPACT ASSESSMENT SUPPLEMENT AIR QUALITY IMPACT			Title: ANNUAL AVERAGE CONCENTRATION OF NO2 (µg/m³) DUE TO THE LNG FACILITY PLUS BACKGROUND SOURCES FOR 3 MTPA PRODUCTION	
	Drawn: LF	Approved: JB	Date: 05-11-2009	Figure: **2-3**	Rev B
	Job No: **42626440**/6220	File: 42626440-g-2077b.srf			A4



Source: This map may contain data which is sourced and Copyright. Refer to table of Contents for Ownership and Copyright.

Datum: MGA94, Zone 55

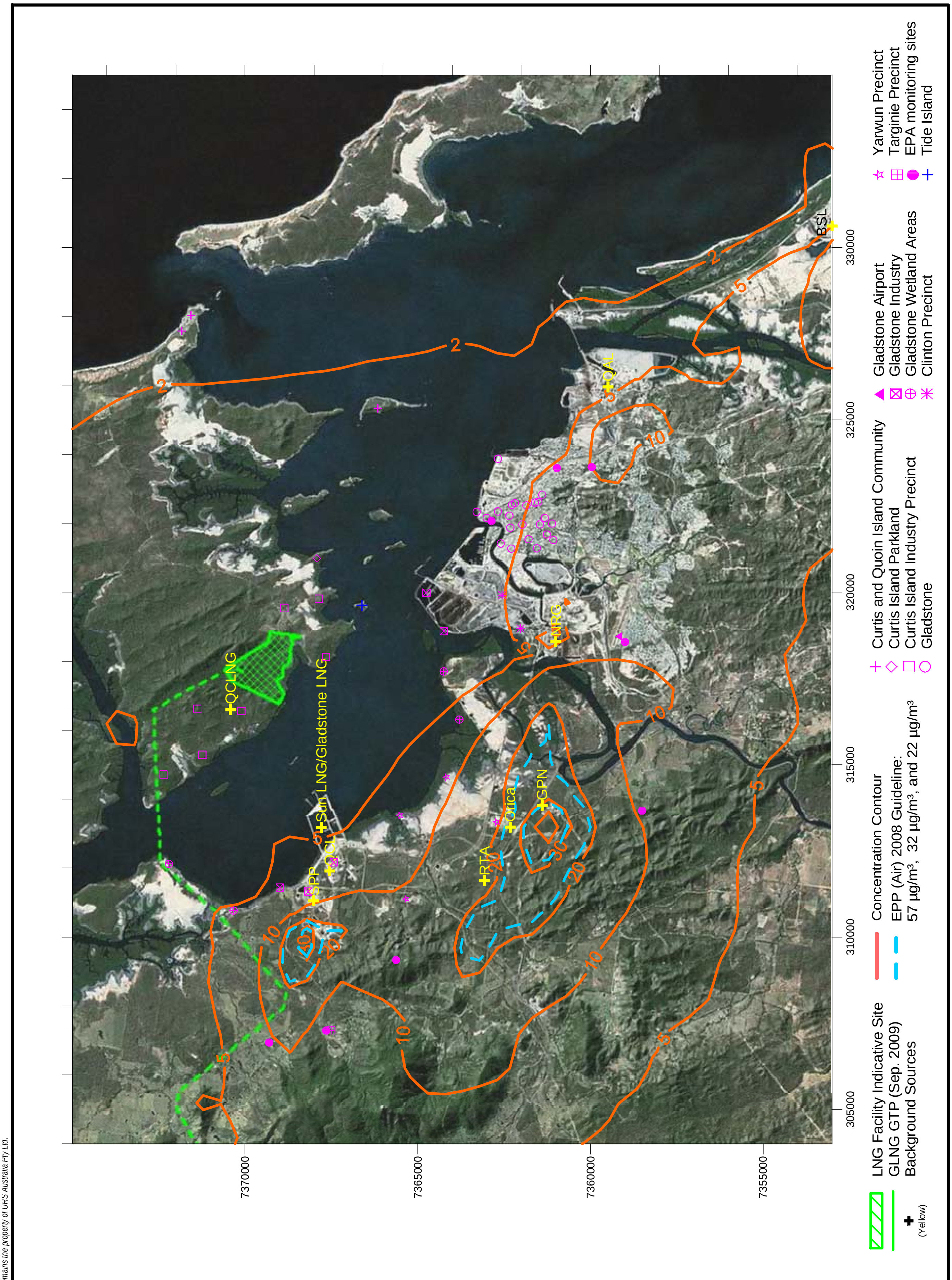
Client:	Project:			Title:	
LNG / URS	GLADSTONE LNG PROJECT ENVIRONMENTAL IMPACT ASSESSMENT SUPPLEMENT AIR QUALITY IMPACT			**99.9TH PERCENTILE 1 HOUR AVERAGE CONCENTRATION OF SO2 (µg/m³) DUE TO BACKGROUND SOURCES**	
	Drawn: LF	Approved: JB	Date: 05-11-2009	Figure: **2-4**	Rev B
	Job No: **42626440**/6220	File: 42626440-g-2078b.srf			A4



Source: This map may contain data which is sourced and Copyright. Refer to table of Contents for Ownership and Copyright.

Datum: MGA94, Zone 55

Client:	Project:	Title:
LNG / URS	GLADSTONE LNG PROJECT ENVIRONMENTAL IMPACT ASSESSMENT SUPPLEMENT AIR QUALITY IMPACT	**MAXIMUM 24 HOUR AVERAGE CONCENTRATION OF SO2 (µg/m³) DUE TO BACKGROUND SOURCES**
	Drawn: LF / Approved: JB / Date: 05-11-2009	Figure: **2-5** / Rev B
	Job No: **42626440**/6220 / File: 42626440-g-2079b.srf	A4



Source: This map may contain data which is sourced and Copyright. Refer to table of Contents for Ownership and Copyright.

Datum: MGA94, Zone 55

Client:	Project:	Title:
LNG / URS	GLADSTONE LNG PROJECT ENVIRONMENTAL IMPACT ASSESSMENT SUPPLEMENT AIR QUALITY IMPACT	**ANNUAL AVERAGE CONCENTRATION OF SO2 (µg/m³) DUE TO BACKGROUND SOURCES**

Drawn: LF	Approved: JB	Date: 05-11-2009	Figure: **2-6**	Rev B
Job No: **42626440**/6220	File: 42626440-g-2080b.srf			A4

2.6 Background Concentrations of VOCs

There is limited ambient monitoring data for VOCs within the Gladstone airshed.

Concentrations of benzene and toluene were monitored by DERM at Targinie (Stupkin Lane). Data for the period 2002 through 2004 is summarized below. The monitoring program was discontinued after 2005. No exceedances have been recorded for either pollutant at the Targinie monitoring site.

- The average annual benzene concentration was 5.7 µg/m3. The EPP (Air) objective is 10 µg/m3.
- The maximum of 24-hour average toluene concentration was 24 µg/m3. The EPP (Air) objective is 4100 µg/m3.
- The average annual toluene concentration was 9 µg/m3. The EPP (Air) objective is 410 µg/m3.

Potential Impacts and Mitigation Measures

3.1 Air Emissions from the GLNG Project

3.1.1 In-stack Emission Concentrations

Based on information provided by Santos, regeneration gas heaters have an O_2 content of 9.8 % and moisture content of 15.2 % while hot oil heaters have an O_2 content of 6.4 % and moisture content of 16.6 %. These in-stack parameters were used to develop in-stack concentrations at standard conditions.

Both regeneration gas heaters and hot oil heaters are boilers operating on gas, for which the relevant in-stack emission standard in the NSW *Protection of the Environment Operations (Clean Air) Regulation 2002* is 350 mg/Nm^3 (dry) at 3 % O_2, 273 K, and 101.3 kPa.

Table 3-1 provides the in-stack emission concentrations referenced to standard conditions, with corrections applied for temperature, oxygen content and moisture content and replaces Table 8.8.7 of Section 8 of the GLNG EIS. All in-stack emission concentrations are below the relevant New South Whales (NSW) Department of Environment and Climate Change (DECC) standard.

Table 3-1 In-Stack Emission Concentrations for Major Emission Sources of the GLNG Facility (mg/m^3)

Emission concentrations	Particulate Matter	NO_x	CO
Refrigeration Compressor Turbines*	2.7	43	26
Power Generation Turbines	3.4	56	34
Relevant NSW emission standards for above gas turbines	**50**	**70**	**125**
Regeneration Gas Heaters(boilers)	5.5	74	62
Hot Oil Heaters (boilers)	3.3	44	37
Relevant NSW emission standards for above gas boilers	**50**	**350**	**125**

*May not be used in the final design of the GLNG facility.

3.1.2 Emissions of Volatile Organic Compounds

For refrigeration compression turbines and power generation turbines, AP-42 Chapter 3.1 (Stationary Gas Turbines) emission factors were used. AP-42 Chapter 3.1 provides emission factors for pollutants including VOC, and VOC speciation including formaldehyde, benzene, toluene, xylenes and 1,3-butadiene.

In order to estimate VOC emissions for gas turbines, CO emission factors have been scaled in accordance with their relationship as by-products of incomplete combustion.

For regeneration gas heaters, hot oil heaters, and flare pilots, AP-42 Chapter 1.4 (Natural Gas Combustion) emission factors were used, with exception for pollutants xylenes and 1,3-butadiene. Chapter 1.4 of AP-42 provides emission factors for a similar set of air pollutants as Chapter 3.1, but does not provide emission factors for xylenes and 1,3-butadiene. The ratio of emissions for xylenes and 1,3-butadiene compared with those for CO provided in AP-42 Chapter 3.1 have been used.

