University of Southern Queensland

Faculty of Health, Engineering and Sciences

Improving Queensland Speed Zoning Practices

A dissertation submitted by

Alexander Williams

in fulfilment of the requirements of

ENG4111 and ENG4112 Research Project

towards the degree of

Bachelor of Engineering (Civil)

Submitted October 2016

Abstract

Queensland speed limits are assessed against the guidelines outlined within Part 4 of the Manual of Uniform Traffic Control Devices (MUTCD Part 4), which is maintained by the Queensland Department of Transport and Main Roads. This project was undertaken in order to develop recommendations for improvements in future revisions of MUTCD Part 4 that meet the needs of local government and industry users.

The current framework outlined within MUTCD Part 4 can be difficult for practitioners to follow and often adds unnecessary cost and complexity to speed zoning processes. Results between different users may be inconsistent as a result. It is also structured towards application on State roads, which means that it does not consistently align with local government needs regarding transport planning and traffic operations. It is believed that amendments to particular elements of the guidelines will increase practicality in application and ensure consistent speed zoning in Queensland.

Local and international guidelines for speed zoning were reviewed to understand the processes undertaken by other road authorities. The possibilities of using speed measuring technology and risk assessment tools to analyse speed limits were also considered.

Interviews were conducted to identify stakeholder issues with MUTCD Part 4, and to assist in making informed recommendations for future revisions. Additionally, case studies were conducted using different speed zoning processes on a sample of roads to identify the strengths and weaknesses of processes used by other state and international road authorities. These results were compared to those obtained using MUTCD Part 4.

Project tasks highlighted numerous aspects of MUTCD Part 4 that could be improved and provided a basis for recommendations to be considered in future revisions of the guidelines. Suggested recommendations include amendments to road function classification, criteria-based speed limits for all speed limits, flowchart mapping of processes for clarity, inclusion of design guidance to effect speed reductions and updates to the online assessment tool, QLIMITS.

If adopted by the Department of Transport and Main Roads, future amendments to MUTCD Part 4 may result in more consistency in speed zoning practise and provide a document that will be practical for transport planning purposes. The suggested recommendations may also contribute to improving community understanding and acceptance of Speed Zoning procedures.

Further work after completion of this project involves approaching The Department of Transport and Main Roads to discuss the project and suggested recommendations for consideration in future amendments to MUTCD Part 4.

University of Southern Queensland

Faculty of Health, Engineering and Sciences

ENG4111 & ENG4112 Research Project

Limitations of Use

The Council of the University of Southern Queensland, its Faculty of Health, Engineering and Sciences, and the staff of the University of Southern Queensland, do not accept any responsibility for the truth, accuracy or completeness of material contained within or associated with this dissertation.

Persons using all or any part of this material do so at their own risk, and not at the risk of the Council of the University of Southern Queensland, its Faculty of Health, Engineering and Sciences or the staff of the University of Southern Queensland.

This dissertation reports an educational exercise and has no purpose or validity beyond this exercise. The sole purpose of the course pair entitled "Research Project" is to contribute to the overall education within the student's chosen degree program. This document, the associated hardware, software, drawings, and any other material set out in the associated appendices should not be used for any other purpose: if they are so used, it is entirely at the risk of the user.

Certification

I certify that the ideas, designs and experimental work, results, analyses and conclusions set out in this dissertation are entirely my own effort, except where otherwise indicated and acknowledged.

I further certify that the work is original and has not been previously submitted for assessment in any other course or institution, except where specifically stated.

Alexander Williams

Student Number 0050084474

Acknowledgements

I would like to thank Ron Ayers and Peter Bilton who have both acted as supervisors and have been immensely helpful with provision of guidance throughout the course of my project.

I would also like to thank the City of Gold Coast and Department of Transport and Main Roads for participating in stakeholder interviews.

Contents

Abstract i
Acknowledgements iv
1.0 Introduction 1
1.1 Project Aim and Justification 1
1.2 Project Methodology 3
1.2.1 Stage 1 – Literature Review 3
1.2.2 Stage 2 – Stakeholder Interviews and Critical Review 4
1.2.3 Stage 3 – Case Studies 4
1.2.4 Stage 4 – Development of Recommendations 5
1.3 Project Appreciation 5
1.4 Key Literature and Definitions 5
1.4.1 Transport Operations (Road Use Management) Act 1995 5
1.4.2 Transport Operations (Road Use Management – Road Rules) Regulation 2009 6
1.4.3 The Manual of Uniform Traffic Control Devices 6
1.4.4 Australian Standard 1742.4-2008 6
1.4.5 Austroads Guide to Road Safety Part 3: Speed Limits and Speed Management 7
1.4.6 Austroads Guide to Traffic Management Part 5: Road Management 7
1.4.7 Engineering Judgement 7
1.4.8 Speed Limit 7
1.4.9 Speed Zone 7
1.4.10 Speed Environment 7
1.4.11 General Speed Limits 8
1.4.12 Prevailing Speed 8
1.4.13 Upper Limit of 15 km/h pace 8
1.4.14 85th percentile speed 8
1.4.15 Road Function 8
2.0 Literature Review 10
2.1 Purpose 10
2.1.1 Safe System Approach 11
2.1.2 Speed and Crash Risk 11
2.1.3 Behavioural Influences 14
2.1.4 Speed Limit Effects on Society 16
2.2 Speed Measuring Methods 16
2.2.1 Tube counts 16
2.2.2 Bluetooth 17
2.2.3 Mobile Phone Locational Data 18

2.3 Risk Assessment Methods 19
2.3.1 AusRAP Data 19
2.4 Intelligent Transport Systems 20
2.4.1 Variable Speed Limits 20
2.4.2 Self-driving technology 22
2.5 The Manual of Uniform Traffic Control Devices Part 4 23
2.5.1 MUTCD Part 4 Overview 23
2.5.2 Speed Management 24
2.5.3 Speed Zoning and Speed Limit Reviews 25
2.6 Australian Standards and Guidelines 31
2.6.1 Victoria 31
2.6.2 New South Wales 32
2.6.3 Western Australia 33
2.7 International Guidelines 33
2.7.1 United States of America (California) 33
2.7.2 Sweden 34
2.7.3 United Kingdom 34
2.7.4 New Zealand 35
2.8 Guideline Summary 37
3.0 Assessment of MUTCD Part 4 42
3.1 Stakeholder Interviews 42
3.2 Identified Issues 42
3.2.1 Criteria Based Approach 42
3.2.2 Road Function 43
3.2.3 Data Collection 44
3.2.4 QLIMITS Crash Rate Formula 44
3.2.5 Safety Focus 44
3.2.6 Clarification of Engineering Judgement 44
3.2.7 Design Guidance 45
3.2.8 Accessibility 46
4.0 Identification of Solutions 47
4.1 Options Overview 47
4.2 Adoption of Other Guidelines 48
4.3 Amendments to MUTCD Part 4 48
5.0 Case Studies 49
5.1 Case Study Process Overview 49
5.2 Case Study Methodology 49
5.2.1 Data Collection 49

5.2.2 MUTCD Part 4 Process 50
5.2.3 New South Wales Process 50
5.2.4 Western Australia Process 51
5.2.5 New Zealand Process 51
5.3 Site Descriptions 52
5.3.1 Nerang Murwillumbah Road 52
5.3.2 Currumbin Creek-Tomewin Road 55
5.3.3 Cunningham Highway 61
5.3.4 Mount Lindesay Highway 65
5.3.5 Oxley Drive 67
5.3.6 Reedy Creek Road 69
5.4 Case Study Results 71
5.4.1 Nerang Murwillumbah Road 71
5.4.2 Currumbin Creek-Tomewin Road 72
5.4.3 Cunningham Highway 74
5.4.4 Mount Lindesay Highway 75
5.4.5 Oxley Road 75
5.4.6 Reedy Creek Road 76
5.4.7 Results Summary 77
5.5 Case Study Observations 79
5.6 Summary of Case Studies 80
6.0 Recommendations 81
6.1 Accessibility Tools 81
6.2 Further Utilisation of Criteria Based Speed Limits 83
6.3 Road Function 84
6.4 Planning and Design Guidance 84
6.5 Clarification of Engineering Judgement 85
6.6 Updates to QLIMITS 85
7.0 Conclusions 86
7.1 Project Summary 86
7.2 Future Work 87
8.0 References 89
Appendix A 91
Appendix B 93
Appendix C 180
Appendix D 264

Tables

Table 2.1 – WTP Values in Queensland (June 2013 values) 14
Table 2.2 - Influencing Factors of Speed Choice 14
Table 2.3 – Additional Driver Related Factors 15
Table 2.4 – Example SLNZ Roadway Rating Criteria (Geometry) 37
Table 2.5 – Guideline Observations: Application and Outcomes 38
Table 2.6 – Guideline Comparison 41
Table 5.1 – Nerang Murwillumbah Road Site Inspection Observations 53
Table 5.2 – Currumbin Creek-Tomewin Road Site Inspection Observations 56
Table 5.3 – Cunningham Highway Site Inspection Observations 62
Table 5.4 – Mount Lindesay Highway Site Inspection Observations 65
Table 5.5 – Oxley Drive Site Inspection Observations 68
Table 5.6 – Reedy Creek Road Site Inspection Observations 70
Table 5.7 – Case Study Results 77
Table 6.1 – Example of Criteria Based Speed Limits (Urban Areas) 83

Figures

Figure 1.1 – Road Type and Function: Mobility vs Access 9
Figure 2.1 – The Power Model 12
Figure 2.2 – The Relationship between Speed and Casualties 12
Figure 2.3 – Pedestrian Fatality Risk as a Function of the Impact Speed of a Car 13
Figure 2.4 – Example Tube Counter Layout 17
Figure 2.5 – Google Live Traffic Updates 18
Figure 2.6 – AusRAP Rating Example 19
Figure 2.7 – Variable Speed Limit Signage in Fortitude Valley 21
Figure 2.8 – Crash Data Collection 28
Figure 2.9 – MUTCD Part 4 Speed Limit Review Process 30
Figure 2.10 – VicRoads process for Speed Limit Assessment in Rural Areas 31
Figure 2.11 – SLNZ Flow Chart for Urban Roads 36
Figure 5.1 – Nerang-Murwillumbah Road Speed Limit Review Extents 52
Figure 5.2 – Currumbin Creek-Tomewin Road Speed Limit Review Extents 55
Figure 5.3 – Cunningham Highway Speed Limit Review Extents 61
Figure 5.4 – Mount Lindesay Highway Speed Limit Review Extents 65
Figure 5.5 – Oxley Drive Speed Limit Review Extents 67
Figure 5.6 – Reedy Creek Road Speed Limit Review Extents 69
Figure 6.1 – Example guidance tool 81
Figure 6.2 – Speed Limit Review Process Flowchart 82
Figure 7.1 – MUTCD Part 4 Revision Process 88

1.0 Introduction

1.1 Project Aim and Justification

Speed limits are typically recognised on Australian roads in the form of signs and pavement markings, or by default limits in areas without devices. They are established with the objective of facilitating movement of road users between locations at a speed that is safe and appropriate for the environment. According to the World Health Organisation, speed is a contributing factor to 30% of all road fatalities in high-income countries. It may be logical to assume that speed limits should be reduced in order to reduce speed related fatalities, however this is not always a practical solution and can affect road mobility and amenity.

It is important that the speed limit of a road be applied appropriately given the context of the road function and environment to encourage compliance and safety of all users. Appropriate speeds, both high and low, contribute to safer road conditions when the prevailing speed of a road is in alignment with the posted speed limit. The action of determining an appropriate speed for a road in Queensland is typically undertaken through a Speed Limit Review process.

This research project has reviewed the existing speed limit assessment process used in Queensland with the objective of improving it by developing of a set of recommendations for future amendments of speed zoning guidelines. A number of options to improve the existing process have been considered and recommendations were developed to address limitations of the current process that were identified in project tasks.

The Queensland Department of Transport and Main Roads' Manual of Uniform Traffic Control Devices (MUTCD) provides guidance towards the use and assessment of traffic control devices on Queensland roads. While not a standard, Part 4 of the MUTCD specifically covers the selection and assessment of speed controls. The guidance given for the practice of Speed Zoning and Speed Limit Reviews (MUTCD Part 4 eighth edition, June 2015) has been critically reviewed as part of this research project in terms of meeting industry needs.

A Speed Limit Review is an assessment of a road environment and determination of a posted speed limit that is appropriate for the assessed environment. The Department of Transport and Main Roads (TMR) and local government authorities require all Speed Limit Reviews conducted on Queensland roads to follow the procedures for speed limit assessment outlined within MUTCD Part 4.

Anecdotally, industry users have identified concerns with application of the current framework, with a consensus that the current guidelines do not adequately cater for common road environments experienced at a local government and private industry level. It is not uncommon for speed limits recommended by MUTCD Part 4 processes to be considered inappropriate for the specific road environment when safety and site-specific issues are accounted for.

In addition, the current guidelines are primarily focused on determining the 'correct' speed limit for a given road environment, and do not assist users in identifying appropriate solutions to achieve a specific desired speed limit outcome. This is often sought in order to change the amenity and characteristics of a road (such as accommodating higher volumes of pedestrians) and is at odds with the nationally adopted Road Safety Strategy that applies the Safe System Approach, encouraging reduction to speed limits. Users have also highlighted difficulties in explaining the current framework and the communication of decisions to non-technical users, illustrating the need for a transparent process.

The ultimate goal of the project is to provide recommendations for future refinement of MUTCD Part 4 and the development of tools and guidelines that are more practical to road authorities. It is believed that the establishment of a framework that allows for repeatability and reliability, and provides guidance towards achieving a specific desired speed environment can better align current practices with the nationally adopted Safe System Approach. This would contribute to the improvement of road safety in Queensland. Furthermore, an amended framework can have additional benefits of time and cost savings through the simplification of complex decision-making processes.

1.2 Project Methodology

The key deliverable of the project is recommendations that improve MUTCD Part 4 from the perspective of accessibility and application for practitioners, and that increase consistency in speed zoning practise. The recommendations herein have been developed from a process involving research into best practice, discussion with industry users and case studies.

The project methodology was devised in order to achieve the following goals:

1. To understand the importance of good speed zoning practise and therefore understand what elements should be improved in MUTCD Part 4.
2. To understand the processes of other regions and identify key differences when compared to MUTCD Part 4.
3. To understand industry views and desired changes for MUTCD Part 4.
4. To identify elements from the processes of other regions that address identified issues, and therefore may be suitable for adoption.

A number of tasks were undertaken in order to develop a set of recommendations for future revisions of MUTCD Part 4. This project was conducted over four stages.

1.2.1 Stage 1 – Literature Review

A review of Australian and international literature was undertaken in order to understand the importance of speed management and to identify processes that have potential to be incorporated into future revisions of MUTCD Part 4. The literature research focused on the following topics:

- Speed and its correlation to crash risk.
- Factors that contribute to speed.
- The objectives of road authorities in setting speed limits in a modern, safe systems approach context.
- Societal attitudes towards posted speed limits and speeding.
- The processes used by road authorities for speed limit assessment.
- Technology and software associated with speed measurement, management and analysis.

Understanding what is considered as best practice in terms of conducting speed zoning is required in order to develop improvement recommendations that address industry issues with MUTCD Part 4. It is possible that other regions have encountered similar issues before and have revised their processes in-turn. The identification of speed zoning

methodologies that are considerably different to those used in Queensland was done during this stage of the project. The different methodologies identified were implemented in the case studies undertaken for the project.

Speed measurement technology and risk assessment tools were also researched to understand if they could be utilised to determine safe speed limits on assessed roads.

1.2.2 Stage 2 – Stakeholder Interviews and Critical Review

Stakeholders from the public and private sectors were engaged in an interview process to understand industry opinion regarding the current assessment methodology. Those involved were parties from State and local governments, and consultants engaged in traffic and transport planning. This cross section of interview candidates provided an insight into the issues encountered, across all levels, by individuals and organisations responsible for applying the guidelines.

Feedback from the interview process was considered in a detailed review of MUTCD Part 4. The review highlighted aspects of the current speed zoning methodology that can potentially be improved in future revisions of the guidelines.

1.2.3 Stage 3 – Case Studies

A case study process was undertaken and involved a comparison of the processes outlined in MUTCD Part 4 against the processes used by other state road authorities and international bodies. Six roads were chosen for the application of different speed zoning processes to determine if issues identified during Stage 2 could be addressed by a different methodology, or if those issues were still relevant.

The case study process involved speed data collection, site visits and conducting four speed limit reviews per road. The methodologies implemented in New South Wales, Western Australia and New Zealand were selected for comparison. These methods differ from each other in having a differing reliance on the use of engineering judgement and prescriptive processes.

The key objective of conducting case studies was to understand any contrast between outputs of different processes and to gain an insight into what elements from other methodologies could be adopted in future revisions of MUTCD Part 4.

1.2.4 Stage 4 – Development of Recommendations

The final stage of this project involved the development of recommendations for future amendments to MUTCD Part 4. The recommendations were developed in consideration of the critical review and case study findings from Stages 2 and 3 of the project, and focus on improvements to the Manual that assist local government and private industry users.

1.3 Project Appreciation

There are benefits in revising the current framework outlined within MUTCD Part 4 to address industry concerns. Accommodation of local government needs can make the guidelines more practical in application to transport planning and placemaking processes, acting as a tool rather than a document that should be complied with. Addressing issues of document accessibility and removal of redundant actions will allow for repeatability and reliability in recommending speed limits. This will also help prevent 'incorrect' decisions that may result from misunderstanding of the guidelines.

The development of guidelines that consider the Safe System Approach and recommend appropriate posted speeds accordingly will likely result in reduction of road trauma at locations where changes are proposed as part of the Speed Limit Review process.

It is anticipated that making improvements to the current speed zoning processes outlined in MUTCD Part 4 will improve road safety in Queensland at the planning and design phase, and in the review of existing infrastructure.

1.4 Key Literature and Definitions

It is important that the following terminology is clarified and understood as it is used to establish context, and outline and expand upon concepts within this dissertation.

1.4.1 Transport Operations (Road Use Management) Act 1995

The Transport Operations (Road Use Management) Act 1995 (TORUM) is Queensland State legislation that outlines laws relating to road use. The Act specifies responsibilities and requirements of various aspects of public road environments such as vehicles, road users, rules and enforcement, and road control. Standards and guidelines developed for Queensland roads must adhere to the TORUM Act.

Chapter 74 of the TORUM Act specifies that contravention of official traffic signs is an offence. This means that speed limit signage that erected by road authorities in Queensland can be enforced.

1.4.2 Transport Operations (Road Use Management – Road Rules) Regulation 2009

Queensland's road rules are outlined within the Transport Operations (Road Use Management – Road Rules) Regulation 2009, also known as the TORUM Regulation. The TORUM Regulation explicitly states the rules that all road users must abide to, and penalties for infringements. In addition to specifying that road users are not permitted to exceed a posted speed limit, the Regulation addresses default speed limits, speed limits in special zones and vehicle restricted limits.

Any amendments to standards and guidelines developed for Queensland roads must not contradict the TORUM Regulation (and the TORUM Act).

1.4.3 The Manual of Uniform Traffic Control Devices

The Queensland MUTCD is a collection of guidelines that outline practices undertaken in Queensland regarding the design, standards and procedures in the establishment of road control devices. It is maintained by TMR and elements covered within the MUTCD include but are not limited to the following:

- signs
- pavement markings
- temporary traffic controls
- bicycle control
- parking control.

The guidelines within the MUTCD are designed to ensure consistency of use of traffic control devices on Queensland roads, however from a regulatory sense all devices must be within the requirements of the TORUM. MUTCD Part 4: Speed Controls specifies the criteria and processes in establishing and assessing posted traffic speeds within Queensland.

1.4.4 Australian Standard 1742.4-2008

All Australian states have prepared their speed limit assessment guidelines to supplement the Australian Standard, AS1742.4 (Manual of Uniform Traffic Control Devices; Part 4: Speed Controls). The standard covers the principles of elements such as speed management, speed zoning, signs and pavement markings. The processes outlined in Queensland's MUTCD Part 4 do not heavily deviate from AS1742.4.

1.4.5 Austroads Guide to Road Safety Part 3: Speed Limits and Speed Management

Austroads Guide to Road Safety Part 3: Speed Limits and Speed Management (AGRS03) is supplemented by State speed limit assessment guidelines. It covers the topics of speed management, safe systems, default and signed speed limits.

AGRS03 provides guidance in selecting the speed limit of a road. It describes all considerations that are typical to State guidelines and emphasises that the most important consideration is to determine the crash risk of the road.

1.4.6 Austroads Guide to Traffic Management Part 5: Road Management

Austroads Guide to Traffic Management Part 5: Road Management outlines the philosophy behind speed limits and provides guidance on the application of speed limits. This includes the use of signs and physical devices to manage speed.

1.4.7 Engineering Judgement

Engineering judgement refers to the application of critical thinking to evaluate a particular element, scenario or result. This can involve the application of a 'first principles' approach or that practitioner's experience to assess and establish a sound conclusion. In relation to speed zoning, engineering judgement can be applied to evaluate if a speed limit is suitable for a road environment.

1.4.8 Speed Limit

A speed limit is the maximum speed at which a vehicle is permitted to travel on a road section. Speed limits are legally enforceable and are typically set with posted signs and pavement markings. Part 3 of the TORUM Regulation (2009) outlines legal obligations and penalties regarding speed limits on Queensland Roads.

1.4.9 Speed Zone

A speed zone is a section of road for which a single speed limit has been set. As outlined in MUTCD Part 4, a speed zone can be categorised for special use. One of the most commonly recognised categories is a school zone (40 km/h speed limit).

1.4.10 Speed Environment

The speed environment considers characteristics of the road and traffic that can influence a motorist's decision to raise or lower their travel speed. Elements such as road alignment, roadside furniture and roadside development form the speed environment.

1.4.11 General Speed Limits

General speed limits (also known as default speed limits) are enforceable where there is an absence of definitive measures to specify speed limits, such as signs and pavement markings. General speed limits in Queensland are 50 km/h in urban areas and 100 km/h in rural areas (Clause 2.2.1 of MUTCD Part 4). These general speed limits are typical across Australia with the exception of Western Australia (110 km/h in rural areas) and the Northern Territory (60km/h in urban areas and 110 km/h in rural areas).

1.4.12 Prevailing Speed

The prevailing speed is the speed at which a majority of vehicles have been recorded travelling during a survey period. It may be defined by the upper limit of the 15 km/h pace or the 85th percentile speed, depending on the local road authority's preference. Given that it is the speed that most vehicles travel on a road, the prevailing speed is viewed as what road users perceive as an acceptable speed for the road (Clause 4.2.3 of MUTCD Part 4), even if it is higher or lower than the posted speed limit.

1.4.13 Upper Limit of 15 km/h pace

The upper limit of 15 km/h pace is a statistic that is reported in traffic speed surveys. Considering the full range of individual speeds at which vehicles are recorded to be travelling when passing the survey point, it is the 15 km/h range of the band where the most vehicles are recorded. Road authorities specify that the upper limit of 15 km/h pace can be used to describe the prevailing vehicle travel speed on a road section; however, the 85th percentile speed can also be used.

1.4.14 85th percentile speed

The 85th percentile speed is a statistic that is reported in traffic speed surveys. 85% of all vehicles recorded in the survey have been observed travelling at this speed or below it. Road authorities specify that the 85th percentile speed can be used to describe the prevailing vehicle travel speed on a road section; however, the upper limit of the 15 km/h pace can also be used.

1.4.15 Road Function

An individual link within a road network can be classified by the purpose of that link, that is, its function. Road function plays an important role in specifying speed limits and the posted speed implemented on a road must be appropriate for its function.

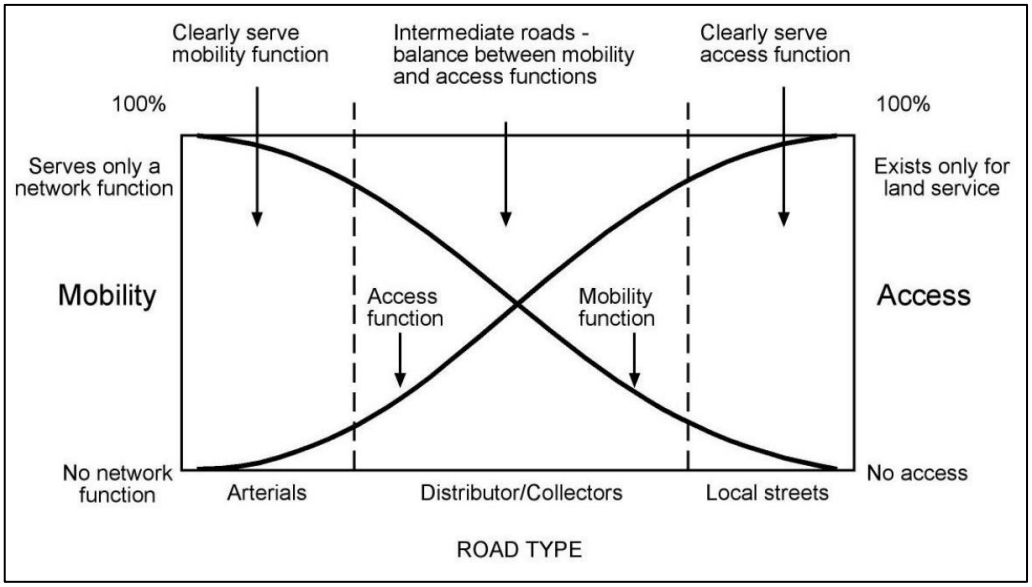
Road classifications can vary between road authorities. TMR's road classification system for urban roads is defined within Appendix A of MUTCD Part 4 and is as follows:

- *Access* or *Local* streets with the function to provide access to properties.
- *Collector* roads with the function to provide access to properties and other streets.
- *Trunk Collector* roads with the function to facilitate transport within districts.
- *Sub-Arterial* roads with the function to facilitate transport across districts and between arterial roads.
- *Arterial* roads with the function to provide fast transport across large distances.
- *Controlled Access Arterial* roads to provide transport through and around metropolitan centres with minimal interruption from intersections e.g. motorways.

TMR's rural classifications are limited to local, collector and arterial roads.

The collection and categorisation of roads by function is referred to as a road hierarchy. The development of a road hierarchy can influence the development of a region as road classification dictates elements such as accessibility and posted speed limits. Austroads Guide to Traffic Management Part 1 (2015) outlines that a balanced network will meet both mobility and access needs, with higher speed limits implemented on roads that serve a clear mobility function and lower speeds implemented on roads that serve a clear access function.

Figure 1.1 – Road Type and Function: Mobility vs Access



Source: Austroads, 2015

2.0 Literature Review

2.1 Purpose

The regulation of vehicle speeds in the public domain has always been undertaken in order to provide a safer environment for roadway users. Speed limits have been enforced from as early as 1861 in the United Kingdom under the Locomotives on Highways Act 1861. Speed limits have always been conveyed by static signage and pavement markings but recently, emerging technology is being utilised for both regulation and control of speed via systems such as variable speed limits and self-driving vehicles.

A speed limit is determined by a technical process and is employed to describe the maximum speed that vehicles are legally permitted to travel through a location under normal conditions. As outlined in AGRS03, the control of vehicle speeds is required on roads in order to achieve the following:

- Minimise the impact of driver error and misjudgement of action-associated risks.
- Minimise potential severity of risks in the road environment that may not always be obvious to road users.
- Provide a safer road environment for other road users such as pedestrians, cyclists and other motorists.
- Control environmental impacts such as vehicle noise, vibrations and emissions.

Speed limit reviews are conducted to ensure that the road is operating under the safest conditions deemed appropriate for the road environment in terms of user safety and amenity. It is important to note that a reduction in the operating speed of a road is not always a suitable decision. As outlined in Clauses 2.1.2 and 2.1.3 of MUTCD Part 4, speed limits that are lower than suitable for the road environment can lead to undesirable outcomes such as differential vehicle speeds. This results from a proportion of users disobeying the posted speed limit and negatively affects road safety.

The overarching concepts behind the decision making process of Speed Limit Reviews should be thoroughly understood by the practitioner prior to commencing a Speed Limit Review, and include:

- the Safe System Approach
- the correlation between vehicle speeds and crash risk
- the cost of crashes to society
- factors which effect driver speed choice
- the effects to society resulting from changes to existing speed limits.

These concepts are discussed in further detail within this section, in addition to other elements that will influence speed limit decision making in the future.

2.1.1 Safe System Approach

Initially endorsed by the Australian Transport Council in 2004, the Safe System Approach has been adopted as a commitment by Australian road authorities and forms the basis of their road safety plans and the National Road Safety Strategy for 2011 to 2020 (Roads and Traffic Authority of New South Wales 2011). The fundamental concept behind this approach is that road users will make errors that may lead to a crash. The road design process should consider this and adopt forgiving elements to attempt to avoid serious or fatal injuries in the event of a crash.

The four principles of a Safe System are typically presented as:

- safe roads and roadsides
- safe speeds
- safe vehicles
- safe road use.

In addition to considering the principle of safe speeds, the decision-making processes behind the implementation of posted speed limits on a road should also consider the other Safe System principles in order to reduce the severity of inevitable crashes.

2.1.2 Speed and Crash Risk

Numerous technical documents and researches conducted within the past 30 years on the subject of vehicle speed and its effect on crash risk refer to research conducted by Nilsson (1984) and Elvik, Christensen and Amundsen (2004). The research conducted by these parties has confirmed that high vehicle speeds tend to increase crash rates and severity of crash injuries.

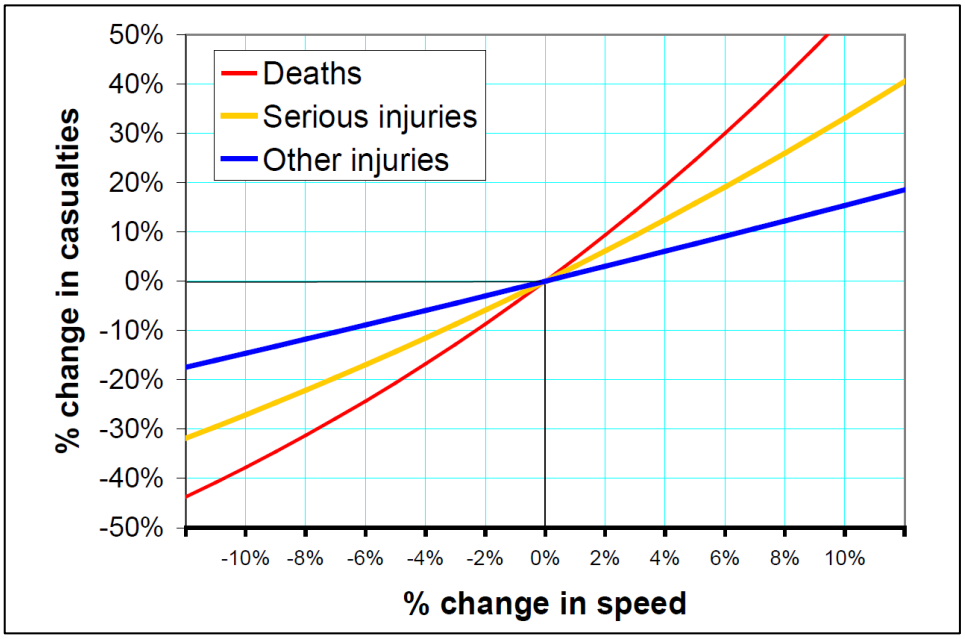
The Power Model is a description of the relationship between speed and accident frequency. It was initially developed by Nilsson and refined by Elvik, Christensen and Amundsen. The Power Model consists of six equations that consider varying crash severity indices and takes the following form:

Figure 2.1 – The Power Model

$$\frac{Accidents\,after}{Accidents\,before} = \left(\frac{Speed\ after}{Speed\ before}\right)^{X}$$

Under Nilsson's model, different exponents are used for fatal accidents (4), fatal or serious injury accidents (3) and all injury accidents (2), although the research conducted by Elvik et al. recommends use of different exponents for these scenarios. The Power Model suggests that the chance for higher severity accidents can be greatly reduced with a reduction of speed. This relationship is shown in Figure 2.2.

Figure 2.2 – The Relationship between Speed and Casualties

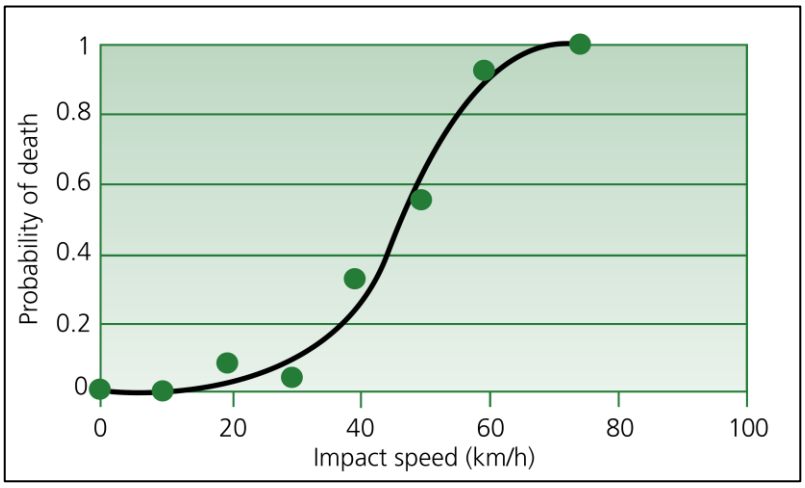


Source: Austroads (2009) – based on Elvik et al. (2004)

The World Report on Road Traffic Injury Prevention prepared by the World Health Organisation (WHO) in 2004 details the correlation between motor vehicle speed and likelihood of increased injury severity. It states that the probability of a crash involving an injury is proportional to the square of the speed, and that the number of crashes on a road will increase with higher speeds.

The report details that speed has an exponentially detrimental effect of the safety of road users. The chance of injury to car occupants greatly increases as speed increases. For example, it is reported that the likelihood of death is 20 times greater at an impact speed of 80 km/h than it would be at 32 km/h. This is similar for pedestrians involved in collisions with vehicles. As shown in Figure 2.3, chances of pedestrian survival dramatically decrease from impact speeds over 40 km/h.

Figure 2.3 – Pedestrian Fatality Risk as a Function of the Impact Speed of a Car



Source: World Health Organisation (2004)

Although it is impossible to prevent all crashes from occurring, steps can be undertaken to reduce the severity of crashes, such as speed reductions where appropriate and installation of roadside devices. Undertaking steps to ensure reduction of crash severity at problematic locations can have economic benefits when considering the costs of crashes to society.

Austroads Guide to Road Safety Part 8: Treatment of Crash Locations outlines that the value of crashes in Australia are comprised of the following elements:

- Human costs – ambulance and hospital costs, other medical costs.
- Labour in the workplace and household, and quality of life.
- Insurance claims, criminal prosecution, correctional services, workplace disruptions, funerals.
- Vehicle costs for repairs, towing, unavailability of vehicles.
- General costs such as travel delay, administration and emergency services.

Two methods are used to establish crash costs in Australia, willingness-to-pay (WTP) and human capital, with WTP being preferred by road authorities. The 2013 WTP values for crashes in Queensland are shown in Table 2.1. These values describe the amount that society is willing to pay to prevent the risk of a crash of a particular severity. As shown, there is a large difference between the WTP value of fatal and other injury crashes, therefore it is highly desirable that crash severities are reduced where possible.

Table 2.1 – WTP Values in Queensland (June 2013 values)

Crash Severity	Rural Environment	Urban Environment
Fatal	$8,059,079	$7,741,325
Serious Injury	$294,906	$436,471
Other Injury	$31,268	$23,446

Source: Austroads (2015)

2.1.3 Behavioural Influences

There are numerous factors that can influence a driver's choice of speed, such as physical surroundings (i.e. road and environment), and characteristics of the individual. These elements are detailed in Table 2.2.

Table 2.2 - Influencing Factors of Speed Choice

Category	Factor
Road	Width Gradient Alignment Surroundings (vegetation, land use, traffic etc.) Layout Markings Surface quality
Vehicle	Type Power/weight ratio Maximum speed Comfort
Traffic	Density Composition Prevailing speed

Category	Factor
Environment	Weather Surface condition Natural light Road lighting Signs Speed limit Enforcement
Driver Related	Age Sex Reaction time Attitudes Thrill-seeking Risk Acceptance Hazard perception Alcohol level Ownership of vehicle Circumstances of journey Occupancy of vehicle

Source: World Report on Road Traffic Injury Prevention (World Health Organisation, 2004)

Fleiter et al. (2016) further discusses driver related factors in an individual's decision-making and choice of speed. There are four main groups of personal, legal, situation and social factors. Some of these factors overlap with the driver related factors described in Table 2.2, and are detailed in Table 2.3.

Table 2.3 – Additional Driver Related Factors

Factor	Example
Personal	Age and gender Crash and infringement history Thrill seeking and risk taking personality Positive attitude to speeding
Legal	Perceived risk of detection and punishment Perceived certainty, swiftness and severity of punishment Perceived ability to avoid punishment
Situational	Time pressures Rejection of posted speed limit Opportunities to speed Work related purposes Drug and alcohol impairment
Social	Family and peer influence

Source: Fleiter et al. (2016)

2.1.4 Speed Limit Effects on Society

Research has shown that community attitudes towards speeding tends to be relaxed and that speeding is acceptable when exceeding posted speed limits by a small amount or when viewed in comparison to other offences that are considered worse, such as drink-driving (Fleiter et al. 2016). Furthermore, an individual's reaction to a posted speed reduction tends to be positive when the change is within an area that directly benefits the individual (e.g. improving safety in areas of residence). The change is typically opposed when it is applied to a road used for commuting and has a minor impact to convenience.

Outside of road safety and amenity, MUTCD Part 4 does not specifically address numerous issues that can affect the community. These other issues can be viewed on a whole as the benefits and costs associated with speed reductions that are not tied directly to road safety, such as reductions in vehicle operating cost and environmental and noise pollution.