Table 3-2 lists the emissions estimated for the GLNG facility, per source unit and with the number of units provided for the 10 Mtpa case.

URS

Table 3-2 Emissions from the GLNG Facility (in g/s per source unit) for the 10 Mtpa Production Scenario

Source	Number of units	Total VOC (excluding Methane)	Formaldehyde	Benzene	Toluene	Xylenes	1,3-butadiene
Refrigeration Compressor Turbine	18	4.98E-02	1.68E-02	2.85E-04	3.08E-03	1.52E-03	1.02E-05
Power generation turbines	11**	1.09E-02	3.68E-03	6.22E-05	6.74E-04	3.32E-04	2.23E-06
Regeneration Gas Heater*	6	1.86E-02	2.53E-04	7.08E-06	1.15E-05	2.21E-04	1.49E-06
Hot Oil Heater	6	6.47E-02	8.83E-04	2.47E-05	4.00E-05	7.72E-04	5.19E-06
Flare pilots	2	9.28E-03	1.26E-04	3.54E-06	5.73E-06	1.11E-04	7.43E-07

* May not be used in the final design of the GLNG facility.

** The number of units may reduce to 9 in the final design of the GLNG facility.

3.2 Dispersion Modelling Methodology

3.2.1 Modelling of NO_2 and SO_2

Cumulative impacts of NO_2 and SO_2 have been assessed using GAMS version 2. Refer to GLNG EIS Section 8.8 and Appendix S for a detailed description of the modelling methodology.

3.2.2 Modelling of VOCs

Modelling was also conducted using GAMS version 2. Refer to the GLNG EIS Section 8.8 and Appendix S for a detailed description of GAMS.

Photochemical reactions were not modelled. Photochemical modelling for Gladstone requires the use of a detailed emission inventory for industrial, commercial, domestic, biogenic and traffic related sources of VOCs as well as oxides of nitrogen. No such inventory exists for Gladstone so detailed photochemical modelling has not been conducted.

In this assessment, the incremental impacts to ground-level VOC concentrations associated with emissions from the GLNG facility have been considered. Due to the lack of comprehensive emissions data for VOCs in Gladstone airshed, cumulative impact modelling has not been conducted. The ambient monitoring data for background VOCs concentrations at Gladstone have been presented in Section 2.4, with data available only for benzene and toluene.

3.3 Interpretation of Air Quality Impacts

3.3.1 Results for NO_2 and SO_2

Results at Receptor Locations

Presented in Table 3-3 are the predicted ground-level concentrations of NO_2 for normal operations based on the 3 Mtpa production scenario. Results for the 10 Mtpa scenario are presented in Table 3-4.

Table 3-5 presents predicted cumulative impacts for the GLNG facility under upset conditions such as scheduled shut-down and start-up for maintenance inspection. In these tables the background impacts include those from the normal operation of the three QCLNG trains (10 Mtpa), the expansion of Rio Tinto Alumina Refinery, and the other industrial sources included in the assessment (Section 2.2).

The dispersion modelling predicts that ground-level concentrations of NO_2 will not exceed any of the EPP (Air) objectives at the nominated receptor locations due to emissions from the GLNG facility assessed in combination with existing and proposed future industrial sources.

Note that although the predicted 99.9^{th} % 1-hour average concentration due to the GLNG facility in isolation differs for the two operational scenarios considered, cumulative impacts due to the GLNG and modelled background industrial facilities (including the proposed QCLNG Facility and Rio Tinto Alumina Refinery) are predicted to be the same for both the GLNG 3 Mtpa (Table 3-3) and GLNG 10 Mtpa (Table 3-4) cases. This suggests that the conditions which lead to the most elevated ground-level concentrations of NO_2 at receptor locations on the 1-hour timescale are dominated by meteorological conditions (which should vary with the receptor locations) that do not lead to elevated ground-levels of NO_2 as a result of emissions from the GLNG facility. Thus for the 99.9^{th} % 1-hour average ground-level concentration of NO_2 at these locations, background sources dominate the predicted NO_2 levels.

Table 3-3 and

Table 3-4 show that modelled cumulative impacts as annual average concentrations have noticeable differences for the GLNG 3 Mpta and 10 Mpta cases. It is because they show impacts under all weather conditions.

Table 3-3 Results for NO_2 at Receptor Locations for the 3 Mtpa Production Scenario during Normal Operation (µg/m³)

Receptor Group	Due to the GLNG Facility in isolation		Due to the GLNG Facility plus background	
	99.9th percentile 1-hour	Annual	99.9th percentile 1-hour	Annual
Curtis Island (South End) & Quoin Island Community	1.4	0.01	26	1.0
Tide Island Community	2.5	0.03	33	0.5
Curtis Island Parkland	2.4	0.02	30	0.8
Curtis Island Industry Precinct	16.7	0.94	65	0.6
Gladstone	1.6	0.02	82	2.2
Gladstone Airport	0.9	0.01	165	1.9
Gladstone Industry	3.7	0.06	86	2.9
Gladstone Wetland areas	4.2	0.15	83	3.9
Clinton Precinct	1.8	0.02	196	2.3
Yarwun Precinct	3.8	0.06	114	1.9
Targinie Precinct	1.1	0.02	65	8.4
EPA monitoring sites	1.9	0.03	169	2.7
EPP (Air) 2008 Guideline	**250[1]**	**62[1], 33[2]**	**250[1]**	**62[1], 33[2]**

[1] Guideline for Human Health
[2] Guideline for Ecological Health

Table 3-4 Results for NO_2 at Receptor Locations for the 10 Mtpa Production Scenario during Normal Operations (µg/m³)

Receptor Group	Due to the GLNG Facility in isolation		Due to the GLNG Facility plus background	
	99.9th percentile 1-hour	Annual	99.9th percentile 1-hour	Annual
Curtis Island (South End) & Quoin Island Community	4.2	0.04	26	1.2
Tide Island Community	7.6	0.09	33	0.5
Curtis Island Parkland	6.4	0.06	30	0.8
Curtis Island Industry Precinct	30.5	2.12	65	0.7
Gladstone	5.0	0.06	82	3.4
Gladstone Airport	2.8	0.04	166	1.9
Gladstone Industry	10.4	0.21	86	3.0
Gladstone Wetland areas	10.7	0.37	83	4.0
Clinton Precinct	5.2	0.06	196	2.4
Yarwun Precinct	11.2	0.18	114	1.9
Targinie Precinct	3.2	0.06	65	8.4

Receptor Group	Due to the GLNG Facility in isolation		Due to the GLNG Facility plus background	
EPA monitoring sites	5.6	0.09	169	2.8
EPP (Air) 2008 Guideline	**250[1]**	**62[1], 33[2]**	**250[1]**	**62[1], 33[2]**

[1] Guideline for Human Health
[2] Guideline for Ecological Health

Table 3-5 Results for the 99.9th percentile 1-hour Average Ground-Level Concentration of NO_2 at Receptor Locations for the 10 Mtpa Production Scenario during Upset Conditions (µg/m³)

Receptor Group	LNG Facility in Isolation	LNG Facility including Background
Curtis Island (South End) & Quoin Island Community	3	26
Tide Island Community	5.2	33
Curtis Island Parkland	5	30
Curtis Island Industry Precinct	26	66
Gladstone	3	82
Gladstone Airport	2	165
Gladstone Industry	7	86
Gladstone Wetland areas	8	83
Clinton Precinct	4	196
Yarwun Precinct	8	114
Targinie Precinct	2	65
EPA monitoring sites	4	169
EPP (Air) Guideline	**250[1]**	

[1] Guideline for Human Health

Regional Results

Presented in Table 3-6 are the results for NO_2 and SO_2 presented as the maximum through the modelling domain, but outside the GLNG facility.

Table 3-6 Modelling Results for NO_2 and SO_2, Presented as the Maximum throughout the Modelling Domain, but outside the GLNG Facility Boundary, for the GLNG Facility in Isolation (Isolation) and the Cumulative Impacts with the Background Sources (with background)

Production	Scenario	NO_2 (µg/m³)		SO_2 (µg/m³)		
		1 hour, 99.9th	Annual	1 hour, 99.9th	24 hour	Annual
3 Mtpa	Isolation	54	2.6	0.1	<0.05	<0.05
	With background	414	11	832	173	48
10 Mtpa	Isolation	67	3.3	0.3	0.1	<0.05
	With background	414	11	832	173	48
Existing and approved background sources	Background only	414	11	832	173	48
EPP (Air) 2008 guideline		**250[1]**	**62[1]** **33[2]**	**570[1]**	**230[1]**	**57[1]** **32[3]** **22[2]**