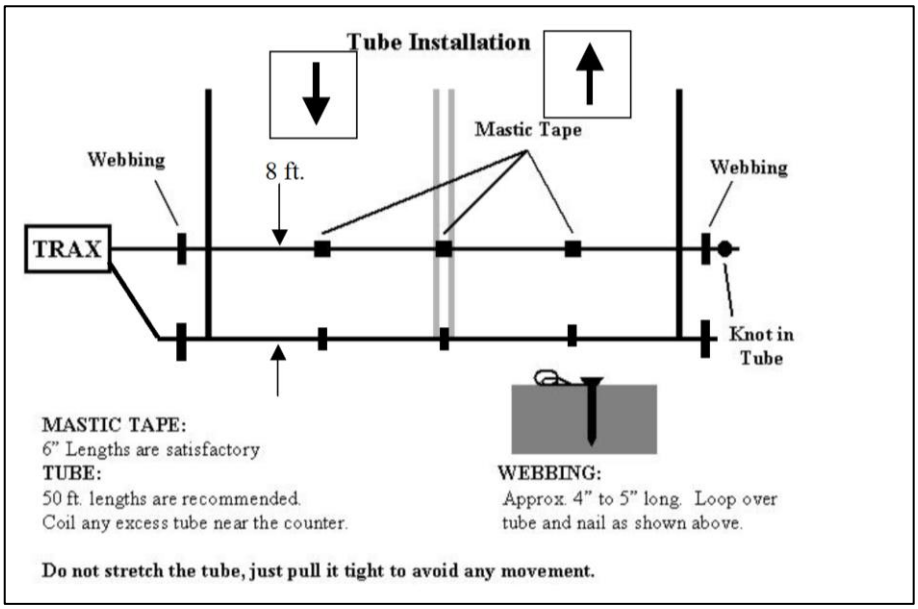
A common misleading assumption made by road users is that increasing travel speed can have a significant decrease to travel time, whereas in reality, significant delays to travel time are typically caused by poor traffic signal coordination and critical lane volume to capacity ratios (Archer et al. 2008). In addition to decreased road trauma, there are significant benefits to society in reducing posted speed limits including, but not limited to, decreases in vehicle operating costs, emissions and noise. The research conducted by Archer et al. infers that the economic benefits of reduced trauma usually outweigh those of travel time. This is due to the reductions in travel time from speed limit increases typically being minor.

2.2 Speed Measuring Methods

2.2.1 Tube counts

Traffic counts are typically conducted by placement of pneumatic tube counters across the road, and are the primary method of conducting speed surveys in Queensland. The tubes are connected to a recording device and when vehicles travel across the tubes, the air pressure within the tube signals the recording device to note the event. Vehicle types are differentiated by the time between successive axles passing the tubes and vehicle speeds are recorded by the use of two tubes offset at a known distance, connected to the recording device. Speed is calculated by the time difference between each tube being struck. An example of a tube counter layout is shown in Figure 2.4.

Figure 2.4 – Example Tube Counter Layout



Source: McGowen and Sanderson (2011)

Key data that can be obtained from speed surveys conducted with tube counts are the mean travel speed, 85th percentile travel speed and upper limit of the 15 km/h pace. MUTCD Part 4 specifies that the data collection point should be at a location that is representative of the entire section being assessed. This can be an issue if the homogenous sections of a road are considered by changes in the nature of the road alignment (i.e. straight, to winding, to straight), given the potential costs of installing multiple counts. Instead, the standard practice is to lay one count per speed zone, often in a flat and straight section where speeding is most likely to occur. This practice can skew results and present inaccuracies in speed survey results as the count only considers the prevailing speed at a single point rather than the entire road section.

2.2.2 Bluetooth

Bluetooth is a communications protocol for wireless data transmission and is found in common items owned by the population such as phones and in car radios. As devices with Bluetooth capability have unique identifiers (MAC addresses), Bluetooth can be used count and track the unique addresses within a traffic stream and allow for calculation of travel times and speeds. Loggers can be placed on the roadside at known intervals to pick up devices in the traffic stream that have Bluetooth enabled. Similar to tube counts, if the loggers are placed at a known interval, the average travel speed can be easily calculated based on the time difference between a particular address registering at both loggers (Blogg et al. 2010).

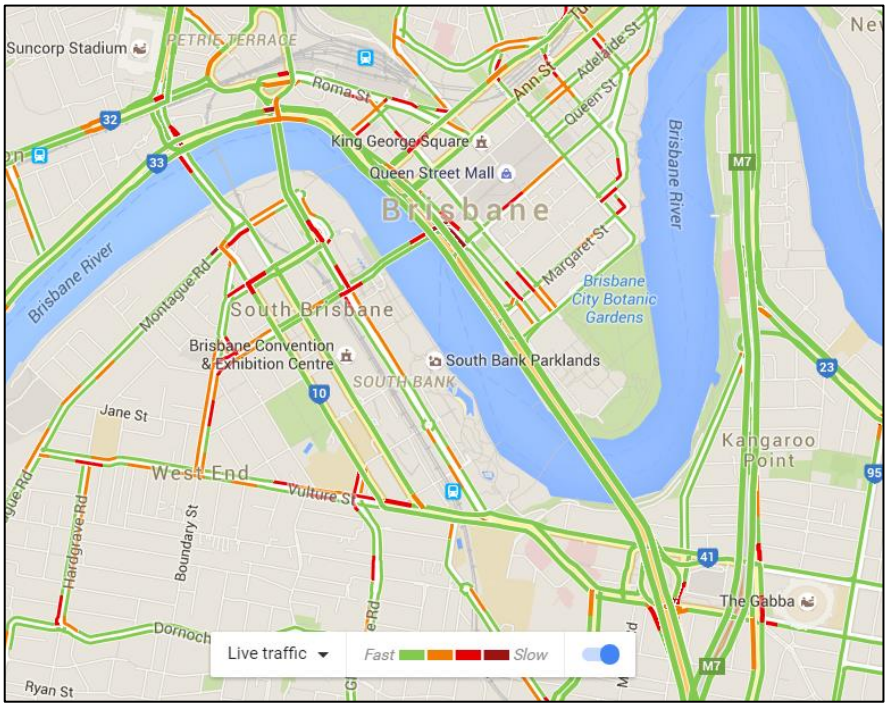
Use of the technology on urban arterial roads can cause some issues due to the presence of different modes of travel. Additional work is normally required to analyse travel times and distinguish readings from motor vehicles, bicycles and pedestrians. This task can be difficult during peak hours where traffic speeds of motor vehicles and bicycles are low and similar due to congestion (Araghi, Krishnan & Lahrmann 2015). Additionally, the presence of multiple devices in a vehicle with Bluetooth enabled can produce an overrepresentation of data.

As the technology relies on Bluetooth being enabled on passing devices, sample sizes on rural roads with low traffic volumes may not be large enough to make an informed decision as to the prevailing traffic speed on the road.

2.2.3 Mobile Phone Locational Data

GPS has become a common form of technology that is carried by a large portion of the population and can be found within almost all modern cars and smartphones. Locational data can be obtained from GPS enabled applications in smartphones that locate vehicles on the road network in real time. This information is typically collected by organisations such as Google to provide up to date traffic congestion reports and allows motorists to partake in route selection while driving. An example of the technology is shown in Figure 2.5.

Figure 2.5 – Google Live Traffic Updates



Source: Google 2016

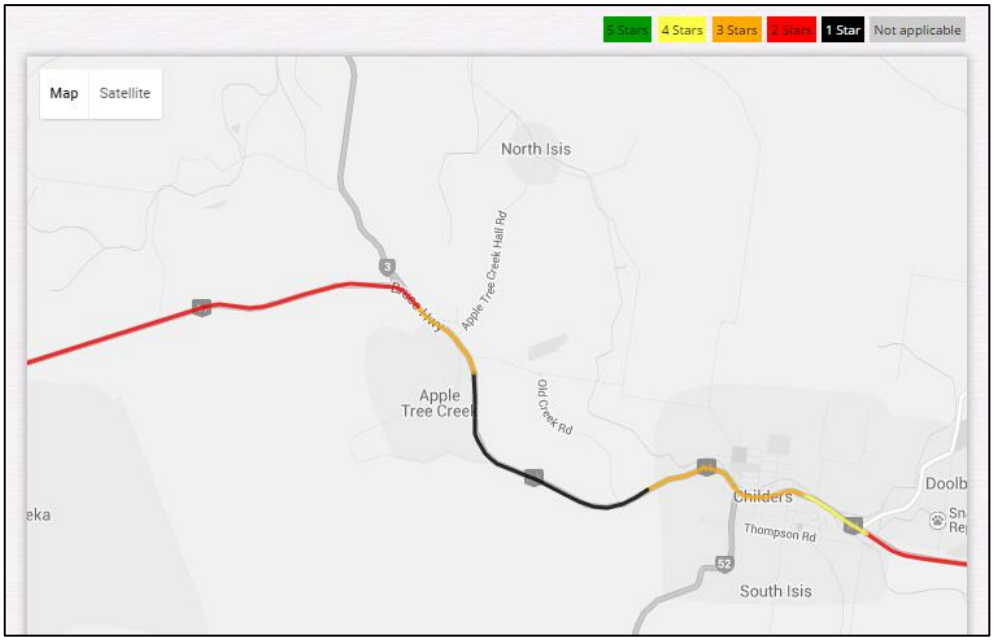
With GPS forming the basis of locational data, vehicle speeds on the road network can also be recorded. This method can be an unobtrusive way (as there are no physical devices to be observed by a motorist) of determining the prevailing traffic speed on a given road, however it requires the user to have mobile tracking and GPS enabled on their smartphone. This may not be common within rural areas and sample sizes may be too small to make a reliable determination of the prevailing traffic speed on a road. Furthermore, although locational data does not reveal the identity of an individual by their device, the community's perception of tracking data may not be favourable which could raise issues around data privacy.

2.3 Risk Assessment Methods

2.3.1 AusRAP Data

AusRAP is a risk assessment tool that is a subset of the International Road Assessment Program (iRAP), a program adopted in numerous countries with the aim of improving road safety. The AusRAP rating system is a star based system used to describe road safety and rates roads on a scale of one star to five star, with one star being the least safe and five star being the safest. An example of the rating system applied to a road is shown below in Figure 2.6.

Figure 2.6 – AusRAP Rating Example



Source: iRAP 2016

Ratings are determined through consideration of road infrastructure attributes that are known to influence both the severity and likelihood of a crash (Turner et al. 2009). These attributes are collected through analysis of video records and include, but are not limited to, traffic volumes, seal widths, posted traffic speeds, presence of roadside objects and their proximity to travel lanes.

In querying a specific road through the iRAP system, the data can be obtained and thus the safety risks on the subject road can be easily identified. Rather than using crash history to identify safety deficiencies that have caused speed related crashes, reviewing the associated risk of a road and the road environment can provide an indication as to whether the current (or proposed) speed limit is appropriate.

An advantage to using AusRAP data is that the practitioner will be able to use an inventory containing an extensive range of road attributes to make an informed decision in speed limit setting. One if the issues with this, however, is that data is typically recorded by inspection of video footage and the task of data recording can be outsourced to individuals without a technical background. This can present problems with data quality. Use of AusRAP data for speed limit setting must ensure that all data is verified, which can be a lengthy process due to the thousands of kilometres of Queensland roads.

2.4 Intelligent Transport Systems

2.4.1 Variable Speed Limits

A Variable Speed Limit (VSL) is a speed limit that can be changed in order to control a road environment in response to an event that will affect road operations or road safety. The action of dynamically controlling a speed limit has proven benefits in safety and performance during congestion, incidents and inclement weather (Han et al. 2009).

VSLs are typically employed through speed signs with LED displays that allow the posted speed to be changed on a singular sign face, although static signs that state operating times for speed limits may be employed. An example of LED sign usage are those installed in Brisbane's Fortitude Valley nightclub precinct (shown in Figure 2.7). The signs allow for a speed reduction from 60 km/h to 40km/h during peak operating times of nightclubs in order to reduce risk of conflict between through traffic and high pedestrian volumes.

Figure 2.7 – Variable Speed Limit Signage in Fortitude Valley

VSLs are most commonly found in Queensland on arterial roads and through school zones. Speed limits are reduced to 40 km/h through school zones during morning and afternoon school peaks as a safety measure to minimise risks when there are a high amount of vehicles and pedestrians around a school. The times that the reduced speed limit is in effect are signalled on specialised signage.

When utilised in highway and motorway environments, the system is typically called a managed motorway. TMR have recently implemented a managed motorway system on the Bruce Highway to control vehicle speeds around on-ramps between the Gateway Motorway and Caboolture. The reduction of speed limits during times of congestion (or incidents and bad weather) at this location has benefits of safer merging conditions, maximisation of capacity and improved travel time reliability (The Department of Main Roads and Transport 2016).

The use of VSLs is considered to introduce a number of benefits to the road system but as of present, MUTCD Part 4 does not consider the use of VSLs as a solution in the Speed Limit Review process. Guidance is provided regarding the criteria for and installation of signs, but the decision to employ a VSL is typically made through a judgement call.

2.4.2 Self-driving technology

It is predicted that autonomous-driving technology will be advanced enough by 2019 that self-driving vehicles (with driver intervention as needed) will be viable under freeway conditions, and that self-driving in most conditions will be achievable by 2030 (Wadud, MacKenzie & Leiby 2016).

Self-driving vehicles are expected to make improvements to traffic operations and environmental impacts. Automation of acceleration and braking will provide benefits of congestion reduction through minimising traffic stream shockwaves, utilising shorter gaps in traffic and efficiency in platooning and route choice (Fagnant & Kockelman 2015). Environmental benefits are expected as well from reductions to fuel consumption and emissions, and brake wear.

Aside from the potential benefits of reduced emissions, improved traffic flows and improved road safety, self-driving vehicles could allow for implementation of speed limits that are currently seen as unconventional i.e. 5 km/h increments or higher speeds on motorway/highway systems. Use of technology to regulate vehicle speeds and handling can remove the human elements of decision-making such as reaction time and perceived risks. By removing this element, speed limits can be more precisely specified in response to road environment factors, and this may need to be considered as part of the Speed Limit Review process in the future.

2.5 The Manual of Uniform Traffic Control Devices Part 4

2.5.1 MUTCD Part 4 Overview

Part 4 of the MUTCD is dedicated to the control of traffic speeds within Queensland and provides guidance on the following:

- speed management and application
- speed zoning and Speed Limit Reviews
- speed limit signs and pavement markings.

The processes involved in speed management, speed zoning and Speed Limit Reviews are of particular relevance to this project. Sections 3 and 4 of MUTCD Part 4 outline the procedures to be undertaken in the establishment and review of speed limits, and are therefore the primary focus of this research project. The eighth edition, published June 2015, has been reviewed for this project.

MUTCD Part 4 is similar to the guidelines implemented in other Australian states and is closely aligned with Australian Standard 1742.4 and Austroads guidelines. It adopts the principles outlined within these documents to form guidance for practitioners in Queensland. It should be noted that there is a supplement to the Manual. The supplement outlines additional considerations that are not covered within the main document (e.g. speed limits in special areas). The currency of the supplement at the time of preparing this dissertation was May 2016.

One of the primary goals of MUTCD Part 4 is to ensure that there is a balance between road safety, amenity and mobility on public roads. The principles and general requirements of speed management (Clauses 2.1.2 and 2.1.3) stipulate that the posted speed of a road should not be so low as to negatively affect its amenity and must be suitable in context to its characteristics to ensure that users do not experience unnecessary delay. Unnecessary delays can have a number of negative impacts such as economic loss and incompliance with speed limits. This can introduce follow-on impacts that reduce road safety such as differential speeds. The presence of differential speeds between vehicles in the traffic stream increases the number of interactions between vehicles and therefore increases the probability for crashes to occur.

Conversely, the impact of a highly posted speed limit to the safety of the road environment must be considered. High vehicle speeds will typically result in higher severity crashes, and a higher cost to society. Furthermore, as outlined in MUTCD Part 4 Clause 4.2.6, the speed environment can mask deficiencies in the road environment. This must be considered when proposing high-speed environments.

2.5.2 Speed Management

The speed management processes within MUTCD Part 4 have been devised to facilitate road safety, mobility and amenity on public roads. This is to be achieved by providing a speed limit that appears both compatible and credible with the speed environment in the road user's perspective.

As detailed in MUTCD Part 4, the principles of speed management are:

- Speed limits should be capable of being practically enforced by reducing amounts of speed changes, ensuring zones are of adequate length and clarified by frequent and adequate sign posting.
- Speed limits need to be credible i.e. not set so low that road users ignore them.
- Speed limits should not be applied to address geometric deficiencies on a road.
- Only general urban, rural and school zone speed limits should be applied to unsealed roads and roads with narrow seals.
- All posted limits should be in multiples of 10 km/h.

As outlined previously, it is expected that posted speed limits that are implemented on Queensland roads must maintain a certain standard of road safety and amenity while being appropriate for the road user's perception of the environment. In setting appropriate speed limits, the potential for crashes resulting from a speed differential (where two vehicles are travelling at different speeds) can be reduced, as the prevailing traffic speed will be in alignment with the posted speed limit.

It is acknowledged that it will not always be possible for vehicles to travel at posted speed limits due to factors such as road geometry, road environment characteristics, weather and lighting. Elements such as these should be accounted for in safe design and implementation of devices such as advisory speed and warning signs.

2.5.3 Speed Zoning and Speed Limit Reviews

2.5.3.1 MUTCD Part 4 Section 3

Section 3 of MUTCD Part 4 details criteria based speed limits and the requirements for their application.

As the name infers, a criteria based speed limit is a speed limit that can be applied to a road if certain criteria are met. Criteria specified within the Manual consider road characteristics that include, but are not limited to:

- roadway width
- daily traffic volumes
- intersection spacing on the road and
- surrounding land uses.

In the current version of MUTCD Part 4, the utility of criteria based speed limits is restricted. They can only be implemented in the following road environments:

- special zones and local streets (40-50 km/h)
- 110 km/h zones
- approaches to rural intersections
- rural residential areas
- foreshores (covered within Part 4 supplement Clause 3.5.3)
- bridges (covered Part 4 supplement Clause 3.7-1).

This limited utility means that, to be in conformance with MUTCD Part 4, if the practitioner must assess a road with an environment or posted speed limit different to that listed above, then a Speed Limit Review process must be undertaken in accordance with Section 4 of MUTCD Part 4. The requirement to undertake a Speed Limit Review can result in unnecessary time and costs when a suitable speed limit is obvious for the assessable road and cannot be applied due to absence of criteria.

2.5.3.2 MUTCD Part 4 Section 4

Section 4 of MUTCD Part 4 details the Speed Zoning and Speed Limit Review procedures that are undertaken on existing roads in Queensland.

Speed Zoning is the action of determining appropriate posted speeds for an existing length of road. The current posted speed limit may not align with the prevailing traffic speed and thus is inappropriate for the conditions, or there history of speed related crashes warranting a review. The process may also be undertaken after the opening of new roads when traffic patterns have been established.

Speed zoning is undertaken on roads where general and criteria based speed limits cannot be applied (or are ineffective) under the guidelines outlined within MUTCD Part 4. As the opportunity to apply criteria based speed limits is restricted to a small range of speed limits and road environments, a Speed Limit Review must be undertaken in most assessment scenarios.

As outlined in Clause 4.2.1 of MUTCD Part 4, three elements are considered when conducting speed zoning or a Speed Limit Review:

- road function
- prevailing traffic speeds
- speed environment.

The process should also consider other aspects such as crash history and safety risks (confirmed with site inspections) on the assessed corridor.

2.5.3.3 Road Function

In considering the road function, the road environment should be consistent with its function. For example, the road environment on a rural road may be high speed with minimal development and few accesses every kilometre, whereas the road environment in an urban area may be low speed with dense development and numerous accesses every kilometre. The road classification can dictate road environment, mobility levels and safety for users, and speed limits are heavily influenced by the road function/classification.

2.5.3.4 Prevailing Traffic Speed

The prevailing traffic speed is considered as what the public perceives as an acceptable travel speed for the section of road being analysed. Two speed statistics can be used to define the prevailing traffic speed on a section of road:

- The 85th percentile speed or,
- The upper limit of the 15 km/h pace.

Either of these statistics can be found from traffic speed survey data and, if the collected speed data shows an ideal distribution, the 85th percentile speed and upper limit of the 15 km/h pace will be similar. As outlined in Appendix C of MUTCD Part 4, TMR use the upper limit of the 15 km/h pace for review processes.

2.5.3.5 Speed Environment

The speed environment consists of factors that can influence a road user's driving behaviour and perception of safe travel speed. These elements are external and cannot be changed by the road user, consisting of:

- The presence, or absence, of roadside development.
- Road characteristics such as the width of the carriageway and allocated lanes, the alignment of the road, the presence and frequency of accesses, the presence of roadside hazards such as trees and their proximity to the travel path.
- Traffic characteristics such as volume and activity fluctuations, the composition of the road traffic (heavy vehicle, pedestrians, cyclists) and the driving behaviour of other road users.

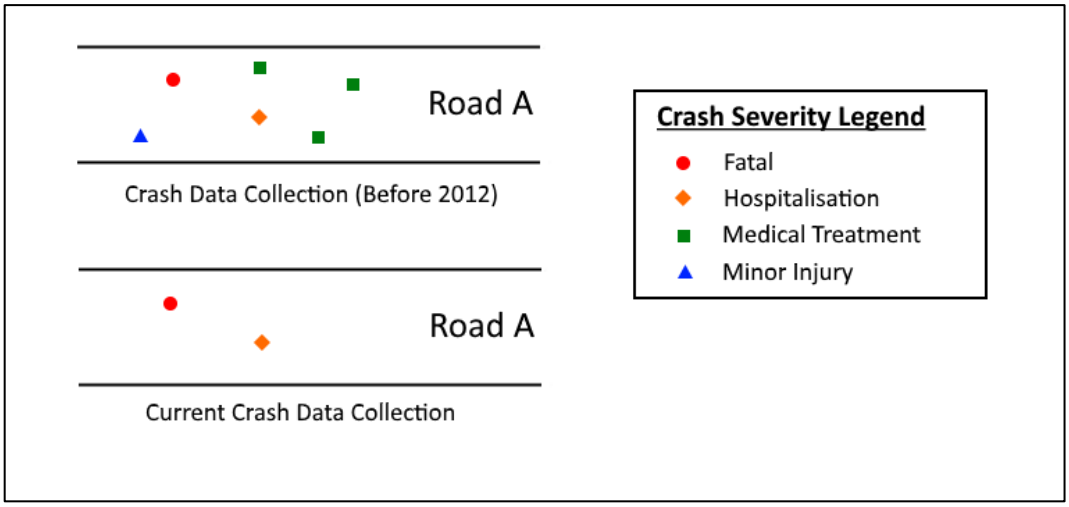
2.5.3.6 Crash History

A high occurrence of speed related crashes could highlight that a posted speed limit on a road is inappropriate. As higher speeds tend to increase injury severity, which in turn can the mask the significance of road deficiencies and roadside hazards, the crash history of the road section being reviewed can play a critical part in the speed zoning and Speed Limit Review process.

Crash data analysis considers the previous five years of crash data for the road section being assessed. The data is used to calculate the casualty crash rate as an Equivalent Risk Unit (ERU) per 10^8 vehicle kilometres travelled using formulas given in Appendix E of MUTCD Part 4. The ERU can be used for a comparison against roads of similar nature to the assessed road in order to determine if the critical casualty crash rate is high enough to warrant concern.

As of 2012, Queensland crash data is recorded only for Fatal or Seriously Injured (FSI) crashes; crashes of lesser severity are no longer recorded by the Queensland Police Service. The lessening availability of data is an issue as the crash data analysis equations outlined in MUTCD Part 4 presently consider all casualty crashes on the subject road to calculate the risk for future crashes. From 2018, five year period crash data for all roads will shrink and may lead to an under representation of crash risk if the current method continues to be utilised. This scenario is illustrated in Figure 2.8.

Figure 2.8 – Crash Data Collection



2.5.3.7 Procedure for Determining Speed Limits

The Speed Limit Review process is undertaken when the criteria based approach outlined in Section 3 of MUTCD Part 4 cannot be applied. It consists of the speed zoning assessment of a road and the subsequent actions required to implement (or reject) the revised speed limit recommended in the speed zoning assessment. The Speed Limit Review process outlined in MUTCD Part 4 has been established for the following reasons:

- To provide guidance for practitioners in data collection and analysis.
- To provide a methodology for consistent application across different jurisdictions and practitioners.
- To ensure consistent correlation of speed environments with speed limits.
- To produce standard documentation for the process, ensuring accountability and quality control.
- To reserve integrity and credibility of speed limits.

While the Manual provides a detailed process and series of calculations and decision-making flowcharts, in practise the speed zoning assessment is typically undertaken using the online software platform, QLIMITS. This platform has been created with the aim of

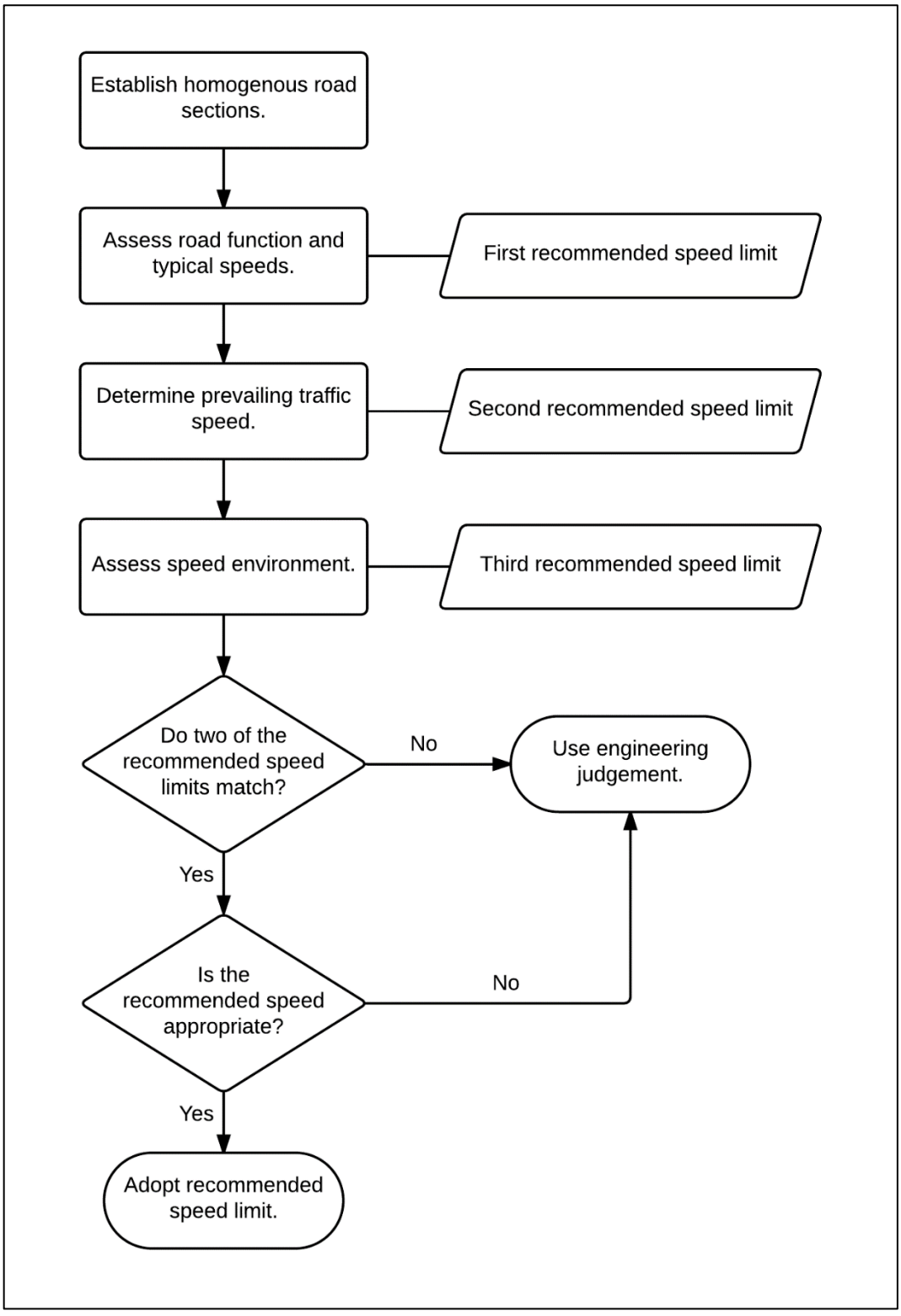
ensuring that reviews can be completed with consistency by different practitioners. It requires data inputs such as the road characteristics, speed survey details and crash history to determine an adequate speed limit for the road section. The steps detailed below give an overview of the speed zoning assessment process:

1. Establishment of homogenous sections of road. The review should only be undertaken on segments of road that are homogenous in terms of characteristics and speed environment i.e. same speed length and carriageway width for the entire corridor. If the road has distinct changes in environment or speed, it should be divided into multiple homogenous sections.
2. Assessment of the road function to allow comparison of the existing speed limit to the typically assigned speed limit for the road function. In the event of a discrepancy, amending the road function should be considered.
3. Assessment of prevailing traffic speeds. A traffic speed survey should be conducted to determine the 85th percentile or upper limit of the 15 km/h pace on the assessed road section. If the existing speed limit correlates with the prevailing traffic speeds, then the existing limit is retained, otherwise speed data is analysed to determine an alternative speed limit.
4. Assessment of speed environment to understand the suitability of the existing speed against the surrounding environment (roadside objects, number of accesses etc.)

Each of the assessment stages is conducted as a singular process in QLIMITS and a recommended speed limit is provided for each stage, independent of what details have been provided for the other stages. A correlation of two recommended speed limits indicates what the review process considers as an appropriate speed limit for the assessed road section. If no correlation is achieved or if the QLIMITS recommendation is not suitable for the assessed road, engineering judgement is used to determine an appropriate speed limit for recommendation. Figure 2.9 outlines this process (on next page).

The review process must be documented and the recommendation submitted to the appropriate TMR officer for consideration. This documentation is then forwarded to the local Speed Management Committee (SMC) for endorsement. The SMC typically consists of representatives from local government, TMR and the Queensland Police Service. It is responsible for ensuring that the interests of road users are considered before a speed zone is introduced. The recommended speed limit is implemented if the SMC agree that it is appropriate, otherwise the Speed Limit Review can be escalated to a Speed Limit Review Panel for an independent assessment.

Figure 2.9 – MUTCD Part 4 Speed Limit Review Process



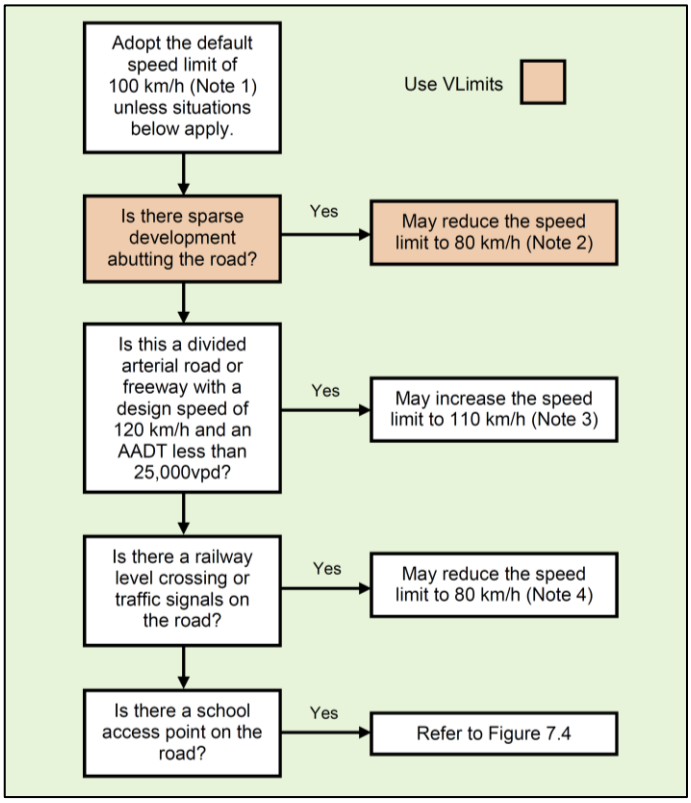
2.6 Australian Standards and Guidelines

2.6.1 Victoria

The Victorian speed zoning guidelines are outlined within VicRoads' Traffic Engineering Manual Volume 1 Chapter 7 and have been written to supplement the Australian Standard and Austroads guidelines. Although its principles of speed management align with those that form MUTCD Part 4, the guidelines largely differ in that they have been written in a fashion to avoid large sections of complex content. Diagrammatic representations of speed zoning processes are also provided for clarification. This is advantageous over MUTCD Part 4 as the simplification removes ambiguity for the practitioner and facilitates consistency in application. Another notable difference between Victoria and Queensland is that Victoria does not implement 70 km/h and 90 km/h zones on its road network (i.e. speed zones on the road network are only in values of 40, 50, 60, 80, 100, 110).

Assessment of speed limits is undertaken by assuming a default speed (urban or rural) and following a mapped process to determine if the default speed should be reduced or increased. The process for rural areas is shown in Figure 2.10. As shown in the figure, a branch in the decision tree requires the practitioner to use VLimits, a similar decision making platform to QLIMITS.

Figure 2.10 – VicRoads process for Speed Limit Assessment in Rural Areas



Source: VicRoads (2013)

It is possible to assess a speed limit for a rural environment using only the mapped process shown previously; however, VLimits must be used for any deviations from the urban default limit of 50 km/h in urban environments.

2.6.2 New South Wales

The New South Wales Speed Zoning Guidelines (maintained by Roads and Maritime Services) are based off the principles outlined in AS1742.4 and Austroads guidelines, and thus follow the same principles outlined within MUTCD Part 4.

The assessment procedure follows a 10-step process that differs from the Queensland process through undertaking multiple site inspections and solely depending on the use of engineering judgement to determine an appropriate speed limit (as opposed to use of a platform such as QLIMITS). The process requires the following actions:

- A crash history analysis to understand if speed is a determinant in the severity or outcome of all crash types.
- An initial site inspection to understand the road environment.
- A seven day speed survey to obtain and review statistics such as mean speed, 85th percentile speed and percentage exceeding the current speed limit.

Following these steps, the practitioner should form an opinion on an appropriate speed limit by comparing the assessed road against typical speed environments described within the guideline. Consultation with relevant stakeholders and a second site visit to confirm additional devices and works required to accommodate the speed limit is undertaken before the authorisation process.

The process has certain advantages over that within MUTCD Part 4, in that it removes the requirement of using a platform such as QLIMITS, and therefore saves time in the speed zoning process. Additionally, not all roads can be compared to a typical environment in a binary manner similar to the action undertaken QLIMITS. The New South Wales process allows the practitioner to use experience to make judgement calls in grey areas where a platform like QLIMITS is not ideal due to its inability to consider site-specific issues (note that engineering judgement can be used to overrule QLIMITS recommendations). Although refined decisions can be made, the process can be open to similar problems to those identified with MUTCD Part 4. Allowing engineering judgement to determine speed limits can result with inconsistent approaches to speed zoning between different practitioners. Additionally, the process used to reach a decision could be difficult to explain to stakeholders given that it is opinion based, and does not have results derived from a clearly defined system.

2.6.3 Western Australia

Main Roads Western Australia have prepared guidelines in which a particular speed limit can be assigned to a road of a particular function and characteristics. This system is similar to the application of criteria based speed limits outlined in MUTCD Part 4, albeit the criteria is less specific in terms of road characteristics. The guidelines require the practitioner to identify the function of the assessed road and then refer to a table that specifies the speed limit for that function. An allowance is given for deviations of 10km/h increases or decreases to the assigned speed, providing the opportunity to adjust a speed limit to suit the road environment.

Speeds can be further increased or reduced outside of the 10 km/h deviation if certain criteria are met or if the 85th percentile speed is more than 10 km/h different from the determined speed. Criteria that is considered in speed reductions includes roadside development (frequency of accesses), hazards within 3 km of consecutive road and the road crash history.

2.7 International Guidelines

2.7.1 United States of America (California)

In some states, particularly on the west coast, the USA road network shares similar characteristics with the Australian road network. The country is expansive with localities separated by large distances and connected by high-speed highways. It is appropriate to understand the Speed Limit Review processes undertaken in the USA as some aspects may be applicable to Queensland roads. Similar to Australia, there are different road authorities for different states, who have different guidelines. The California Manual for Setting Speed Limits prepared by the California Department of Transportation has been considered in this review due to the weather conditions and topography of California being similar to that of Queensland.

The prevailing speed limit is typically assigned as the posted speed limit on Californian roads. This is considered as the 85th percentile speed as determined by an Engineering and Traffic Survey. Roadway safety is also a primary consideration in establishing speed limits. The speed environment and crash history must be assessed in addition to the prevailing traffic speed.

The Californian guidelines specify that the length of a speed zone should be as long as possible and consistent with changes to the environment. In particular, speed zones of less than 0.5 miles (800m) should be avoided. This minimum length specification differs to Australian guidelines, all of which have varying minimum lengths for different speed

zones. Although this is a simple method to ensure consistent speed zoning, it does not account for elements such as driver impatience in low speed areas.

2.7.2 Sweden

Jurewicz et al. (2014) detail that in Sweden, depending on the tier of road, speed limit setting can be undertaken by authorities at all levels (national, regional and local). The process of speed zoning is similar to other countries in that speed limits can be increased if the road and roadside environment are considered to be at an acceptable standard for the proposed speed limit. Speed reductions aimed at improving safety in small villages and high-volume intersections can be undertaken at the discretion of regional councils. It is important to note that in Stockholm, a speed limit of 30km/h has been adopted on residential streets in order to provide a safer environment for pedestrians and cyclists, and that no negative impacts to average speeds and flows have been observed while recorded maximum speeds have decreased.

Guidelines translated to English could not be found. From all available documentation on the subject that could be understood, it appears that Sweden do not implement any additional or have any discernible differences in assessment procedures from those used by Australian road authorities.

2.7.3 United Kingdom

The Setting Local Speed Limits guidelines prepared by the Department for Transport in the United Kingdom place an emphasis on considering crash history when assessing the speed limit of the road. Like Australian guidelines, the other factors to be considered in the assessment process are the road function and speed environment. An appraisal tool can be used to estimate the effects of implementing a speed limit; however, it is not for the same purpose as the QLIMITS platform and appears to be for economic analysis. It considers inputs of vehicle operating costs and emissions alongside traffic characteristics.

The UK guidelines deviate from Australian guidelines and suggest that the mean speed determined from traffic surveys should be adopted for local speed limits (as opposed to the 85th percentile or upper limit of the 15 km/h pace). Adopting this sort of change in Australia may pose an issue given that the 85th percentile speed is considered as what motorists perceive as an acceptable speed. Implementing a speed limit on a road that reflects the mean speed may result in high proportions of speeding and differential speeds.

There are also other differences with the guidelines in that the length of speed zones should be a minimum 600m regardless of the posted speed limit (lengths of 300-400m are permitted in exceptional circumstances). Effects on air quality is also another factor that is detailed within the guidelines, implying that reductions to the posted speed limit should be considered at locations where air pollution is of concern.

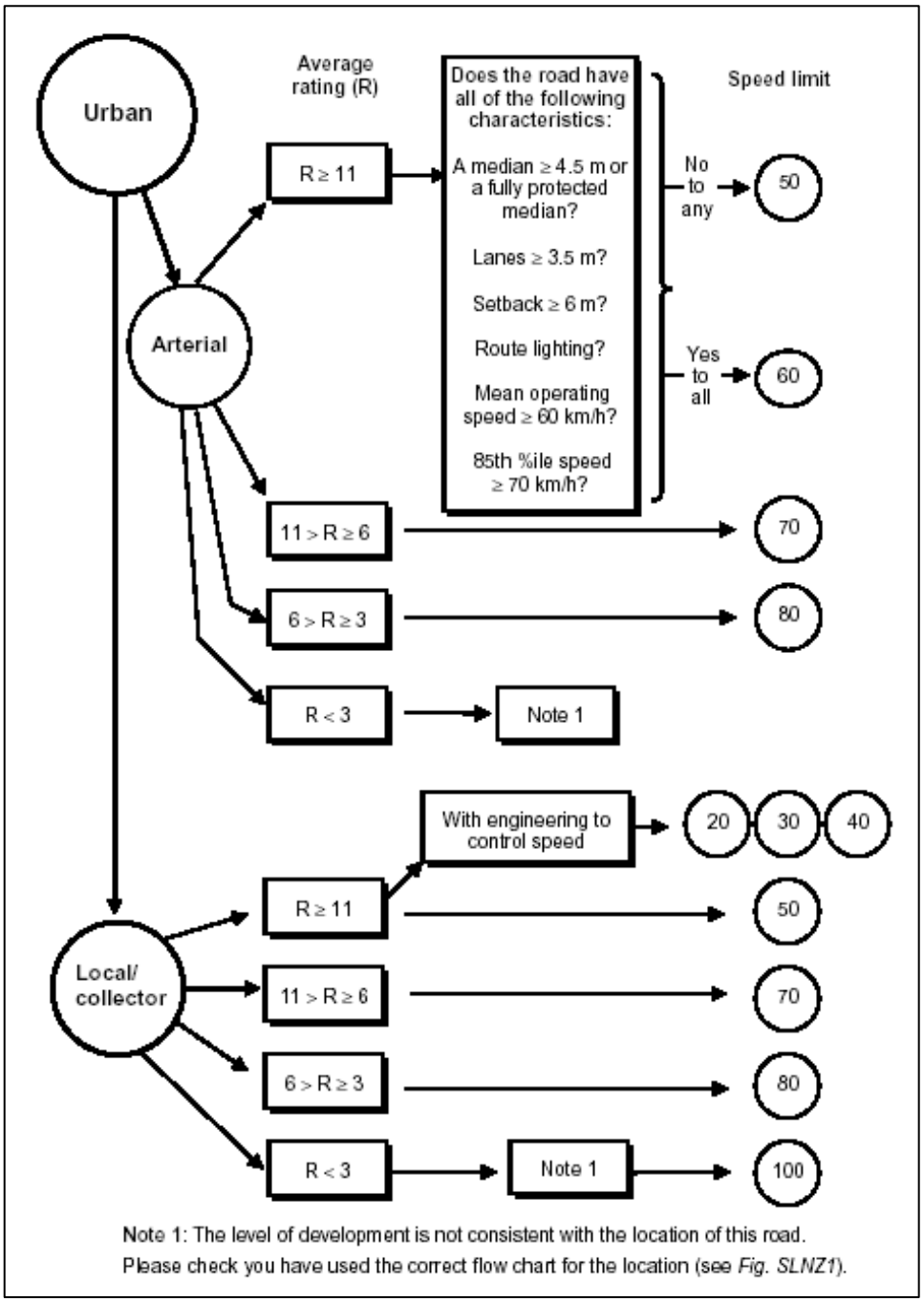
2.7.4 New Zealand

The New Zealand Transport Agency requires assessment of speed limits to be conducted in accordance with its Speed Limits New Zealand (SLNZ) guidelines. Like the Australian guidelines, the SLNZ method has been developed with the principles of road function, speed environment and crash history in mind. Default limits of 50 km/h and 100 km/h are used in urban and rural areas and may be changed between 20 km/h to 100 km/h dependant on the function of the road.

The process of assessing whether a speed limit is appropriate is completed through typical methods (i.e. site investigations, crash history analysis etc.) however the decision-making process in calculating a speed limit is undertaken with a rating system. The system considers a collection of survey data to arrive at a rating that is used as an input on a flow chart that determines the appropriate speed limit for the road. An example of one of the SLNZ flow charts is shown in Figure 2.11 (on next page).

The input rating considers the assessed road in separate 100m segments and is the average of two separate rating categories, a development rating and a roadway rating. The assessment of 100m segments makes the process demanding of data and requires a heavy data collection process.

Figure 2.11 – SLNZ Flow Chart for Urban Roads



Source: New Zealand Transport Agency (2004)

The development rating allocated to a road is based on the expected generation (vehicle, pedestrian and cycle) of development on the assessed road and for the first 500m of side roads. It is determined from SLNZ tables outlining criteria for each rating rank. The roadway rating is determined by a number of criteria relating to activity on the road (pedestrians, cyclists, parking, geometry, controls and use). An example of one of the elements used to determine the roadway rating is shown in Table 2.4.

Table 2.4 – Example SLNZ Roadway Rating Criteria (Geometry)

Type of Roadway	Alignment		
	Open Visibility	Average Visibility	Limited Visibility
Divided carriageway (solid median or barrier) or one way	0	0	0
4 or more lanes (flush median or undivided)	0	1	1
2 or 3 lanes (flush median or undivided)	0	1	2
1 lane (two way)	3	4	5

Source: New Zealand Transport Agency (2004)

This methodology requires a large input of data and appears to utilise more precision in decision-making than the Speed Limit Review process outlined in MUTCD Part 4. The calculations required to determine development and roadway ratings provide a degree of transparency, showing the practitioner what particular elements of the assessed road affect the speed limit recommendation given by SLNZ. This contrasts to QLIMITS, which does not provide feedback on the effect of data inputs.

As shown in Table 2.4, the rating system considers each element in specific detail and in the case of geometry, adds to the road rating (resulting in a lower speed) based on available carriageway width and visibility. Although there is an option to note substandard elements in the QLIMITS system, it does not consider those inputs to determine final recommendations like the SLNZ system.

2.8 Guideline Summary

The processes that were researched as part of this literature review have been considered at a high level in terms of ease of application, potential for consistent outcomes and useability. The comparisons in Table 2.5 and Table 2.6 have been conducted to understand the differences between the guidelines. This has also determined which processes are ideal for the case study stage of this project, by highlighting a range of different approaches to speed zoning and potential actions that could be adopted in future revisions of MUTCD Part 4.

Table 2.5 – Guideline Observations: Application and Outcomes

Region	Application	Outcomes
Queensland	• The Speed Limit Review process outlined in Section 4 is easy to apply, but the written content can be difficult to follow. • The mandatory use of QLIMITS can be an unnecessary consumption of time. • Establishment of homogenous sections can be inconsistent and/or incorrect, depending on the practitioner's level of experience.	• QLIMITS can produce inappropriate recommendations for speed limits, requiring engineering judgement to be applied to correct it. Experience is required to ensure suitable corrections. • Although engineering judgement is permitted, it is not something that is emphasised within MUTCD Part 4 and is not mentioned within the main body of the document. Practitioners may assume that QLIMITS results are final and inappropriate speed limits may be recommended.
New South Wales	• Focuses on use of engineering judgement, stakeholder consultation and multiple site visits to determine appropriate speeds. Experience is required in order to ensure that appropriate speed limits are recommended. • Comparison against typical speed environments may result in certain deficiencies being overlooked therefore should only be practised by experienced individuals.	• Reliance on engineering judgement can lead to inconsistent speed limit recommendations from different practitioners. • The process/results is difficult to communicate and may cause issues with community acceptance.

Region	Application	Outcomes
Victoria	• Flow-charted processes within the guidelines make the document more accessible to inexperienced users. • Similar to QLIMITS, the requirement to use VLIMITS in urban areas may be an unnecessary consumption of time.	• As VLIMITS is similar to QLIMITS, it is assumed that the system can also produce inappropriate suggestions for speed limits. Experience is required to ensure that corrections made using engineering judgement are suitable.
Western Australia	• The guidelines are straightforward to follow and criteria to deviate from typical speed limits is clearly stated. • Experience is required to identify the road function correctly.	• Due to the ease of being able to increase or decrease a typical speed limit, there may be inconsistencies with application across a state network. Similar roads on a network may be assigned different speed limits under this system. This could lead to questioning of the credibility of posted speed limits.
California	• Follows similar principles to other regions however, the prevailing speed is typically adopted. Application is similar to the New South Wales guidelines.	• The guidelines specify that speed zones should be as long as possible and not shorter than 0.5 miles. This is inconsistent with Australian guidelines and application of a blanket minimum length for speed zones may cause safety issues in low speed zones due to driver impatience.

Region	Application	Outcomes
Sweden	• Speed zoning appears to be based on consideration of road function and environment. No detailed information regarding the process could be found.	• Not enough information is available in English to determine the exact methodology. It appears to be based on engineering judgement.
United Kingdom	• Assessment of road function and environment is similar to other regions. There is an emphasis on crash history. • Use of the appraisal tool can simplify decision-making processes, but it focuses on economic benefits as opposed to road safety outcomes.	• Economic analysis of speed limit changes may produce more consistency with decisions, however should not be at the forefront of decision making for safety purposes.
New Zealand	• Using the SLNZ calculations and flow charts is data intensive and requires significantly more data than the processes of other regions. • SLNZ flow charts are easy to follow, but require more time to apply due to the need to consider a road at 100m segments. This can be very time demanding for long sections of road greater than 5km.	• The use of multiple input tables to determine a recommended speed limit makes the SLNZ process highly transparent/trackable. This type of system ensures consistency in outcomes when utilised correctly. Suggested speed limits from the process should still be subjected to engineering judgement.

Table 2.6 – Guideline Comparison

	QLD	NSW	VIC	WA	USA	UK	NZ
Speed limit recommendations are mostly determined by road characteristic data.	✗	✗	✗	✗	✗	✗	✓
Road function and typical environments are integral to determining a speed limit.	✓	✓	✓	✓	✗	✗	✗
The guidelines and processes can be utilised in both design and assessment phases to achieve specific road environment outcomes.	✗	✗	✗	✗	✗	✓	✓
The process is traceable and/or easily explained to stakeholders.	✗	✗	✗	✓	✗	✗	✓
The guidelines facilitate quick decision-making by reducing the requirement to use tools and data inputs.	✗	✓	✗	✓	✓	✗	✗

3.0 Assessment of MUTCD Part 4

3.1 Stakeholder Interviews

An interview process was conducted with industry stakeholders to gain an understanding of the issues that are commonly encountered in the application of MUTCD Part 4. The interview process also allowed identification of industry desired changes for future revisions of MUTCD Part 4. Interview responses were considered in the development of the recommended amendments to the guidelines that are suggested in this dissertation.

Stakeholders from the following organisations were approached:

- The Department of Transport and Main Roads
- City of Gold Coast (CoGC)
- Private engineering consultancies.

Interview responses highlighted numerous issues such as problems with guideline application, accessibility and compatibility with local government transport planning objectives. The issues are detailed within this section.

3.2 Identified Issues

3.2.1 Criteria Based Approach

Section 3 of MUTCD Part 4 and the Supplement to Part 4 (May 2016) allows the use of criteria based speed limits to be implemented on roads that have operational and functional characteristics that align with specifically defined criteria. The application of criteria based speed limits is presently restricted to the following six road environments:

- special zones and local streets (40-50 km/h)
- 110 km/h zones
- approaches to rural intersections
- rural residential areas
- foreshores (covered within Part 4 supplement Clause 3.5.3-1)
- bridges (covered Part 4 supplement Clause 3.7-1).

This limited range of environments that are suitable for criteria based approaches means that for urban roads with speed limits above 50 km/h, speed surveys are required to understand traffic characteristics. This is outlined in the process for Speed Limit Reviews in Section 4 of MUTCD Part 4. The requirement for a speed survey process where a particular speed limit may be clearly appropriate (based on engineering judgement and

the nature of the road environment) results in unnecessary data collection and additional resources for the sake of procedural compliance.

Considering a greater range of criteria for assessment would allow the overall speed limit assessment process (as outlined in Appendix F of the Manual) to incorporate Section 3 of MUTCD Part 4. Currently the relationship between Section 3 and Section 4 is not clearly linked within the Manual. The first action of the speed limit assessment process would be to undertake a criteria based approach, and if road environment characteristics do not clearly align with criteria or if road safety issues are present, then the Speed Limit Review process outlined in Section 4 (and Appendix F of MUTCD Part 4) could be followed.

3.2.2 Road Function

The first step of the Speed Limit Review process outlined in Section 4 of MUTCD Part 4 is to assess the function of the reviewed road and to identify the speed limit typically assigned to a road of that function. It is understood that the functional classifications outlined in MUTCD Part 4 Appendix B are specified to ensure consistent speed zoning across the State controlled network. This contributes towards the objective of establishing a credible statewide system of speed limits as outlined in Clause 2.1.1 of the Manual. Although this works well at a State level (where roads typically have the purpose of traffic mobility), the functional definitions are not always applicable to dense local road networks. In addition, some local roads may require a posted speed that is inconsistent with its functional classification to encourage use of other roads on the network or to accommodate targeted road user groups.

From a local government perspective, it would be beneficial to either expand the current range of road functions described in Appendix B of the Manual or alternatively to modify the first stage of the Speed Limit Review process and reduce the emphasis on road function. The latter could be achieved by focusing instead on the assignment of typical speed limits to typical road environments. This could include elements of the currently defined typical road functions but also be expanded to more definitive road and traffic characteristics such as number of lanes, carriageway widths, AADT, abutting land use and access frequency for roads of various posted speeds.

3.2.3 Data Collection

Although extensive data collection is required for the Speed Limit Review process, it is difficult to determine to what extent this data affects the final recommendations received from the QLIMITS platform. Stage 3 of the QLIMITS process involves a speed environment assessment; however, the output reports from QLIMITS do not detail data inputs or their influence on results. Review of inputs requires access to the software platform and a manual review of the input data.

Additionally, data such as road characteristics and special usage observations may be entered for the reviewing panel's consideration, but do not appear to serve any other purpose in recommendations produced by the system. It would be beneficial, for transparency and reporting purposes, if the output report detailed all inputs and indicated whether they directly affect QLIMITS recommendations.

3.2.4 QLIMITS Crash Rate Formula

The crash data analysis calculation outlined in MUTCD Part 4 requires the most recent five year period of casualty crash data to determine crash risk in a road section. As previously outlined in this dissertation, only FSI crashes have been recorded from 2012 in Queensland. The absence of crash data for lesser severities than FSI means that the crash risk equation will need to be revised otherwise crash risk within a road section may be underrepresented.

3.2.5 Safety Focus

It is acknowledged and agreed that road safety should be a primary consideration in the selection of speed limits. MUTCD Part 4 is worded to present road safety as the primary (and only) consideration in the Speed Limit Review process. Implementing speed limits that are lower than typical for a particular road function is currently only justifiable through the road having a high crash rate, high pedestrian activity or if there is a temporary event (Clauses 2.2.3, 2.2.4, 4.2.1). The action of implementing a lower speed limit to change road amenity (or support transport planning, place making and environmental issues) is not in accordance with MUTCD Part 4, and there is no guidance or references to facilitate these objectives.

3.2.6 Clarification of Engineering Judgement

It is not clearly stated that that engineering judgement should be applied to overrule QLIMITS recommendations when they are not appropriate for the road environment conditions. The first statement that this action may be appropriate is not until Clause D2 of Appendix D. Furthermore, MUTCD Part 4 Section 4 does not clearly state that a Road Safety Audit should be undertaken as part of the Speed Limit Review process where a

speed limit increase or safety issue is identified (but this is inferred in other sections of the Manual and within the QLIMITS process).

As previously discussed, the requirement to undertake the Section 4 Speed Limit Review process when criteria based speed limits cannot be applied can result in posted speed recommendations that are inappropriate for the road environment. This is generally due to differences in range of road function at Local and State levels and site specific safety issues that can only be identified through road safety audits (and not by crash rate calculations). The application of engineering judgement at this stage is critical to ensure that unsafe speed limits are not recommended, however, this is not clearly stated within the main body of MUTCD Part 4. From an infrequent practitioner or stakeholder's perspective, it may appear that the recommendations obtained from QLIMITS are final even when they are not appropriate for the assessed road environment. This increases the risk of the software being used to establish inappropriate speed limits.

The main body of MUTCD Part 4 (as opposed to the appendices) should emphasise that engineering judgement can (and should) be exercised to remove ambiguity and establish that results obtained from the Speed Limit Review process are recommendations and not final.

3.2.7 Design Guidance

The current guidance within MUTCD Part 4 helps the practitioner establish what the 'correct' speed for a particular road environment should be through the Speed Limit Review process; however, there is limited guidance for users to identify solutions to achieve a specific desired speed limit outcome. Inclusion of further guidance on optimal treatments to reduce speed and example typical road forms that are considered as effective to achieve desired speed environments would increase the applicability of Part 4 for local governments.

In addition to provision of guidance to achieve specific speed environments, standard practices to introduce speed reductions on roads with no crash history is desirable. For example, changing the amenity of a local road to encourage higher active transport use may be desired by a road authority but MUTCD Part 4 does not address this aspect of speed management.

MUTCD Part 4 currently provides detailed guidance for the assessment of speed limits on existing roads; however, there is no process to determine appropriate speed limits for new roads prior to opening to the public. The guidelines currently state that the process for an existing road should be applied to a new road after opening (Clause 4.2.1), but no specific

guidance is provided for determining posted speed limits in the design phase aside from road function descriptions in Appendix B of the Manual. It is acknowledged that Part 4 mentions that a new road should be constructed to a geometric standard appropriate for the predicted operating speed in accordance with road design guidelines, however clearer guidance on desirable road environment aspects would assist reviewers and road designers. Without such guidance, there is typically a lag in the review of speeds on new roads. This results in a reactive approach to speed related safety issues that could be avoided if a more proactive approach was provided to assist with the establishment of speeds during the design process.

3.2.8 Accessibility

MUTCD Part 4 is a complex framework in which the documented procedures can be difficult to follow for both practitioners with technical backgrounds in traffic engineering and those without a technical background. There is no concise overview of procedures to clearly outline what is required of the practitioner or up-front guidance for the first time (or infrequent) user. By way of comparison, MUTCD Part 3 (which has a similar level of complexity to Part 4) provides guidance tables for users at the start of the document.

There is currently only one mapped process, located within Appendix F of MUTCD Part 4. It details the entire process for the review of speed limits in Section 4. The flowchart is relatively complex and could be further broken down into separate flowcharts (including how Section 3 should be applied) and remove tasks that are not particularly relevant to the practitioner. This is also not referenced until Section 4.3.4 of the Manual whereas such user guidance would typically be expected before the table of contents.

In addition, many parts of the document could be simplified or currently have some degree of ambiguity in the wording. While it is acknowledged that detail is required to establish context around procedures outlined within the Manual, a revision to remove unnecessary detail and ambiguity, as well as the development of checklists and flowcharts would simplify and clearly establish what is required of the practitioner. This would be beneficial and allow:

- a succinct outline of processes, which would facilitate consistency in application
- processes that are easier to follow for users with minimal technical experience and infrequent users of MUTCD Part 4
- community and non-technical stakeholders to understand the overall process.

4.0 Identification of Solutions

4.1 Options Overview

Responses to the stakeholder interview process indicate that industry users are not seeking innovation in regards to speed zoning processes, but are seeking revisions to MUTCD Part 4 that make it more comprehensive of user needs while being easier to follow. In addition to clarification of MUTCD Part 4 processes, there is a desire for further guidance on the subject of achieving suitable environments for proposed speed limits.

The use of technology to improve Speed Limit Review processes has been considered, but it has been determined it will not address industry problems that were identified in the interview stage of this project. Although Bluetooth can be used to understand the speed profile of a traffic stream, it is only an alternative to tube counting devices and does not offer further utility to assess road environments or improve the current methodology.

Similarly, Mobile Phone Locational Data can be used to understand the speed profile of a traffic stream, but once again cannot be used to make informed decisions that consider the road environment. It can be useful prior to the speed zoning process to determine what roads may be suitable for a Speed Limit Review. The data can be utilised to assess the actual speed profile of a road network against posted speed data. Discrepancies between recorded average speeds against posted speeds could be an indication of where the existing posted speed limit is not suitable for the road environment.

AusRAP data has been considered for use in Speed Limit Reviews but it has been determined that it is not currently suitable for this application. A desktop review of the data has found quality issues in the reporting of road attributes. Data checks undertaken against TMR digital video records found a substantial portion of recorded attributes to be an incorrect representation of the road environment. These issues could be due to user error in recording, or because road attributes are recorded in a binary fashion for 100m segments of road and therefore cannot capture all detail. Additionally, AusRAP data is currently unavailable for roads governed by local road authorities (as at July 2016). This means that there is currently no utility for Speed Limit Reviews on a majority of the Queensland road network.

Solutions to the industry issues with MUTCD Part 4 may be found through the review and adoption of the speed zoning processes conducted by other regions, or through making amendments to the current guidelines that directly address industry issues.

4.2 Adoption of Other Guidelines

An in depth review of the processes utilised by other regions may provide insight into how the MUTCD Part 4 Speed Limit Review process may be improved. Other methodologies may provide speed limit recommendations that are more often considered suitable for the assessed road than the process outlined in MUTCD Part 4. They may also have a structure that is easier to understand and faster to implement, addressing the industry concern of difficulty in following the current guidelines

Case studies have been conducted to identify if any elements of processes from other regions should be recommended for adoption in future MUTCD Part 4 editions. The case studies have involved applying the processes of other regions to selected roads and comparing the results against those obtained from a Speed Limit Review conducted in accordance with MUTCD Part 4.

4.3 Amendments to MUTCD Part 4

Revisions to the current framework will address a number of industry issues with MUTCD Part 4. As outlined previously, these changes may include:

- addition of flowcharts and clarification of processes to simplify document use for practitioners
- design guidance to achieve transport planning objectives
- further opportunity to apply criteria based speed limits
- updates to crash calculations and QLIMITS.

Recommended amendments to the current framework and associated benefits are further detailed within Section 6.0 of this dissertation.

5.0 Case Studies

5.1 Case Study Process Overview

Six sites were selected for Speed Limit Reviews using processes from different regions. The purpose of conducting the case studies was to compare the processes used by other road authorities against the current MUTCD Part 4 process. Conducting multiple reviews with differing methodologies on the same road allowed the strengths of each process to be identified, and thus inform recommendations for future revisions of MUTCD Part 4. The case studies have also provided an understanding to whether industry concerns and issues are relevant with the other processes.

Under the current MUTCD Part 4 framework, criteria based speed limits cannot be applied to the roads selected for the case studies, as they are not suitable environments for speed limits of 50 km/h, 100 km/h and 110 km/h. The Speed Limit Review process from Section 4 of MUTCD Part 4 was undertaken to establish base-case speed limit recommendations for comparison.

The methodologies selected for the case studies are those implemented in New South Wales (NSW), Western Australia (WA) and New Zealand (NZ). These were chosen for consideration due to each guideline having a differing level of reliance on the use of engineering judgement and prescriptive processes. Assessment of these processes has provided a better understanding as to whether MUTCD Part 4 should focus more on the use of engineering judgement or more on prescriptive processes and data input.

5.2 Case Study Methodology

5.2.1 Data Collection

Each speed zoning process requires particular data inputs such as prevailing speed, road widths and access frequency. A data gathering process was undertaken and involved the following actions:

- A site inspection was undertaken on each of the case study roads to understand the road and speed environments, and to identify safety issues that could be exacerbated by vehicle speed. Elements relevant to Speed Limit Reviews, such as frequency of access and carriageway width were gathered.

- Crash histories on the study case roads were obtained from the Queensland Transport Globe prior to assessment. No discernible trends or safety issues with a direct relation to speed could be identified from the crash data, with the exception of Reedy Creek Road, which has a history of rear end crashes.
- Speed surveys were obtained to gain an understanding of the prevailing travel speed on the roads. These surveys are contained at Appendix B of this dissertation.

This data has been used for process inputs and making informed decisions regarding the suitability of recommended speed limits.

5.2.2 MUTCD Part 4 Process

Speed Limit Reviews were undertaken in accordance with the process detailed in Section 4 of MUTCD Part 4. Data gathered from site inspections, crash history analysis and speed surveys were run through QLIMITS to obtain speed limit recommendations for each analysed road segment.

The Speed Limit Reviews conducted in QLIMITS established a base case scenario for comparison of results against those obtained from the other processes. Engineering judgement has also been applied against these recommendations to make a call on the suitability of recommendations given by QLIMITS.

5.2.3 New South Wales Process

Speed Limit Reviews were conducted following the process outlined in Clause 2.5 of the New South Wales Speed Zoning Guidelines. Although the guidelines detail a 10-step procedure, steps 6-10 were not undertaken as they involve the action of implementing a new speed zone with the road authority.

This process relies on site inspections and speed surveys to understand the road and speed environment. Engineering judgement is used to determine a speed limit for recommendation. No decision-making platforms such as QLIMITS are used under this methodology.

5.2.4 Western Australia Process

Speed Limit Reviews were conducted in accordance with Clause 4 of the Western Australia Policy and Application Guidelines for Speed Zoning. This methodology is similar to a criteria based approach and requires the use of engineering judgement to identify road characteristics and function. The road characteristics and function are then compared against a set of typical road environments and typical speed limits to determine a speed limit for recommendation. The guidelines allow for adjustments of 10 km/h (increase or decrease) to account for site-specific issues that render the typical speed limit unsuitable.

This process relies on a combination of engineering judgement and prescriptive process to determine a speed limit recommendation.

5.2.5 New Zealand Process

The SLNZ process requires a substantial amount of data input and knowledge of operations on the local network. Site inspections allowed this data to be collected for input into SLNZ calculations. Speed Limit Reviews were conducted following the process outlined in Section 4 of the SLNZ guidelines. Section 4 of the guidelines details how to calculate roadway and development ratings, and how to use these ratings to determine a speed limit for recommendation. A roadway rating and development rating were determined for each road by consideration of the assessed roads in 100m segments. The roadway and development ratings were then averaged to produce a score that correlated to a recommended speed limit.

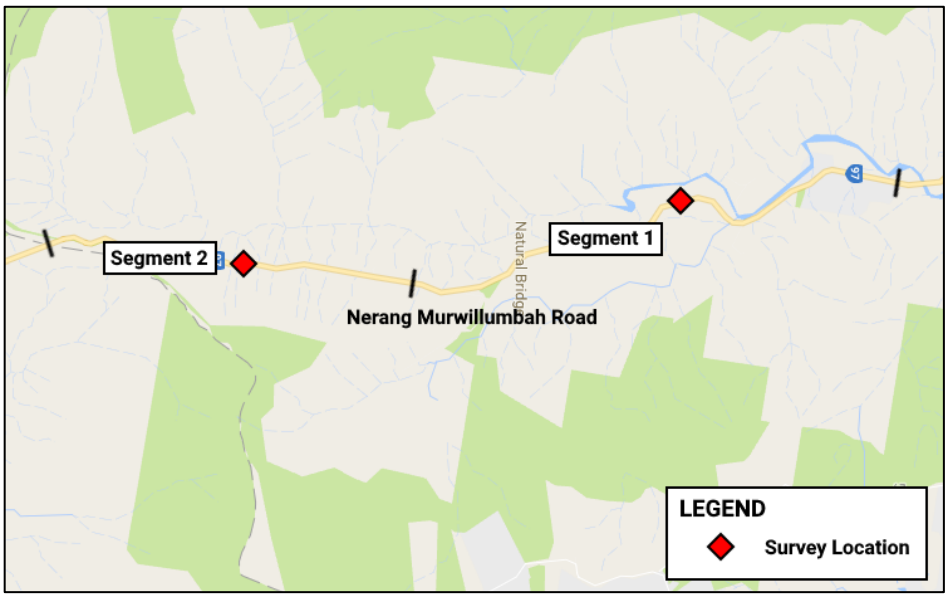
The process relies on data collection, inputs, calculations, and is entirely prescriptive. Engineering judgement is only required for verification of recommended speed limits.

5.3 Site Descriptions

5.3.1 Nerang Murwillumbah Road

Nerang Murwillumbah Road is located within the Gold Coast Hinterland Region. The assessed road section of Nerang Murwillumbah Road runs from Bochow Park to the New South Wales border. For the purposes of the Speed Limit Review, the corridor has been divided into two homogenous segments of consistent existing speed limits and road geometry (shown in Figure 5.1). Under TMR's road hierarchy definitions, it can be classified as a Rural Arterial road.

Figure 5.1 – Nerang-Murwillumbah Road Speed Limit Review Extents



Map Base Source: Google (2016)

A site inspection was conducted to understand the road environment and characteristics pertinent to the Speed Limit Review process. Site inspection observations are detailed in Table 5.1.

Table 5.1 – Nerang Murwillumbah Road Site Inspection Observations

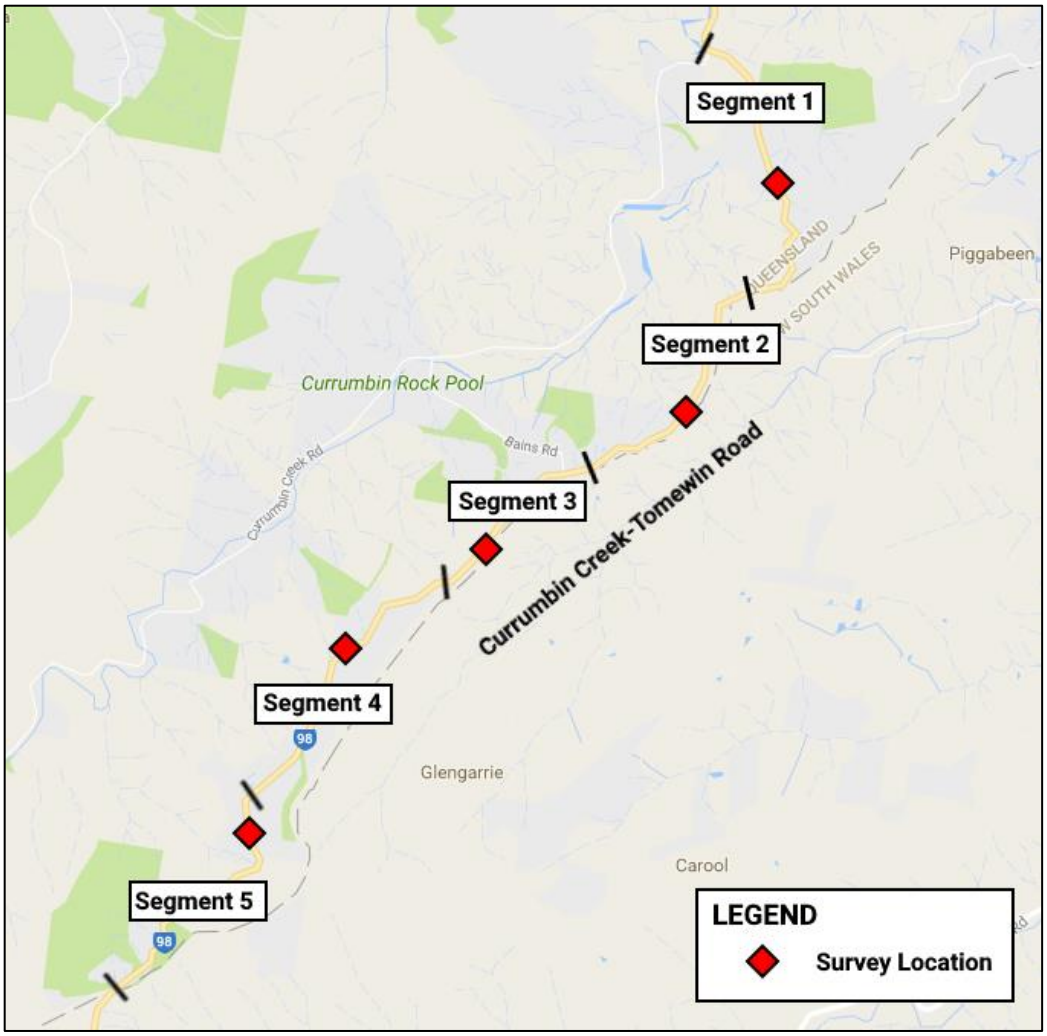
Segment	Road Characteristics
Segment 1 	• two lanes, undivided with a typical width of 6.5m approx. • posted speed limit of 80 km/h • delineation provided with guide posts, edge lines and centre line pavement markings • little shoulder space available on both sides of the carriageway (typically less than 0.3m) • numerous blind spots through the road segment where vegetation and topography restricts sight lines • a high number of low speed curves with advisory speed signs provided • hazards within the clear zone along the entire segment (trees, power poles and drop offs) • used as a recreational route for motorcyclists • used for transportation of rural equipment e.g. wide load tractors.

Segment	Road Characteristics
Segment 2 	• two lanes, undivided with a typical width of 5.5m approx. • posted speed limit of 70 km/h • delineation provided with guide posts, edge lines and centre line pavement markings • little shoulder space available on both sides of the carriageway (typically less than 0.3m) • numerous blind spots through the road segment where vegetation and topography restricts sight lines • a high number of low speed curves with advisory speed signs provided • hazards within the clear zone along the entire segment (trees, power poles and drop offs) • used as a recreational route for motorcyclists • used for transportation of rural equipment e.g. wide load tractors.

5.3.2 Currumbin Creek-Tomewin Road

Currumbin Creek-Tomewin Road is located within the Gold Coast Hinterland Region. The assessed road section of Currumbin Creek-Tomewin Road runs from Currumbin Creek Road to the New South Wales border. For the purposes of the Speed Limit Review, the corridor has been divided into five homogenous segments of consistent existing speed limits and road geometry (shown in Figure 5.2). The road environment is typical of an urban-fringe area. The assessed road section is classified as a Rural Arterial road.

Figure 5.2 – Currumbin Creek-Tomewin Road Speed Limit Review Extents



Map Base Source: Google Maps 2016

A site inspection was conducted to understand the road environment and characteristics pertinent to the Speed Limit Review process. Site inspection observations are detailed in Table 5.2.

Table 5.2 – Currumbin Creek-Tomewin Road Site Inspection Observations

Segment	Road Characteristics
Segment 1 	• two lanes, undivided with a typical width of 6.5m approx. • posted speed limit of 60 km/h • delineation provided with guide posts, edge lines and centre line pavement markings • little shoulder space available on both sides of the carriageway (typically less than 0.3m) • numerous blind spots through the road segment where vegetation and topography restricts sight lines • a high number of low speed curves with advisory speed signs provided • hazards within the clear zone along the entire segment (trees, power poles and drop offs) • used as a school bus route • infrequent residential accesses.

Segment	Road Characteristics
Segment 2 	• two lanes, undivided with a typical width of 6.5m approx. • posted speed limit of 60 km/h • delineation provided with guide posts, edge lines and centre line pavement markings • little shoulder space available on both sides of the carriageway (typically less than 0.3m) • numerous blind spots through the road segment where vegetation and topography restricts sight lines • a high number of low speed curves with advisory speed signs provided • hazards within the clear zone along the entire segment (trees, power poles and drop offs) • used as a school bus route • frequent residential accesses.

Segment	Road Characteristics
Segment 3 	• two lanes, undivided with a typical width of 6.5m approx. • posted speed limit of 80 km/h • delineation provided with guide posts, edge lines and centre line pavement markings • little shoulder space available on both sides of the carriageway (typically less than 0.3m) • numerous blind spots through the road segment where vegetation and topography restricts sight lines • a high number of low speed curves with advisory speed signs provided • hazards within the clear zone along the entire segment (trees, power poles and drop offs) • infrequent residential accesses.

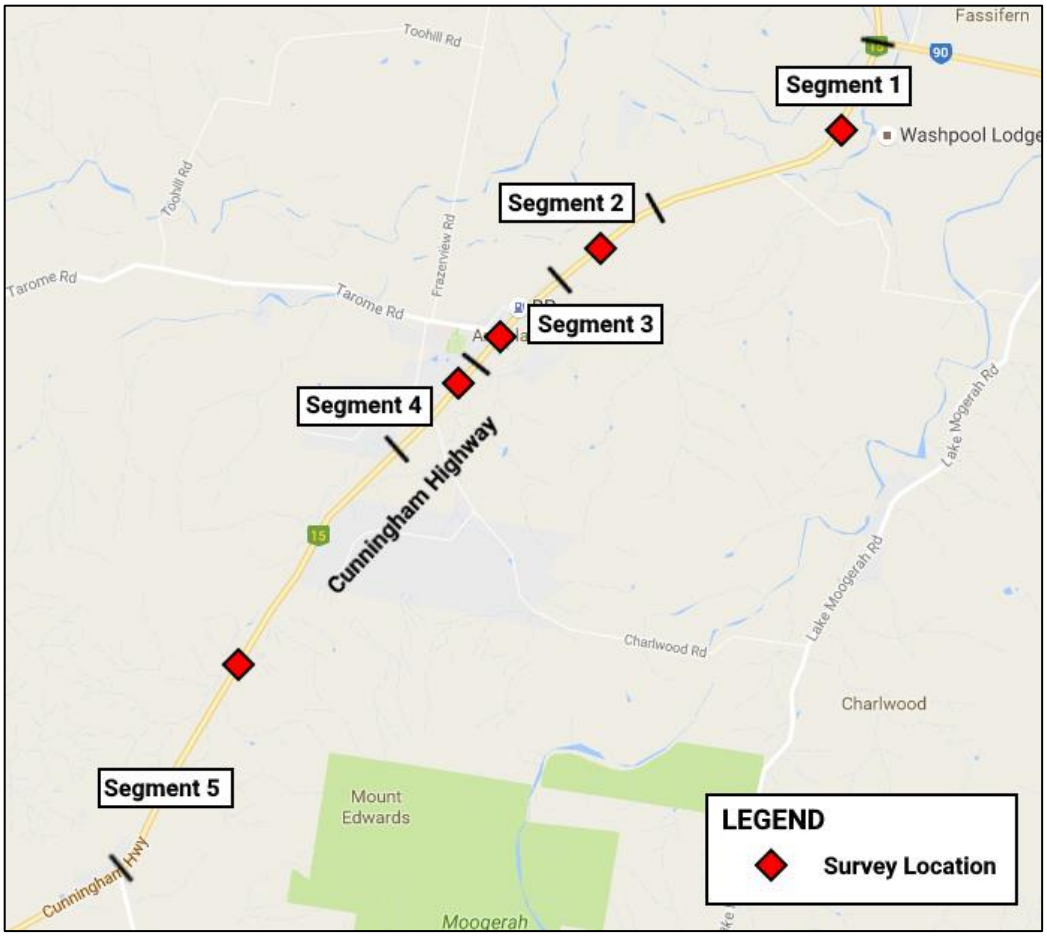
Segment	Road Characteristics
Segment 4 	• two lanes, undivided with a typical width of 6.5m approx. • posted speed limit of 80 km/h • delineation provided with guide posts, edge lines and centre line pavement markings • little shoulder space available on both sides of the carriageway (typically less than 0.3m) • numerous blind spots through the road segment where vegetation and topography restricts sight lines • a high number of low speed curves with advisory speed signs provided • hazards within the clear zone along the entire segment (trees, power poles and drop offs) • frequent residential accesses.

Segment	Road Characteristics
Segment 5 	• two lanes, undivided with a typical width of 6.5m approx. • posted speed limit of 60 km/h • delineation provided with guide posts, edge lines and centre line pavement markings • little shoulder space available on both sides of the carriageway (typically less than 0.3m) • numerous blind spots through the road segment where vegetation and topography restricts sight lines • a high number of low speed curves with advisory speed signs provided • hazards within the clear zone along the entire segment (trees, power poles and drop offs) • used as a school bus route • frequent residential accesses.