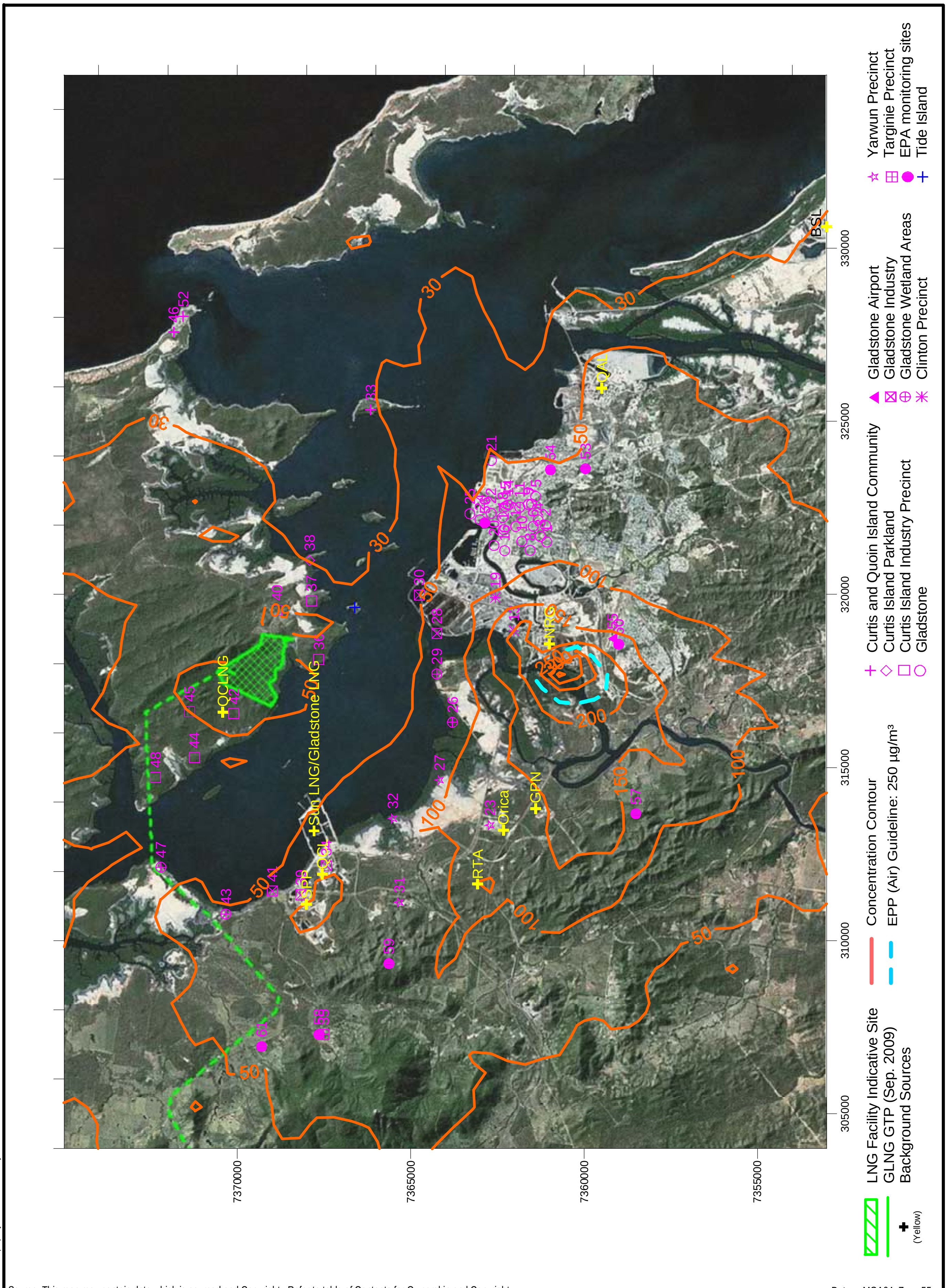
[1] EPP (Air) 2008 Guideline for human health and wellbeing.
[2] EPP (Air) 2008 Guideline for ecological health and biodiversity (for forests and natural vegetation).
[3] EPP (Air) 2008 Guideline for agriculture.

Regional Contour Plots

The contour maps of the modelled cumulative impacts due to normal operation for 99.9th percentile 1-hour average ground level concentration of NO_2 for the 3 Mtpa production scenario are presented in Figure 3-1. Results for the 10 Mtpa production scenario are presented in Figure 3-2. Both figures suggest that the model-predicted cumulative impacts for 99.9th percentile 1-hour average ground-level concentration of NO_2 exceed the EPP (Air) 2008 guideline of 250 µg/m³ for human health and wellbeing in an area close to existing industrial sources at Gladstone. The exceedances are a result of existing industry. Comparison of Figure 3-2 with the EIS Figure 8.8.3 shows that the proposed GLNG Project as well as proposed QCLNG and Rio Tinto Aluminium Yarwun expansion does not significantly change the concentrations at the previous exceedance areas, nor do they contribute to significantly larger areas of exceedances.

At Curtis Island and nearby areas, the inclusion of QCLNG in the cumulative assessment has not led to any exceedances of EPP (Air) objectives for NO_2. The 99.9th percentile 1-hour average ground-level concentration of NO_2 concentrations near the GLNG and QCLNG facilities is approximately 50 µg/m³, which is below the EPP (Air) objective of 250 µg/m³.

The contour maps of the modelled cumulative impacts due to normal operation for annual average NO_2 have been presented in Figure 3-3 for the 3 Mtpa production scenario and in Figure 3-4 for the 10 Mtpa production scenario. The EPP (Air) annual objective of 62 µg/m³ for protecting human health and



Datum: MGA94, Zone 55

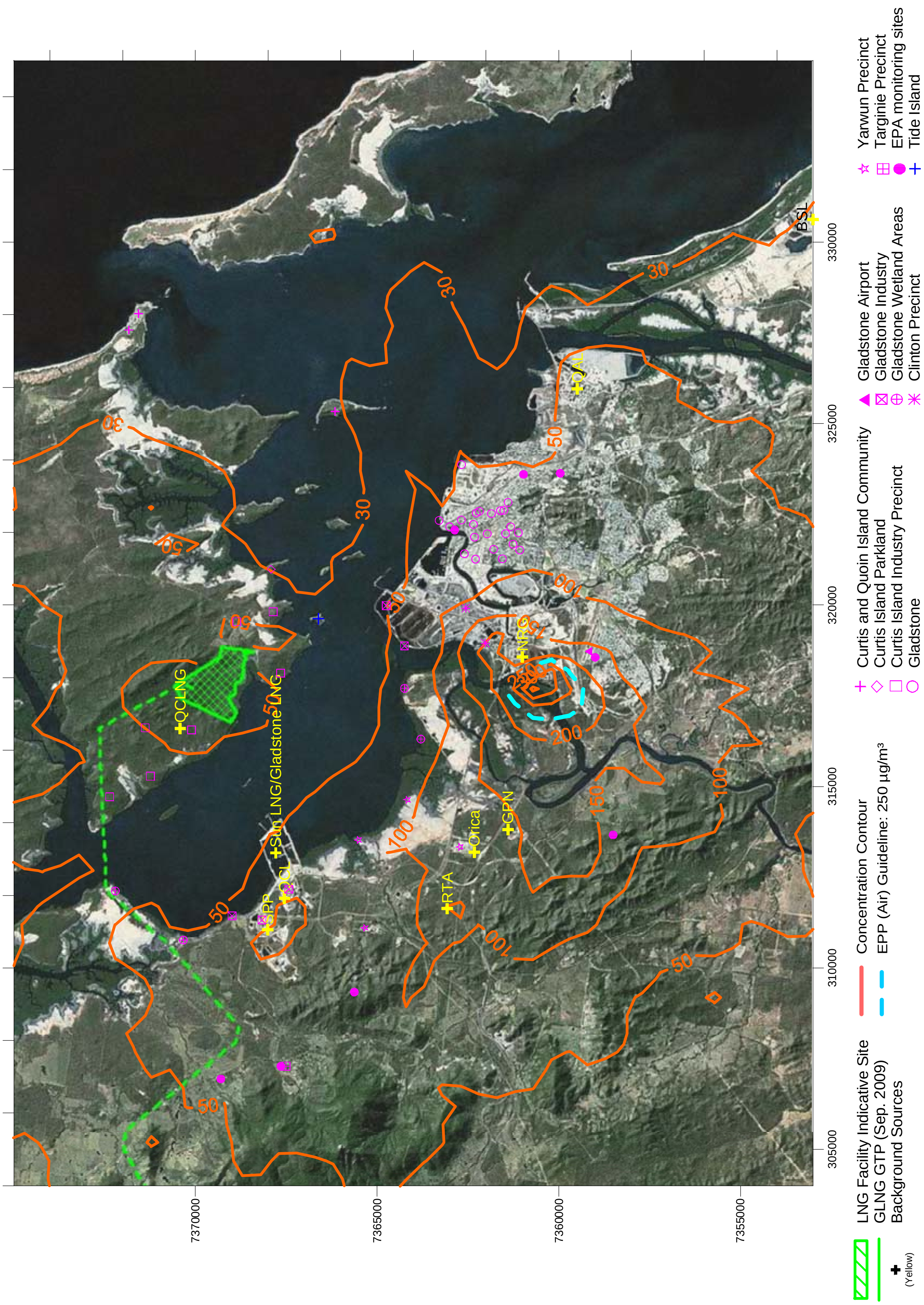
Client: LNG

URS

Project:
GLADSTONE LNG PROJECT
ENVIRONMENTAL IMPACT ASSESSMENT
SUPPLEMENT
AIR QUALITY IMPACT

Title:
99.9th PERCENTILE 1 HOUR AVERAGE CONCENTRATION OF NO2 DUE TO THE LNG FACILITY PLUS BACKGROUND SOURCES FOR 3MTPA (µg/m³)

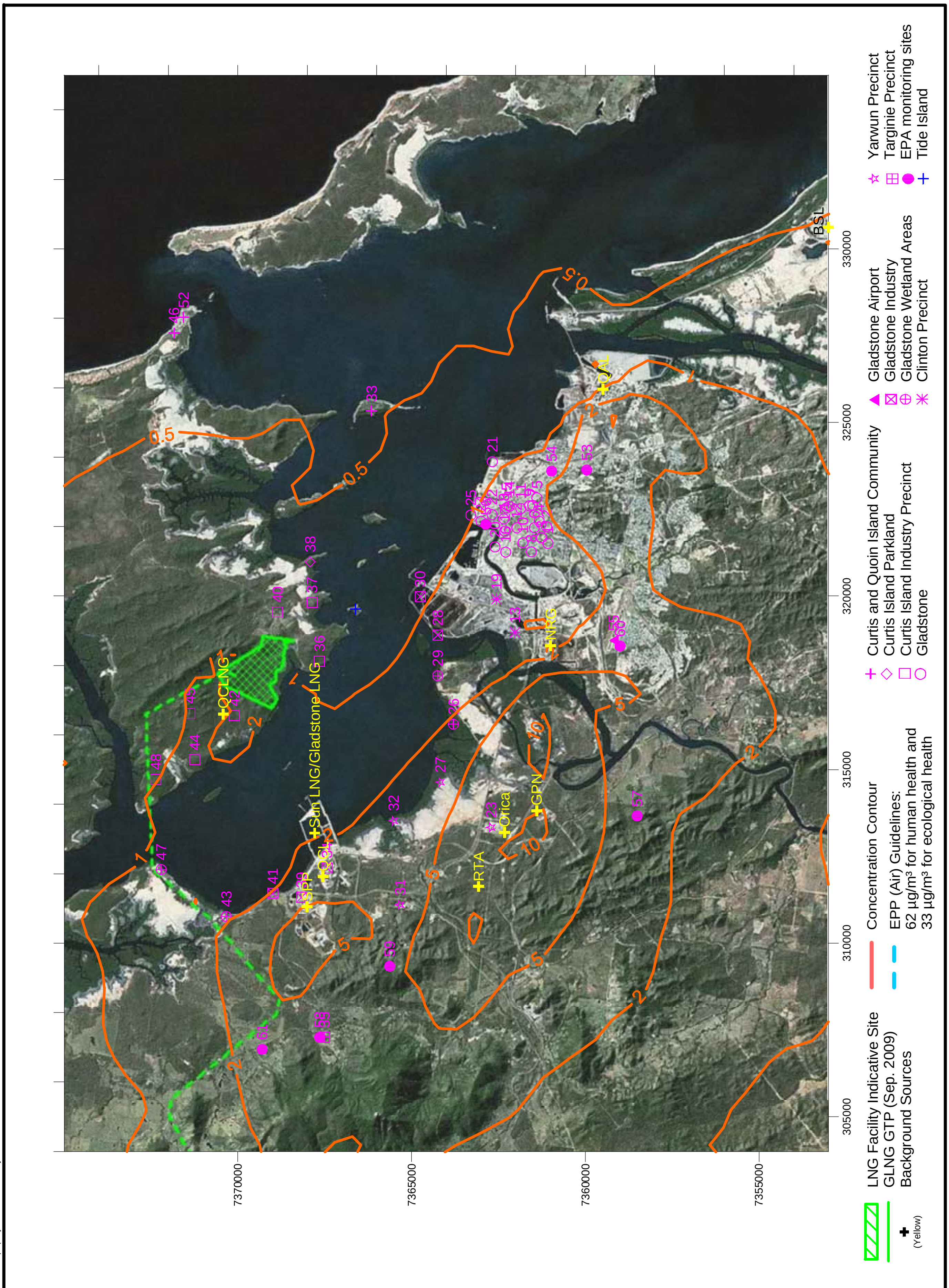
Drawn: LF	Approved: JB	Date: 05-11-2009	Figure: **3-1**	Rev B
Job No: **42626440**/6220	File: 42626440-g-2081b.srf			A4



Source: This map may contain data which is sourced and Copyright. Refer to table of Contents for Ownership and Copyright.

Datum: MGA94, Zone 55

Client:	Project: GLADSTONE LNG PROJECT ENVIRONMENTAL IMPACT ASSESSMENT SUPPLEMENT AIR QUALITY IMPACT	Title: **99.9th PERCENTILE 1 HOUR AVERAGE CONCENTRATION OF NO2 DUE TO THE LNG FACILITY PLUS BACKGROUND SOURCES FOR 10MTPA (µg/m³)**
LNG / URS	Drawn: LF · Approved: JB · Date: 05-11-2009	Figure: **3-2** · Rev B
	Job No: **42626440** /6220 · File: 42626440-g-2082b.srf	A4



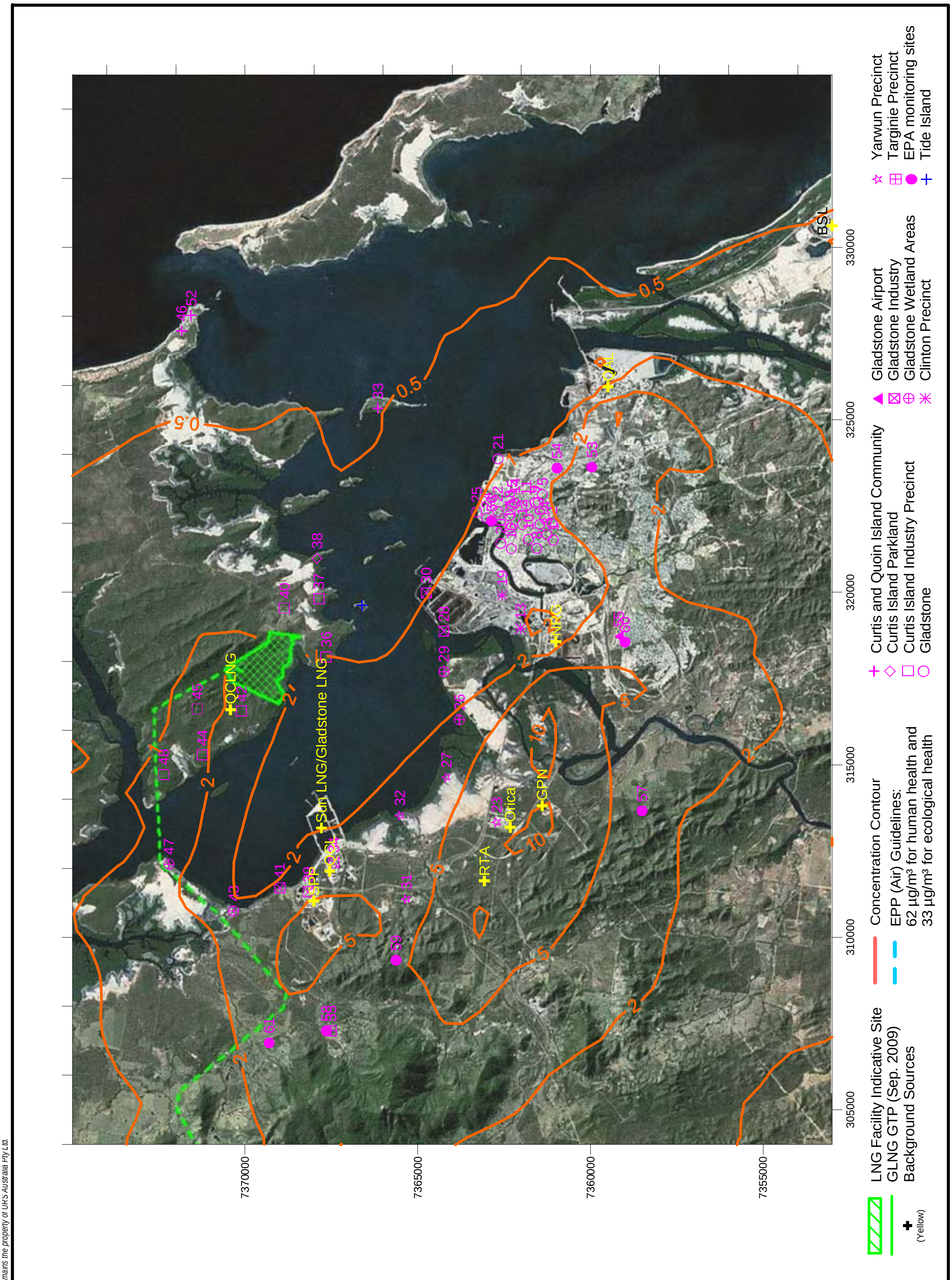
Datum: MGA94, Zone 55

Client: LNG URS

Project:
GLADSTONE LNG PROJECT
ENVIRONMENTAL IMPACT ASSESSMENT
SUPPLEMENT
AIR QUALITY IMPACT

Title:
ANNUAL AVERAGE CONCENTRATION OF NO2 DUE TO THE LNG FACILITY PLUS BACKGROUND SOURCES (µg/m³) FOR 3 MTPA PRODUCTION

Drawn: LF	Approved: JB	Date: 05-11-2009	Figure: **3-3**	Rev B
Job No: **42626440**/6220	File: 42626440-g-2083b.srf			A4



Source: This map may contain data which is sourced and Copyright. Refer to table of Contents for Ownership and Copyright.