5.3.3 Cunningham Highway

The assessed road section of the Cunningham Highway is between Boonah-Fassifern Road and Lake Moogerah Road, passing through the township of Aratula. For the purposes of the Speed Limit Review, the corridor has been divided into five homogenous segments of consistent existing speed limits and road geometry (shown in Figure 5.3). The road environment is typical of a rural area. The assessed road section can be classified as a Rural Arterial road.

Figure 5.3 – Cunningham Highway Speed Limit Review Extents



Map Base Source: Google Maps 2016

A site inspection was conducted to understand the road environment and characteristics pertinent to the Speed Limit Review process. Site inspection observations are detailed in Table 5.3.

Table 5.3 – Cunningham Highway Site Inspection Observations

Segment	Road Characteristics
Segment 1 	• two lanes, undivided with a typical width of 10.2m approx. • posted speed limit of 100 km/h • delineation provided with guide posts, edge lines and centre line pavement markings • 1.5m shoulders on both sides of the carriageway • open terrain with few hazards in the clear zone • heavy usage by heavy vehicles, motorcycle enthusiasts, tourists and caravans • used for transportation of rural equipment (e.g. tractors).
Segment 2 	• two lanes, undivided with a typical width of 10.2m approx. • posted speed limit of 100 km/h • delineation provided with guide posts, edge lines and centre line pavement markings • 1.5m shoulders on both sides of the carriageway • open terrain with hazards in the clear zone • heavy usage by heavy vehicles, motorcycle enthusiasts, tourists and caravans • used for transportation of rural equipment (e.g. tractors).

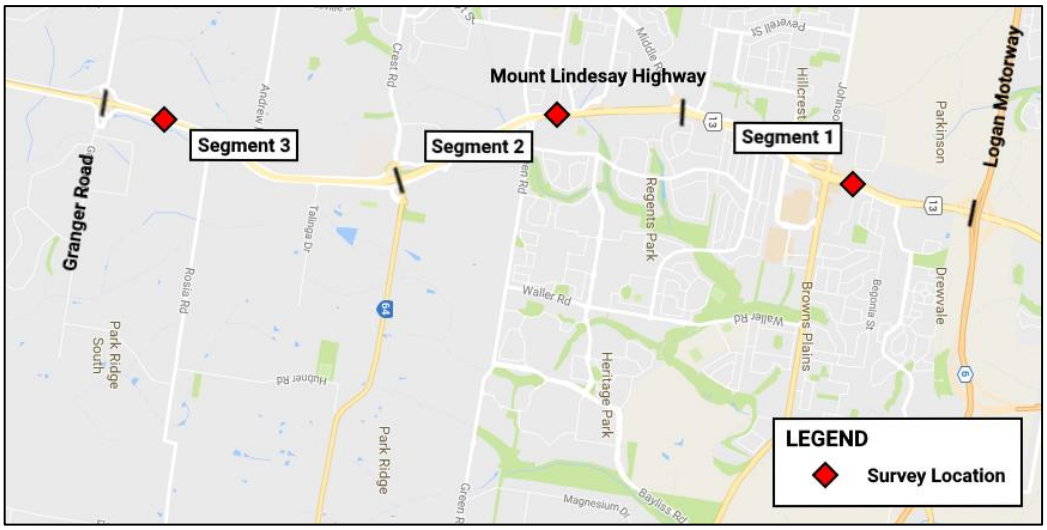
Segment	Road Characteristics
Segment 3 	• four lanes, undivided with a typical width of 19.5m approx. • posted speed limit of 70 km/h • delineation provided with edge lines and centre line pavement markings • wide parking shoulders on both sides of the carriageway • frequent residential and commercial accesses • heavy usage by heavy vehicles, motorcycle enthusiasts, tourists and caravans • used for transportation of rural equipment (e.g. tractors).
Segment 4 	• two lanes, undivided with a typical width of 10.2m approx. • posted speed limit of 70 km/h • delineation provided with edge lines and centre line pavement markings • 1.5m shoulders on both sides of the carriageway • open terrain with hazards in the clear zone • infrequent residential and commercial accesses • heavy usage by heavy vehicles, motorcycle enthusiasts, tourists and caravans • used for transportation of rural equipment (e.g. tractors).

Segment	Road Characteristics
Segment 5 	• two lanes, undivided with a typical width of 10.2m approx. • posted speed limit of 100 km/h • delineation provided with guide posts, edge lines and centre line pavement markings • 1.5m shoulders on both sides of the carriageway • overtaking lanes present within segment • hazards in the clear zone • heavy usage by heavy vehicles, motorcycle enthusiasts, tourists and caravans • used for transportation of rural equipment (e.g. tractors).

5.3.4 Mount Lindesay Highway

The assessed road section of the Mount Lindesay Highway is between the Logan Motorway and Granger Road. For the purposes of the Speed Limit Review, the corridor has been divided into three homogenous segments (shown in Figure 5.4). The road environment is typical of an urban motorway. The assessed road section can be classified as an Arterial road.

Figure 5.4 – Mount Lindesay Highway Speed Limit Review Extents



Map Base Source: Google Maps 2016

A site inspection was conducted to understand the road environment and characteristics pertinent to the Speed Limit Review process. Site inspection observations are detailed in Table 5.4.

Table 5.4 – Mount Lindesay Highway Site Inspection Observations

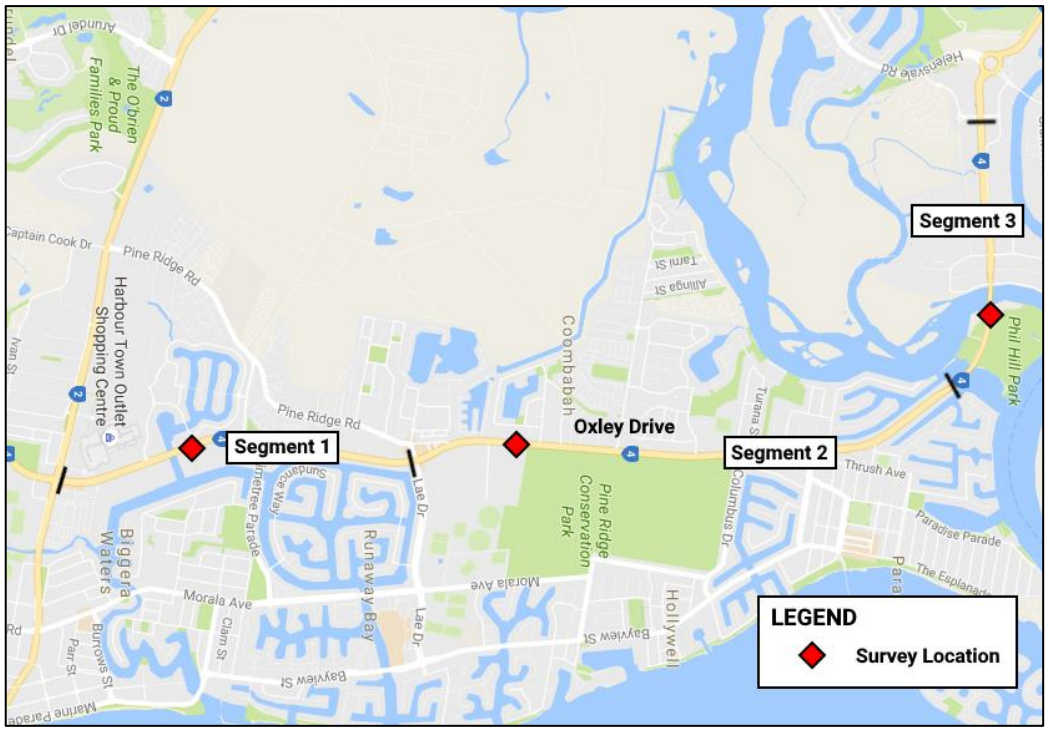
Segment	Road Characteristics
Segment 1 	• four lanes and divided • posted speed limit of 80 km/h • delineation provided with lane markings, Retroreflective Pavement Markers (RRPMs) and edge lines • 1m shoulders on the driver side and 2.5m shoulders on the passenger side • concrete barriers on the passenger side and a grassed median on the driver side • restricted access • AADT of 40,719 vehicles.

Segment	Road Characteristics
Segment 2 	• four lanes and divided • posted speed limit of 80 km/h • delineation provided with lane markings, Retroreflective Pavement Markers (RRPMs) and edge lines • 1m shoulders on the driver side and 2.5m shoulders on the passenger side • concrete barriers on the passenger side and a median with vegetation on the driver side • restricted access • AADT of 33,821 vehicles.
Segment 3 	• four lanes and divided • posted speed limit of 80 km/h • delineation provided with lane markings, Retroreflective Pavement Markers (RRPMs) and edge lines • 1m shoulders on the driver side and 2.5m shoulders on the passenger side • concrete barriers on the passenger side and a median with vegetation, protected by wire rope barrier on the driver side • restricted access • AADT of 22,088 vehicles.

5.3.5 Oxley Drive

Oxley Drive is a 7.3 km road that is located in Coombabah, connecting Hope Island Road to the Gold Coast Highway. For the purposes of the Speed Limit Review, the corridor has been divided into three homogenous segments (shown in Figure 5.5). The road environment is a typical urban environment, with frequent residential access occurring. It is classified as a sub-arterial road under TMR's road hierarchy.

Figure 5.5 – Oxley Drive Speed Limit Review Extents



Map Base Source: Google Maps 2016

A site inspection was conducted to understand the road environment and characteristics pertinent to the Speed Limit Review process. Site inspection observations are detailed in Table 5.5.

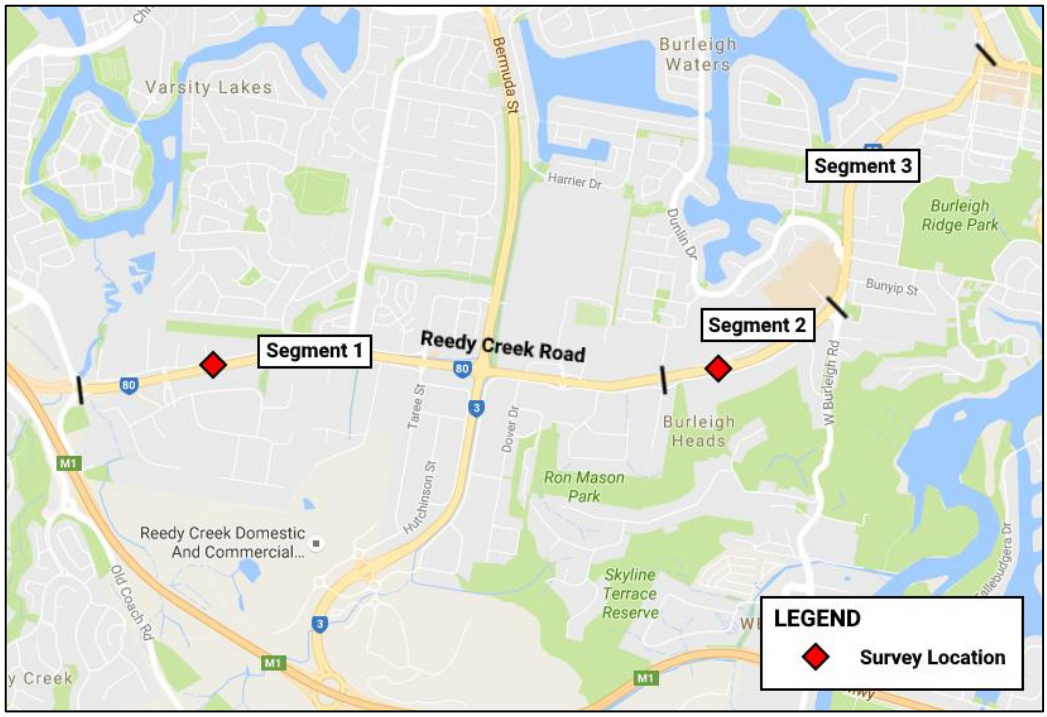
Table 5.5 – Oxley Drive Site Inspection Observations

Segment	Road Characteristics
Segment 1 	• four lanes and divided • posted speed limit of 70 km/h • delineation provided with lane markings, Retroreflective Pavement Markers (RRPMs) and edge lines • built-up urban area with direct property access • hazards within the clear zone include street lighting and infrastructure typical of an urban environment.
Segment 2 	• four lanes and divided • posted speed limit of 60 km/h • delineation provided with lane markings, Retroreflective Pavement Markers (RRPMs) and edge lines • parking shoulders present in both directions • frequent residential and commercial access • hazards within the clear zone include street lighting and infrastructure typical of an urban environment • school zone located within the segment.
Segment 3 	• two lanes and undivided • posted speed limit of 60 km/h • narrow lanes and shoulders • concrete barriers on both sides of the road • two bridges within the road segment.

5.3.6 Reedy Creek Road

Reedy Creek Road is a 5.2 km road that is located in between Burleigh Heads and Reedy Creek. For the purposes of the Speed Limit Review, the corridor has been divided into three homogenous segments (shown in Figure 5.6). The road environment is a typical urban environment, with frequent direct access. It is classified as a sub-arterial road under TMR's road hierarchy. 30 rear end crashes were recorded between 2010 and 2014, indicating a high risk for this crash type on Reedy Creek Road.

Figure 5.6 – Reedy Creek Road Speed Limit Review Extents



Map Base Source: Google Maps 2016

A site inspection was conducted to understand the road environment and characteristics pertinent to the Speed Limit Review process. Site inspection observations are detailed in Table 5.6.

Table 5.6 – Reedy Creek Road Site Inspection Observations

Segment	Road Characteristics
Segment 1 	• four lanes and divided • posted speed limit of 80 km/h • built-up urban area with limited property access • hazards within the clear zone include street lighting and infrastructure typical of an urban environment • numerous signalised intersections within road segment • school zone within road segment (60 km/h variable speed limit).
Segment 2 	• six lanes and divided • posted speed limit of 60 km/h • built-up urban area with limited property access • hazards within the clear zone include street lighting and infrastructure typical of an urban environment • three signalised intersections within road segment.
Segment 3 	• four lanes and divided • posted speed limit of 60 km/h • built-up urban area with frequent access to industrial and commercial properties • hazards within the clear zone include street lighting and infrastructure typical of an urban environment.

5.4 Case Study Results

The results of the case studies are outlined in this section. Outputs from QLIMITS and SLNZ are located at Appendix C of this dissertation. As the New South Wales and Western Australia processes are completed using engineering judgement, the reasons for the speed limit recommendations are discussed within this section.

5.4.1 Nerang Murwillumbah Road

5.4.1.1 MUTCD Part 4 Process

Following the process outlined in Section 4 of MUTCD Part 4, a Speed Limit Review of Nerang Murwillumbah Road was undertaken using QLIMITS. The initial speed limit recommendations given by QLIMITS for each road section were:

- Segment 1 – retain the existing 80 km/h limit.
- Segment 2 – increase the speed limit from 70 km/h to 80 km/h.

The recommendation given for Segment 2 was determined to be inappropriate due to identified safety issues that could be exacerbated by increased vehicle speeds. These issues included a narrow carriageway width (less than 6m), narrow road shoulders, limited sight distance and geometry demanding of driver skill.

Although safety issues were identified during the site inspection of Nerang Murwillumbah Road and could be used to argue a speed limit reduction, it is important to note that the road primarily functions as a link between large regions. There would likely be high levels of non-compliance with lower speed limits, creating further safety issues with differential speeds between compliant vehicles. The appropriate action would be to address safety issues in the corridor with remedial works.

Under this process, the final recommendations were to leave the speed limits unchanged.

5.4.1.2 New South Wales Process

Based on the site inspection, review of crash history and speed survey data, the final recommendation under the NSW speed zoning process is to retain the existing speed limits.

This recommendation is based on the reasoning used in the Queensland process.

5.4.1.3 Western Australia Process

Assessment of Nerang Murwillumbah Road with the WA process has produced the following speed limit recommendations:

- Segment 1 – retain the existing 80 km/h limit.
- Segment 2 – retain the existing 70 km/h limit.

Segment 1 is classified as a distributor under the WA classification system and, as per the guidelines, the recommended speed limit of 80 km/h is suitable for a road of this classification. The road is undivided and has relatively low levels of direct access from abutting development. The seal width is also wide enough to accommodate two-way traffic. As the road has these attributes and serves the purpose of the movement of traffic between regions, 80 km/h is an appropriate speed limit.

Segment 2 falls into the same classification as Segment 1, but due to the identified safety issues, the existing speed limit of 70 km/h is more appropriate.

5.4.1.4 New Zealand Process

Using the SLNZ process, the following speed limits were recommended for the road segments on Nerang Murwillumbah Road:

- Segment 1 – retain the existing 80 km/h limit.
- Segment 2 – increase the speed limit from 70 km/h to 80 km/h.

The roadway rating and development ratings calculated for the observable environment and traffic characteristics suggest that both segments are suitable for 80 km/h speed limits in a rural environment. This is similar to the initial recommendations provided by QLIMITS.

5.4.2 Currumbin Creek-Tomewin Road

5.4.2.1 MUTCD Part 4 Process

The QLIMITS assessment of Currumbin Creek-Tomewin Road produced the following recommendations:

- Segment 1 – increase the speed limit from 60 km/h to 80 km/h.
- Segment 2 – increase the speed limit from 60 km/h to 80 km/h.
- Segment 3 – retain the existing 80 km/h limit.
- Segment 4 – retain the existing 80 km/h limit.
- Segment 5 – increase the speed limit from 60 km/h to 80 km/h.

The recommendations given for Segments 1, 2 and 5 are considered inappropriate due to the presence of demanding geometry, roadside hazards and high levels of cyclist and tourist traffic. The existing speed limit of 60 km/h is considered as suitable for the observed conditions.

Although QLIMITS has provided a recommendation to retain the existing 80 km/h limit in Segments 3 and 4, the extension of Segment 2 and Segment 5 60 km/h zones is suggested due to demanding geometry and roadside hazards.

The final recommendations for this road are as follows:

- Segment 1 – retain the existing 60 km/h limit.
- Segment 2 – retain the existing 60 km/h limit and extend it into Segment 3.
- Segment 3 – reduce the length of the existing 80 km/h limit zone.
- Segment 4 – reduce the length of the existing 80 km/h limit zone.
- Segment 5 – retain the existing 60 km/h limit and extend it into Segment 4.

5.4.2.2 New South Wales Process

Based on the site inspection, review of crash history and speed survey data, the final recommendation under the NSW speed zoning process is to retain the existing speed limits and adjust the speed zone lengths as previously detailed.

5.4.2.3 Western Australia Process

Currumbin Creek-Tomewin Road is considered as a distributor road and the speed limit recommendations for each road segment are as follows:

- Segment 1 – retain the existing 60 km/h limit.
- Segment 2 – retain the existing 60 km/h limit.
- Segment 3 – retain the existing 80 km/h limit.
- Segment 4 – reduce the speed limit from 80 km/h to 60 km/h.
- Segment 5 – retain the existing 60 km/h limit.

Segment 4 is suggested for a speed reduction due to the identified safety issues.

5.4.2.4 New Zealand Process

Similar to QLIMITS, the SLNZ process produces speed limit recommendations of 80 km/h for all sections. Although safety issues were identified during the site inspection, the roadway and development ratings calculated under SLNZ did not account for the issues.

5.4.3 Cunningham Highway

5.4.3.1 MUTCD Part 4 Process

QLIMITS produced the following speed limit recommendations for the Cunningham Highway:

- Segment 1 – retain the existing 100 km/h limit.
- Segment 2 – retain the existing 100 km/h limit.
- Segment 3 – reduce the speed limit from 70 km/h to 60 km/h.
- Segment 4 – increase the speed limit from 70 km/h to 80 km/h.
- Segment 5 – retain the existing 100 km/h limit.

The recommendations given by QLIMITS were judged as appropriate for the assessed road environments.

The recommendation to reduce the speed limit in Segment 3 to 60 km/h can be justified as the segment passes through the township of Aratula, where there is a significant increase of direct access to the road. An increase to the speed limit in Segment 4 can be justified as the segment is on the outer fringe of Aratula where there is minimal access to the Cunningham Highway.

5.4.3.2 New South Wales Process

Based on the site inspection, review of crash history and speed survey data, the final recommendation under the NSW speed zoning process is to adopt the speed limit changes as recommended by QLIMITS. This is for the same reasons as previously described, in that Segment 3 runs through the township of Aratula and Segment 4 is on the outer edge of the township.

5.4.3.3 Western Australia Process

Assessment of the Cunningham Highway using this process resulted in the same recommendations obtained from QLIMITS. The Cunningham Highway is classified as a distributor under WA classifications and the recommended speed limits for each segment are in accordance with the guidelines, when considering the level of direct access, seal widths and other road characteristics.

5.4.3.4 New Zealand Process

The SLNZ process produced the same recommendations as QLIMITS for four of the five road segments that were assessed. The recommendation for Segment 3 was to retain the existing speed limit of 70 km/h. The roadway and development ratings calculated for this segment provided a score that correlated to 70 km/h.

5.4.4 Mount Lindesay Highway

5.4.4.1 MUTCD Part 4 Process

QLIMITS has recommended that the existing speed limit of 80 km/h be retained through all segments assessed on the Mount Lindesay Highway. This is considered appropriate, as although the road has no direct access and a divided carriageway, it is adjacent to dense development. There is high levels of traffic activity around on and off ramps and the Mount Lindesay Highway is utilised for trips within and between regions.

5.4.4.2 New South Wales Process

For the reasons detailed previously, 80 km/h has been considered as an appropriate speed limit for the assessed segments of the Mount Lindesay Highway. The presence of traffic signals within the assessed section also justifies the recommended speed limit.

5.4.4.3 Western Australia Process

The Mount Lindesay Highway is considered as a higher standard urban road due to its frequency of on and off ramps and proximity to dense development. As per the specifications of the WA guidelines, a road segment that has traffic signal controls cannot be assigned a speed limit greater than 80 km/h. All segments of the road are recommended to have a speed limit of 80 km/h under this method.

5.4.4.4 New Zealand Process

The roadway and development ratings have produced recommendations of 100 km/h for each segment. This is due to the absence of elements such as parking, direct access, cyclists and pedestrians.

5.4.5 Oxley Road

5.4.5.1 MUTCD Part 4 Process

The QLIMITS assessment of Oxley Road provided recommendations to retain the existing posted speed limits in all segments. Based on observations taken during the site inspection, these recommendations are appropriate. Retaining the 70 km/h speed limit in Segment 1 is justified given that Oxley Road is a high standard urban road with traffic signal control and direct access mostly coming from commercial land uses. The existing 60 km/h posted speed limit in Segments 2 and 3 is appropriate given the high frequency of direct residential access in Segment 2 and road formation of Segment 3.

5.4.5.2 New South Wales Process

Based on the site inspection, review of crash history and speed survey data, the final recommendation under the NSW speed zoning process is to retain the existing speed limits. As previously outlined, the current speed limits are appropriate given the high standard of the road and frequency of accesses to commercial and residential land uses.

5.4.5.3 Western Australia Process

It is recommended under the WA process to retain the existing speed limits in all road segments on Oxley Drive. As previously detailed, the presence of traffic signals and access frequency justifies the application of 70 km/h and 60 km/h speed limits in the road segments. In accordance with the guidelines, a speed limit of 60 km/h is suitable for Segment 3 as it is undivided and within an urban area.

5.4.5.4 New Zealand Process

The SLNZ process provided recommendations to retain the existing speed limits in Segments 1 and 2, and to increase the speed limit in Segment 3 to 70 km/h. The recommendation to raise the Segment 3 speed limit is a result of the absence of direct access to the road, which affected the final roadway and development ratings.

5.4.6 Reedy Creek Road

5.4.6.1 MUTCD Part 4 Process

A Speed Limit Review of Reedy Creek Road was undertaken using QLIMITS. The initial speed limit recommendations given by QLIMITS for each road section were:

- Segment 1 – retain the existing 80 km/h limit.
- Segment 2 – increase the speed limit from 60 km/h to 70 km/h.
- Segment 3 – retain the existing 60 km/h limit.

The recommendation given for Segment 2 was determined to be inappropriate due to the history of rear end crashes recorded on the assessed road. An increase to the posted speed limit may further increase the risk of rear end crashes (by giving motorists less time to react to obstructions). Furthermore, due to the short length of Segment 2 (900m) it would be ideal to retain the 60 km/h limit in order to ensure consistency in the speed environment for motorists.

The final recommendations for this road are to retain all current posted speed limits.

5.4.6.2 New South Wales Process

Based on the site inspection, review of crash history and speed survey data, the final recommendation under the NSW speed zoning process is to retain the existing speed limits. As previously detailed, the high occurrence of rear end crashes on Reedy Creek Road makes an increase to posted speeds inappropriate.

5.4.6.3 Western Australia Process

Using the WA process, the final recommendations for Reedy Creek Road are to retain the current posted speed limits. Although the road is a high standard urban distributor, the crash history and frequency of direct access justifies the current 60 km/h limits in Segments 2 and 3.

5.4.6.4 New Zealand Process

The SLNZ process has recommended the following speed limits for Reedy Creek Road:

- Segment 1 – retain the existing 80 km/h limit.
- Segment 2 – increase the speed limit from 60 km/h to 80 km/h.
- Segment 3 – retain the existing 60 km/h limit.

The roadway and development ratings calculations suggest that Segment 2 is suitable for a higher posted speed limit; however, they do not consider the road crash history.

5.4.7 Results Summary

The results of the speed limit reviews undertaken for the case studies are detailed below in Table 5.7.

Table 5.7 – Case Study Results

Road	Segment	QLD (Initial)	QLD (Final)	NSW	WA	NZ
Nerang Murwillumbah Road	1	80 km/h	80 km/h	80 km/h	80 km/h	80 km/h
	2	80 km/h	70 km/h	70 km/h	70 km/h	80 km/h

Road	Segment	QLD (Initial)	QLD (Final)	NSW	WA	NZ
Currumbin Creek-Tomewin Road	1	80 km/h	60 km/h	60 km/h	60 km/h	80 km/h
	2	80 km/h	60 km/h	60 km/h	60 km/h	80 km/h
	3	80 km/h	60 km/h & 80 km/h	60 km/h & 80 km/h	80 km/h	80 km/h
	4	80 km/h	60 km/h & 80 km/h	60 km/h & 80 km/h	60 km/h	80 km/h
	5	80 km/h	60 km/h	60 km/h	60 km/h	80 km/h
Cunningham Highway	1	100 km/h	100 km/h	100 km/h	100 km/h	100 km/h
	2	100 km/h	100 km/h	100 km/h	100 km/h	100 km/h
	3	60 km/h	60 km/h	60 km/h	60 km/h	70 km/h
	4	80 km/h	80 km/h	80 km/h	80 km/h	80 km/h
	5	100 km/h	100 km/h	100 km/h	100 km/h	100 km/h
Mount Lindesay Highway	1	80 km/h	80 km/h	80 km/h	80 km/h	100 km/h
	2	80 km/h	80 km/h	80 km/h	80 km/h	100 km/h
	3	80 km/h	80 km/h	80 km/h	80 km/h	100 km/h
Oxley Drive	1	70 km/h	70 km/h	70 km/h	70 km/h	70 km/h
	2	60 km/h	60 km/h	60 km/h	60 km/h	60 km/h
	3	60 km/h	60 km/h	60 km/h	60 km/h	70 km/h
Reedy Creek Road	1	80 km/h	80 km/h	80 km/h	80 km/h	80 km/h
	2	70 km/h	60 km/h	60 km/h	70 km/h	80 km/h
	3	60 km/h	60 km/h	60 km/h	60 km/h	60 km/h

5.5 Case Study Observations

Undertaking Speed Limit Reviews using different methodologies has shown that even if the system heavily focuses on detail, incorrect speed limit recommendations are still a possibility. Engineering judgement should always be applied in some capacity to verify recommendations.

The use of prescriptive processes can aid in establishing transparency and explanation to stakeholders but can add time and cost to the Speed Limit Review process, particularly if unnecessary to determine an appropriate speed limit.

Undertaking the Speed Limit Review process by the method outlined in MUTCD Part 4 (QLIMITS) produced recommendations that required correction through use of engineering judgement. This was mainly due the inability of QLIMITS to consider site-specific issues.

The NSW process was the quickest methodology to undertake, as it only required application of engineering judgement to determine an appropriate speed limit. The biggest disadvantage to using this methodology is that it should only be undertaken by experienced practitioners who are able to identify road safety deficiencies. It may be difficult to explain processes and justify results to non-technical stakeholders.

Similar to the NSW process, the WA methodology relies on the application of engineering judgement. Experience is required in order to identify the function of a road and to compare it to the typical examples provided in the guidelines. The method illustrates how assessment of speed environments in Queensland could be done quicker for simple road environments by allowing criteria based approaches for all speed limits.

Based on the case studies SLNZ was consistent with QLIMITS in providing recommendations for rural and urban fringe environments, but there were discrepancies in recommendations provided for built up urban environments. This is due to the SLNZ system being calibrated for New Zealand roads that likely have different characteristics to Queensland roads. Furthermore, it should be noted that the methodology is time consuming to undertake and does not consider prevailing speeds on the assessed road.

SLNZ requires a large amount of data input, more so than QLIMITS, and does not appear to offer any advantages aside from transparency given through the roadway and development calculations. The process is binary and does not account for road crash history or local knowledge. This means that final recommendations given by the system will need to be verified with engineering judgement.

5.6 Summary of Case Studies

Site visits are necessary to understand the road environment and collect data. Engineering judgement should be used to verify that the results obtained from a process are suitable for the assessed road. This means that the practitioner should be experienced in road safety assessment to ensure that appropriate speeds are chosen for implementation. It was found that the processes relying more on engineering judgement were quicker to implement. It is acknowledged that these processes raise difficulties in the areas of transparency and explanation to non-technical users. The provision of simple tools such as the contextual tables found within the WA guidelines can assist with these issues.

The use of systems that require detailed data inputs can assist the practitioner in decision-making, but should not be solely relied upon. These systems may be more suitable for use in situations where it may be difficult to ascertain an appropriate speed limit for a given road environment.

In summary, undertaking case studies using different speed zoning methodologies has yielded the following observations:

- No system is perfect in providing speed limit recommendations.
- Processes should not be viewed as a decision making tool, but as a guide for the practitioner.
- Engineering judgement should always be applied to verify that final recommendations suggested by speed zoning processes are suitable for the assessed road environment.

6.0 Recommendations

Following the interview and case study stages of this project, it is understood what is sought after and what can realistically be incorporated into future revisions of MUTCD Part 4. A large-scale overhaul of MUTCD Part 4 is not required. An ideal outcome would be to incorporate small changes to the existing framework and provide additional content that addresses local government needs.

This section details recommended improvements that are suggested for future revisions of MUTCD Part 4.

6.1 Accessibility Tools

One of the issues identified in the interview process related to document accessibility. It was highlighted that the Manual currently does not provide guidance for practitioners prior to undertaking the speed zoning process, which can lead to inconsistent application of the Manual.

Provision of a guidance tool prior to Section 1 of the Manual would allow inexperienced practitioners to identify what process they should be undertaking. This tool could look similar to that shown in Figure 6.1. It should be noted that the figure is an example only and that it references elements that are not currently in MUTCD Part 4 (i.e. planning guidance).

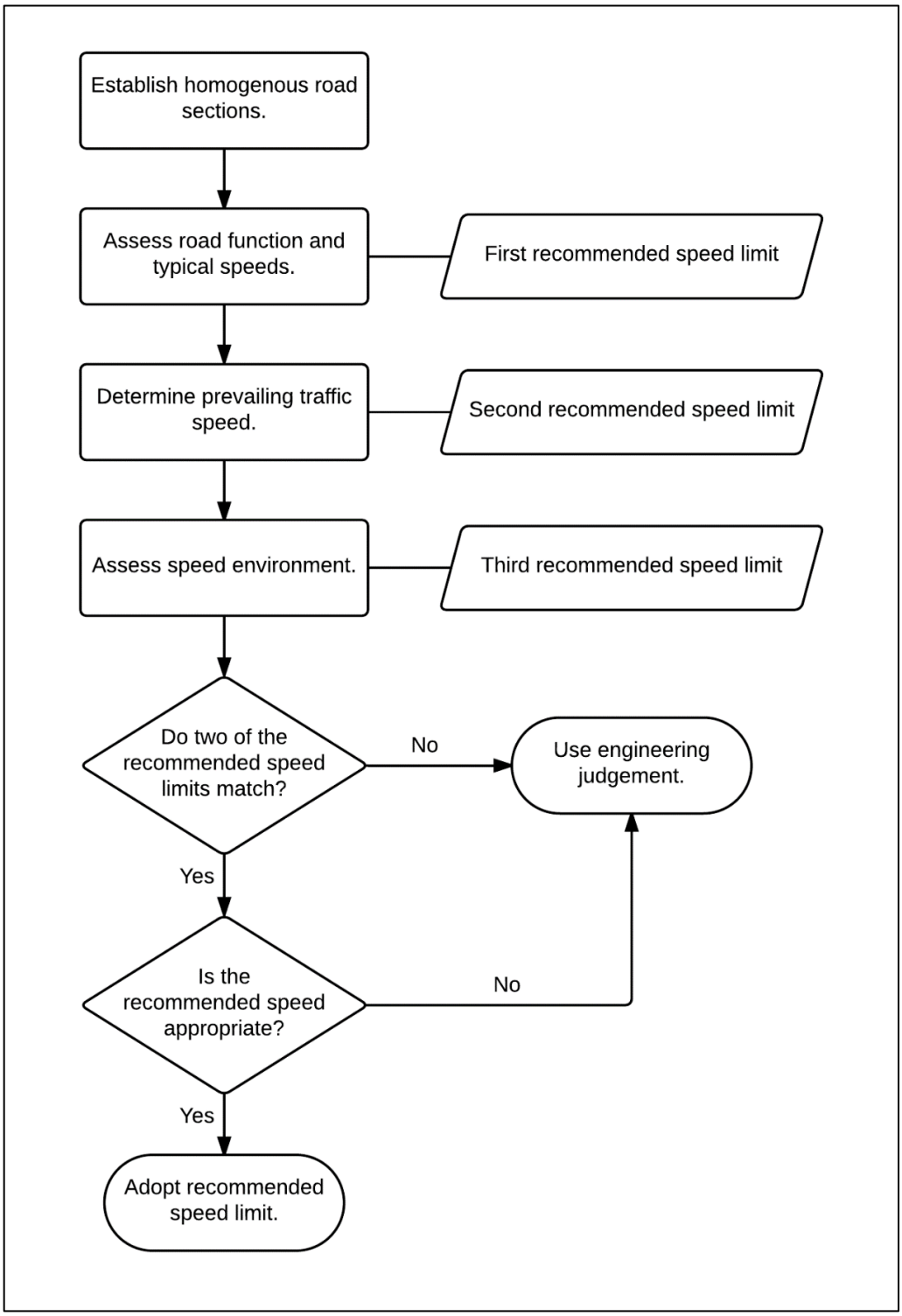
Figure 6.1 – Example guidance tool

Assessment Scenario	Relevant Section
The assessed road is **existing** and **does not** have a significant crash history and the road environment can be compared to MUTCD Part 4 typical environment examples.	**Section 3 - Application of Criteria Based Speed Limits**
The assessed road is **existing** and has a significant crash history and/or the road environment can not be compared to MUTCD Part 4 typical environment examples.	**Section 4 - Speed Zoning and Speed Limit Review**
The assessed road is currently in the **design** phase and guidance is sought to achieve a desired speed environment.	**Section X - Speed Environment Design**
The assessed road is **existing** and guidance is sought to achieve a desired speed environment through the introduction of physical devices and changes to the road environment.	**Section X - Speed Environment Design**
The assessed road is **existing** and guidance is sought to emphasise alternative travel modes.	**Section Y - Planning Considerations**

Use of a guidance tool prior to undertaking a speed zoning assessment could save time for practitioners by directing them to the section of MUTCD Part 4 that is relevant for their application. Ensuring that practitioners are directed to the appropriate section of the Manual will also increase consistency in speed zoning outcomes.

In addition to guidance tools, processes within MUTCD Part 4 could be simplified by providing diagrammatic representations. Figure 6.2 (previously shown as Figure 2.9 in this dissertation) shows an example of how the Speed Limit Review process could be mapped in a flow chart. This would give inexperienced practitioners a high-level view of processes, allowing for tracking of progress and ensuring that all assessment stages are addressed.

Figure 6.2 – Speed Limit Review Process Flowchart



6.2 Further Utilisation of Criteria Based Speed Limits

The limited applicability of criteria based speed limits will typically result in a Speed Limit Review process being undertaken for a majority of assessments (as per Section 4 of the Manual). The requirement to conduct this process, even when a suitable speed limit is apparent, results in lost time and unnecessary costs.

The issues of unnecessary data collection and time wasting could be addressed through amendments to Section 3 of MUTCD Part 4. Allowing the application of criteria based approaches in the consideration and assessment of all speed limits (i.e. allowing 60 km/h to be recommended based on road environment criteria) would have large timesavings for practitioners. These changes would be easy to implement and would result in a process that is similar to that used by Western Australia for speed zoning. An example of criteria for roads in urban areas is shown below in Table 6.1. It should be noted that this is an example only and that, if adopted, the criteria is likely to be different to what is shown.

Table 6.1 – Example of Criteria Based Speed Limits (Urban Areas)

Speed Limit	Criteria
50	• Carriageway width of 10m or less • Absence of centre line markings • Built up area where land use is primarily residential and access to the road is frequent i.e. more than 2 accesses per 50m
60	• The carriageway width is greater than 10m • Centre line markings are present or the carriageway is divided • Access to the road is frequent i.e. more than 2 accesses per 50m • Parking within the carriageway has a dedicated shoulder
80	• Centre line markings are present or the carriageway is divided • Protection is provided for turning movements • Direct access to the carriageway is infrequent i.e. less than 2 accesses per kilometre • Road geometry is to an acceptable standard for 80 km/h • Traffic signals are not spaced closer than 1km apart
100	• The road is a highway or a motorway • Access and egress to the road only occurs by on and off ramps • Traffic flow on the road is not interrupted by permanent control measures such as traffic signals, signs etc. • Road geometry is to an acceptable standard for 100 km/h • Parking is not permitted within the shoulder, unless utilised for vehicle breakdowns

It is not suggested that a criteria based approach should be the only method for speed zoning. It is suggested that the Speed Limit Review process outlined in Section 4 of MUTCD Part 4 is only implemented when the road environment is complex and does not clearly align with criteria for one speed limit, or if there is a significant crash history.

6.3 Road Function

The emphasis on road function in the first stage of the Speed Limit Review could be reduced and characteristics typical of speed environments could instead be considered. As an example, rather than recognising that a road is an arterial road and should therefore have a posted speed of 70 km/h, its characteristics (number of lanes etc.) could dictate what speed limit is appropriate. This is similar to the application of criteria based speed limits, however, would be implemented as the first stage of the Speed Limit Review process in Section 4 of MUTCD Part 4.