Datum: MGA94, Zone 55

Client:

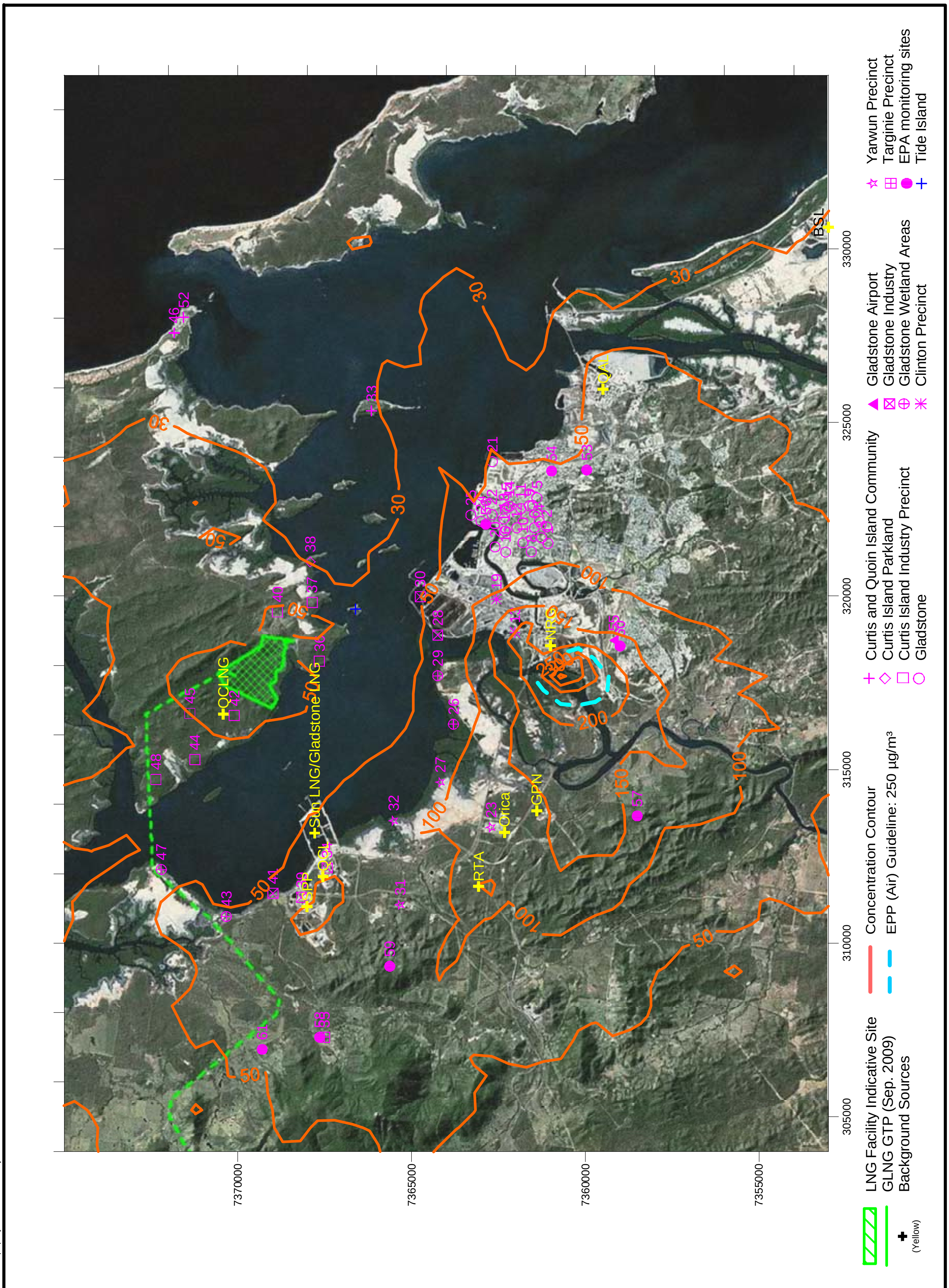
Project:

GLADSTONE LNG PROJECT
ENVIRONMENTAL IMPACT ASSESSMENT
SUPPLEMENT
AIR QUALITY IMPACT

Title:

ANNUAL AVERAGE CONCENTRATION OF NO2 DUE TO THE LNG FACILITY PLUS BACKGROUND SOURCES FOR 10 MTPA PRODUCTION (µg/m³)

Drawn: LF	Approved: JB	Date: 05-11-2009	Figure: **3-4**	Rev B
Job No: **42626440**/6220	File: 42626440-g-2084b.srf			A4



Source: This map may contain data which is sourced and Copyright. Refer to table of Contents for Ownership and Copyright.

Datum: MGA94, Zone 55

Client: LNG / URS	Project: GLADSTONE LNG PROJECT ENVIRONMENTAL IMPACT ASSESSMENT SUPPLEMENT AIR QUALITY IMPACT	Title: **99.9th PERCENTILE 1 HOUR AVERAGE CONCENTRATION OF NO2 DUE TO PLANT PLUS BACKGROUND FOR 10MTPA WITH UPSET CONDITIONS (µg/m³)**
	Drawn: LF · Approved: JB · Date: 05-11-2009	Figure: **3-5** · Rev B
	Job No: **42626440**/6220 · File: 42626440-g-2085b.srf	A4

3.3.2 Results for VOCs

Results are summarised in Table 3-7 for the maximum 24-hour and annual average concentration of VOCs. The modelling results at any receptor locations are well below the EPP (Air) objectives. Even combined with the background levels (presented in Section 2.5), EPP (Air) guidelines for benzene and toluene are not exceeded. Note that background data are not available at Gladstone for other pollutants.

Table 3-7 VOC Concentrations at Receptor Locations due to the GLNG Facility in Isolation (µg/m3)

Receptor Locations	formaldehyde	benzene	toluene		Xylenes		1,3-butadiene
	24 hour	annual	24 hour	annual	24-hour	annual	annual
Curtis Island (South End) & Quoin Island Community	1.6E-02	7.5E-06	2.8E-03	8.1E-05	1.4E-03	4.0E-05	2.7E-07
Tide Island Community	2.7E-02	1.9E-05	5.0E-03	2.1E-04	2.5E-03	1.0E-04	6.8E-07
Curtis Island Parkland	1.9E-02	1.3E-05	3.5E-03	1.4E-04	1.7E-03	6.9E-05	4.7E-07
Curtis Island Industry Precinct	**1.5E-01**	**4.6E-04**	**2.7E-02**	**5.0E-03**	**1.3E-02**	**2.5E-03**	1.7E-05
Gladstone	1.8E-02	1.2E-05	3.3E-03	1.3E-04	1.6E-03	6.3E-05	4.2E-07
Gladstone Airport	8.8E-03	9.1E-06	1.6E-03	9.9E-05	7.9E-04	4.9E-05	3.3E-07
Gladstone Industry	3.0E-02	4.5E-05	5.5E-03	4.9E-04	2.7E-03	2.4E-04	1.6E-06
Gladstone Wetland areas	3.9E-02	8.1E-05	7.2E-03	8.8E-04	3.6E-03	4.3E-04	2.9E-06
Clinton Precinct	2.1E-02	1.2E-05	3.8E-03	1.3E-04	1.9E-03	6.6E-05	4.5E-07
Yarwun Precinct	2.9E-02	3.8E-05	5.3E-03	4.2E-04	2.6E-03	2.0E-04	1.4E-06
Targinie Precinct	1.0E-02	1.3E-05	1.9E-03	1.4E-04	9.3E-04	6.7E-05	4.5E-07
EPA monitoring sites	2.6E-02	2.0E-05	4.8E-03	2.2E-04	2.4E-03	1.1E-04	7.2E-07
EPP (Air) Guideline	**54**	**10**	**4100**	**410**	**1200**	**950**	**2.4**

4

Summary

An assessment of the impacts of the inclusion of emissions of oxides of nitrogen from the proposed QCLNG facility at Curtis Island and emissions from Rio Tinto Alumina Refinery on NO_2 concentration within the Gladstone airshed has been conducted. Results do not highlight any additional air quality issues to those reported as part of the GLNG EIS air quality assessment Section 8.8 and Appendix S. Specifically, predicted exceedances of EPP (Air) objectives are isolated to small areas in close proximity to existing industrial facilities. The predicted ambient NO_2 concentrations stay below the air objectives at sensitive receptor locations and do not significantly change from the previous assessment in the EIS.

Consideration has been given to the emission of VOC from the GLNG facility in isolation from other sources that may exist within the airshed. Results do not highlight any air quality issues associated with emissions of VOC from the facility.

URS

References

QCLNG EIS Appendix 5.13: Air quality impact assessment of the QCLNG Project, Gladstone, Queensland, June 2009, by Katestone Environmental Pty Ltd.

NSW Department of Environment and Climate Change 2002, *Protection of the Environment Operations (Clean Air) Regulation*.

Queensland Government, *Environmental Protection (Air) Policy 2008*

U.S. EPA: *AP-42 - Compilation of Air Pollutant Emission Factors, Fifth Edition*, Volume 1. Web access is http://www.epa.gov/ttn/chief/ap42/.

Limitations

URS Australia Pty Ltd (URS) has prepared this report in accordance with the usual care and thoroughness of the consulting profession for the use of Santo Ltd and only those third parties who have been authorised in writing by URS to rely on the report. It is based on generally accepted practices and standards at the time it was prepared. No other warranty, expressed or implied, is made as to the professional advice included in this report.

The methodology adopted and sources of information used by URS are outlined in this report. URS has made no independent verification of this information beyond the agreed scope of works and URS assumes no responsibility for any inaccuracies or omissions. No indications were found during our investigations that information contained in this report as provided to URS was false.

This report was prepared between 1-10-2009 and 30-10-2009 and is based on the conditions encountered and information reviewed at the time of preparation. URS disclaims responsibility for any changes that may have occurred after this time.

This report should be read in full. No responsibility is accepted for use of any part of this report in any other context or for any other purpose. This report does not purport to give legal advice. Legal advice can only be given by qualified legal practitioners

D

Appendix D Cumulative Noise Assessment - Gladstone

URS

REPORT 20-2014-R8

Revision 0

Santos LNG Facility
Cumulative Noise Impacts

PREPARED FOR

URS Australia Pty Ltd
Level 16 240 Queen Street
Brisbane Qld 4000

3 NOVEMBER 2009

HEGGIES PTY LTD
ABN 29 001 584 612

Santos LNG Facility
Cumulative Noise Impacts

PREPARED BY:

Heggies Pty Ltd
Ground Floor, Suite 7, 240 Waterworks Road Ashgrove QLD 4060 Australia
Telephone 61 7 3858 4800 Facsimile 61 7 3858 4801
Email brisbane@heggies.com Web www.heggies.com

MEMBER FIRM OF THE ASSOCIATION OF AUSTRALIAN ACOUSTICAL CONSULTANTS

Heggies Pty Ltd is a Member Firm of the Association of Australian Acoustical Consultants.