In addition to the elements already defined within Appendix B of the Manual, characteristic elements that could be considered as typical for posted speed limits include:

- number of lanes
- carriageway widths
- AADT
- abutting land uses and
- frequency of property access.

The methodology outlined in Clause 3.2.2 of the Roads and Maritime Services' NSW Speed Zoning Guidelines details a similar comparative process. Benefits to this approach are that users would have more certainty of where the subject road fits in the description of typical road environments. It is often difficult to designate road function under the current framework, in particular when the environment may change several times throughout a corridor.

6.4 Planning and Design Guidance

Guideline revisions that provide forms of design guidance and accommodation for transport planning objectives would make MUTCD Part 4 more practical in application for local government road authorities.

Safe system and transport planning objectives could be supported by providing best practise examples of treatments and approaches to achieve outcomes such as changes to road amenity and environment, noise and pollution reductions and speed reductions. This would be highly beneficial for local governments that normally seek to introduce these types of changes to high-density urban environments.

MUTCD Part 4 does not need to include detailed guidance to the extent that there are redundancies with road design guidelines, however some overlap and reference to other guidelines can help establish context. The inclusion of best practise optimal treatments to achieve targeted road environment objectives would help to achieve a greater consistency in road environments across Queensland.

6.5 Clarification of Engineering Judgement

There is currently an ambiguity about the use of engineering judgement in the Speed Limit Review process. Application of engineering judgement in the process is not detailed within the main body of MUTCD Part 4 and is instead referred to in Appendix D of the Manual.

Inexperienced practitioners may assume QLIMITS recommendations as final, and as these recommendations can be inappropriate for the assessed road environment, it is essential that engineering judgement be applied to ensure that final speed limit recommendations are suitable and safe.

Changes to the main body of MUTCD Part 4 to emphasise the use of engineering judgement are recommended. An example would be an addition to Clause 4.3.3 (standard procedure for Speed Limit Reviews) to mention use of engineering judgement to verify QLIMITS recommendations.

6.6 Updates to QLIMITS

The identified problems that relate to QLIMITS involve transparency and currency issues. Updating QLIMITS to address these issues would not require significant changes to the system or to how it is used. The recommended changes are to:

- update the crash rate formula to consider only FSI crashes and,
- provide a reporting output that details how data input affects the speed limit recommendations given by QLIMITS.

7.0 Conclusions

7.1 Project Summary

This research project reviewed the existing speed zoning processes used in Queensland, as outlined within Part 4 of the MUTCD. The review was conducted with the objective of improving the guidelines to facilitate for easier use by both road authority and private sector users.

A literature review was conducted to understand numerous aspects pertinent to the establishment of speed zones such as injury risks, behavioural influences and attitudes towards speed. Potential applications of technology that could assist in the speed zoning process was also researched. In addition to these elements, the speed zoning processes implemented by other Australian states and international road authorities were reviewed in order to understand different approaches that are implemented for speed zoning.

Stakeholder interviews were conducted with parties responsible for undertaking Speed Limit Reviews, and maintenance of MUTCD Part 4. Responses highlighted the need for a number of changes to the Manual, including:

- reduction of unnecessary tasks
- further application for criteria based assessment
- accessibility improvements and clarification of processes
- guidance to achieve transport planning, design, environmental objectives
- updates to various aspects of QLIMITS.

Case studies were conducted on a selection of roads, using the speed zoning processes of other regions. These processes use different approaches to determining an appropriate speed limit for a road, and provided insight into what could be adopted into future revisions of MUTCD Part 4. The case study process highlighted that the tools utilised in speed zoning do not always provide appropriate speed limit recommendations and that engineering judgement should always be exercised. It was noted that the methodology utilised in Western Australia highlighted the advantages to allowing criteria based assessments for a greater range of speed limits.

Based on the tasks undertaken as part of this project, the following changes are suggested for TMR's consideration in future editions of MUTCD Part 4:

- Clarify the structure of the Manual and its processes with simplified or conceptual flow charts.
- Increase the application of Section 3 to allow criteria based speed limits to be implemented for a greater range of speed environments.
- Increased focus on road characteristics rather than functional classification, in particular for urban areas.
- Provide references to design guidance for ensuring effective speed limit changes.
- Provide options to achieve a desired speed outcome for environmental (noise or exhaust pollution), urban amenity or active transport promotion.
- Emphasise that engineering judgement can (and should) be exercised to remove ambiguity and establish that results obtained from the QLIMITS software are recommendations and not final.
- Update QLIMITS to provide more information regarding data inputs and impacts to final recommendations, and revise its crash formula.

It is believed that these recommendations will make MUTCD Part 4 a document that is easier to follow and more practical for users. Achieving a greater level of consistency in outcomes from the speed zoning process will ultimately improve road safety in Queensland.

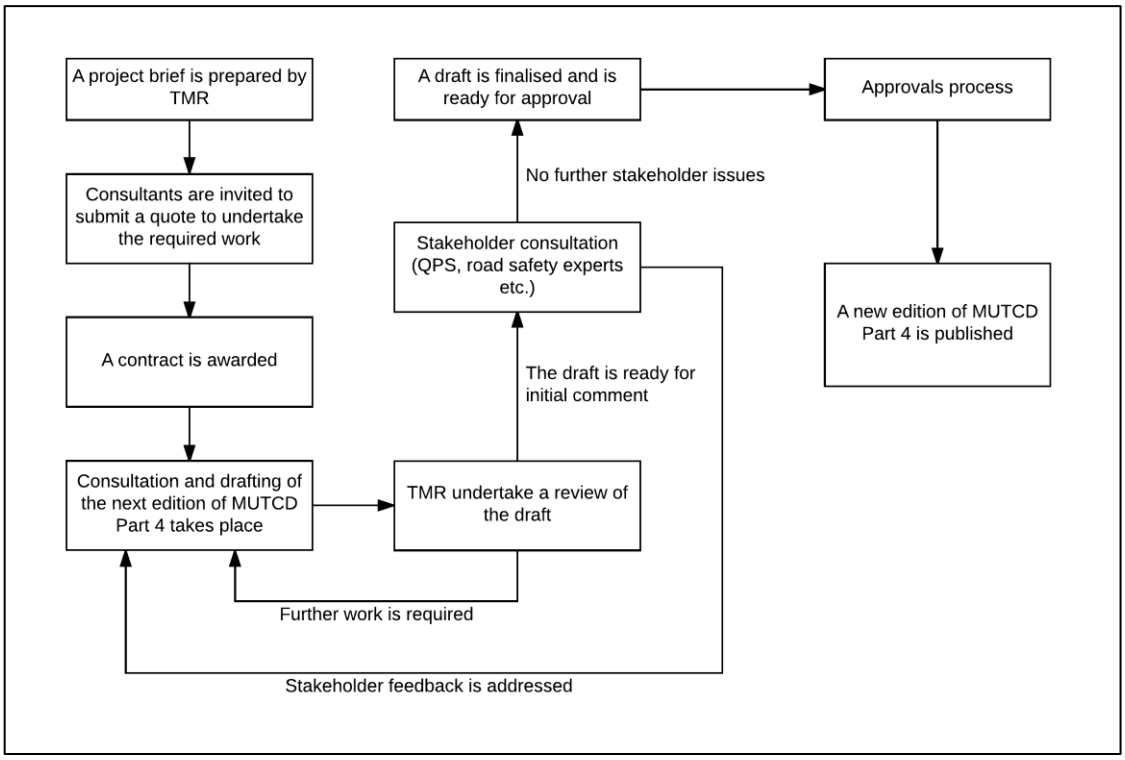
7.2 Future Work

As all project work has been completed and recommended changes have been developed, the next step in this project is to approach TMR to discuss the project findings. The TMR branch that is responsible for maintaining MUTCD Part 4 are aware of this research project, having partaken in the stakeholder interviews.

Some of the recommended changes within this report have been developed based on TMR's interview responses, therefore it is expected that there will be acceptance of these recommendations for adoption in future revisions of MUTCD Part 4. It is expected that discussions with TMR will be based on both feasibility of recommendations and alignment with future planning and standards development. The process to revise MUTCD Part 4 would be iterative, involving draft review and stakeholder review stages prior to publishing a new edition.

It is envisioned that the process would be as shown below in Figure 7.1. A larger version of this figure has been provided at Appendix D of this dissertation.

Figure 7.1 – MUTCD Part 4 Revision Process



8.0 References

Araghi, BN, Krishnan, R & Lahrmann, H 2015, 'Mode-Specific Travel Time Estimation Using Bluetooth Technology', *Journal of Intelligent Transportation Systems*.

Archer, J, Fotheringham, N, Symmons, M & Corben, B 2008, *The Impact of Lowered Speed Limits in Urban and Metropolitan Areas*, Monash University, Melbourne.

Blogg, M, Semler, C, Hingorani, M & Troutbeck, R 2010, 'Travel Time and Origin-Destination Data Collection using Bluetooth MAC Address Readers', *Australasian Transport Research Forum 2010 Proceedings*, Canberra.

California Department of Transportation 2014, *California Manual for Setting Speed Limits*, California Department of Transportation, Sacramento.

Department for Transport 2013, *Setting Local Speed Limits*, Department for Transport, London.

Eady, P, Han, C & Luk, J 2014, *Guide to Traffic Management Part 5: Road Management*, 2nd edn, Austroads, Sydney.

Elvik, R, Christensen, P & Amundsen, A 2004, *Speed and road accidents: An evaluation of the Power Model*, Institute of Transport Economics TOI, Oslo.

Fagnant, DJ & Kockelman, K 2015, 'Preparing a nation for autonomous vehicles: opportunities, barriers and policy recommendations', *Transportation Research Part A*, vol 77, pp. 167-181.

Fleiter, J, Lewis, I, Sherrie-Anne, K, Soole, D, Rakotonirainy, A & Debnath, A 2016, *Public Demand for Safer Speeds: Identification of Interventions for Trial*, Austroads, Sydney.

Google 2016, *Google Maps*, viewed 1 March 2016, <http://maps.google.com>.

Guide to Road Safety Part 3: Speed Limits and Speed Management 2008, Austroads, Sydney.

Han, C & Luk, J 2015, *Guide to Traffic Management Part 1: Introduction to Traffic Management*, 3rd edn, Austroads, Sydney.

Han, C, Luk, J, Pyta, V & Cairney, P 2009, *Best Practice for Variable Speed Limits: Literature Review*, Austroads, Sydney.

International Road Assessment Programme 2010, *Vehicle Speeds and the iRAP Protocols*, International Road Assessment Programme, London.

Jurewicz, C, Phillips, C, Tziotis, M & Turner, B 2014, *Model National Guidelines for Setting Speed Limits at High-risk Locations*, Austroads, Sydney.

Locomotives on Highways Act 1861, (United Kingdom).

Main Roads (Western Australia) 2014, *Policy and Application Guidelines for Speed Zoning*, viewed 7 April 2016, <https://www.mainroads.wa.gov.au/BuildingRoads/StandardsTechnical/RoadandTrafficEngineering/TrafficManagement/SpeedZones/Pages/Policy_and_Application_Guidelines_for_Speed_Zoning.aspx>.

McGowen, P & Sanderson, M 2011, 'Accuracy of Pneumatic Road Tube Counters', Institute of Transportation Engineers, Anchorage.

New Zealand Transport Agency 2004, *Speed Limits New Zealand*, viewed 10 April 2016, <http://www.nzta.govt.nz/resources/speed-limits/speed-limits-nz/speed-limits-nz.html>.

Roads and Traffic Authority New South Wales 2011, *NSW speed zoning guidelines*, 4th edn, Roads and Traffic Authority New South Wales, Sydney.

Roads and Traffic Authority of New South Wales 2011, *'Safe System' - the key to managing road safety*, Roads and Traffic Authority of New South Wales, Sydney.

Standards Australia 2009, *Manual of uniform traffic control devices Part 4: Speed controls*, Standards Australia, Sydney.

The Department of Main Roads and Transport 2015, *Manual of Uniform Traffic Control Devices Part 4 Speed Controls*, Queensland Government, Brisbane.

The Department of Main Roads and Transport 2016, *Bruce Highway Managed Motorway Project*, viewed 11 March 2016, <http://www.tmr.qld.gov.au/Projects/Name/B/Bruce-Highway-Managed-Motorway-Project.aspx>.

Tiedong, W, Tingjian, F, Jianghong, H & Jian, W 2010, 'Traffic Monitoring Using Floating Car Data in Hefei', *International Symposium on Intelligence Information Processing and Trusted Computing*, IEEE, Huanggang.

Transport Operations (Road Use Management) Act 1995, (Queensland).

Transport Operations (Road Use Management—Road Rules) Regulation 2009, (Queensland).

Turner, B, Affum, J, Tziotis, M & Jurewicz, C 2009, *Review of iRAP Risk Parameters*, viewed 10 March 2016, <http://irap.org/about-irap-3/research-and-technical-papers?download=111:review-of-irap-riskparameters>.

Turner, B, Tziotis, M, Hillier, P, Beck, D & Makwasha, T 2009, *Guide to Road Safety Part 8: Treatment of Crash Locations*, 2nd edn, Austroads, Sydney.

Vicroads 2013, *Traffic Engineering Manual Volume 1 Chapter 7: Speed Zoning Guidelines*, 5th edn, Vicroads, Melbourne.

Wadud, Z, MacKenzie, D & Leiby, P 2016, 'Help or hindrance? The travel, energy and carbon impacts', *Transportation Research Part A*, no. 86, pp. 1-18.

World Health Organisation 2004, *World report on road traffic injury prevention*, World Health Organisation, Geneva.

Appendix A

Project Specification

ENG4111/4112 Research Project

Project Specification

For: Alexander Williams

Title: Improving Queensland Speed Zoning Practices

Major: Civil Engineering

Supervisors: Professor Ron Ayers
Peter Bilton, Point8 Pty Ltd

Enrolment: ENG4111 – EXT S1, 2016

ENG4112 – EXT S2, 2016

Project Aim: This project will review the existing methodology used to assess road speed limits in Queensland. The aim of the project is to identify and recommend changes to the existing guidelines in order to ensure consistent assessment of road speed limits and contribute to improvement of road safety in Queensland.

Programme: **Issue B, 25th September 2016**

1. Review Australian and international literature relevant to the Project Aim, and focussing on:
   - The processes used by road and enforcement authorities for speed limit assessment,
   - Technology and software associated with speed measurement, management and analysis.
2. Consultation and stakeholder engagement to understand industry opinion regarding the current assessment process. Where possible, engagement will include the following parties:
   - Department of Transport and Main Roads Officers responsible for maintaining and updating MUTCD Part 4,
   - Industry users i.e. Local and State authorities, and
   - Consultants engaged in traffic and transport planning.
3. Carry out a detailed review of the existing assessment process to identify weaknesses and aspects that can potentially be improved.
4. Identify a number of roads with different environments for assessment in case studies using different speed zoning methodologies.
5. Conduct case studies on the selected roads using Queensland's assessment methodology and a selection of different methodologies that are used by other regions.
6. Compare and contrast the results obtained from the case study process.
7. Critically review the methodologies used in the case study process and identify elements that could potentially be adopted into future revisions of Queensland's assessment methods.
8. Develop recommendations for changes to the existing Queensland assessment methods.
9. Report on the project in the required oral and written formats.

If time permits:

10. Carry out analyses to assess potential benefits if the recommended methods were to be adopted, such as time savings for industry professionals and better communication, understanding and acceptance of speed limits by the community.

Student: /9/2016 Supervisor: /9/2016

Appendix B

Speed Surveys

Nerang-Murwillumbah Rd

MetroCount Traffic Executive
Northbound Speed Statistics

SpeedStat-1664 -- English (ENA)

Datasets:

Site:	**[11621-1] Nerang-Murwillumbah rd, Natural Bridge, 2km sth Bochow Park <80>**
Direction:	7 - North bound A>B, South bound B>A. **Lane:** 0
Survey Duration:	14:06 Monday, 22 June 2015 => 14:19 Tuesday, 30 June 2015
File:	11621-130Jun2015.EC0 (Plus)
Identifier:	DA44BQF1 MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm:	Factory default
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**0:00 Tuesday, 23 June 2015 => 0:00 Tuesday, 30 June 2015**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range:	0 - 200 km/h.
Direction:	North (bound)
Separation:	All - (Headway)
Name:	Default Profile
Scheme:	Vehicle classification (AustRoads94)
Units:	Metric (meter, kilometer, m/s, km/h, kg, tonne)

Speed Statistics

SpeedStat-1664
Site: 11621-1.0NS
Description: **Nerang-Murwillumbah rd, Natural Bridge, 2km sth Bochow Park <80>**
Filter time: **0:00 Tuesday, 23 June 2015 => 0:00 Tuesday, 30 June 2015**
Scheme: Vehicle classification (AustRoads94)
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12 13) Dir(N) Sp(0,200) Headway(>0)

Vehicles = 2163
Posted speed limit = 80 km/h, Exceeding = 373 (17.24%), Mean Exceeding = 86.14 km/h
Maximum = 125.5 km/h, **Minimum** = 13.7 km/h, **Mean** = 71.5 km/h
85% Speed = 80.6 km/h, **95% Speed** = 87.5 km/h, **Median** = 70.9 km/h
20 km/h Pace = 60 - 80, **Number in Pace** = 1601 (74.02%)
Variance = 93.46, **Standard Deviation** = 9.67 km/h

Speed Bins

Speed	Bin		Below		Above		Energy	vMult	n * vMult
0 - **10**	0	0.0%	0	0.0%	2163	100.0%	0.00	0.00	0.00
10 - **20**	1	0.0%	1	0.0%	2162	100.0%	0.00	0.00	0.00
20 - **30**	0	0.0%	1	0.0%	2162	100.0%	0.00	0.00	0.00
30 - **40**	3	0.1%	4	0.2%	2159	99.8%	0.00	0.00	0.00
40 - **50**	28	1.3%	32	1.5%	2131	98.5%	0.00	0.00	0.00
50 - **60**	172	8.0%	204	9.4%	1959	90.6%	0.00	0.00	0.00
60 - **70**	773	35.7%	977	45.2%	1186	54.8%	0.00	0.00	0.00
70 - **80**	813	37.6%	1790	82.8%	373	17.2%	0.00	0.00	0.00
80 - **90**	303	14.0%	2093	96.8%	70	3.2%	0.00	0.00	0.00
90 - **100**	62	2.9%	2155	99.6%	8	0.4%	0.00	0.00	0.00
100 - **110**	5	0.2%	2160	99.9%	3	0.1%	0.00	0.00	0.00
110 - **120**	2	0.1%	2162	100.0%	1	0.0%	0.00	0.00	0.00
120 - **130**	1	0.0%	2163	100.0%	0	0.0%	0.00	0.00	0.00
130 - **140**	0	0.0%	2163	100.0%	0	0.0%	0.00	0.00	0.00
140 - **150**	0	0.0%	2163	100.0%	0	0.0%	0.00	0.00	0.00
150 - **160**	0	0.0%	2163	100.0%	0	0.0%	0.00	0.00	0.00
160 - **170**	0	0.0%	2163	100.0%	0	0.0%	0.00	0.00	0.00
170 - **180**	0	0.0%	2163	100.0%	0	0.0%	0.00	0.00	0.00
180 - **190**	0	0.0%	2163	100.0%	0	0.0%	0.00	0.00	0.00
190 - **200**	0	0.0%	2163	100.0%	0	0.0%	0.00	0.00	0.00

Total Speed Rating = 0.00
Total Moving Energy (Estimated) = 0.00

Speed limit fields

	Limit	Below		Above	
0	80 (PSL)	1790	82.8%	373	17.2%

MetroCount Traffic Executive
Southbound Speed Statistics

SpeedStat-1664 -- English (ENA)

Datasets:

Site:	**[11621-1] Nerang-Murwillumbah rd, Natural Bridge, 2km sth Bochow Park <80>**
Direction:	7 - North bound A>B, South bound B>A. **Lane:** 0
Survey Duration:	14:06 Monday, 22 June 2015 => 14:19 Tuesday, 30 June 2015
File:	11621-130Jun2015.EC0 (Plus)
Identifier:	DA44BQF1 MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm:	Factory default
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**0:00 Tuesday, 23 June 2015 => 0:00 Tuesday, 30 June 2015**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range:	0 - 200 km/h.
Direction:	South (bound)
Separation:	All - (Headway)
Name:	Default Profile
Scheme:	Vehicle classification (AustRoads94)
Units:	Metric (meter, kilometer, m/s, km/h, kg, tonne)
In profile:	Vehicles = 2525 / 5259 (48.01%)

Speed Statistics

SpeedStat-1664
Site: 11621-1.0NS
Description: **Nerang-Murwillumbah rd, Natural Bridge, 2km sth Bochow Park <80>**
Filter time: **0:00 Tuesday, 23 June 2015 => 0:00 Tuesday, 30 June 2015**
Scheme: Vehicle classification (AustRoads94)
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12 13) Dir(S) Sp(0,200) Headway(>0)

Vehicles = 2525
Posted speed limit = 80 km/h, Exceeding = 208 (8.24%), Mean Exceeding = 87.40 km/h
Maximum = 114.8 km/h, **Minimum** = 13.3 km/h, **Mean** = 66.9 km/h
85% Speed = 76.0 km/h, **95% Speed** = 82.8 km/h, **Median** = 66.2 km/h
20 km/h Pace = 57 - 77, **Number in Pace** = 1865 (73.86%)
Variance = 103.01, **Standard Deviation** = 10.15 km/h

Speed Bins

Speed	Bin		Below		Above		Energy	vMult	n * vMult
0 - **10**	0	0.0%	0	0.0%	2525	100.0%	0.00	0.00	0.00
10 - **20**	3	0.1%	3	0.1%	2522	99.9%	0.00	0.00	0.00
20 - **30**	2	0.1%	5	0.2%	2520	99.8%	0.00	0.00	0.00
30 - **40**	11	0.4%	16	0.6%	2509	99.4%	0.00	0.00	0.00
40 - **50**	69	2.7%	85	3.4%	2440	96.6%	0.00	0.00	0.00
50 - **60**	482	19.1%	567	22.5%	1958	77.5%	0.00	0.00	0.00
60 - **70**	1092	43.2%	1659	65.7%	866	34.3%	0.00	0.00	0.00
70 - **80**	658	26.1%	2317	91.8%	208	8.2%	0.00	0.00	0.00
80 - **90**	152	6.0%	2469	97.8%	56	2.2%	0.00	0.00	0.00
90 - **100**	40	1.6%	2509	99.4%	16	0.6%	0.00	0.00	0.00
100 - **110**	13	0.5%	2522	99.9%	3	0.1%	0.00	0.00	0.00
110 - **120**	3	0.1%	2525	100.0%	0	0.0%	0.00	0.00	0.00
120 - **130**	0	0.0%	2525	100.0%	0	0.0%	0.00	0.00	0.00
130 - **140**	0	0.0%	2525	100.0%	0	0.0%	0.00	0.00	0.00
140 - **150**	0	0.0%	2525	100.0%	0	0.0%	0.00	0.00	0.00
150 - **160**	0	0.0%	2525	100.0%	0	0.0%	0.00	0.00	0.00
160 - **170**	0	0.0%	2525	100.0%	0	0.0%	0.00	0.00	0.00
170 - **180**	0	0.0%	2525	100.0%	0	0.0%	0.00	0.00	0.00
180 - **190**	0	0.0%	2525	100.0%	0	0.0%	0.00	0.00	0.00
190 - **200**	0	0.0%	2525	100.0%	0	0.0%	0.00	0.00	0.00

Total Speed Rating = 0.00
Total Moving Energy (Estimated) = 0.00

Speed limit fields

	Limit	Below		Above	
0	80 (PSL)	2317	91.8%	208	8.2%

MetroCount Traffic Executive
Northbound Speed Statistics

SpeedStat-1664 -- English (ENA)

Datasets:

Site:	**[11621-2] Natural BridgeNerang-Murwillumbah rd, 1.5km sth Bakers <70>**
Direction:	7 - North bound A>B, South bound B>A. **Lane:** 0
Survey Duration:	14:39 Monday, 22 June 2015 => 14:26 Tuesday, 30 June 2015
File:	11621-230Jun2015.EC0 (Plus)
Identifier:	CP777Q38 MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm:	Factory default
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**0:00 Tuesday, 23 June 2015 => 0:00 Tuesday, 30 June 2015**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range:	0 - 200 km/h.
Direction:	North (bound)
Separation:	All - (Headway)
Name:	Default Profile
Scheme:	Vehicle classification (AustRoads94)
Units:	Metric (meter, kilometer, m/s, km/h, kg, tonne)
In profile:	Vehicles = 1216 / 3144 (38.68%)

Speed Statistics

SpeedStat-1664
Site: 11621-2.0NS
Description: **Natural BridgeNerang-Murwillumbah rd, 1.5km sth Bakers <70>**
Filter time: **0:00 Tuesday, 23 June 2015 => 0:00 Tuesday, 30 June 2015**
Scheme: Vehicle classification (AustRoads94)
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12 13) Dir(N) Sp(0,200) Headway(>0)

Vehicles = 1216
Posted speed limit = 70 km/h, Exceeding = 204 (16.78%), Mean Exceeding = 75.61 km/h
Maximum = 101.8 km/h, **Minimum** = 27.9 km/h, **Mean** = 61.0 km/h
85% Speed = 70.6 km/h, **95% Speed** = 76.0 km/h, **Median** = 60.5 km/h
20 km/h Pace = 51 - 71, **Number in Pace** = 894 (73.52%)
Variance = 93.19, **Standard Deviation** = 9.65 km/h

Speed Bins

Speed	Bin		Below		Above		Energy	vMult	n * vMult
0 - **10**	0	0.0%	0	0.0%	1216	100.0%	0.00	0.00	0.00
10 - **20**	0	0.0%	0	0.0%	1216	100.0%	0.00	0.00	0.00
20 - **30**	1	0.1%	1	0.1%	1215	99.9%	0.00	0.00	0.00
30 - **40**	19	1.6%	20	1.6%	1196	98.4%	0.00	0.00	0.00
40 - **50**	119	9.8%	139	11.4%	1077	88.6%	0.00	0.00	0.00
50 - **60**	433	35.6%	572	47.0%	644	53.0%	0.00	0.00	0.00
60 - **70**	440	36.2%	1012	83.2%	204	16.8%	0.00	0.00	0.00
70 - **80**	173	14.2%	1185	97.5%	31	2.5%	0.00	0.00	0.00
80 - **90**	24	2.0%	1209	99.4%	7	0.6%	0.00	0.00	0.00
90 - **100**	6	0.5%	1215	99.9%	1	0.1%	0.00	0.00	0.00
100 - **110**	1	0.1%	1216	100.0%	0	0.0%	0.00	0.00	0.00
110 - **120**	0	0.0%	1216	100.0%	0	0.0%	0.00	0.00	0.00
120 - **130**	0	0.0%	1216	100.0%	0	0.0%	0.00	0.00	0.00
130 - **140**	0	0.0%	1216	100.0%	0	0.0%	0.00	0.00	0.00
140 - **150**	0	0.0%	1216	100.0%	0	0.0%	0.00	0.00	0.00
150 - **160**	0	0.0%	1216	100.0%	0	0.0%	0.00	0.00	0.00
160 - **170**	0	0.0%	1216	100.0%	0	0.0%	0.00	0.00	0.00
170 - **180**	0	0.0%	1216	100.0%	0	0.0%	0.00	0.00	0.00
180 - **190**	0	0.0%	1216	100.0%	0	0.0%	0.00	0.00	0.00
190 - **200**	0	0.0%	1216	100.0%	0	0.0%	0.00	0.00	0.00

Total Speed Rating = 0.00
Total Moving Energy (Estimated) = 0.00

Speed limit fields

	Limit	Below		Above	
0	70 (PSL)	1012	83.2%	204	16.8%

MetroCount Traffic Executive
Southbound Speed Statistics

SpeedStat-1664 -- English (ENA)

Datasets:

Site:	**[11621-2] Natural BridgeNerang-Murwillumbah rd, 1.5km sth Bakers <70>**
Direction:	7 - North bound A>B, South bound B>A. **Lane:** 0
Survey Duration:	14:39 Monday, 22 June 2015 => 14:26 Tuesday, 30 June 2015
File:	11621-230Jun2015.EC0 (Plus)
Identifier:	CP777Q38 MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm:	Factory default
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**0:00 Tuesday, 23 June 2015 => 0:00 Tuesday, 30 June 2015**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range:	0 - 200 km/h.
Direction:	South (bound)
Separation:	All - (Headway)
Name:	Default Profile
Scheme:	Vehicle classification (AustRoads94)
Units:	Metric (meter, kilometer, m/s, km/h, kg, tonne)
In profile:	Vehicles = 1588 / 3144 (50.51%)

Speed Statistics

SpeedStat-1664
Site: 11621-2.0NS
Description: **Natural BridgeNerang-Murwillumbah rd, 1.5km sth Bakers <70>**
Filter time: **0:00 Tuesday, 23 June 2015 => 0:00 Tuesday, 30 June 2015**
Scheme: Vehicle classification (AustRoads94)
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12 13) Dir(S) Sp(0,200) Headway(>0)

Vehicles = 1588
Posted speed limit = 70 km/h, Exceeding = 155 (9.76%), Mean Exceeding = 74.79 km/h
Maximum = 98.5 km/h, **Minimum** = 11.2 km/h, **Mean** = 57.8 km/h
85% Speed = 67.0 km/h, **95% Speed** = 72.7 km/h, **Median** = 58.0 km/h
20 km/h Pace = 48 - 68, **Number in Pace** = 1183 (74.50%)
Variance = 100.57, **Standard Deviation** = 10.03 km/h

Speed Bins

Speed	Bin		Below		Above		Energy	vMult	n * vMult
0 - **10**	0	0.0%	0	0.0%	1588	100.0%	0.00	0.00	0.00
10 - **20**	9	0.6%	9	0.6%	1579	99.4%	0.00	0.00	0.00
20 - **30**	12	0.8%	21	1.3%	1567	98.7%	0.00	0.00	0.00
30 - **40**	31	2.0%	52	3.3%	1536	96.7%	0.00	0.00	0.00
40 - **50**	257	16.2%	309	19.5%	1279	80.5%	0.00	0.00	0.00
50 - **60**	631	39.7%	940	59.2%	648	40.8%	0.00	0.00	0.00
60 - **70**	493	31.0%	1433	90.2%	155	9.8%	0.00	0.00	0.00
70 - **80**	136	8.6%	1569	98.8%	19	1.2%	0.00	0.00	0.00
80 - **90**	15	0.9%	1584	99.7%	4	0.3%	0.00	0.00	0.00
90 - **100**	4	0.3%	1588	100.0%	0	0.0%	0.00	0.00	0.00
100 - **110**	0	0.0%	1588	100.0%	0	0.0%	0.00	0.00	0.00
110 - **120**	0	0.0%	1588	100.0%	0	0.0%	0.00	0.00	0.00
120 - **130**	0	0.0%	1588	100.0%	0	0.0%	0.00	0.00	0.00
130 - **140**	0	0.0%	1588	100.0%	0	0.0%	0.00	0.00	0.00
140 - **150**	0	0.0%	1588	100.0%	0	0.0%	0.00	0.00	0.00
150 - **160**	0	0.0%	1588	100.0%	0	0.0%	0.00	0.00	0.00
160 - **170**	0	0.0%	1588	100.0%	0	0.0%	0.00	0.00	0.00
170 - **180**	0	0.0%	1588	100.0%	0	0.0%	0.00	0.00	0.00
180 - **190**	0	0.0%	1588	100.0%	0	0.0%	0.00	0.00	0.00
190 - **200**	0	0.0%	1588	100.0%	0	0.0%	0.00	0.00	0.00

Total Speed Rating = 0.00
Total Moving Energy (Estimated) = 0.00

Speed limit fields

	Limit	Below		Above	
0	70 (PSL)	1433	90.2%	155	9.8%

Currumbin Creek-Tomewin Road

MetroCount Traffic Executive
Speed Statistics

SpeedStat-1746 -- English (ENA)

Datasets:

Site:	**[2011-1] Currumbin Creek - Tomewin Mountain road, Currumbin Valley, south of Brocks road <60>**
Direction:	7 - North bound A>B, South bound B>A. **Lane:** 0
Survey Duration:	15:09 Monday, 2 November 2015 => 9:36 Tuesday, 10 November 2015
File:	2011-1 0 2015-11-10 0937.EC0 (Plus)
Identifier:	FS13WJC6 MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm:	Factory default
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**0:00 Tuesday, 3 November 2015 => 0:00 Tuesday, 10 November 2015**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range:	0 - 200 km/h.
Direction:	North (bound)
Separation:	All - (Headway)
Name:	Default Profile
Scheme:	Vehicle classification (AustRoads94)
Units:	Metric (meter, kilometer, m/s, km/h, kg, tonne)
In profile:	Vehicles = 2766 / 5821 (47.52%)

Speed Statistics

SpeedStat-1746
Site: 2011-1.0NS
Description: **Currumbin Creek - Tomewin Mountain road, Currumbin Valley, south of Brocks road <60>**
Filter time: **0:00 Tuesday, 3 November 2015 => 0:00 Tuesday, 10 November 2015**
Scheme: Vehicle classification (AustRoads94)
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12 13) Dir(N) Sp(0,200) Headway(>0)

Vehicles = 2766
Posted speed limit = 60 km/h, Exceeding = 817 (29.54%), Mean Exceeding = 65.78 km/h
Maximum = 100.3 km/h, **Minimum** = 14.8 km/h, **Mean** = 55.5 km/h
85% Speed = 64.1 km/h, **95% Speed** = 70.2 km/h, **Median** = 55.8 km/h
15 km/h Pace = 48 - 63, **Number in Pace** = 1831 (66.20%)
Variance = 90.42, **Standard Deviation** = 9.51 km/h

Speed Bins

Speed	Bin		Below		Above		Energy	vMult	n * vMult
0 - **10**	0	0.0%	0	0.0%	2766	100.0%	0.00	0.00	0.00
10 - **20**	3	0.1%	3	0.1%	2763	99.9%	0.00	0.00	0.00
20 - **30**	48	1.7%	51	1.8%	2715	98.2%	0.00	0.00	0.00
30 - **40**	93	3.4%	144	5.2%	2622	94.8%	0.00	0.00	0.00
40 - **50**	494	17.9%	638	23.1%	2128	76.9%	0.00	0.00	0.00
50 - **60**	1311	47.4%	1949	70.5%	817	29.5%	0.00	0.00	0.00
60 - **70**	674	24.4%	2623	94.8%	143	5.2%	0.00	0.00	0.00
70 - **80**	119	4.3%	2742	99.1%	24	0.9%	0.00	0.00	0.00
80 - **90**	21	0.8%	2763	99.9%	3	0.1%	0.00	0.00	0.00
90 - **100**	2	0.1%	2765	100.0%	1	0.0%	0.00	0.00	0.00
100 - **110**	1	0.0%	2766	100.0%	0	0.0%	0.00	0.00	0.00
110 - **120**	0	0.0%	2766	100.0%	0	0.0%	0.00	0.00	0.00
120 - **130**	0	0.0%	2766	100.0%	0	0.0%	0.00	0.00	0.00
130 - **140**	0	0.0%	2766	100.0%	0	0.0%	0.00	0.00	0.00
140 - **150**	0	0.0%	2766	100.0%	0	0.0%	0.00	0.00	0.00
150 - **160**	0	0.0%	2766	100.0%	0	0.0%	0.00	0.00	0.00
160 - **170**	0	0.0%	2766	100.0%	0	0.0%	0.00	0.00	0.00
170 - **180**	0	0.0%	2766	100.0%	0	0.0%	0.00	0.00	0.00
180 - **190**	0	0.0%	2766	100.0%	0	0.0%	0.00	0.00	0.00
190 - **200**	0	0.0%	2766	100.0%	0	0.0%	0.00	0.00	0.00

Total Speed Rating = 0.00
Total Moving Energy (Estimated) = 0.00

Speed limit fields

	Limit	Below		Above	
0	60 (PSL)	1949	70.5%	817	29.5%

MetroCount Traffic Executive
Speed Statistics

SpeedStat-1746 -- English (ENA)

Datasets:

Site:	**[2011-1] Currumbin Creek - Tomewin Mountain road, Currumbin Valley, south of Brocks road <60>**
Direction:	7 - North bound A>B, South bound B>A. **Lane:** 0
Survey Duration:	15:09 Monday, 2 November 2015 => 9:36 Tuesday, 10 November 2015
File:	2011-1 0 2015-11-10 0937.EC0 (Plus)
Identifier:	FS13WJC6 MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm:	Factory default
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**0:00 Tuesday, 3 November 2015 => 0:00 Tuesday, 10 November 2015**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range:	0 - 200 km/h.
Direction:	South (bound)
Separation:	All - (Headway)
Name:	Default Profile
Scheme:	Vehicle classification (AustRoads94)
Units:	Metric (meter, kilometer, m/s, km/h, kg, tonne)
In profile:	Vehicles = 2609 / 5821 (44.82%)

Speed Statistics

SpeedStat-1746
Site: 2011-1.0NS
Description: **Currumbin Creek - Tomewin Mountain road, Currumbin Valley, south of Brocks road <60>**
Filter time: **0:00 Tuesday, 3 November 2015 => 0:00 Tuesday, 10 November 2015**
Scheme: Vehicle classification (AustRoads94)
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12 13) Dir(S) Sp(0,200) Headway(>0)

Vehicles = 2609
Posted speed limit = 60 km/h, Exceeding = 663 (25.41%), Mean Exceeding = 65.62 km/h
Maximum = 108.4 km/h, **Minimum** = 8.0 km/h, **Mean** = 54.0 km/h
85% Speed = 62.6 km/h, **95% Speed** = 68.8 km/h, **Median** = 54.7 km/h
15 km/h Pace = 48 - 63, **Number in Pace** = 1686 (64.62%)
Variance = 111.29, **Standard Deviation** = 10.55 km/h

Speed Bins

Speed	Bin		Below		Above		Energy	vMult	n * vMult
0 - 10	2	0.1%	2	0.1%	2607	99.9%	0.00	0.00	0.00
10 - 20	46	1.8%	48	1.8%	2561	98.2%	0.00	0.00	0.00
20 - 30	34	1.3%	82	3.1%	2527	96.9%	0.00	0.00	0.00
30 - 40	106	4.1%	188	7.2%	2421	92.8%	0.00	0.00	0.00
40 - 50	539	20.7%	727	27.9%	1882	72.1%	0.00	0.00	0.00
50 - 60	1219	46.7%	1946	74.6%	663	25.4%	0.00	0.00	0.00
60 - 70	555	21.3%	2501	95.9%	108	4.1%	0.00	0.00	0.00
70 - 80	88	3.4%	2589	99.2%	20	0.8%	0.00	0.00	0.00
80 - 90	13	0.5%	2602	99.7%	7	0.3%	0.00	0.00	0.00
90 - 100	5	0.2%	2607	99.9%	2	0.1%	0.00	0.00	0.00
100 - 110	2	0.1%	2609	100.0%	0	0.0%	0.00	0.00	0.00
110 - 120	0	0.0%	2609	100.0%	0	0.0%	0.00	0.00	0.00
120 - 130	0	0.0%	2609	100.0%	0	0.0%	0.00	0.00	0.00
130 - 140	0	0.0%	2609	100.0%	0	0.0%	0.00	0.00	0.00
140 - 150	0	0.0%	2609	100.0%	0	0.0%	0.00	0.00	0.00
150 - 160	0	0.0%	2609	100.0%	0	0.0%	0.00	0.00	0.00
160 - 170	0	0.0%	2609	100.0%	0	0.0%	0.00	0.00	0.00
170 - 180	0	0.0%	2609	100.0%	0	0.0%	0.00	0.00	0.00
180 - 190	0	0.0%	2609	100.0%	0	0.0%	0.00	0.00	0.00
190 - 200	0	0.0%	2609	100.0%	0	0.0%	0.00	0.00	0.00