Quality System
Quality Endorsed Company
ISO 9001 Lic 3236
SAI Global

Heggies Pty Ltd operates under a Quality System which has been certified by SAI Global Pty Limited to comply with all the requirements of ISO 9001:2000 "Quality management systems - Requirements" (Licence No 3236).

This document has been prepared in accordance with the requirements of that System.

DOCUMENT CONTROL

Reference	Status	Date	Prepared	Checked	Authorised
20-2014-R8	Revision 0	3 November 2009	Henrik Malker / Glyn Cowie	Henrik Malker	Mark Caslin

EXECUTIVE SUMMARY

PROJECT DESCRIPTION

Heggies Pty Ltd (Heggies) has been engaged by URS Australia Pty Ltd (URS) on behalf of Santos Ltd (Santos) to conduct an assessment of potential cumulative noise impacts based on the predicted operational noise emission levels from a number of proposed industrial developments located in the Gladstone Harbour region as well as the Santos LNG facility.

In addition to the proposed Santos LNG facility, the cumulative noise impact study included the following proposed and approved industrial developments in the Gladstone Harbour region:

- The Queensland Curtis LNG (QCLNG) – an LNG facility (3 process trains of similar size) to be located just north-west of the proposed Santos LNG site on Curtis Island;
- Gladstone LNG – a smaller LNG facility (2 process trains) to be located on reclaimed land at Fisherman's Landing;
- Sun LNG – a smaller LNG facility (similar size to the Gladstone LNG facility) to be located at Fisherman's Landing next to the Gladstone LNG facility;
- Gladstone Pacific Nickel – a nickel refinery to be located in the Yarwun Precinct; and
- Wiggins Island Coal Terminal – a large ship loading coal terminal to be located next to Wiggins Island.

The predicted operational noise emission levels from the Santos LNG facility have been calculated using Heggies 3D noise model (developed for the GLNG EIS study) and incorporate the latest noise model inputs provided by Bechtel (2009[1]).

CUMULATIVE NOISE ASSESSMENT – LNG FACILITY

The following noise modelling scenarios were considered in the cumulative noise assessment:

- **Scenario 1** – Predicted noise levels from the Santos LNG facility (based on updated noise source levels as provided by Bechtel[1]).
- **Scenario 2** – Predicted noise levels from the Santos LNG facility are based on mitigated noise source levels provided by Bechtel (2009[2]) including pipe lagging and low noise air coolers amongst other mitigated noise sources (approximate noise reduction of 7 dBA compared to Scenario 1).

The predicted operational noise levels from the above Scenarios 1 and 2 were compared to predicted operational noise levels from the proposed and approved industrial developments to predict an overall cumulative noise level.

The significance of the cumulative noise impacts associated with the Santos LNG facility was determined with respect to the two (2) following factors:

- **Cumulative Noise Impact 1** – Predicted noise emission levels from the Santos LNG facility has a significant impact on the cumulative noise level from all proposed industrial developments (ie Santos LNG facility increased the total noise level by more than 2 dBA).
- **Cumulative Noise Impact 2** – The predicted cumulative noise level from all proposed industrial developments (including the Santos LNG facility) was equal to or above the existing background noise level (ie cumulative noise levels to significantly impact the existing background noise level).

EXECUTIVE SUMMARY

FINDINGS

Scenario 1

Scenario 1 showed that Santos LNG facility was a significant contributor to the total cumulative noise Level at the majority of the assessment locations except P1 (Tide Island) and P6 (Gladstone Marina). Of the locations where Santos LNG facility was a significant contributor, another two (2) locations (P3 and P7) were predicted to have cumulative noise levels (from all industrial developments) which were significantly impacting on the existing background noise level.

Of all the industrial developments that contributed, the significant cumulative noise impact to existing background noise levels at P1 (Tide Island) was primarily due to the proposed Wiggins Island Coal Terminal.

Scenario 2

For the Santos LNG Facility with reduced noise source levels (Scenario 2), the Santos LNG facility does not significantly contribute to the total cumulative noise level at any of the assessment locations (ie there is less than 2 dBA increase when noise emissions from all industry developments are considered).

Scenario 2 showed that there will be a significant cumulative noise impact at Tide Island and Fisherman's Road. However, the cumulative noise impact at P1 (Tide Island) was primarily due to noise emissions from the Wiggins Island Coal Terminal and not by the Santos LNG facility. The cumulative noise impact at Fisherman's Road (for Scenario 2) was due to the two (2) LNG facilities proposed at Fisherman's Landing (Gladstone LNG and Sun LNG). At the other assessment locations, no significant cumulative noise impacts were predicted on the existing background noise level from the proposed industrial projects (ie that is the total cumulative noise level from all industry developments is lower than the existing background noise level).

TABLE OF CONTENTS

1 INTRODUCTION

Heggies Pty Ltd (Heggies) was engaged by URS Australia Pty Ltd (URS) on behalf of Santos Ltd (Santos) to assess the cumulative noise impacts based on the predicted operational noise emission levels from a number of proposed industrial developments located in the Gladstone Harbour region as well as the Santos LNG facility.

The predicted operational noise emission levels from the Santos LNG facility have been calculated using Heggies 3D noise model (developed for the GLNG EIS study) and incorporate the latest noise model inputs provided by Bechtel (2009[1]).

The predicted operational noise emission levels for the other relevant industrial developments have been sourced from the available published EIS reports.

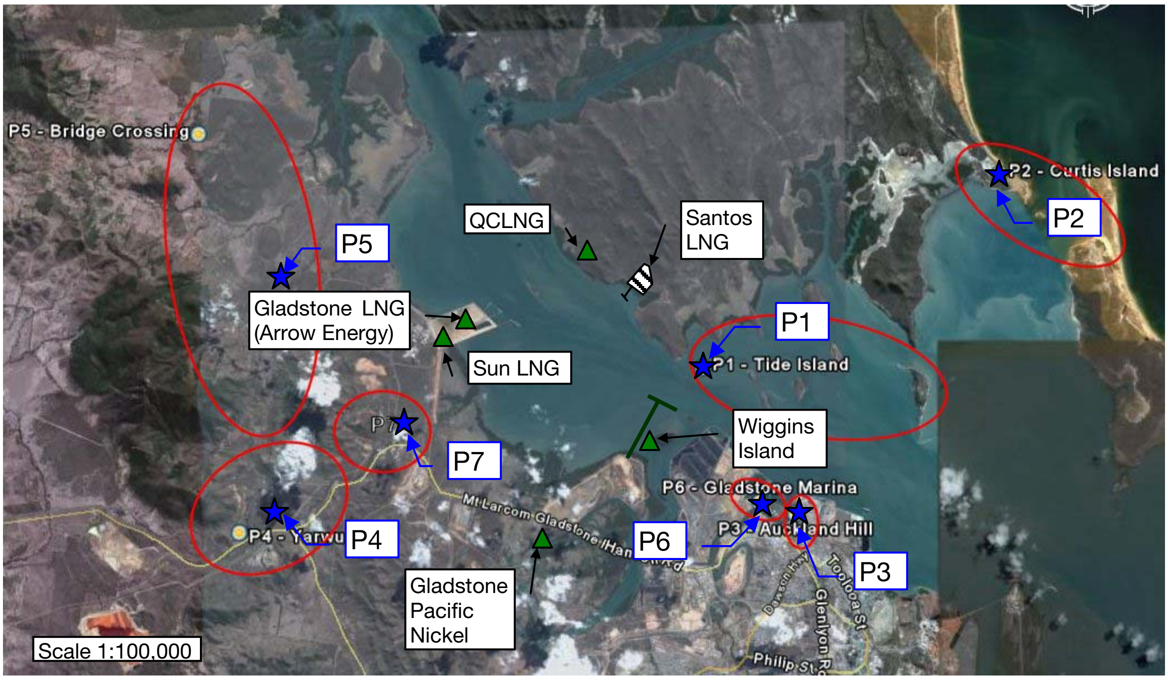
2 PROPOSED DEVELOPMENTS IN GLADSTONE

The cumulative noise impact study considers a number of proposed and approved industrial developments in the Gladstone Harbour region. The industrial developments considered in this study include:

- The Queensland Curtis LNG (QCLNG) – an LNG facility (3 process trains of similar size) to be located just north-west of the proposed Santos LNG site on Curtis Island. The noise source levels were taken from the EIS report for this project (ERM, 2009);
- Gladstone LNG – a smaller LNG facility (2 process trains) to be located on reclaimed land at Fisherman's Landing. The noise source levels were taken from the EIS report for this project (Savery and Associates, 2008);
- Sun LNG – a smaller LNG facility (similar size to the Gladstone LNG facility) to be located at Fisherman's Landing next to the Gladstone LNG facility. The noise source levels were assumed to be the same as for Gladstone LNG facility;
- Gladstone Pacific Nickel – a nickel refinery to be located in the Yarwun Precinct. The noise source levels were taken from the EIS Supplement report for the project (ASK, 2007); and
- Wiggins Island Coal Terminal – a large ship loading coal terminal to be located next to Wiggins Island. The noise source levels were taken from the EIS Supplement report for the project (Heggies, 2007).

The proposed industrial developments are shown in **Figure 1**.

Figure 1 Proposed Industrial Developments and Assessment Locations (P1-P7)



3 CUMULATIVE NOISE ASSESSMENT – LNG FACILITY

This assessment compares the predicted noise levels from the Santos LNG facility with predicted noise levels from other industrial developments within the Gladstone Harbour area and with the existing rating background level (RBL[1]). The predicted cumulative noise levels from these industrial developments are discussed for scenarios with and without the Santos LNG facility in order to assess the cumulative noise impact (if any) associated with the Santos LNG facility. The assessment locations at which the predicted noise levels have been calculated are shown in **Figure 1** and are representative of the nearest residential receivers to the proposed LNG facility.