Total Speed Rating = 0.00
Total Moving Energy (Estimated) = 0.00

Speed limit fields

	Limit	Below		Above	
0	60 (PSL)	1946	74.6%	663	25.4%

MetroCount Traffic Executive
Speed Statistics

SpeedStat-1746 -- English (ENA)

Datasets:

Site:	**[2011-2] Currumbin Creek - Tomewin Mountain road, Currumbin Valley, north of Bains road <60>**
Direction:	7 - North bound A>B, South bound B>A. **Lane:** 0
Survey Duration:	12:36 Monday, 2 November 2015 => 9:43 Tuesday, 10 November 2015
File:	2011-2 0 2015-11-10 0944.EC0 (Plus)
Identifier:	CW96SPB5 MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm:	Factory default
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**0:00 Tuesday, 3 November 2015 => 0:00 Tuesday, 10 November 2015**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range:	0 - 200 km/h.
Direction:	North (bound)
Separation:	All - (Headway)
Name:	Default Profile
Scheme:	Vehicle classification (AustRoads94)
Units:	Metric (meter, kilometer, m/s, km/h, kg, tonne)
In profile:	Vehicles = 2616 / 5691 (45.97%)

MetroCount Traffic Executive
Speed Statistics

SpeedStat-1746 -- English (ENA)

Datasets:

Site:	**[2011-2] Currumbin Creek - Tomewin Mountain road, Currumbin Valley, north of Bains road <60>**
Direction:	7 - North bound A>B, South bound B>A. **Lane:** 0
Survey Duration:	12:36 Monday, 2 November 2015 => 9:43 Tuesday, 10 November 2015
File:	2011-2 0 2015-11-10 0944.EC0 (Plus)
Identifier:	CW96SPB5 MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm:	Factory default
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**0:00 Tuesday, 3 November 2015 => 0:00 Tuesday, 10 November 2015**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range:	0 - 200 km/h.
Direction:	North (bound)
Separation:	All - (Headway)
Name:	Default Profile
Scheme:	Vehicle classification (AustRoads94)
Units:	Metric (meter, kilometer, m/s, km/h, kg, tonne)
In profile:	Vehicles = 2616 / 5691 (45.97%)

Speed Statistics

SpeedStat-1746
Site: 2011-2.0NS
Description: **Currumbin Creek - Tomewin Mountain road, Currumbin Valley, north of Bains road <60>**
Filter time: **0:00 Tuesday, 3 November 2015 => 0:00 Tuesday, 10 November 2015**
Scheme: Vehicle classification (AustRoads94)
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12 13) Dir(N) Sp(0,200) Headway(>0)

Vehicles = 2616
Posted speed limit = 60 km/h, Exceeding = 996 (38.07%), Mean Exceeding = 66.15 km/h
Maximum = 93.7 km/h, **Minimum** = 17.7 km/h, **Mean** = 57.2 km/h
85% Speed = 65.9 km/h, **95% Speed** = 71.6 km/h, **Median** = 57.2 km/h
15 km/h Pace = 51 - 66, **Number in Pace** = 1629 (62.27%)
Variance = 86.11, **Standard Deviation** = 9.28 km/h

Speed Bins

Speed	Bin		Below		Above		Energy	vMult	n * vMult
0 - **10**	0	0.0%	0	0.0%	2616	100.0%	0.00	0.00	0.00
10 - **20**	2	0.1%	2	0.1%	2614	99.9%	0.00	0.00	0.00
20 - **30**	9	0.3%	11	0.4%	2605	99.6%	0.00	0.00	0.00
30 - **40**	83	3.2%	94	3.6%	2522	96.4%	0.00	0.00	0.00
40 - **50**	437	16.7%	531	20.3%	2085	79.7%	0.00	0.00	0.00
50 - **60**	1089	41.6%	1620	61.9%	996	38.1%	0.00	0.00	0.00
60 - **70**	811	31.0%	2431	92.9%	185	7.1%	0.00	0.00	0.00
70 - **80**	157	6.0%	2588	98.9%	28	1.1%	0.00	0.00	0.00
80 - **90**	23	0.9%	2611	99.8%	5	0.2%	0.00	0.00	0.00
90 - **100**	5	0.2%	2616	100.0%	0	0.0%	0.00	0.00	0.00
100 - **110**	0	0.0%	2616	100.0%	0	0.0%	0.00	0.00	0.00
110 - **120**	0	0.0%	2616	100.0%	0	0.0%	0.00	0.00	0.00
120 - **130**	0	0.0%	2616	100.0%	0	0.0%	0.00	0.00	0.00
130 - **140**	0	0.0%	2616	100.0%	0	0.0%	0.00	0.00	0.00
140 - **150**	0	0.0%	2616	100.0%	0	0.0%	0.00	0.00	0.00
150 - **160**	0	0.0%	2616	100.0%	0	0.0%	0.00	0.00	0.00
160 - **170**	0	0.0%	2616	100.0%	0	0.0%	0.00	0.00	0.00
170 - **180**	0	0.0%	2616	100.0%	0	0.0%	0.00	0.00	0.00
180 - **190**	0	0.0%	2616	100.0%	0	0.0%	0.00	0.00	0.00
190 - **200**	0	0.0%	2616	100.0%	0	0.0%	0.00	0.00	0.00

Total Speed Rating = 0.00
Total Moving Energy (Estimated) = 0.00

Speed limit fields

	Limit	Below		Above	
0	60 (PSL)	1620	61.9%	996	38.1%

MetroCount Traffic Executive
Speed Statistics

SpeedStat-1746 -- English (ENA)

Datasets:

Site:	**[2011-2] Currumbin Creek - Tomewin Mountain road, Currumbin Valley, north of Bains road <60>**
Direction:	7 - North bound A>B, South bound B>A. **Lane:** 0
Survey Duration:	12:36 Monday, 2 November 2015 => 9:43 Tuesday, 10 November 2015
File:	2011-2 0 2015-11-10 0944.EC0 (Plus)
Identifier:	CW96SPB5 MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm:	Factory default
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**0:00 Tuesday, 3 November 2015 => 0:00 Tuesday, 10 November 2015**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range:	0 - 200 km/h.
Direction:	South (bound)
Separation:	All - (Headway)
Name:	Default Profile
Scheme:	Vehicle classification (AustRoads94)
Units:	Metric (meter, kilometer, m/s, km/h, kg, tonne)
In profile:	Vehicles = 2510 / 5691 (44.10%)

MetroCount Traffic Executive
Speed Statistics

SpeedStat-1746 -- English (ENA)

Datasets:

Site:	**[2011-2] Currumbin Creek - Tomewin Mountain road, Currumbin Valley, north of Bains road <60>**
Direction:	7 - North bound A>B, South bound B>A. **Lane:** 0
Survey Duration:	12:36 Monday, 2 November 2015 => 9:43 Tuesday, 10 November 2015
File:	2011-2 0 2015-11-10 0944.EC0 (Plus)
Identifier:	CW96SPB5 MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm:	Factory default
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**0:00 Tuesday, 3 November 2015 => 0:00 Tuesday, 10 November 2015**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range:	0 - 200 km/h.
Direction:	South (bound)
Separation:	All - (Headway)
Name:	Default Profile
Scheme:	Vehicle classification (AustRoads94)
Units:	Metric (meter, kilometer, m/s, km/h, kg, tonne)
In profile:	Vehicles = 2510 / 5691 (44.10%)

Speed Statistics

SpeedStat-1746
Site: 2011-2.0NS
Description: **Currumbin Creek - Tomewin Mountain road, Currumbin Valley, north of Bains road <60>**
Filter time: **0:00 Tuesday, 3 November 2015 => 0:00 Tuesday, 10 November 2015**
Scheme: Vehicle classification (AustRoads94)
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12 13) Dir(S) Sp(0,200) Headway(>0)

Vehicles = 2510
Posted speed limit = 60 km/h, Exceeding = 708 (28.21%), Mean Exceeding = 65.86 km/h
Maximum = 99.4 km/h, **Minimum** = 10.8 km/h, **Mean** = 55.4 km/h
85% Speed = 63.7 km/h, **95% Speed** = 70.2 km/h, **Median** = 55.1 km/h
15 km/h Pace = 47 - 62, **Number in Pace** = 1639 (65.30%)
Variance = 79.41, **Standard Deviation** = 8.91 km/h

Speed Bins

Speed	Bin		Below		Above		Energy	vMult	n * vMult
0 - **10**	0	0.0%	0	0.0%	2510	100.0%	0.00	0.00	0.00
10 - **20**	1	0.0%	1	0.0%	2509	100.0%	0.00	0.00	0.00
20 - **30**	14	0.6%	15	0.6%	2495	99.4%	0.00	0.00	0.00
30 - **40**	77	3.1%	92	3.7%	2418	96.3%	0.00	0.00	0.00
40 - **50**	567	22.6%	659	26.3%	1851	73.7%	0.00	0.00	0.00
50 - **60**	1143	45.5%	1802	71.8%	708	28.2%	0.00	0.00	0.00
60 - **70**	572	22.8%	2374	94.6%	136	5.4%	0.00	0.00	0.00
70 - **80**	118	4.7%	2492	99.3%	18	0.7%	0.00	0.00	0.00
80 - **90**	13	0.5%	2505	99.8%	5	0.2%	0.00	0.00	0.00
90 - **100**	5	0.2%	2510	100.0%	0	0.0%	0.00	0.00	0.00
100 - **110**	0	0.0%	2510	100.0%	0	0.0%	0.00	0.00	0.00
110 - **120**	0	0.0%	2510	100.0%	0	0.0%	0.00	0.00	0.00
120 - **130**	0	0.0%	2510	100.0%	0	0.0%	0.00	0.00	0.00
130 - **140**	0	0.0%	2510	100.0%	0	0.0%	0.00	0.00	0.00
140 - **150**	0	0.0%	2510	100.0%	0	0.0%	0.00	0.00	0.00
150 - **160**	0	0.0%	2510	100.0%	0	0.0%	0.00	0.00	0.00
160 - **170**	0	0.0%	2510	100.0%	0	0.0%	0.00	0.00	0.00
170 - **180**	0	0.0%	2510	100.0%	0	0.0%	0.00	0.00	0.00
180 - **190**	0	0.0%	2510	100.0%	0	0.0%	0.00	0.00	0.00
190 - **200**	0	0.0%	2510	100.0%	0	0.0%	0.00	0.00	0.00

Total Speed Rating = 0.00
Total Moving Energy (Estimated) = 0.00

Speed limit fields

	Limit	Below		Above	
0	60 (PSL)	1802	71.8%	708	28.2%

MetroCount Traffic Executive
Speed Statistics

SpeedStat-1746 -- English (ENA)

Datasets:

Site:	**[20011-3] Currumbin Creek - Tomewin Mountain road, Currumbin Valley, south of Taylors**
Lane <80>	
Direction:	7 - North bound A>B, South bound B>A. **Lane:** 0
Survey Duration:	14:33 Monday, 2 November 2015 => 10:11 Tuesday, 10 November 2015
File:	2011-3 0 2015-11-10 1012.EC0 (Plus)
Identifier:	FR49CCMF MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm:	Factory default
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**0:00 Tuesday, 3 November 2015 => 0:00 Tuesday, 10 November 2015**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range:	0 - 200 km/h.
Direction:	North (bound)
Separation:	All - (Headway)
Name:	Default Profile
Scheme:	Vehicle classification (AustRoads94)
Units:	Metric (meter, kilometer, m/s, km/h, kg, tonne)
In profile:	Vehicles = 2708 / 5742 (47.16%)

Speed Statistics

SpeedStat-1746
Site: 20011-3.0NS
Description: **Currumbin Creek - Tomewin Mountain road, Currumbin Valley, south of Taylors Lane <80>**
Filter time: **0:00 Tuesday, 3 November 2015 => 0:00 Tuesday, 10 November 2015**
Scheme: Vehicle classification (AustRoads94)
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12 13) Dir(N) Sp(0,200) Headway(>0)

Vehicles = 2708
Posted speed limit = 80 km/h, Exceeding = 965 (35.64%), Mean Exceeding = 89.66 km/h
Maximum = 155.9 km/h, **Minimum** = 26.1 km/h, **Mean** = 77.2 km/h
85% Speed = 87.8 km/h, **95% Speed** = 98.3 km/h, **Median** = 76.3 km/h
15 km/h Pace = 70 - 85, **Number in Pace** = 1455 (53.73%)
Variance = 159.78, **Standard Deviation** = 12.64 km/h

Speed Bins

Speed	Bin		Below		Above		Energy	vMult	n * vMult
0 - **10**	0	0.0%	0	0.0%	2708	100.0%	0.00	0.00	0.00
10 - **20**	0	0.0%	0	0.0%	2708	100.0%	0.00	0.00	0.00
20 - **30**	4	0.1%	4	0.1%	2704	99.9%	0.00	0.00	0.00
30 - **40**	4	0.1%	8	0.3%	2700	99.7%	0.00	0.00	0.00
40 - **50**	17	0.6%	25	0.9%	2683	99.1%	0.00	0.00	0.00
50 - **60**	134	4.9%	159	5.9%	2549	94.1%	0.00	0.00	0.00
60 - **70**	553	20.4%	712	26.3%	1996	73.7%	0.00	0.00	0.00
70 - **80**	1031	38.1%	1743	64.4%	965	35.6%	0.00	0.00	0.00
80 - **90**	645	23.8%	2388	88.2%	320	11.8%	0.00	0.00	0.00
90 - **100**	200	7.4%	2588	95.6%	120	4.4%	0.00	0.00	0.00
100 - **110**	70	2.6%	2658	98.2%	50	1.8%	0.00	0.00	0.00
110 - **120**	25	0.9%	2683	99.1%	25	0.9%	0.00	0.00	0.00
120 - **130**	15	0.6%	2698	99.6%	10	0.4%	0.00	0.00	0.00
130 - **140**	7	0.3%	2705	99.9%	3	0.1%	0.00	0.00	0.00
140 - **150**	2	0.1%	2707	100.0%	1	0.0%	0.00	0.00	0.00
150 - **160**	1	0.0%	2708	100.0%	0	0.0%	0.00	0.00	0.00
160 - **170**	0	0.0%	2708	100.0%	0	0.0%	0.00	0.00	0.00
170 - **180**	0	0.0%	2708	100.0%	0	0.0%	0.00	0.00	0.00
180 - **190**	0	0.0%	2708	100.0%	0	0.0%	0.00	0.00	0.00
190 - **200**	0	0.0%	2708	100.0%	0	0.0%	0.00	0.00	0.00

Total Speed Rating = 0.00
Total Moving Energy (Estimated) = 0.00

Speed limit fields

	Limit	Below		Above	
0	80 (PSL)	1743	64.4%	965	35.6%

MetroCount Traffic Executive
Speed Statistics

SpeedStat-1746 -- English (ENA)

Datasets:

Site:	**[20011-3] Currumbin Creek - Tomewin Mountain road, Currumbin Valley, south of Taylors**
Lane <80>	
Direction:	7 - North bound A>B, South bound B>A. **Lane:** 0
Survey Duration:	14:33 Monday, 2 November 2015 => 10:11 Tuesday, 10 November 2015
File:	2011-3 0 2015-11-10 1012.EC0 (Plus)
Identifier:	FR49CCMF MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm:	Factory default
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**0:00 Tuesday, 3 November 2015 => 0:00 Tuesday, 10 November 2015**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range:	0 - 200 km/h.
Direction:	South (bound)
Separation:	All - (Headway)
Name:	Default Profile
Scheme:	Vehicle classification (AustRoads94)
Units:	Metric (meter, kilometer, m/s, km/h, kg, tonne)
In profile:	Vehicles = 2524 / 5742 (43.96%)

Speed Statistics

SpeedStat-1746
Site: 20011-3.0NS
Description: **Currumbin Creek - Tomewin Mountain road, Currumbin Valley, south of Taylors Lane <80>**
Filter time: **0:00 Tuesday, 3 November 2015 => 0:00 Tuesday, 10 November 2015**
Scheme: Vehicle classification (AustRoads94)
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12 13) Dir(S) Sp(0,200) Headway(>0)

Vehicles = 2524
Posted speed limit = 80 km/h, Exceeding = 544 (21.55%), Mean Exceeding = 88.05 km/h
Maximum = 154.1 km/h, **Minimum** = 12.8 km/h, **Mean** = 72.2 km/h
85% Speed = 82.8 km/h, **95% Speed** = 90.7 km/h, **Median** = 71.6 km/h
15 km/h Pace = 63 - 78, **Number in Pace** = 1381 (54.71%)
Variance = 142.90, **Standard Deviation** = 11.95 km/h

Speed Bins

Speed	Bin		Below		Above		Energy	vMult	n * vMult
0 - **10**	0	0.0%	0	0.0%	2524	100.0%	0.00	0.00	0.00
10 - **20**	9	0.4%	9	0.4%	2515	99.6%	0.00	0.00	0.00
20 - **30**	2	0.1%	11	0.4%	2513	99.6%	0.00	0.00	0.00
30 - **40**	4	0.2%	15	0.6%	2509	99.4%	0.00	0.00	0.00
40 - **50**	43	1.7%	58	2.3%	2466	97.7%	0.00	0.00	0.00
50 - **60**	247	9.8%	305	12.1%	2219	87.9%	0.00	0.00	0.00
60 - **70**	762	30.2%	1067	42.3%	1457	57.7%	0.00	0.00	0.00
70 - **80**	913	36.2%	1980	78.4%	544	21.6%	0.00	0.00	0.00
80 - **90**	395	15.6%	2375	94.1%	149	5.9%	0.00	0.00	0.00
90 - **100**	115	4.6%	2490	98.7%	34	1.3%	0.00	0.00	0.00
100 - **110**	22	0.9%	2512	99.5%	12	0.5%	0.00	0.00	0.00
110 - **120**	4	0.2%	2516	99.7%	8	0.3%	0.00	0.00	0.00
120 - **130**	3	0.1%	2519	99.8%	5	0.2%	0.00	0.00	0.00
130 - **140**	2	0.1%	2521	99.9%	3	0.1%	0.00	0.00	0.00
140 - **150**	2	0.1%	2523	100.0%	1	0.0%	0.00	0.00	0.00
150 - **160**	1	0.0%	2524	100.0%	0	0.0%	0.00	0.00	0.00
160 - **170**	0	0.0%	2524	100.0%	0	0.0%	0.00	0.00	0.00
170 - **180**	0	0.0%	2524	100.0%	0	0.0%	0.00	0.00	0.00
180 - **190**	0	0.0%	2524	100.0%	0	0.0%	0.00	0.00	0.00
190 - **200**	0	0.0%	2524	100.0%	0	0.0%	0.00	0.00	0.00

Total Speed Rating = 0.00
Total Moving Energy (Estimated) = 0.00

Speed limit fields

	Limit	Below		Above	
0	80 (PSL)	1980	78.4%	544	21.6%

MetroCount Traffic Executive
Speed Statistics

SpeedStat-1746 -- English (ENA)

Datasets:

Site:	**[2011-4] Currumbin Creek - Tomewin Mountain road, Currumbin Valley, approx 1.6 klm south of Taylors Lane <80>**
Direction:	7 - North bound A>B, South bound B>A. **Lane:** 0
Survey Duration:	13:46 Monday, 2 November 2015 => 10:01 Tuesday, 10 November 2015
File:	2011-4 0 2015-11-10 1002.EC0 (Plus)
Identifier:	B063YT3N MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm:	Factory default
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**0:00 Tuesday, 3 November 2015 => 0:00 Tuesday, 10 November 2015**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range:	0 - 200 km/h.
Direction:	North (bound)
Separation:	All - (Headway)
Name:	Default Profile
Scheme:	Vehicle classification (AustRoads94)
Units:	Metric (meter, kilometer, m/s, km/h, kg, tonne)
In profile:	Vehicles = 2646 / 5610 (47.17%)

Speed Statistics

SpeedStat-1746
Site: 2011-4.0NS
Description: **Currumbin Creek - Tomewin Mountain road, Currumbin Valley, approx 1.6 klm south of Taylors Lane <80>**
Filter time: **0:00 Tuesday, 3 November 2015 => 0:00 Tuesday, 10 November 2015**
Scheme: Vehicle classification (AustRoads94)
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12 13) Dir(N) Sp(0,200) Headway(>0)

Vehicles = 2646
Posted speed limit = 80 km/h, Exceeding = 0 (0.00%), Mean Exceeding = 0.00 km/h
Maximum = 77.6 km/h, **Minimum** = 24.5 km/h, **Mean** = 48.9 km/h
85% Speed = 55.4 km/h, **95% Speed** = 60.1 km/h, **Median** = 49.0 km/h
15 km/h Pace = 41 - 56, **Number in Pace** = 1971 (74.49%)
Variance = 50.77, **Standard Deviation** = 7.13 km/h

Speed Bins

Speed	Bin		Below		Above		Energy	vMult	n * vMult
0 - 10	0	0.0%	0	0.0%	2646	100.0%	0.00	0.00	0.00
10 - 20	0	0.0%	0	0.0%	2646	100.0%	0.00	0.00	0.00
20 - 30	18	0.7%	18	0.7%	2628	99.3%	0.00	0.00	0.00
30 - 40	237	9.0%	255	9.6%	2391	90.4%	0.00	0.00	0.00
40 - 50	1227	46.4%	1482	56.0%	1164	44.0%	0.00	0.00	0.00
50 - 60	1016	38.4%	2498	94.4%	148	5.6%	0.00	0.00	0.00
60 - 70	136	5.1%	2634	99.5%	12	0.5%	0.00	0.00	0.00
70 - 80	12	0.5%	2646	100.0%	0	0.0%	0.00	0.00	0.00
80 - 90	0	0.0%	2646	100.0%	0	0.0%	0.00	0.00	0.00
90 - 100	0	0.0%	2646	100.0%	0	0.0%	0.00	0.00	0.00
100 - 110	0	0.0%	2646	100.0%	0	0.0%	0.00	0.00	0.00
110 - 120	0	0.0%	2646	100.0%	0	0.0%	0.00	0.00	0.00
120 - 130	0	0.0%	2646	100.0%	0	0.0%	0.00	0.00	0.00
130 - 140	0	0.0%	2646	100.0%	0	0.0%	0.00	0.00	0.00
140 - 150	0	0.0%	2646	100.0%	0	0.0%	0.00	0.00	0.00
150 - 160	0	0.0%	2646	100.0%	0	0.0%	0.00	0.00	0.00
160 - 170	0	0.0%	2646	100.0%	0	0.0%	0.00	0.00	0.00
170 - 180	0	0.0%	2646	100.0%	0	0.0%	0.00	0.00	0.00
180 - 190	0	0.0%	2646	100.0%	0	0.0%	0.00	0.00	0.00
190 - 200	0	0.0%	2646	100.0%	0	0.0%	0.00	0.00	0.00

Total Speed Rating = 0.00
Total Moving Energy (Estimated) = 0.00

Speed limit fields

	Limit	Below		Above	
0	80 (PSL)	2646	100.0%	0	0.0%

MetroCount Traffic Executive
Speed Statistics

SpeedStat-1746 -- English (ENA)

Datasets:

Site:	**[2011-4] Currumbin Creek - Tomewin Mountain road, Currumbin Valley, approx 1.6 klm south of Taylors Lane <80>**
Direction:	7 - North bound A>B, South bound B>A. **Lane:** 0
Survey Duration:	13:46 Monday, 2 November 2015 => 10:01 Tuesday, 10 November 2015
File:	2011-4 0 2015-11-10 1002.EC0 (Plus)
Identifier:	B063YT3N MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm:	Factory default
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**0:00 Tuesday, 3 November 2015 => 0:00 Tuesday, 10 November 2015**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range:	0 - 200 km/h.
Direction:	South (bound)
Separation:	All - (Headway)
Name:	Default Profile
Scheme:	Vehicle classification (AustRoads94)
Units:	Metric (meter, kilometer, m/s, km/h, kg, tonne)
In profile:	Vehicles = 2456 / 5610 (43.78%)

Speed Statistics

SpeedStat-1746
Site: 2011-4.0NS
Description: **Currumbin Creek - Tomewin Mountain road, Currumbin Valley, approx 1.6 klm south of Taylors Lane <80>**
Filter time: **0:00 Tuesday, 3 November 2015 => 0:00 Tuesday, 10 November 2015**
Scheme: Vehicle classification (AustRoads94)
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12 13) Dir(S) Sp(0,200) Headway(>0)

Vehicles = 2456
Posted speed limit = 80 km/h, Exceeding = 1 (0.04%), Mean Exceeding = 80.55 km/h
Maximum = 80.6 km/h, **Minimum** = 7.4 km/h, **Mean** = 46.9 km/h
85% Speed = 53.3 km/h, **95% Speed** = 58.3 km/h, **Median** = 46.4 km/h
15 km/h Pace = 39 - 54, **Number in Pace** = 1900 (77.36%)
Variance = 49.85, **Standard Deviation** = 7.06 km/h

Speed Bins

Speed	Bin		Below		Above		Energy	vMult	n * vMult
0 - 10	1	0.0%	1	0.0%	2455	100.0%	0.00	0.00	0.00
10 - 20	4	0.2%	5	0.2%	2451	99.8%	0.00	0.00	0.00
20 - 30	19	0.8%	24	1.0%	2432	99.0%	0.00	0.00	0.00
30 - 40	313	12.7%	337	13.7%	2119	86.3%	0.00	0.00	0.00
40 - 50	1405	57.2%	1742	70.9%	714	29.1%	0.00	0.00	0.00
50 - 60	628	25.6%	2370	96.5%	86	3.5%	0.00	0.00	0.00
60 - 70	71	2.9%	2441	99.4%	15	0.6%	0.00	0.00	0.00
70 - 80	14	0.6%	2455	100.0%	1	0.0%	0.00	0.00	0.00
80 - 90	1	0.0%	2456	100.0%	0	0.0%	0.00	0.00	0.00
90 - 100	0	0.0%	2456	100.0%	0	0.0%	0.00	0.00	0.00
100 - 110	0	0.0%	2456	100.0%	0	0.0%	0.00	0.00	0.00
110 - 120	0	0.0%	2456	100.0%	0	0.0%	0.00	0.00	0.00
120 - 130	0	0.0%	2456	100.0%	0	0.0%	0.00	0.00	0.00
130 - 140	0	0.0%	2456	100.0%	0	0.0%	0.00	0.00	0.00
140 - 150	0	0.0%	2456	100.0%	0	0.0%	0.00	0.00	0.00
150 - 160	0	0.0%	2456	100.0%	0	0.0%	0.00	0.00	0.00
160 - 170	0	0.0%	2456	100.0%	0	0.0%	0.00	0.00	0.00
170 - 180	0	0.0%	2456	100.0%	0	0.0%	0.00	0.00	0.00
180 - 190	0	0.0%	2456	100.0%	0	0.0%	0.00	0.00	0.00
190 - 200	0	0.0%	2456	100.0%	0	0.0%	0.00	0.00	0.00

Total Speed Rating = 0.00
Total Moving Energy (Estimated) = 0.00

Speed limit fields

	Limit	Below		Above	
0	80 (PSL)	2455	100.0%	1	0.0%

MetroCount Traffic Executive
Speed Statistics

SpeedStat-1746 -- English (ENA)

Datasets:

Site:	**[2011-5] Currumbin Creek - Tomewin Mountain road, Currumbin Valley, north of Glengarrie road <60>**
Direction:	7 - North bound A>B, South bound B>A. **Lane:** 0
Survey Duration:	13:20 Monday, 2 November 2015 => 9:52 Tuesday, 10 November 2015
File:	2011-5 0 2015-11-10 0952.EC0 (Plus)
Identifier:	T872ZPCW MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm:	Factory default
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**0:00 Tuesday, 3 November 2015 => 0:00 Tuesday, 10 November 2015**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range:	0 - 200 km/h.
Direction:	North (bound)
Separation:	All - (Headway)
Name:	Default Profile
Scheme:	Vehicle classification (AustRoads94)
Units:	Metric (meter, kilometer, m/s, km/h, kg, tonne)
In profile:	Vehicles = 2261 / 4831 (46.80%)

Speed Statistics

SpeedStat-1746
Site: 2011-5.0NS
Description: **Currumbin Creek - Tomewin Mountain road, Currumbin Valley, north of Glengarrie road <60>**
Filter time: **0:00 Tuesday, 3 November 2015 => 0:00 Tuesday, 10 November 2015**
Scheme: Vehicle classification (AustRoads94)
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12 13) Dir(N) Sp(0,200) Headway(>0)

Vehicles = 2261
Posted speed limit = 60 km/h, Exceeding = 635 (28.08%), Mean Exceeding = 66.65 km/h
Maximum = 98.9 km/h, **Minimum** = 9.4 km/h, **Mean** = 55.1 km/h
85% Speed = 64.1 km/h, **95% Speed** = 70.6 km/h, **Median** = 55.1 km/h
15 km/h Pace = 48 - 63, **Number in Pace** = 1419 (62.76%)
Variance = 107.58, **Standard Deviation** = 10.37 km/h

Speed Bins

Speed	Bin		Below		Above		Energy	vMult	n * vMult
0 - 10	1	0.0%	1	0.0%	2260	100.0%	0.00	0.00	0.00
10 - 20	6	0.3%	7	0.3%	2254	99.7%	0.00	0.00	0.00
20 - 30	58	2.6%	65	2.9%	2196	97.1%	0.00	0.00	0.00
30 - 40	65	2.9%	130	5.7%	2131	94.3%	0.00	0.00	0.00
40 - 50	464	20.5%	594	26.3%	1667	73.7%	0.00	0.00	0.00
50 - 60	1032	45.6%	1626	71.9%	635	28.1%	0.00	0.00	0.00
60 - 70	506	22.4%	2132	94.3%	129	5.7%	0.00	0.00	0.00
70 - 80	96	4.2%	2228	98.5%	33	1.5%	0.00	0.00	0.00
80 - 90	21	0.9%	2249	99.5%	12	0.5%	0.00	0.00	0.00
90 - 100	12	0.5%	2261	100.0%	0	0.0%	0.00	0.00	0.00
100 - 110	0	0.0%	2261	100.0%	0	0.0%	0.00	0.00	0.00
110 - 120	0	0.0%	2261	100.0%	0	0.0%	0.00	0.00	0.00
120 - 130	0	0.0%	2261	100.0%	0	0.0%	0.00	0.00	0.00
130 - 140	0	0.0%	2261	100.0%	0	0.0%	0.00	0.00	0.00
140 - 150	0	0.0%	2261	100.0%	0	0.0%	0.00	0.00	0.00
150 - 160	0	0.0%	2261	100.0%	0	0.0%	0.00	0.00	0.00
160 - 170	0	0.0%	2261	100.0%	0	0.0%	0.00	0.00	0.00
170 - 180	0	0.0%	2261	100.0%	0	0.0%	0.00	0.00	0.00
180 - 190	0	0.0%	2261	100.0%	0	0.0%	0.00	0.00	0.00
190 - 200	0	0.0%	2261	100.0%	0	0.0%	0.00	0.00	0.00

Total Speed Rating = 0.00
Total Moving Energy (Estimated) = 0.00

Speed limit fields

	Limit	Below		Above	
0	60 (PSL)	1626	71.9%	635	28.1%

MetroCount Traffic Executive
Speed Statistics

SpeedStat-1746 -- English (ENA)

Datasets:

Site:	**[2011-5] Currumbin Creek - Tomewin Mountain road, Currumbin Valley, north of Glengarrie road <60>**
Direction:	7 - North bound A>B, South bound B>A. **Lane:** 0
Survey Duration:	13:20 Monday, 2 November 2015 => 9:52 Tuesday, 10 November 2015
File:	2011-5 0 2015-11-10 0952.EC0 (Plus)
Identifier:	T872ZPCW MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm:	Factory default
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**0:00 Tuesday, 3 November 2015 => 0:00 Tuesday, 10 November 2015**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range:	0 - 200 km/h.
Direction:	South (bound)
Separation:	All - (Headway)
Name:	Default Profile
Scheme:	Vehicle classification (AustRoads94)
Units:	Metric (meter, kilometer, m/s, km/h, kg, tonne)
In profile:	Vehicles = 2128 / 4831 (44.05%)

Speed Statistics

SpeedStat-1746
Site: 2011-5.0NS
Description: **Currumbin Creek - Tomewin Mountain road, Currumbin Valley, north of Glengarrie road <60>**
Filter time: **0:00 Tuesday, 3 November 2015 => 0:00 Tuesday, 10 November 2015**
Scheme: Vehicle classification (AustRoads94)
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12 13) Dir(S) Sp(0,200) Headway(>0)

Vehicles = 2128
Posted speed limit = 60 km/h, Exceeding = 1003 (47.13%), Mean Exceeding = 67.05 km/h
Maximum = 106.1 km/h, **Minimum** = 10.1 km/h, **Mean** = 59.5 km/h
85% Speed = 68.4 km/h, **95% Speed** = 74.2 km/h, **Median** = 59.4 km/h
15 km/h Pace = 52 - 67, **Number in Pace** = 1345 (63.20%)
Variance = 93.11, **Standard Deviation** = 9.65 km/h

Speed Bins

Speed	Bin		Below		Above		Energy	vMult	n * vMult
0 - 10	0	0.0%	0	0.0%	2128	100.0%	0.00	0.00	0.00
10 - 20	3	0.1%	3	0.1%	2125	99.9%	0.00	0.00	0.00
20 - 30	18	0.8%	21	1.0%	2107	99.0%	0.00	0.00	0.00
30 - 40	37	1.7%	58	2.7%	2070	97.3%	0.00	0.00	0.00
40 - 50	214	10.1%	272	12.8%	1856	87.2%	0.00	0.00	0.00
50 - 60	853	40.1%	1125	52.9%	1003	47.1%	0.00	0.00	0.00
60 - 70	755	35.5%	1880	88.3%	248	11.7%	0.00	0.00	0.00
70 - 80	215	10.1%	2095	98.4%	33	1.6%	0.00	0.00	0.00
80 - 90	24	1.1%	2119	99.6%	9	0.4%	0.00	0.00	0.00
90 - 100	7	0.3%	2126	99.9%	2	0.1%	0.00	0.00	0.00
100 - 110	2	0.1%	2128	100.0%	0	0.0%	0.00	0.00	0.00
110 - 120	0	0.0%	2128	100.0%	0	0.0%	0.00	0.00	0.00
120 - 130	0	0.0%	2128	100.0%	0	0.0%	0.00	0.00	0.00
130 - 140	0	0.0%	2128	100.0%	0	0.0%	0.00	0.00	0.00
140 - 150	0	0.0%	2128	100.0%	0	0.0%	0.00	0.00	0.00
150 - 160	0	0.0%	2128	100.0%	0	0.0%	0.00	0.00	0.00
160 - 170	0	0.0%	2128	100.0%	0	0.0%	0.00	0.00	0.00
170 - 180	0	0.0%	2128	100.0%	0	0.0%	0.00	0.00	0.00
180 - 190	0	0.0%	2128	100.0%	0	0.0%	0.00	0.00	0.00
190 - 200	0	0.0%	2128	100.0%	0	0.0%	0.00	0.00	0.00

Total Speed Rating = 0.00
Total Moving Energy (Estimated) = 0.00

Speed limit fields

	Limit	Below		Above	
0	60 (PSL)	1125	52.9%	1003	47.1%

Cunningham Highway

MetroCount Traffic Executive
Speed Statistics

SpeedStat-1746 -- English (ENA)

Datasets:

Site:	**[11972-17B1] 17B1 cunningham Highway btn Boonah Fassifern Rd and Morwincha Rd <100>**
Direction:	7 - North bound A>B, South bound B>A. **Lane:** 0
Survey Duration:	7:00 Sunday, 1 November 2015 => 11:51 Monday, 9 November 2015
File:	11972-17B1 0 2015-11-09 1151.EC0 (Plus)
Identifier:	FS4350MB MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm:	Factory default
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**0:00 Monday, 2 November 2015 => 0:00 Monday, 9 November 2015**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range:	0 - 200 km/h.
Direction:	North (bound)
Separation:	All - (Headway)
Name:	Default Profile
Scheme:	Vehicle classification (AustRoads94)
Units:	Metric (meter, kilometer, m/s, km/h, kg, tonne)
In profile:	Vehicles = 22354 / 53921 (41.46%)

Speed Statistics

SpeedStat-1746
Site: 11972-17B1.0NS
Description: **17B1 cunningham Highway btn Boonah Fassifern Rd and Morwincha Rd <100>**
Filter time: **0:00 Monday, 2 November 2015 => 0:00 Monday, 9 November 2015**
Scheme: Vehicle classification (AustRoads94)
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12 13) Dir(N) Sp(0,200) Headway(>0)

Vehicles = 22354
Posted speed limit = 100 km/h, Exceeding = 4447 (19.89%), Mean Exceeding = 103.73 km/h
Maximum = 188.7 km/h, **Minimum** = 7.6 km/h, **Mean** = 92.9 km/h
85% Speed = 100.8 km/h, **95% Speed** = 104.4 km/h, **Median** = 94.3 km/h
15 km/h Pace = 87 - 102, **Number in Pace** = 15653 (70.02%)
Variance = 109.02, **Standard Deviation** = 10.44 km/h

Speed Bins

Speed	Bin		Below		Above		Energy	vMult	n * vMult
0 - **10**	1	0.0%	1	0.0%	22353	100.0%	0.00	0.00	0.00
10 - **20**	8	0.0%	9	0.0%	22345	100.0%	0.00	0.00	0.00
20 - **30**	8	0.0%	17	0.1%	22337	99.9%	0.00	0.00	0.00
30 - **40**	86	0.4%	103	0.5%	22251	99.5%	0.00	0.00	0.00
40 - **50**	208	0.9%	311	1.4%	22043	98.6%	0.00	0.00	0.00
50 - **60**	112	0.5%	423	1.9%	21931	98.1%	0.00	0.00	0.00
60 - **70**	154	0.7%	577	2.6%	21777	97.4%	0.00	0.00	0.00
70 - **80**	1016	4.5%	1593	7.1%	20761	92.9%	0.00	0.00	0.00
80 - **90**	5014	22.4%	6607	29.6%	15747	70.4%	0.00	0.00	0.00
90 - **100**	11300	50.6%	17907	80.1%	4447	19.9%	0.00	0.00	0.00
100 - **110**	4127	18.5%	22034	98.6%	320	1.4%	0.00	0.00	0.00
110 - **120**	252	1.1%	22286	99.7%	68	0.3%	0.00	0.00	0.00
120 - **130**	54	0.2%	22340	99.9%	14	0.1%	0.00	0.00	0.00
130 - **140**	10	0.0%	22350	100.0%	4	0.0%	0.00	0.00	0.00
140 - **150**	2	0.0%	22352	100.0%	2	0.0%	0.00	0.00	0.00
150 - **160**	1	0.0%	22353	100.0%	1	0.0%	0.00	0.00	0.00
160 - **170**	0	0.0%	22353	100.0%	1	0.0%	0.00	0.00	0.00
170 - **180**	0	0.0%	22353	100.0%	1	0.0%	0.00	0.00	0.00
180 - **190**	1	0.0%	22354	100.0%	0	0.0%	0.00	0.00	0.00
190 - **200**	0	0.0%	22354	100.0%	0	0.0%	0.00	0.00	0.00

Total Speed Rating = 0.00
Total Moving Energy (Estimated) = 0.00

Speed limit fields

	Limit	Below		Above	
0	100 (PSL)	17907	80.1%	4447	19.9%

MetroCount Traffic Executive
Speed Statistics

SpeedStat-1746 -- English (ENA)

Datasets:

Site:	**[11972-17B1] 17B1 cunningham Highway btn Boonah Fassifern Rd and Morwincha Rd <100>**
Direction:	7 - North bound A>B, South bound B>A. **Lane:** 0
Survey Duration:	7:00 Sunday, 1 November 2015 => 11:51 Monday, 9 November 2015
File:	11972-17B1 0 2015-11-09 1151.EC0 (Plus)
Identifier:	FS4350MB MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm:	Factory default
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**0:00 Monday, 2 November 2015 => 0:00 Monday, 9 November 2015**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range:	0 - 200 km/h.
Direction:	South (bound)
Separation:	All - (Headway)
Name:	Default Profile
Scheme:	Vehicle classification (AustRoads94)
Units:	Metric (meter, kilometer, m/s, km/h, kg, tonne)
In profile:	Vehicles = 22066 / 53921 (40.92%)

Speed Statistics

SpeedStat-1746
Site: 11972-17B1.0NS
Description: **17B1 cunningham Highway btn Boonah Fassifern Rd and Morwincha Rd <100>**
Filter time: **0:00 Monday, 2 November 2015 => 0:00 Monday, 9 November 2015**
Scheme: Vehicle classification (AustRoads94)
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12 13) Dir(S) Sp(0,200) Headway(>0)

Vehicles = 22066
Posted speed limit = 100 km/h, Exceeding = 7020 (31.81%), Mean Exceeding = 104.17 km/h
Maximum = 166.4 km/h, **Minimum** = 29.8 km/h, **Mean** = 94.8 km/h
85% Speed = 103.0 km/h, **95% Speed** = 106.9 km/h, **Median** = 96.5 km/h
15 km/h Pace = 90 - 105, **Number in Pace** = 15069 (68.29%)
Variance = 114.73, **Standard Deviation** = 10.71 km/h

Speed Bins

Speed	Bin		Below		Above		Energy	vMult	n * vMult
0 - **10**	0	0.0%	0	0.0%	22066	100.0%	0.00	0.00	0.00
10 - **20**	0	0.0%	0	0.0%	22066	100.0%	0.00	0.00	0.00
20 - **30**	1	0.0%	1	0.0%	22065	100.0%	0.00	0.00	0.00
30 - **40**	41	0.2%	42	0.2%	22024	99.8%	0.00	0.00	0.00
40 - **50**	155	0.7%	197	0.9%	21869	99.1%	0.00	0.00	0.00
50 - **60**	203	0.9%	400	1.8%	21666	98.2%	0.00	0.00	0.00
60 - **70**	246	1.1%	646	2.9%	21420	97.1%	0.00	0.00	0.00
70 - **80**	898	4.1%	1544	7.0%	20522	93.0%	0.00	0.00	0.00
80 - **90**	3620	16.4%	5164	23.4%	16902	76.6%	0.00	0.00	0.00
90 - **100**	9882	44.8%	15046	68.2%	7020	31.8%	0.00	0.00	0.00
100 - **110**	6502	29.5%	21548	97.7%	518	2.3%	0.00	0.00	0.00
110 - **120**	403	1.8%	21951	99.5%	115	0.5%	0.00	0.00	0.00
120 - **130**	77	0.3%	22028	99.8%	38	0.2%	0.00	0.00	0.00
130 - **140**	27	0.1%	22055	100.0%	11	0.0%	0.00	0.00	0.00
140 - **150**	8	0.0%	22063	100.0%	3	0.0%	0.00	0.00	0.00
150 - **160**	2	0.0%	22065	100.0%	1	0.0%	0.00	0.00	0.00
160 - **170**	1	0.0%	22066	100.0%	0	0.0%	0.00	0.00	0.00
170 - **180**	0	0.0%	22066	100.0%	0	0.0%	0.00	0.00	0.00
180 - **190**	0	0.0%	22066	100.0%	0	0.0%	0.00	0.00	0.00
190 - **200**	0	0.0%	22066	100.0%	0	0.0%	0.00	0.00	0.00

Total Speed Rating = 0.00
Total Moving Energy (Estimated) = 0.00

Speed limit fields

	Limit	Below		Above	
0	100 (PSL)	15046	68.2%	7020	31.8%

MetroCount Traffic Executive
Speed Statistics

SpeedStat-1746 -- English (ENA)

Datasets:

Site:	**[11972-17B2] 17B2 Cunningham Highway Aratula btn Morwincha Rd and Sawmill Rd <100>**
Direction:	7 - North bound A>B, South bound B>A. **Lane:** 0
Survey Duration:	7:25 Sunday, 1 November 2015 => 12:01 Monday, 9 November 2015
File:	11972-17B2 0 2015-11-09 1201.EC0 (Plus)
Identifier:	T8216TMK MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm:	Factory default
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**0:00 Monday, 2 November 2015 => 0:00 Monday, 9 November 2015**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range:	0 - 200 km/h.
Direction:	North (bound)
Separation:	All - (Headway)
Name:	Default Profile
Scheme:	Vehicle classification (AustRoads94)
Units:	Metric (meter, kilometer, m/s, km/h, kg, tonne)
In profile:	Vehicles = 23126 / 56487 (40.94%)

Speed Statistics

SpeedStat-1746
Site: 11972-17B2.0NS
Description: **17B2 Cunningham Highway Aratula btn Morwincha Rd and Sawmill Rd <100>**
Filter time: **0:00 Monday, 2 November 2015 => 0:00 Monday, 9 November 2015**
Scheme: Vehicle classification (AustRoads94)
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12 13) Dir(N) Sp(0,200) Headway(>0)

Vehicles = 23126
Posted speed limit = 100 km/h, Exceeding = 2734 (11.82%), Mean Exceeding = 104.02 km/h
Maximum = 174.9 km/h, **Minimum** = 39.0 km/h, **Mean** = 88.7 km/h
85% Speed = 98.6 km/h, **95% Speed** = 103.3 km/h, **Median** = 88.9 km/h
15 km/h Pace = 83 - 98, **Number in Pace** = 12979 (56.12%)
Variance = 96.48, **Standard Deviation** = 9.82 km/h

Speed Bins

Speed	Bin		Below		Above		Energy	vMult	n * vMult
0 - **10**	0	0.0%	0	0.0%	23126	100.0%	0.00	0.00	0.00
10 - **20**	0	0.0%	0	0.0%	23126	100.0%	0.00	0.00	0.00
20 - **30**	0	0.0%	0	0.0%	23126	100.0%	0.00	0.00	0.00
30 - **40**	1	0.0%	1	0.0%	23125	100.0%	0.00	0.00	0.00
40 - **50**	8	0.0%	9	0.0%	23117	100.0%	0.00	0.00	0.00
50 - **60**	104	0.4%	113	0.5%	23013	99.5%	0.00	0.00	0.00
60 - **70**	726	3.1%	839	3.6%	22287	96.4%	0.00	0.00	0.00
70 - **80**	3354	14.5%	4193	18.1%	18933	81.9%	0.00	0.00	0.00
80 - **90**	8343	36.1%	12536	54.2%	10590	45.8%	0.00	0.00	0.00
90 - **100**	7856	34.0%	20392	88.2%	2734	11.8%	0.00	0.00	0.00
100 - **110**	2544	11.0%	22936	99.2%	190	0.8%	0.00	0.00	0.00
110 - **120**	171	0.7%	23107	99.9%	19	0.1%	0.00	0.00	0.00
120 - **130**	13	0.1%	23120	100.0%	6	0.0%	0.00	0.00	0.00
130 - **140**	2	0.0%	23122	100.0%	4	0.0%	0.00	0.00	0.00
140 - **150**	3	0.0%	23125	100.0%	1	0.0%	0.00	0.00	0.00
150 - **160**	0	0.0%	23125	100.0%	1	0.0%	0.00	0.00	0.00
160 - **170**	0	0.0%	23125	100.0%	1	0.0%	0.00	0.00	0.00
170 - **180**	1	0.0%	23126	100.0%	0	0.0%	0.00	0.00	0.00
180 - **190**	0	0.0%	23126	100.0%	0	0.0%	0.00	0.00	0.00
190 - **200**	0	0.0%	23126	100.0%	0	0.0%	0.00	0.00	0.00

Total Speed Rating = 0.00
Total Moving Energy (Estimated) = 0.00

Speed limit fields

	Limit	Below		Above	
0	100 (PSL)	20392	88.2%	2734	11.8%

MetroCount Traffic Executive
Speed Statistics

SpeedStat-1746 -- English (ENA)

Datasets:

Site:	**[11972-17B2] 17B2 Cunningham Highway Aratula btn Morwincha Rd and Sawmill Rd <100>**
Direction:	7 - North bound A>B, South bound B>A. **Lane:** 0
Survey Duration:	7:25 Sunday, 1 November 2015 => 12:01 Monday, 9 November 2015
File:	11972-17B2 0 2015-11-09 1201.EC0 (Plus)
Identifier:	T8216TMK MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm:	Factory default
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**0:00 Monday, 2 November 2015 => 0:00 Monday, 9 November 2015**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range:	0 - 200 km/h.
Direction:	South (bound)
Separation:	All - (Headway)
Name:	Default Profile
Scheme:	Vehicle classification (AustRoads94)
Units:	Metric (meter, kilometer, m/s, km/h, kg, tonne)
In profile:	Vehicles = 23543 / 56487 (41.68%)

Speed Statistics

SpeedStat-1746
Site: 11972-17B2.0NS
Description: **17B2 Cunningham Highway Aratula btn Morwincha Rd and Sawmill Rd <100>**
Filter time: **0:00 Monday, 2 November 2015 => 0:00 Monday, 9 November 2015**
Scheme: Vehicle classification (AustRoads94)
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12 13) Dir(S) Sp(0,200) Headway(>0)

Vehicles = 23543
Posted speed limit = 100 km/h, Exceeding = 1134 (4.82%), Mean Exceeding = 104.01 km/h
Maximum = 170.7 km/h, **Minimum** = 39.9 km/h, **Mean** = 84.4 km/h
85% Speed = 94.0 km/h, **95% Speed** = 99.7 km/h, **Median** = 84.6 km/h
15 km/h Pace = 77 - 92, **Number in Pace** = 13532 (57.48%)
Variance = 93.65, **Standard Deviation** = 9.68 km/h

Speed Bins

Speed	Bin		Below		Above		Energy	vMult	n * vMult
0 - **10**	0	0.0%	0	0.0%	23543	100.0%	0.00	0.00	0.00
10 - **20**	0	0.0%	0	0.0%	23543	100.0%	0.00	0.00	0.00
20 - **30**	0	0.0%	0	0.0%	23543	100.0%	0.00	0.00	0.00
30 - **40**	1	0.0%	1	0.0%	23542	100.0%	0.00	0.00	0.00
40 - **50**	14	0.1%	15	0.1%	23528	99.9%	0.00	0.00	0.00
50 - **60**	161	0.7%	176	0.7%	23367	99.3%	0.00	0.00	0.00
60 - **70**	1487	6.3%	1663	7.1%	21880	92.9%	0.00	0.00	0.00
70 - **80**	5778	24.5%	7441	31.6%	16102	68.4%	0.00	0.00	0.00
80 - **90**	9429	40.1%	16870	71.7%	6673	28.3%	0.00	0.00	0.00
90 - **100**	5539	23.5%	22409	95.2%	1134	4.8%	0.00	0.00	0.00
100 - **110**	1058	4.5%	23467	99.7%	76	0.3%	0.00	0.00	0.00
110 - **120**	60	0.3%	23527	99.9%	16	0.1%	0.00	0.00	0.00
120 - **130**	9	0.0%	23536	100.0%	7	0.0%	0.00	0.00	0.00
130 - **140**	2	0.0%	23538	100.0%	5	0.0%	0.00	0.00	0.00
140 - **150**	2	0.0%	23540	100.0%	3	0.0%	0.00	0.00	0.00
150 - **160**	2	0.0%	23542	100.0%	1	0.0%	0.00	0.00	0.00
160 - **170**	0	0.0%	23542	100.0%	1	0.0%	0.00	0.00	0.00
170 - **180**	1	0.0%	23543	100.0%	0	0.0%	0.00	0.00	0.00
180 - **190**	0	0.0%	23543	100.0%	0	0.0%	0.00	0.00	0.00
190 - **200**	0	0.0%	23543	100.0%	0	0.0%	0.00	0.00	0.00

Total Speed Rating = 0.00
Total Moving Energy (Estimated) = 0.00

Speed limit fields

	Limit	Below		Above	
0	100 (PSL)	22409	95.2%	1134	4.8%

MetroCount Traffic Executive
Speed Statistics

SpeedStat-1746 -- English (ENA)

Datasets:

Site:	**[11972-17B3] 17B3 Cunningham Hwy Aratula btn Elizabeth Street and Charlwood Rd <70>**
Direction:	7 - North bound A>B, South bound B>A. **Lane:** 0
Survey Duration:	7:44 Sunday, 1 November 2015 => 12:45 Monday, 9 November 2015
File:	11972-17B3 0 2015-11-09 1245.EC0 (Plus)
Identifier:	T822PX3J MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm:	Factory default
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**0:00 Monday, 2 November 2015 => 0:00 Monday, 9 November 2015**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range:	0 - 200 km/h.
Direction:	North (bound)
Separation:	All - (Headway)
Name:	Default Profile
Scheme:	Vehicle classification (AustRoads94)
Units:	Metric (meter, kilometer, m/s, km/h, kg, tonne)
In profile:	Vehicles = 19758 / 48503 (40.74%)

Speed Statistics

SpeedStat-1746
Site: 11972-17B3.0NS
Description: **17B3 Cunningham Hwy Aratula btn Elizabeth Street and Charlwood Rd <70>**
Filter time: **0:00 Monday, 2 November 2015 => 0:00 Monday, 9 November 2015**
Scheme: Vehicle classification (AustRoads94)
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12 13) Dir(N) Sp(0,200) Headway(>0)

Vehicles = 19758
Posted speed limit = 70 km/h, Exceeding = 3085 (15.61%), Mean Exceeding = 73.79 km/h
Maximum = 125.5 km/h, **Minimum** = 9.5 km/h, **Mean** = 61.9 km/h
85% Speed = 69.8 km/h, **95% Speed** = 74.2 km/h, **Median** = 62.6 km/h
15 km/h Pace = 56 - 71, **Number in Pace** = 13199 (66.80%)
Variance = 80.62, **Standard Deviation** = 8.98 km/h

Speed Bins

Speed	Bin		Below		Above		Energy	vMult	n * vMult
0 - **10**	3	0.0%	3	0.0%	19755	100.0%	0.00	0.00	0.00
10 - **20**	16	0.1%	19	0.1%	19739	99.9%	0.00	0.00	0.00
20 - **30**	63	0.3%	82	0.4%	19676	99.6%	0.00	0.00	0.00
30 - **40**	330	1.7%	412	2.1%	19346	97.9%	0.00	0.00	0.00
40 - **50**	1455	7.4%	1867	9.4%	17891	90.6%	0.00	0.00	0.00
50 - **60**	5332	27.0%	7199	36.4%	12559	63.6%	0.00	0.00	0.00
60 - **70**	9474	48.0%	16673	84.4%	3085	15.6%	0.00	0.00	0.00
70 - **80**	2885	14.6%	19558	99.0%	200	1.0%	0.00	0.00	0.00
80 - **90**	176	0.9%	19734	99.9%	24	0.1%	0.00	0.00	0.00
90 - **100**	20	0.1%	19754	100.0%	4	0.0%	0.00	0.00	0.00
100 - **110**	3	0.0%	19757	100.0%	1	0.0%	0.00	0.00	0.00
110 - **120**	0	0.0%	19757	100.0%	1	0.0%	0.00	0.00	0.00
120 - **130**	1	0.0%	19758	100.0%	0	0.0%	0.00	0.00	0.00
130 - **140**	0	0.0%	19758	100.0%	0	0.0%	0.00	0.00	0.00
140 - **150**	0	0.0%	19758	100.0%	0	0.0%	0.00	0.00	0.00
150 - **160**	0	0.0%	19758	100.0%	0	0.0%	0.00	0.00	0.00
160 - **170**	0	0.0%	19758	100.0%	0	0.0%	0.00	0.00	0.00
170 - **180**	0	0.0%	19758	100.0%	0	0.0%	0.00	0.00	0.00
180 - **190**	0	0.0%	19758	100.0%	0	0.0%	0.00	0.00	0.00
190 - **200**	0	0.0%	19758	100.0%	0	0.0%	0.00	0.00	0.00

Total Speed Rating = 0.00
Total Moving Energy (Estimated) = 0.00

Speed limit fields

	Limit	Below		Above	
0	70 (PSL)	16673	84.4%	3085	15.6%

MetroCount Traffic Executive
Speed Statistics

SpeedStat-1746 -- English (ENA)

Datasets:

Site:	**[11972-17B3] 17B3 Cunningham Hwy Aratula btn Elizabeth Street and Charlwood Rd <70>**
Direction:	7 - North bound A>B, South bound B>A. **Lane:** 0
Survey Duration:	7:44 Sunday, 1 November 2015 => 12:45 Monday, 9 November 2015
File:	11972-17B3 0 2015-11-09 1245.EC0 (Plus)
Identifier:	T822PX3J MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm:	Factory default
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**0:00 Monday, 2 November 2015 => 0:00 Monday, 9 November 2015**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range:	0 - 200 km/h.
Direction:	South (bound)
Separation:	All - (Headway)
Name:	Default Profile
Scheme:	Vehicle classification (AustRoads94)
Units:	Metric (meter, kilometer, m/s, km/h, kg, tonne)
In profile:	Vehicles = 19713 / 48503 (40.64%)

Speed Statistics

SpeedStat-1746
Site: 11972-17B3.0NS
Description: **17B3 Cunningham Hwy Aratula btn Elizabeth Street and Charlwood Rd <70>**
Filter time: **0:00 Monday, 2 November 2015 => 0:00 Monday, 9 November 2015**
Scheme: Vehicle classification (AustRoads94)
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12 13) Dir(S) Sp(0,200) Headway(>0)

Vehicles = 19713
Posted speed limit = 70 km/h, Exceeding = 3427 (17.38%), Mean Exceeding = 73.66 km/h
Maximum = 161.8 km/h, **Minimum** = 5.1 km/h, **Mean** = 62.2 km/h
85% Speed = 70.2 km/h, **95% Speed** = 74.2 km/h, **Median** = 63.7 km/h
15 km/h Pace = 57 - 72, **Number in Pace** = 13357 (67.76%)
Variance = 94.00, **Standard Deviation** = 9.70 km/h

Speed Bins

Speed	Bin		Below		Above		Energy	vMult	n * vMult
0 - **10**	6	0.0%	6	0.0%	19707	100.0%	0.00	0.00	0.00
10 - **20**	46	0.2%	52	0.3%	19661	99.7%	0.00	0.00	0.00
20 - **30**	174	0.9%	226	1.1%	19487	98.9%	0.00	0.00	0.00
30 - **40**	386	2.0%	612	3.1%	19101	96.9%	0.00	0.00	0.00
40 - **50**	1287	6.5%	1899	9.6%	17814	90.4%	0.00	0.00	0.00
50 - **60**	4546	23.1%	6445	32.7%	13268	67.3%	0.00	0.00	0.00
60 - **70**	9841	49.9%	16286	82.6%	3427	17.4%	0.00	0.00	0.00
70 - **80**	3196	16.2%	19482	98.8%	231	1.2%	0.00	0.00	0.00
80 - **90**	205	1.0%	19687	99.9%	26	0.1%	0.00	0.00	0.00
90 - **100**	20	0.1%	19707	100.0%	6	0.0%	0.00	0.00	0.00
100 - **110**	2	0.0%	19709	100.0%	4	0.0%	0.00	0.00	0.00
110 - **120**	1	0.0%	19710	100.0%	3	0.0%	0.00	0.00	0.00
120 - **130**	2	0.0%	19712	100.0%	1	0.0%	0.00	0.00	0.00
130 - **140**	0	0.0%	19712	100.0%	1	0.0%	0.00	0.00	0.00
140 - **150**	0	0.0%	19712	100.0%	1	0.0%	0.00	0.00	0.00
150 - **160**	0	0.0%	19712	100.0%	1	0.0%	0.00	0.00	0.00
160 - **170**	1	0.0%	19713	100.0%	0	0.0%	0.00	0.00	0.00
170 - **180**	0	0.0%	19713	100.0%	0	0.0%	0.00	0.00	0.00
180 - **190**	0	0.0%	19713	100.0%	0	0.0%	0.00	0.00	0.00
190 - **200**	0	0.0%	19713	100.0%	0	0.0%	0.00	0.00	0.00

Total Speed Rating = 0.00
Total Moving Energy (Estimated) = 0.00

Speed limit fields

	Limit	Below		Above	
0	70 (PSL)	16286	82.6%	3427	17.4%

MetroCount Traffic Executive
Speed Statistics

SpeedStat-1746 -- English (ENA)

Datasets:

Site:	**[11972-17B4] 17B4 Cunningham Highway Aratula north of Charlwood Rd <70>**
Direction:	7 - North bound A>B, South bound B>A. **Lane:** 0
Survey Duration:	8:09 Sunday, 1 November 2015 => 12:08 Monday, 9 November 2015
File:	11972-17B4 0 2015-11-09 1209.EC0 (Plus)
Identifier:	N758PP3V MC56-L4 [MC55] (c)Microcom 19Sep03
Algorithm:	Factory default
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**0:00 Monday, 2 November 2015 => 0:00 Monday, 9 November 2015**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range:	0 - 200 km/h.
Direction:	North (bound)
Separation:	All - (Headway)
Name:	Default Profile
Scheme:	Vehicle classification (AustRoads94)
Units:	Metric (meter, kilometer, m/s, km/h, kg, tonne)
In profile:	Vehicles = 19194 / 46820 (41.00%)

Speed Statistics

SpeedStat-1746
Site: 11972-17B4.0NS
Description: **17B4 Cunningham Highway Aratula north of Charlwood Rd <70>**
Filter time: **0:00 Monday, 2 November 2015 => 0:00 Monday, 9 November 2015**
Scheme: Vehicle classification (AustRoads94)
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12 13) Dir(N) Sp(0,200) Headway(>0)

Vehicles = 19194
Posted speed limit = 70 km/h, Exceeding = 8919 (46.47%), Mean Exceeding = 76.28 km/h
Maximum = 140.6 km/h, **Minimum** = 8.9 km/h, **Mean** = 69.3 km/h
85% Speed = 77.4 km/h, **95% Speed** = 83.2 km/h, **Median** = 69.1 km/h
15 km/h Pace = 62 - 77, **Number in Pace** = 13139 (68.45%)
Variance = 78.20, **Standard Deviation** = 8.84 km/h

Speed Bins

Speed	Bin		Below		Above		Energy	vMult	n * vMult
0 - 10	3	0.0%	3	0.0%	19191	100.0%	0.00	0.00	0.00
10 - 20	5	0.0%	8	0.0%	19186	100.0%	0.00	0.00	0.00
20 - 30	7	0.0%	15	0.1%	19179	99.9%	0.00	0.00	0.00
30 - 40	50	0.3%	65	0.3%	19129	99.7%	0.00	0.00	0.00
40 - 50	461	2.4%	526	2.7%	18668	97.3%	0.00	0.00	0.00
50 - 60	1662	8.7%	2188	11.4%	17006	88.6%	0.00	0.00	0.00
60 - 70	8087	42.1%	10275	53.5%	8919	46.5%	0.00	0.00	0.00
70 - 80	7133	37.2%	17408	90.7%	1786	9.3%	0.00	0.00	0.00
80 - 90	1527	8.0%	18935	98.7%	259	1.3%	0.00	0.00	0.00
90 - 100	225	1.2%	19160	99.8%	34	0.2%	0.00	0.00	0.00
100 - 110	30	0.2%	19190	100.0%	4	0.0%	0.00	0.00	0.00
110 - 120	2	0.0%	19192	100.0%	2	0.0%	0.00	0.00	0.00
120 - 130	1	0.0%	19193	100.0%	1	0.0%	0.00	0.00	0.00
130 - 140	0	0.0%	19193	100.0%	1	0.0%	0.00	0.00	0.00
140 - 150	1	0.0%	19194	100.0%	0	0.0%	0.00	0.00	0.00
150 - 160	0	0.0%	19194	100.0%	0	0.0%	0.00	0.00	0.00
160 - 170	0	0.0%	19194	100.0%	0	0.0%	0.00	0.00	0.00
170 - 180	0	0.0%	19194	100.0%	0	0.0%	0.00	0.00	0.00
180 - 190	0	0.0%	19194	100.0%	0	0.0%	0.00	0.00	0.00
190 - 200	0	0.0%	19194	100.0%	0	0.0%	0.00	0.00	0.00

Total Speed Rating = 0.00
Total Moving Energy (Estimated) = 0.00

Speed limit fields

	Limit	Below		Above	
0	70 (PSL)	10275	53.5%	8919	46.5%

MetroCount Traffic Executive
Speed Statistics

SpeedStat-1746 -- English (ENA)

Datasets:

Site:	**[11972-17B4] 17B4 Cunningham Highway Aratula north of Charlwood Rd <70>**
Direction:	7 - North bound A>B, South bound B>A. **Lane:** 0
Survey Duration:	8:09 Sunday, 1 November 2015 => 12:08 Monday, 9 November 2015
File:	11972-17B4 0 2015-11-09 1209.EC0 (Plus)
Identifier:	N758PP3V MC56-L4 [MC55] (c)Microcom 19Sep03
Algorithm:	Factory default
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**0:00 Monday, 2 November 2015 => 0:00 Monday, 9 November 2015**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range:	0 - 200 km/h.
Direction:	South (bound)
Separation:	All - (Headway)
Name:	Default Profile
Scheme:	Vehicle classification (AustRoads94)
Units:	Metric (meter, kilometer, m/s, km/h, kg, tonne)
In profile:	Vehicles = 19160 / 46820 (40.92%)

Speed Statistics

SpeedStat-1746
Site: 11972-17B4.0NS
Description: **17B4 Cunningham Highway Aratula north of Charlwood Rd <70>**
Filter time: **0:00 Monday, 2 November 2015 => 0:00 Monday, 9 November 2015**
Scheme: Vehicle classification (AustRoads94)
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12 13) Dir(S) Sp(0,200) Headway(>0)

Vehicles = 19160
Posted speed limit = 70 km/h, Exceeding = 11528 (60.17%), Mean Exceeding = 77.50 km/h
Maximum = 139.9 km/h, **Minimum** = 19.3 km/h, **Mean** = 71.9 km/h
85% Speed = 80.3 km/h, **95% Speed** = 86.0 km/h, **Median** = 71.6 km/h
15 km/h Pace = 65 - 80, **Number in Pace** = 12409 (64.77%)
Variance = 82.54, **Standard Deviation** = 9.09 km/h

Speed Bins

Speed	Bin		Below		Above		Energy	vMult	n * vMult
0 - **10**	0	0.0%	0	0.0%	19160	100.0%	0.00	0.00	0.00
10 - **20**	1	0.0%	1	0.0%	19159	100.0%	0.00	0.00	0.00
20 - **30**	0	0.0%	1	0.0%	19159	100.0%	0.00	0.00	0.00
30 - **40**	27	0.1%	28	0.1%	19132	99.9%	0.00	0.00	0.00
40 - **50**	270	1.4%	298	1.6%	18862	98.4%	0.00	0.00	0.00
50 - **60**	1363	7.1%	1661	8.7%	17499	91.3%	0.00	0.00	0.00
60 - **70**	5971	31.2%	7632	39.8%	11528	60.2%	0.00	0.00	0.00
70 - **80**	8345	43.6%	15977	83.4%	3183	16.6%	0.00	0.00	0.00
80 - **90**	2751	14.4%	18728	97.7%	432	2.3%	0.00	0.00	0.00
90 - **100**	370	1.9%	19098	99.7%	62	0.3%	0.00	0.00	0.00
100 - **110**	47	0.2%	19145	99.9%	15	0.1%	0.00	0.00	0.00
110 - **120**	11	0.1%	19156	100.0%	4	0.0%	0.00	0.00	0.00
120 - **130**	2	0.0%	19158	100.0%	2	0.0%	0.00	0.00	0.00
130 - **140**	2	0.0%	19160	100.0%	0	0.0%	0.00	0.00	0.00
140 - **150**	0	0.0%	19160	100.0%	0	0.0%	0.00	0.00	0.00
150 - **160**	0	0.0%	19160	100.0%	0	0.0%	0.00	0.00	0.00
160 - **170**	0	0.0%	19160	100.0%	0	0.0%	0.00	0.00	0.00
170 - **180**	0	0.0%	19160	100.0%	0	0.0%	0.00	0.00	0.00
180 - **190**	0	0.0%	19160	100.0%	0	0.0%	0.00	0.00	0.00
190 - **200**	0	0.0%	19160	100.0%	0	0.0%	0.00	0.00	0.00

Total Speed Rating = 0.00
Total Moving Energy (Estimated) = 0.00

Speed limit fields

	Limit	Below		Above	
0	70 (PSL)	7632	39.8%	11528	60.2%

MetroCount Traffic Executive
Speed Statistics

SpeedStat-1746 -- English (ENA)

Datasets:

Site:	**[11972-17B5] 17B5 Cunningham Highway Aratula North of Lake Moogerah Rd <100>**
Direction:	7 - North bound A>B, South bound B>A. **Lane:** 0
Survey Duration:	8:34 Sunday, 1 November 2015 => 12:23 Monday, 9 November 2015
File:	11972-17B5 0 2015-11-09 1223.EC0 (Plus)
Identifier:	FR530XT8 MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm:	Factory default
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**0:00 Monday, 2 November 2015 => 0:00 Monday, 9 November 2015**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range:	0 - 200 km/h.
Direction:	North (bound)
Separation:	All - (Headway)
Name:	Default Profile
Scheme:	Vehicle classification (AustRoads94)
Units:	Metric (meter, kilometer, m/s, km/h, kg, tonne)
In profile:	Vehicles = 17229 / 41852 (41.17%)

Speed Statistics

SpeedStat-1746
Site: 11972-17B5.0NS
Description: **17B5 Cunningham Highway Aratula North of Lake Moogerah Rd <100>**
Filter time: **0:00 Monday, 2 November 2015 => 0:00 Monday, 9 November 2015**
Scheme: Vehicle classification (AustRoads94)
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12 13) Dir(N) Sp(0,200) Headway(>0)

Vehicles = 17229
Posted speed limit = 100 km/h, Exceeding = 7309 (42.42%), Mean Exceeding = 104.95 km/h
Maximum = 177.8 km/h, **Minimum** = 26.6 km/h, **Mean** = 98.6 km/h
85% Speed = 104.8 km/h, **95% Speed** = 109.8 km/h, **Median** = 98.6 km/h
15 km/h Pace = 91 - 106, **Number in Pace** = 12959 (75.22%)
Variance = 57.39, **Standard Deviation** = 7.58 km/h

Speed Bins

Speed	Bin		Below		Above		Energy	vMult	n * vMult
0 - 10	0	0.0%	0	0.0%	17229	100.0%	0.00	0.00	0.00
10 - 20	0	0.0%	0	0.0%	17229	100.0%	0.00	0.00	0.00
20 - 30	1	0.0%	1	0.0%	17228	100.0%	0.00	0.00	0.00
30 - 40	0	0.0%	1	0.0%	17228	100.0%	0.00	0.00	0.00
40 - 50	1	0.0%	2	0.0%	17227	100.0%	0.00	0.00	0.00
50 - 60	2	0.0%	4	0.0%	17225	100.0%	0.00	0.00	0.00
60 - 70	22	0.1%	26	0.2%	17203	99.8%	0.00	0.00	0.00
70 - 80	213	1.2%	239	1.4%	16990	98.6%	0.00	0.00	0.00
80 - 90	1614	9.4%	1853	10.8%	15376	89.2%	0.00	0.00	0.00
90 - 100	8067	46.8%	9920	57.6%	7309	42.4%	0.00	0.00	0.00
100 - 110	6457	37.5%	16377	95.1%	852	4.9%	0.00	0.00	0.00
110 - 120	700	4.1%	17077	99.1%	152	0.9%	0.00	0.00	0.00
120 - 130	119	0.7%	17196	99.8%	33	0.2%	0.00	0.00	0.00
130 - 140	19	0.1%	17215	99.9%	14	0.1%	0.00	0.00	0.00
140 - 150	9	0.1%	17224	100.0%	5	0.0%	0.00	0.00	0.00
150 - 160	3	0.0%	17227	100.0%	2	0.0%	0.00	0.00	0.00
160 - 170	0	0.0%	17227	100.0%	2	0.0%	0.00	0.00	0.00
170 - 180	2	0.0%	17229	100.0%	0	0.0%	0.00	0.00	0.00
180 - 190	0	0.0%	17229	100.0%	0	0.0%	0.00	0.00	0.00
190 - 200	0	0.0%	17229	100.0%	0	0.0%	0.00	0.00	0.00

Total Speed Rating = 0.00
Total Moving Energy (Estimated) = 0.00

Speed limit fields

	Limit	Below		Above	
0	100 (PSL)	9920	57.6%	7309	42.4%

MetroCount Traffic Executive
Speed Statistics

SpeedStat-1746 -- English (ENA)

Datasets:

Site:	**[11972-17B5] 17B5 Cunningham Highway Aratula North of Lake Moogerah Rd <100>**
Direction:	7 - North bound A>B, South bound B>A. **Lane:** 0
Survey Duration:	8:34 Sunday, 1 November 2015 => 12:23 Monday, 9 November 2015
File:	11972-17B5 0 2015-11-09 1223.EC0 (Plus)
Identifier:	FR530XT8 MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm:	Factory default
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**0:00 Monday, 2 November 2015 => 0:00 Monday, 9 November 2015**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range:	0 - 200 km/h.
Direction:	South (bound)
Separation:	All - (Headway)
Name:	Default Profile
Scheme:	Vehicle classification (AustRoads94)
Units:	Metric (meter, kilometer, m/s, km/h, kg, tonne)
In profile:	Vehicles = 17004 / 41852 (40.63%)

Speed Statistics

SpeedStat-1746
Site: 11972-17B5.0NS
Description: **17B5 Cunningham Highway Aratula North of Lake Moogerah Rd <100>**
Filter time: **0:00 Monday, 2 November 2015 => 0:00 Monday, 9 November 2015**
Scheme: Vehicle classification (AustRoads94)
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12 13) Dir(S) Sp(0,200) Headway(>0)

Vehicles = 17004
Posted speed limit = 100 km/h, Exceeding = 6548 (38.51%), Mean Exceeding = 104.45 km/h
Maximum = 182.8 km/h, **Minimum** = 35.5 km/h, **Mean** = 97.1 km/h
85% Speed = 104.0 km/h, **95% Speed** = 108.0 km/h, **Median** = 97.9 km/h
15 km/h Pace = 91 - 106, **Number in Pace** = 12111 (71.22%)
Variance = 67.38, **Standard Deviation** = 8.21 km/h

Speed Bins

Speed	Bin		Below		Above		Energy	vMult	n * vMult
0 - **10**	0	0.0%	0	0.0%	17004	100.0%	0.00	0.00	0.00
10 - **20**	0	0.0%	0	0.0%	17004	100.0%	0.00	0.00	0.00
20 - **30**	0	0.0%	0	0.0%	17004	100.0%	0.00	0.00	0.00
30 - **40**	2	0.0%	2	0.0%	17002	100.0%	0.00	0.00	0.00
40 - **50**	8	0.0%	10	0.1%	16994	99.9%	0.00	0.00	0.00
50 - **60**	10	0.1%	20	0.1%	16984	99.9%	0.00	0.00	0.00
60 - **70**	56	0.3%	76	0.4%	16928	99.6%	0.00	0.00	0.00
70 - **80**	406	2.4%	482	2.8%	16522	97.2%	0.00	0.00	0.00
80 - **90**	2435	14.3%	2917	17.2%	14087	82.8%	0.00	0.00	0.00
90 - **100**	7539	44.3%	10456	61.5%	6548	38.5%	0.00	0.00	0.00
100 - **110**	5980	35.2%	16436	96.7%	568	3.3%	0.00	0.00	0.00
110 - **120**	483	2.8%	16919	99.5%	85	0.5%	0.00	0.00	0.00
120 - **130**	65	0.4%	16984	99.9%	20	0.1%	0.00	0.00	0.00
130 - **140**	17	0.1%	17001	100.0%	3	0.0%	0.00	0.00	0.00
140 - **150**	2	0.0%	17003	100.0%	1	0.0%	0.00	0.00	0.00
150 - **160**	0	0.0%	17003	100.0%	1	0.0%	0.00	0.00	0.00
160 - **170**	0	0.0%	17003	100.0%	1	0.0%	0.00	0.00	0.00
170 - **180**	0	0.0%	17003	100.0%	1	0.0%	0.00	0.00	0.00
180 - **190**	1	0.0%	17004	100.0%	0	0.0%	0.00	0.00	0.00
190 - **200**	0	0.0%	17004	100.0%	0	0.0%	0.00	0.00	0.00