The predicted noise levels are for neutral weather conditions (10°C, 70% humidity, Pasquill Stability Category D and no wind) in order to eliminate the influence of metrological conditions on predicted noise levels. In particular, the following noise modelling scenarios have been considered in the cumulative noise assessment:

- **Scenario 1** – Predicted noise levels from the Santos LNG facility are based on noise source levels as provided by Bechtel (2009[1]).
- **Scenario 2** – Predicted noise levels from the Santos LNG facility are based on mitigated noise source levels provided by Bechtel (2009[2]) including pipe lagging and low noise air coolers amongst other mitigated noise sources. This represents a noise reduction of approximately 7 dBA in comparison with Scenario 1 above.

[1] The RBL is the median of the 90th percentile background (LA90) noise levels in each assessment period (day, evening and night) over the duration of the noise monitoring (as defined in the Queensland's Department of Environment and Resource Management's (DERM) *Ecoaccess Guideline: Planning for Noise Control*).

It is appropriate to assess the cumulative noise impacts associated with the Santos LNG facility with reference to the existing and future (predicted) background (L_{A90}) noise levels. The predicted noise levels for several industrial developments are presented in terms of the L_{Aeq} noise parameter. For those industrial developments not presenting predictions for the L_{A90} noise parameter, it has been assumed that the difference between the L_{Aeq} parameter and the L_{A90} parameter is minimal for typical continuous noise emissions from LNG facilities and Nickel refineries (such as those discussed in this assessment).

Table 1 compares the predicted noise levels from the Santos LNG facility, based on the noise source levels as per Scenario 1 above, with the other proposed industrial developments.

Table 2 compares the predicted noise levels from the Santos LNG facility, based on the noise source levels as per Scenario 2 above, with the other proposed industrial developments.

Figure 2 shows the individual and cumulative noise levels from the proposed industrial developments in the Gladstone Harbour region (based on the Santos LNG facility noise source levels as per Scenario 1 above).

Figure 3 shows the individual and cumulative noise levels from the proposed industrial developments in the Gladstone Harbour region (based on the Santos LNG facility noise source levels as per Scenario 2 above).

Table 1 Noise Levels from Proposed Projects in the Gladstone Harbour Region – Scenario 1

Assessment Location	Santos LNG Scenario 1	QCLNG	Gladstone LNG	Sun LNG (Estimated)	Wiggins Island	Gladstone Nickel	Total without Santos	Total with Santos	Current RBL[1]
P1	44	30	31	31	48	25	48	50	41
P2	26	11	< 10	< 10	17	< 10	18	27	31
P3	36	25	21	21	29	19	32	37	37
P4	25	-	17	17	11	21	24	27	37
P5	29	24	22	22	10	< 10	28	31	33
P6	32	24	21	21	32	22	34	36	38
P7	38	30	35	35	26	30	39	42	40[2]

Note: Predicted noise levels are shown in terms of the LA90 noise parameter and for neutral weather conditions.

Note 1: RBL is the median of the 90th percentile background (LA90) noise levels in each assessment period (day, evening and night) over the duration of the noise monitoring.

Note 2: Typical background noise levels for an "Industrial Area' as shown in Queensland's DERM's *Ecoaccess Guideline: Planning for Noise Control* 'Recommended Outdoor Planning Noise Levels'.

'-' denotes no predict noise emission levels at P4 from QCLNG.

Table 2 Noise Levels from Proposed Projects in the Gladstone Harbour Region – Scenario 2 (Bechtel Mitigated)

Assessment Location	Santos LNG Scenario 2	QCLNG	Gladstone LNG	Sun LNG (Estimated)	Wiggins Island	Gladstone Nickel	Total without Santos	Total with Santos	Current RBL[1]
P1	37	30	31	31	48	25	48	49	41
P2	20	11	< 10	< 10	17	< 10	18	22	31
P3	29	25	21	21	29	19	32	33	37
P4	18	-	17	17	11	21	24	25	37
P5	22	24	22	22	10	< 10	28	29	33
P6	25	24	21	21	32	22	34	34	38
P7	31	30	35	35	26	30	39	40	40[2]

Note: Predicted noise levels are shown in terms of the LA90 noise parameter and for neutral weather conditions.

Note 1: RBL is the median of the 90th percentile background (LA90) noise levels in each assessment period (day, evening and night) over the duration of the noise monitoring.

Note 2: Typical background noise levels for an "Industrial Area' as shown in Queensland's DERM's *Ecoaccess Guideline: Planning for Noise Control* 'Recommended Outdoor Planning Noise Levels'.

'-' denotes no predict noise emission levels at P4 from QCLNG.

Figure 2 Comparison of Predicted Noise Levels from Proposed Industrial Developments in the Gladstone Harbour Region - Scenario 1

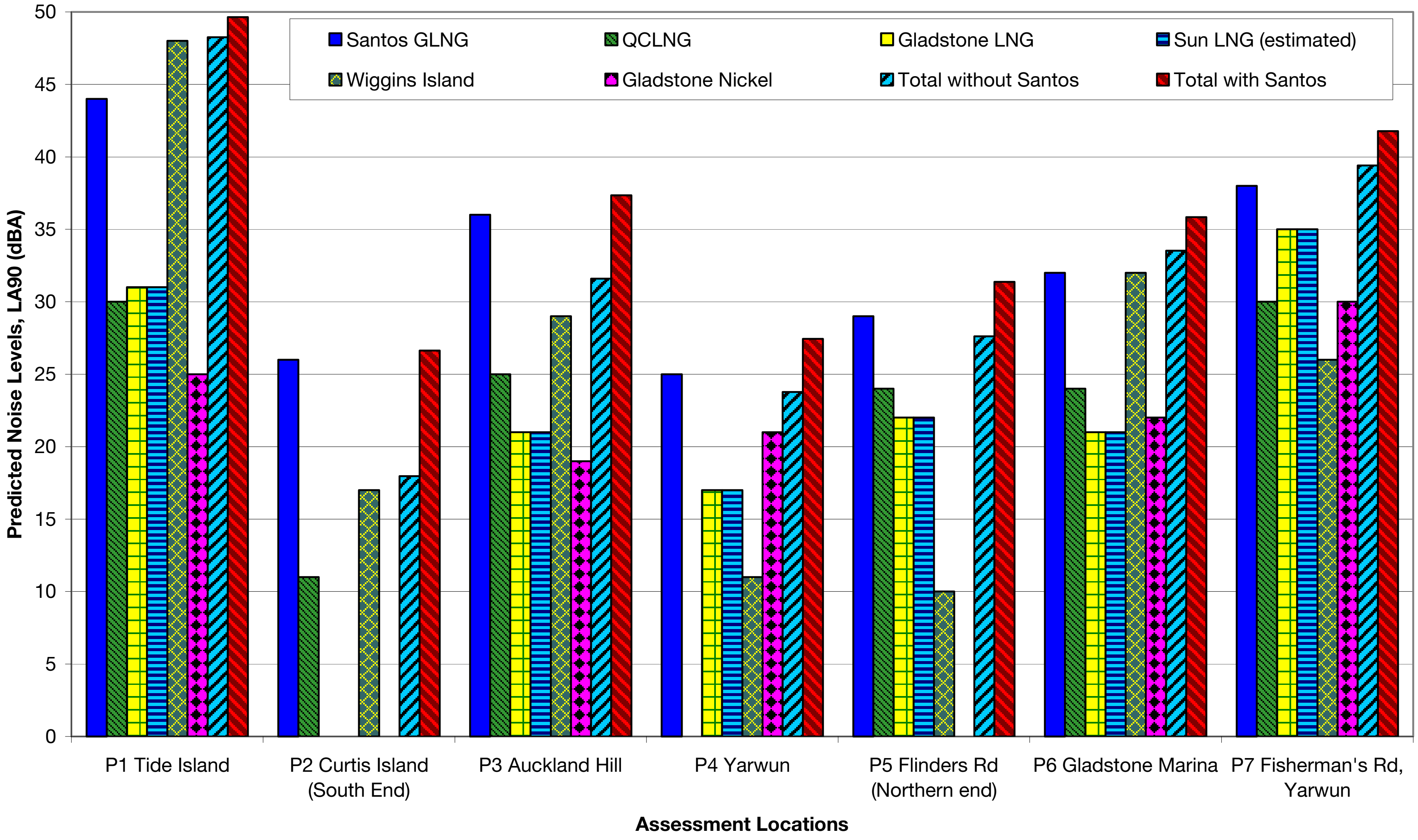
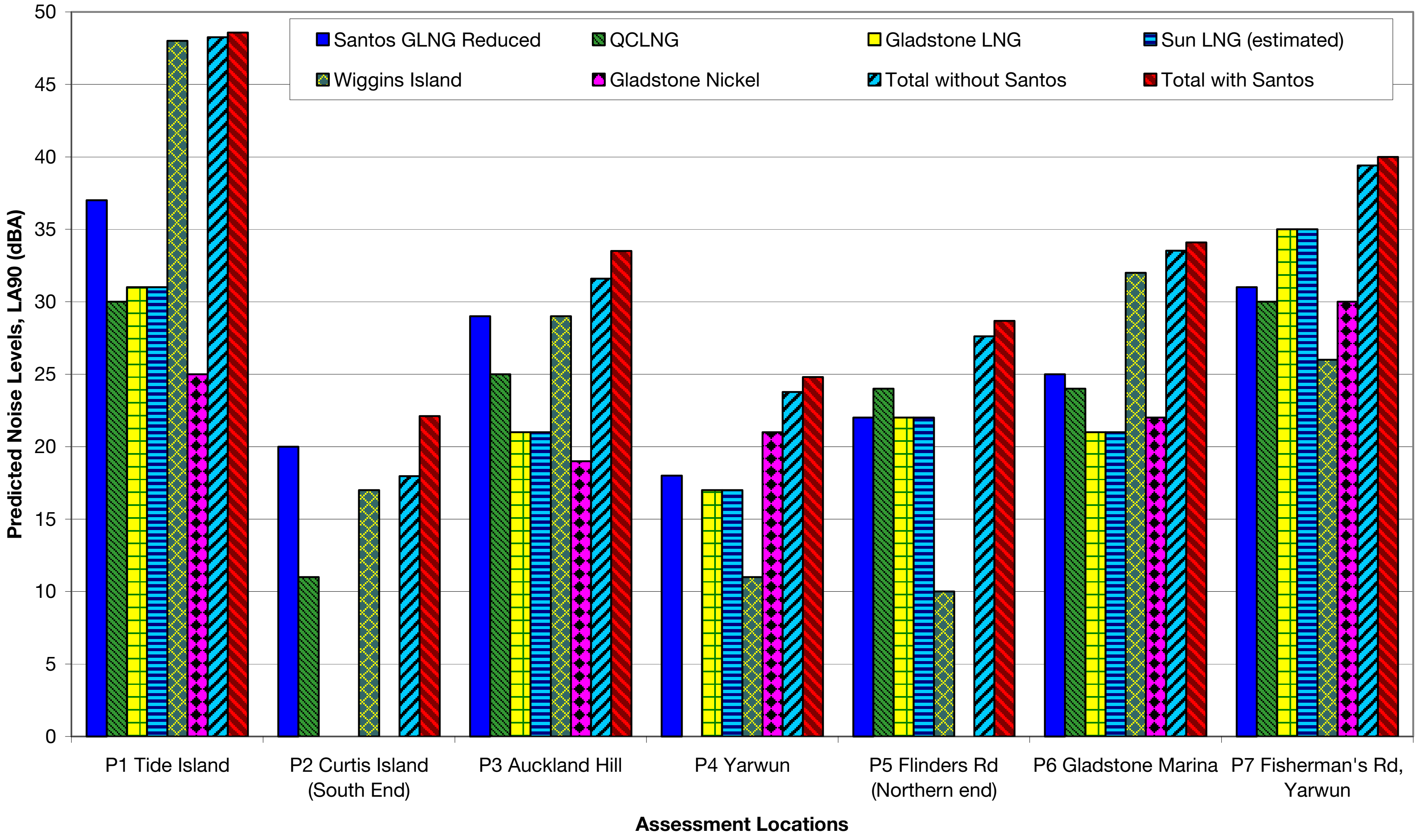


Figure 3 Comparison of Predicted Noise Levels from Proposed Industrial Developments in the Gladstone Harbour Region - Scenario 2 (Bechtel Mitigated)



4 DISCUSSION

Table 1 and **Figure 2** (Scenario 1) show that the predicted noise levels from the Santos LNG facility are below the existing background noise levels at all assessment locations except Tide Island. The predicted noise emissions from the Santos LNG facility are lower at P1 (Tide Island) when compared to the predicted noise emission levels from the Wiggins Island Coal Terminal development.

An assessment of the significance of the cumulative noise impacts of the combined projects on the receptor locations and the level of contribution of the Santos LNG Facility to the cumulative noise impacts at the receptor locations has been undertaken. The assessment of significance of the cumulative noise impacts has been undertaken with respect to the two (2) following factors:

- **Cumulative Noise Impact 1** – Predicted noise emission levels from the Santos LNG facility have a significant impact on the cumulative noise level from all proposed industrial developments (ie that is increasing the total noise level by more than 2 dBA). This is determined by comparing the 'Total with Santos' and the 'Total without Santos' in **Table 1** and **Table 2**; and
- **Cumulative Noise Impact 2** – The predicted cumulative noise level from all proposed industrial developments (including the Santos LNG facility) is equal to or above the existing background noise level (ie the predicted cumulative noise levels is having a significant impact on existing background noise level).

The results of the assessment are summarised in **Table 3** below.

Table 3 Assessment of Cumulative Noise Impact – Summary

Assessment Location	Scenario 1		Scenario 2	
	Cumulative Noise Impact 1	**Cumulative Noise Impact 2**	**Cumulative Noise Impact 1**	**Cumulative Noise Impact 2**
P1	No	Yes	No	Yes
P2	Yes	No	Yes	No
P3	Yes	Yes	No	No
P4	Yes	No	No	No
P5	Yes	No	No	No
P6	No	No	No	No
P7	Yes	Yes	No	Yes

Scenario 1

Table 3 shows that the Santos LNG facility (Scenario 1) is a significant contributor to the total cumulative noise level at the majority of the assessment locations except P1 (Tide Island) and P6 (Gladstone Marina). Of the locations at which the Santos LNG is a significant contributor, two (2) locations (P3 and P7) are also predicted to have cumulative noise levels (from all industrial developments) which are significantly impacting on the existing background noise level.

Of all the industrial development that contributed, the significant cumulative noise impacting on existing background noise levels at P1 (Tide Island) was primarily due to the proposed Wiggins Island Coal Terminal.

Scenario 2

For the Santos LNG Facility with reduced noise source levels (Scenario 2), **Table 3** shows that the Santos LNG facility only significantly contribute to the total cumulative noise level at the P2 (Curtis Island South end). At P2 the total cumulative noise levels is more than 10 dBA below the existing, resulting in no cumulative noise impact.

Table 3 indicates that for Scenario 2 there will be a significant cumulative noise impact at Tide Island and Fisherman's Road. However, the cumulative noise impact at P1 (Tide Island) is primarily due to noise emissions from the Wiggins Island coal terminal and not by the Santos LNG facility. The cumulative noise impact at Fisherman's Road (for Scenario 2) is due to the two (2) LNG facilities proposed to be located at Fisherman's Landing (Gladstone LNG and Sun LNG). At the other assessment locations there is not predicted to be any significant cumulative noise impact on existing background noise level from the proposed industrial projects (ie that is the total cumulative noise level from all industry developments is lower than the existing background noise level).

5 CONCLUSION

A comprehensive assessment has been undertaken to present the cumulative noise impacts of operational noise emission levels at noise sensitive receiver locations within the Gladstone area.

In addition to the proposed Santos LNG facility, the cumulative noise impact study included the following proposed and approved industrial developments in the Gladstone Harbour region:

- Queensland Curtis LNG
- Gladstone LNG
- Sun LNG
- Gladstone Pacific Nickel
- Wiggins Island Coal Terminal

The following noise modelling scenarios were considered in the cumulative noise assessment:

- **Scenario 1** – Predicted noise levels from the Santos LNG facility (based on updated noise source levels as provided by Bechtel (2009[1])).
- **Scenario 2** – Predicted noise levels from the Santos LNG facility are based on mitigated noise source levels provided by Bechtel (2009[2]) including pipe lagging and low noise air coolers amongst other mitigated noise sources. This represents a noise reduction of approximately 7 dBA in comparison with Scenario 1 above.

The predicted operational noise levels from the above Scenarios 1 and 2 were compared to predicted operational noise levels from the proposed and approved industrial developments to predict an overall cumulative noise level.

The significance of the cumulative noise impacts associated with the Santos LNG facility were determined with respect to the two (2) following factors:

- **Cumulative Noise Impact 1** – Predicted noise emission levels from the Santos LNG facility had a significant impact on the cumulative noise level from all proposed industrial developments (ie Santos LNG facility increased the total noise level by more than 2 dBA).
- **Cumulative Noise Impact 2** – The predicted cumulative noise level from all proposed industrial developments (including the Santos LNG facility) was equal to or above the existing background noise level (ie cumulative noise levels to significantly impact the existing background noise level).

Table 3 indicates that while the Santos LNG facility was observed to significantly contributing to the total cumulative noise level for Scenario 1, there will not be a significant cumulative noise impact due to the Santos LNG facility for Scenario 2 due to the 9 dBA noise reduction for this plant design. It is noted that there may also be no cumulative noise impact from Santos LNG facility at noise reduction levels of less than 9 dBA.

6 ACRONYMS

DERM[1]	Department of Environment and Resource Management
GLNG	Santos Ltd / PETRONAS Gladstone LNG
LNG	Liquefied Natural Gas
QCLNG	Queensland Curtis LNG
RBL	Rating Background Level

[1] Formerly Environmental Protection Agency (EPA)

7 REFERENCES

ASK Consulting Engineers (2007). *Gladstone Nickel Project EIS Supplement, Appendix J: Updated Noise Report.* Dated 22 October 2007

Bechtel (2009[1]). *GLNG list of noise sources* and *Noise source locations (13Aug09)*, email dated 2 September 2009

Bechtel (2009[2]). *List of Noise Sources and their PWL SPL_12Oct09*, email dated 21 October 2009

Department of Environment and Resource Management (2004), *Ecoaccess Guidelines: Planning for Noise Control*

ERM Australia Pty Ltd (2009). *Queensland Curtis LNG EIS, Volume 5, Chapter 13: Noise and Vibration*. Dated July 2009

Heggies (2007). *Wiggins Island Coal Terminal Supplementary EIS, Chapter 14: Noise and Vibration.* Dated 27 July 2007

Heggies, (2009). *Santos Gladstone LNG Environmental Impact Statement – Noise and Vibration (Terrestrial)*. (Reference: 20-2014-R1R4, dated 22 May 2009).

Savery & Associates (2008). *Volume 1 Environmental Impact Statement, Chapter 12 Noise and Vibration*. Report by Worley Parsons dated 17 September 2008

URS

URS Australia Pty Ltd
Level 16, 240 Queen Street
Brisbane, QLD 4000
GPO Box 302, QLD 4001
Australia
T: 61 7 3243 2111
F: 61 7 3243 2199

www.ap.urscorp.com