Total Speed Rating = 0.00
Total Moving Energy (Estimated) = 0.00

Speed limit fields

	Limit	Below		Above	
0	100 (PSL)	10456	61.5%	6548	38.5%

Mount Lindesay Highway

Queensland Government Transport and Main Roads

21-Feb-2014 11:32

Traffic Analysis and Reporting System

Site Daily Speed Statistics

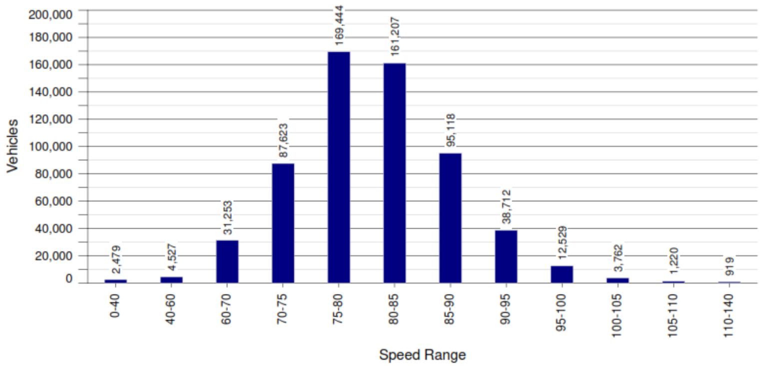
Region 210 - South Coast   Road Section 25A - Mount Lindesay Highway (Brisbane-beaudesert)
Site 136154 - 400m south of Browns Plains Road exit   TDist 0.570km   Speed Limit Unknown
Traffic Class 00 - All Vehicles   Wednesday 13-Nov-2013 - Wednesday 04-Dec-2013

TARS

Page 2 of 3 (2 of 19)

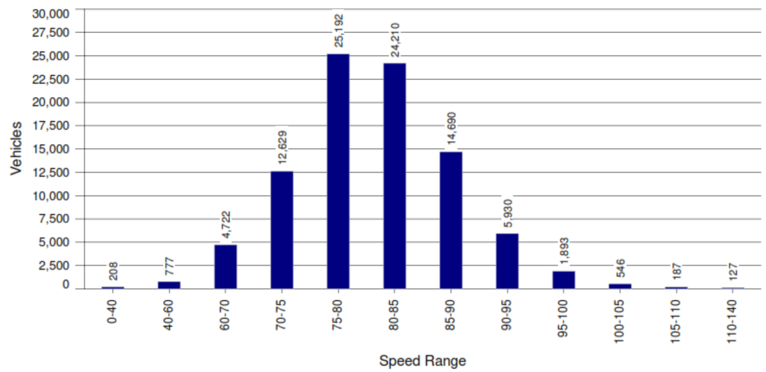
All Days

Vehicles	608,793	Median	80.3
Mean	80.2	85th Percentile	88.2
Std. Deviation	8.8	15km/h Pace	75-90



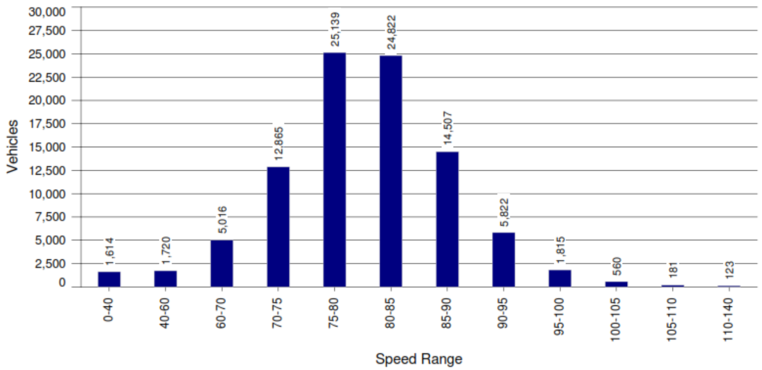
Monday

Vehicles	91,111	Median	80.4
Mean	80.4	85th Percentile	88.3
Std. Deviation	8.5	15km/h Pace	75-90



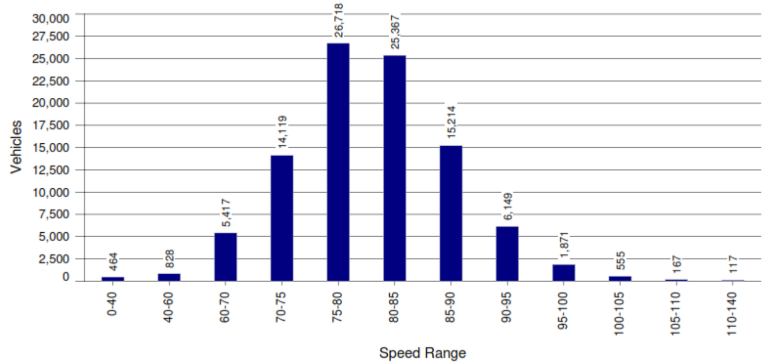
Tuesday

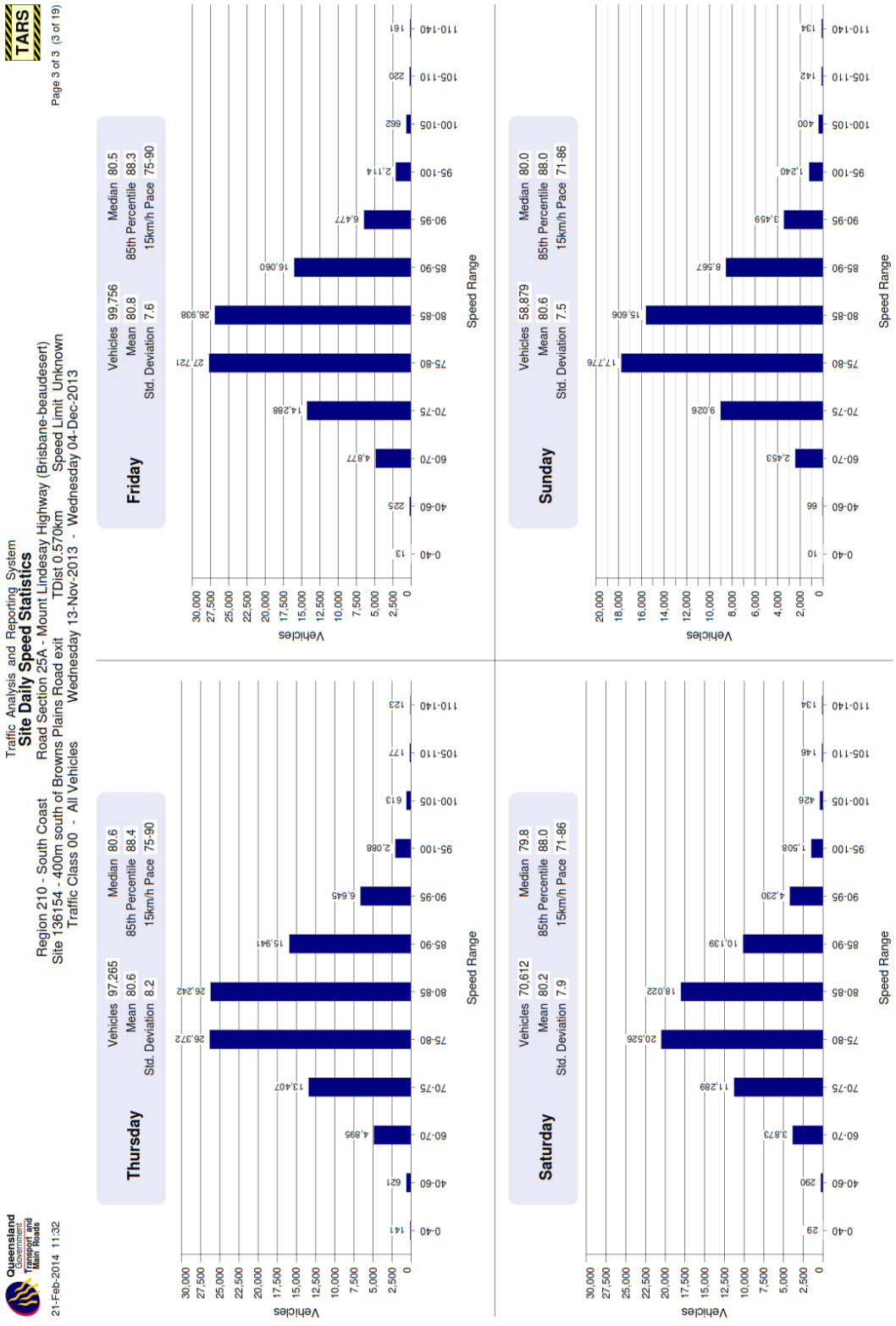
Vehicles	94,184	Median	80.1
Mean	79.1	85th Percentile	88.1
Std. Deviation	11.5	15km/h Pace	75-90



Wednesday

Vehicles	96,986	Median	80.2
Mean	80.0	85th Percentile	88.1
Std. Deviation	9.0	15km/h Pace	75-90




Traffic Analysis and Reporting System
Site Daily Speed Statistics
Region 210 - South Coast
Site 136154 - 400m south of Browns Plains Road exit
Traffic Class 00 - All Vehicles
Road Section 25A - Mount Lindesay Highway (Brisbane-beaudesert)
TDist 0.570km
Wednesday 13-Nov-2013 - Wednesday 04-Dec-2013
Speed Limit Unknown
Queensland Government Transport and Main Roads
TARS
21-Feb-2014 11:32
Page 3 of 3 (3 of 19)
Thursday
Vehicles 97,265
Mean 80.6
Std. Deviation 8.2
Median 80.6
85th Percentile 88.4
15km/h Pace 75-90
Friday
Vehicles 99,756
Mean 80.8
Std. Deviation 7.6
Median 80.5
85th Percentile 88.3
15km/h Pace 75-90
Saturday
Vehicles 70,612
Mean 80.2
Std. Deviation 7.9
Median 79.8
85th Percentile 88.0
15km/h Pace 71-86
Sunday
Vehicles 58,879
Mean 80.6
Std. Deviation 7.5
Median 80.0
85th Percentile 88.0
15km/h Pace 71-86
Vehicles
Speed Range
0-40
40-60
60-70
70-75
75-80
80-85
85-90
90-95
95-100
100-105
105-110
110-140

Queensland Government
Transport and Main Roads

21-Feb-2014 11:32

Traffic Analysis and Reporting System

Site Daily Speed Statistics

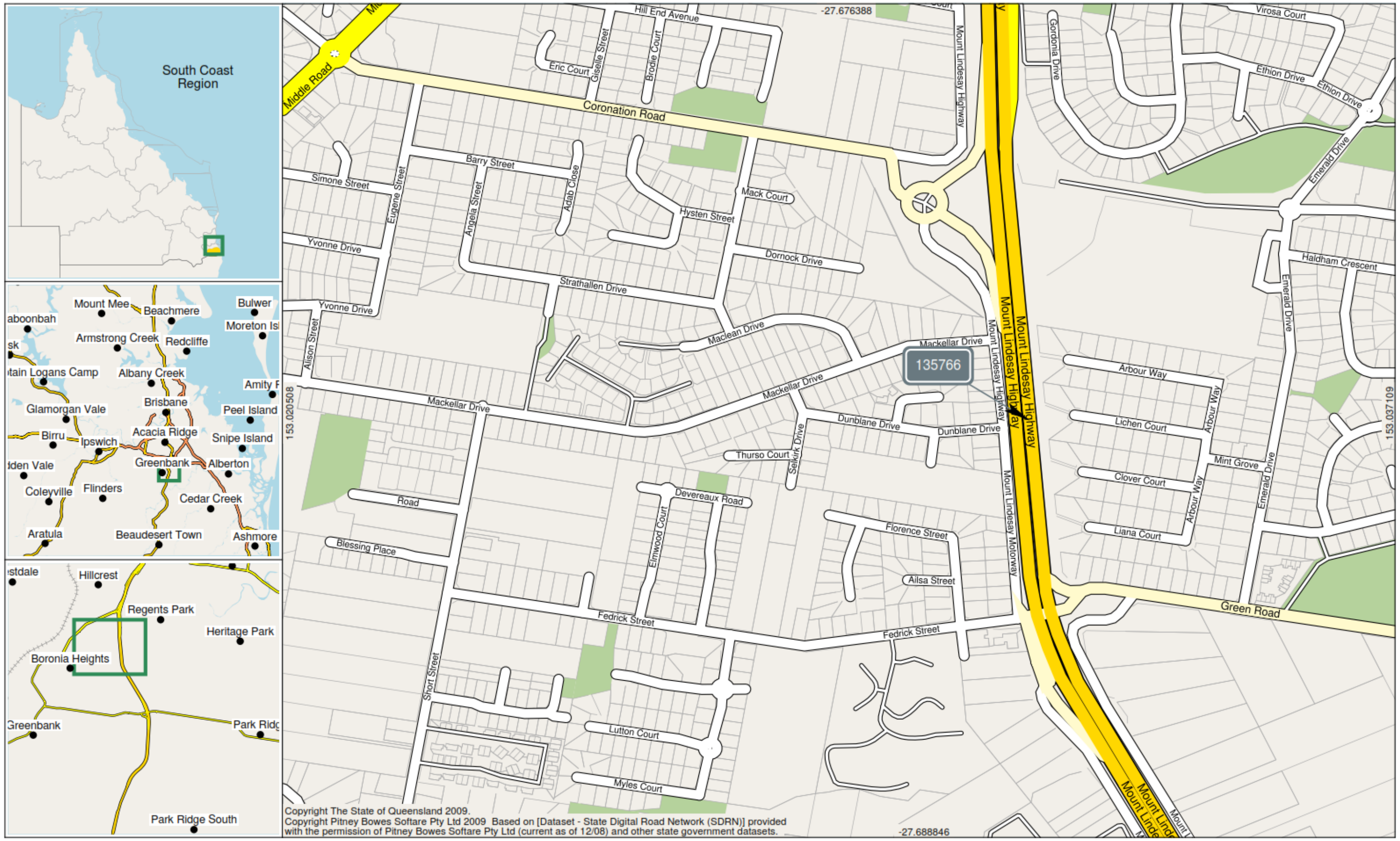
Region 210 - South Coast   Road Section 25A - Mount Lindesay Highway (Brisbane-beaudesert)

Site 135766 - 350m North of Green Rd   TDist 3.550km   Speed Limit Unknown

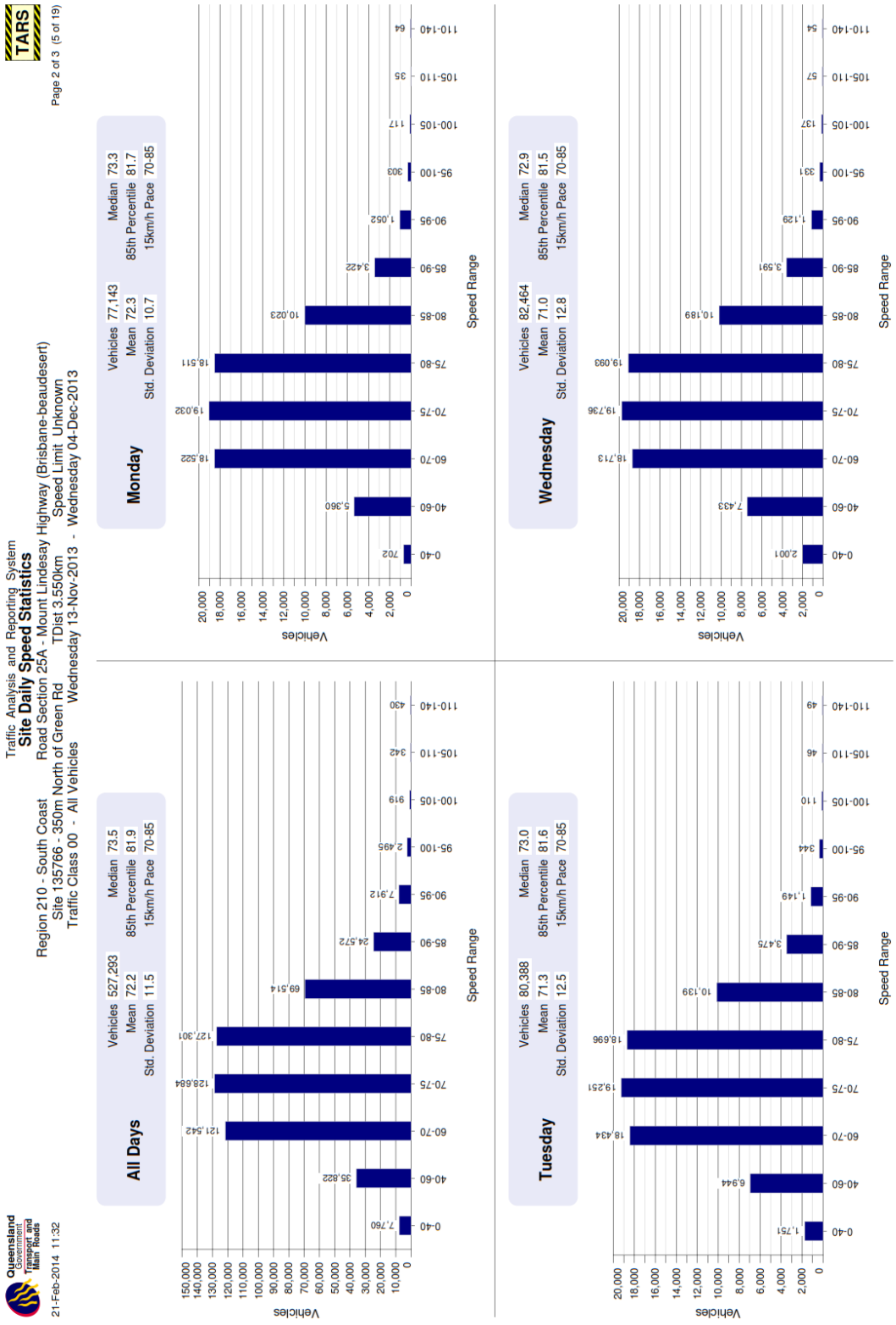
Traffic Class 00 - All Vehicles   Wednesday 13-Nov-2013 - Wednesday 04-Dec-2013

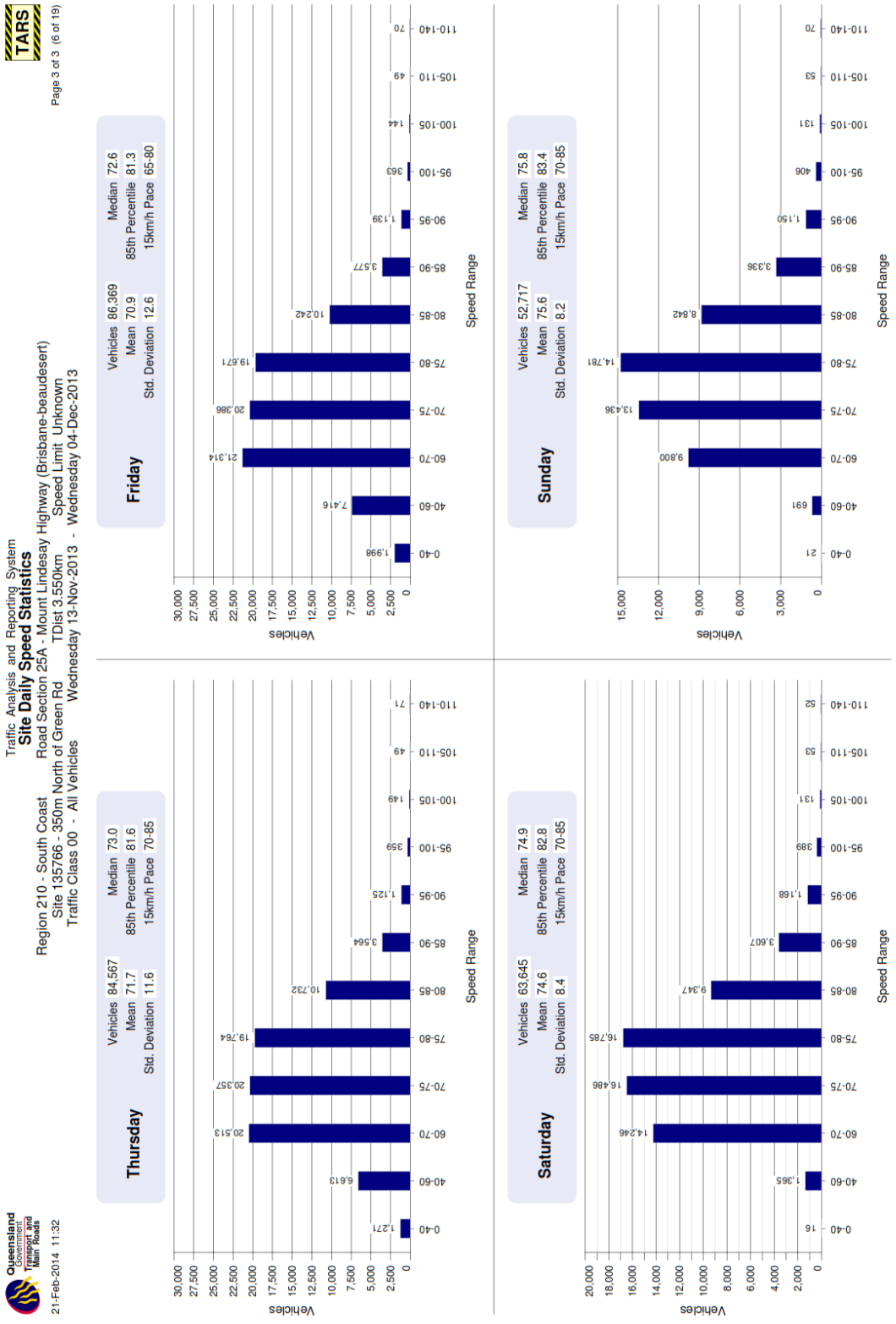
TARS

Page 1 of 3 (4 of 19)



South Coast Region
Mount Mee
Beachmere
Bulwer
Moreton Is
Armstrong Creek
Redcliffe
Albany Creek
Amity F
Glamorgan Vale
Brisbane
Peel Island
Birru
Ipswich
Acacia Ridge
Snipe Island
Greenbank
Alberton
Coleyville
Flinders
Cedar Creek
Aratula
Beaudesert Town
Ashmore
Hillcrest
Regents Park
Heritage Park
Boronia Heights
Greenbank
Park Ridge South
Middle Road
Coronation Road
Mount Lindesay Highway
Mount Lindesay Motorway
Green Road
Mackellar Drive
Fedrick Street
135766
-27.676388
-27.688846
153.020508
153.037109
Copyright The State of Queensland 2009.
Copyright Pitney Bowes Softare Pty Ltd 2009 Based on [Dataset - State Digital Road Network (SDRN)] provided with the permission of Pitney Bowes Softare Pty Ltd (current as of 12/08) and other state government datasets.


Traffic Analysis and Reporting System
Site Daily Speed Statistics
Region 210 - South Coast
Site 135766 - 350m North of Green Rd
Traffic Class 00 - All Vehicles
Road Section 25A - Mount Lindesay Highway (Brisbane-beaudesert)
TDist 3.550km
Wednesday 13-Nov-2013 - Wednesday 04-Dec-2013
Speed Limit Unknown
TARS
Page 2 of 3 (5 of 19)
21-Feb-2014 11:32
All Days
Vehicles 527,293
Mean 72.2
Std. Deviation 11.5
Median 73.5
85th Percentile 81.9
15km/h Pace 70-85
Monday
Vehicles 77,143
Mean 72.3
Std. Deviation 10.7
Median 73.3
85th Percentile 81.7
15km/h Pace 70-85
Tuesday
Vehicles 80,388
Mean 71.3
Std. Deviation 12.5
Median 73.0
85th Percentile 81.6
15km/h Pace 70-85
Wednesday
Vehicles 82,464
Mean 71.0
Std. Deviation 12.8
Median 72.9
85th Percentile 81.5
15km/h Pace 70-85
Vehicles
Speed Range
0-40
40-60
60-70
70-75
75-80
80-85
85-90
90-95
95-100
100-105
105-110
110-140


Traffic Analysis and Reporting System
Site Daily Speed Statistics
Region 210 - South Coast
Road Section 25A - Mount Lindesay Highway (Brisbane-beaudesert)
Site 135766 - 350m North of Green Rd
TDist 3.550km
Speed Limit Unknown
Traffic Class 00 - All Vehicles
Wednesday 13-Nov-2013 - Wednesday 04-Dec-2013
Queensland Government Transport and Main Roads
TARS
21-Feb-2014 11:32
Page 3 of 3 (6 of 19)
Thursday
Vehicles 84,567
Mean 71.7
Std. Deviation 11.6
Median 73.0
85th Percentile 81.6
15km/h Pace 70-85
Friday
Vehicles 86,369
Mean 70.9
Std. Deviation 12.6
Median 72.6
85th Percentile 81.3
15km/h Pace 65-80
Saturday
Vehicles 63,645
Mean 74.6
Std. Deviation 8.4
Median 74.9
85th Percentile 82.8
15km/h Pace 70-85
Sunday
Vehicles 52,717
Mean 75.6
Std. Deviation 8.2
Median 75.8
85th Percentile 83.4
15km/h Pace 70-85
Vehicles
Speed Range
0-40
40-60
60-70
70-75
75-80
80-85
85-90
90-95
95-100
100-105
105-110
110-140

Queensland Government
Transport and Main Roads

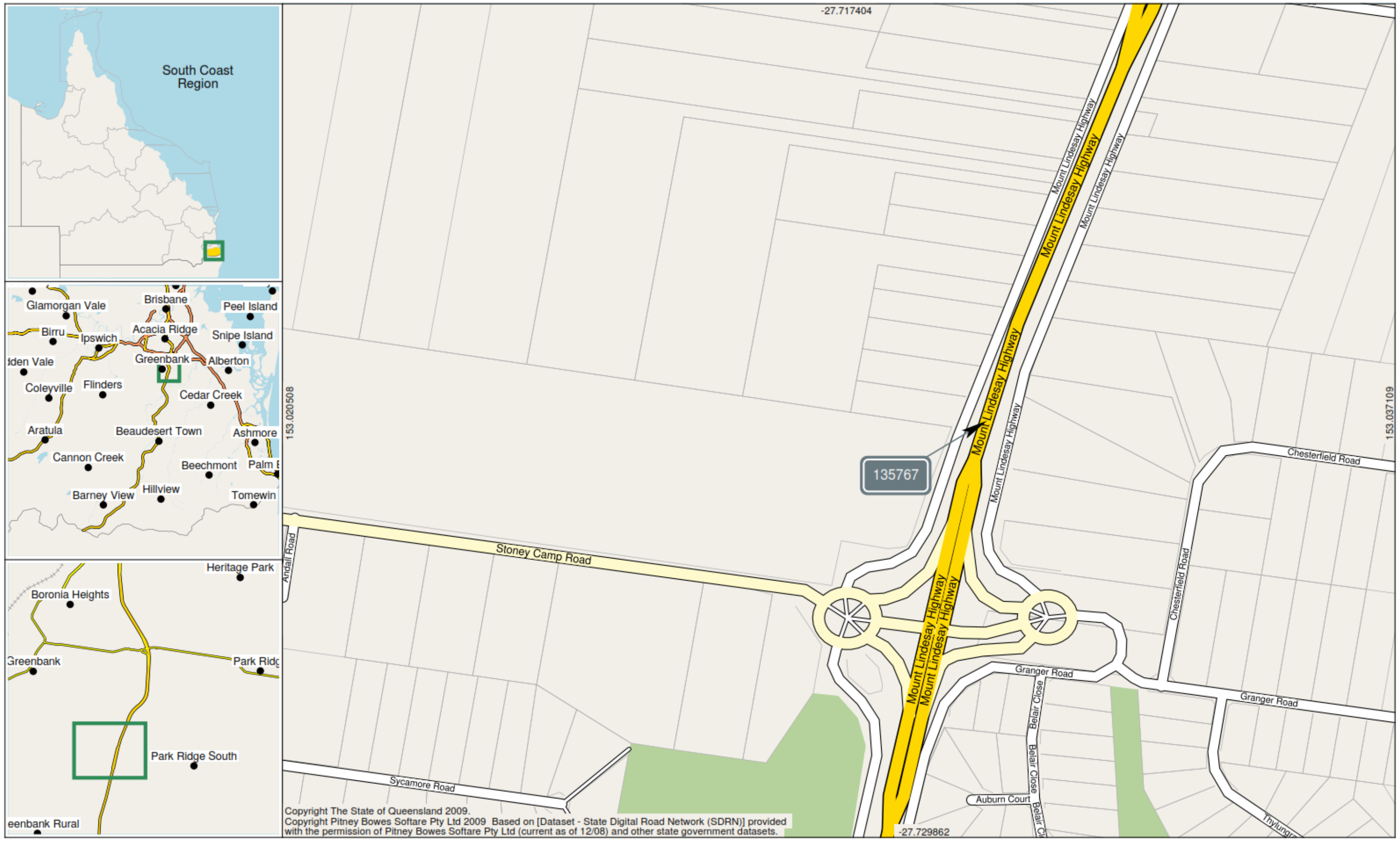
21-Feb-2014 11:32

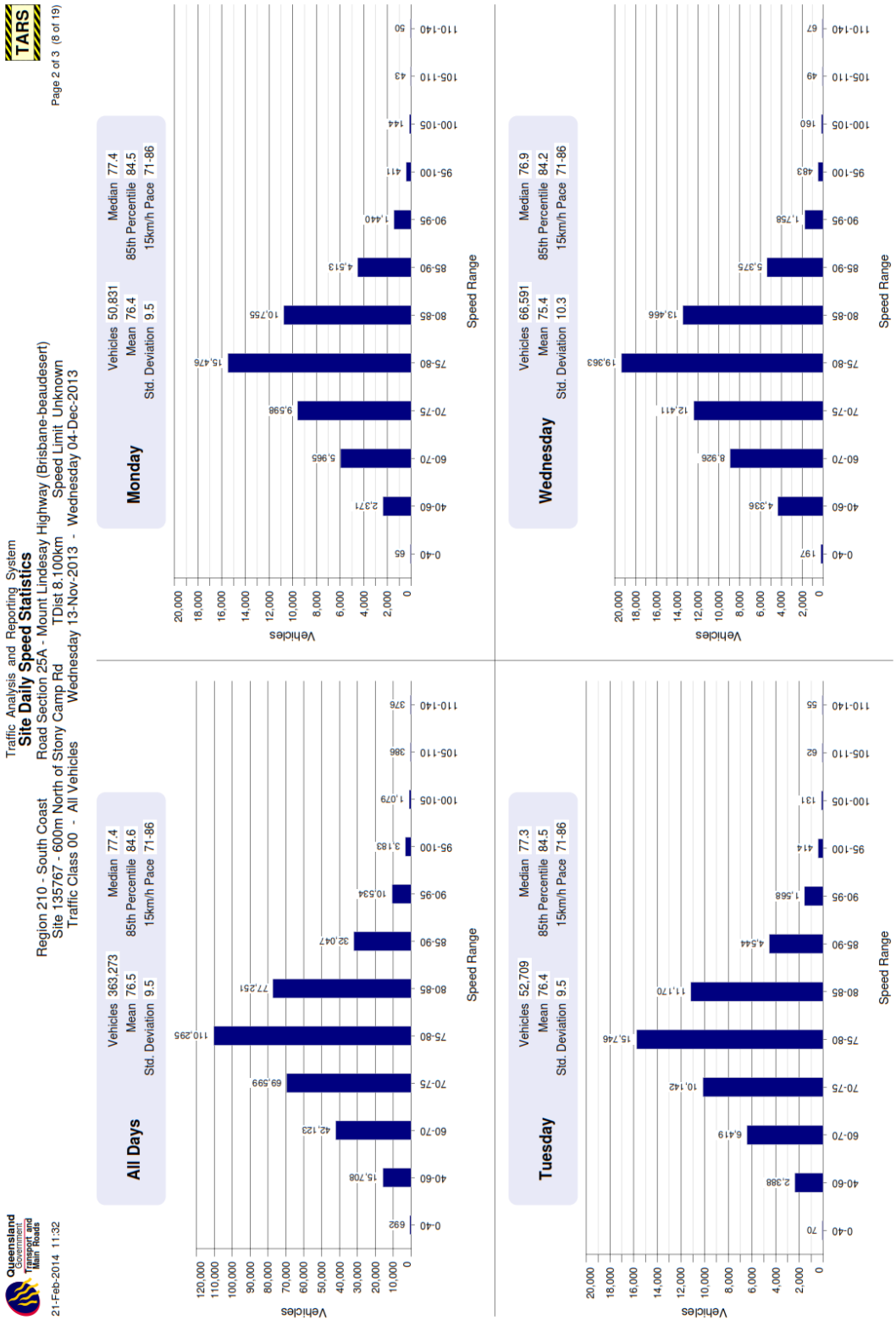
Traffic Analysis and Reporting System

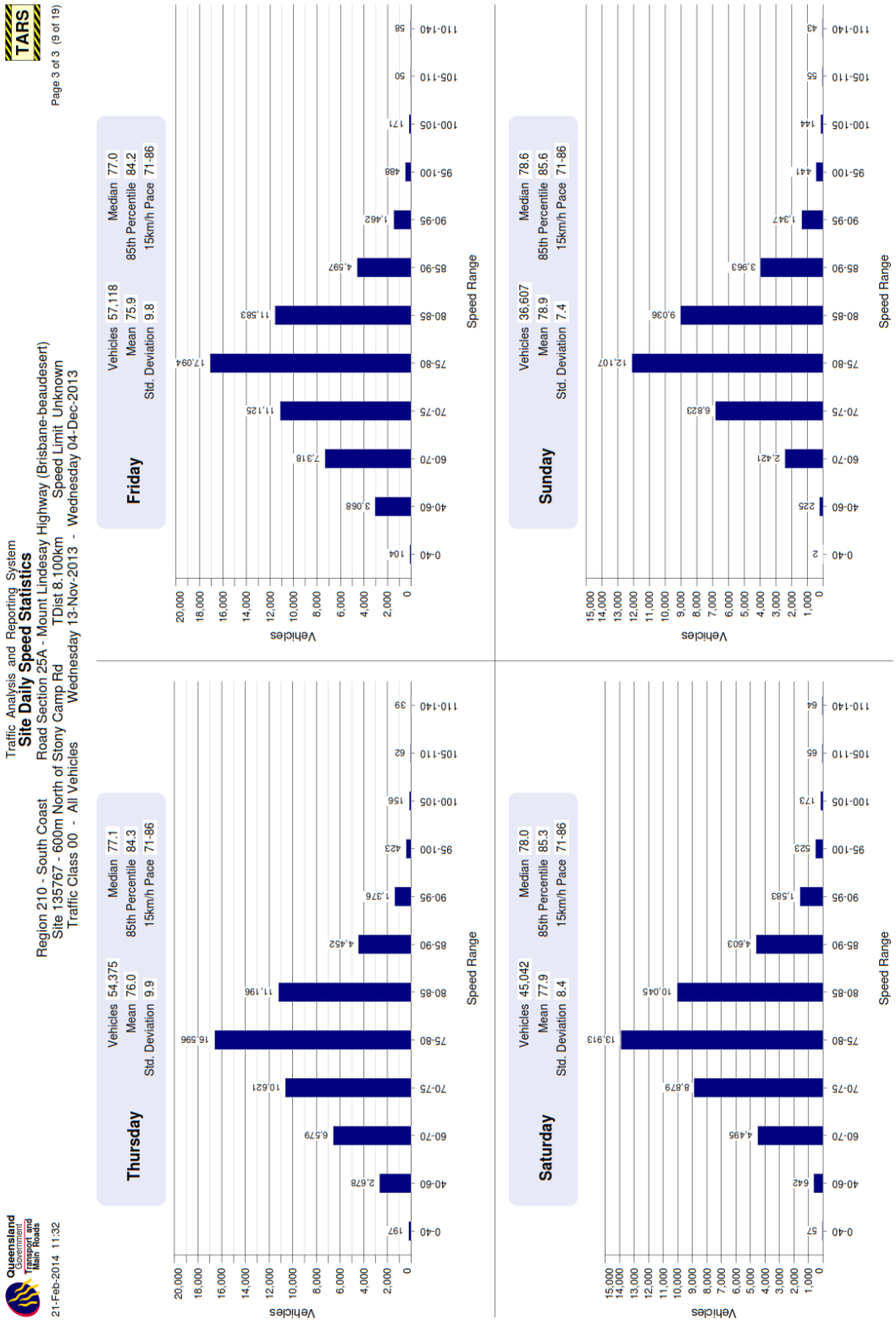
Site Daily Speed Statistics

Region 210 - South Coast Road Section 25A - Mount Lindesay Highway (Brisbane-beaudesert)
Site 135767 - 600m North of Stony Camp Rd TDist 8.100km Speed Limit Unknown
Traffic Class 00 - All Vehicles Wednesday 13-Nov-2013 - Wednesday 04-Dec-2013

TARS
Page 1 of 3 (7 of 19)




Traffic Analysis and Reporting System
Site Daily Speed Statistics
Region 210 - South Coast
Site 135767 - 600m North of Stony Camp Rd
Traffic Class 00 - All Vehicles
Road Section 25A - Mount Lindesay Highway (Brisbane-beaudesert)
TDist 8.100km
Wednesday 13-Nov-2013 - Wednesday 04-Dec-2013
Speed Limit Unknown
TARS
Page 2 of 3 (8 of 19)
Queensland Government Transport and Main Roads
21-Feb-2014 11:32
All Days
Vehicles 363,273
Mean 76.5
Std. Deviation 9.5
Median 77.4
85th Percentile 84.6
15km/h Pace 71-86
Monday
Vehicles 50,831
Mean 76.4
Std. Deviation 9.5
Median 77.4
85th Percentile 84.5
15km/h Pace 71-86
Tuesday
Vehicles 52,709
Mean 76.4
Std. Deviation 9.5
Median 77.3
85th Percentile 84.5
15km/h Pace 71-86
Wednesday
Vehicles 66,591
Mean 75.4
Std. Deviation 10.3
Median 76.9
85th Percentile 84.2
15km/h Pace 71-86
Vehicles
Speed Range
0-40
40-60
60-70
70-75
75-80
80-85
85-90
90-95
95-100
100-105
105-110
110-140


Traffic Analysis and Reporting System
Site Daily Speed Statistics
Region 210 - South Coast
Site 135767 - 600m North of Stony Camp Rd
Traffic Class 00 - All Vehicles
Road Section 25A - Mount Lindesay Highway (Brisbane-beaudesert)
TDist 8.100km
Wednesday 13-Nov-2013 - Wednesday 04-Dec-2013
Speed Limit Unknown
TARS
Page 3 of 3 (9 of 19)
Queensland Government Transport and Main Roads
21-Feb-2014 11:32
Thursday
Vehicles 54,375
Mean 76.0
Std. Deviation 9.9
Median 77.1
85th Percentile 84.3
15km/h Pace 71-86
Friday
Vehicles 57,118
Mean 75.9
Std. Deviation 9.8
Median 77.0
85th Percentile 84.2
15km/h Pace 71-86
Saturday
Vehicles 45,042
Mean 77.9
Std. Deviation 8.4
Median 78.0
85th Percentile 85.3
15km/h Pace 71-86
Sunday
Vehicles 36,607
Mean 78.9
Std. Deviation 7.4
Median 78.6
85th Percentile 85.6
15km/h Pace 71-86
Vehicles
Speed Range
0-40
40-60
60-70
70-75
75-80
80-85
85-90
90-95
95-100
100-105
105-110
110-140

Queensland Government Transport and Main Roads

21-Feb-2014 11:32

Traffic Analysis and Reporting System

Site Daily Speed Statistics

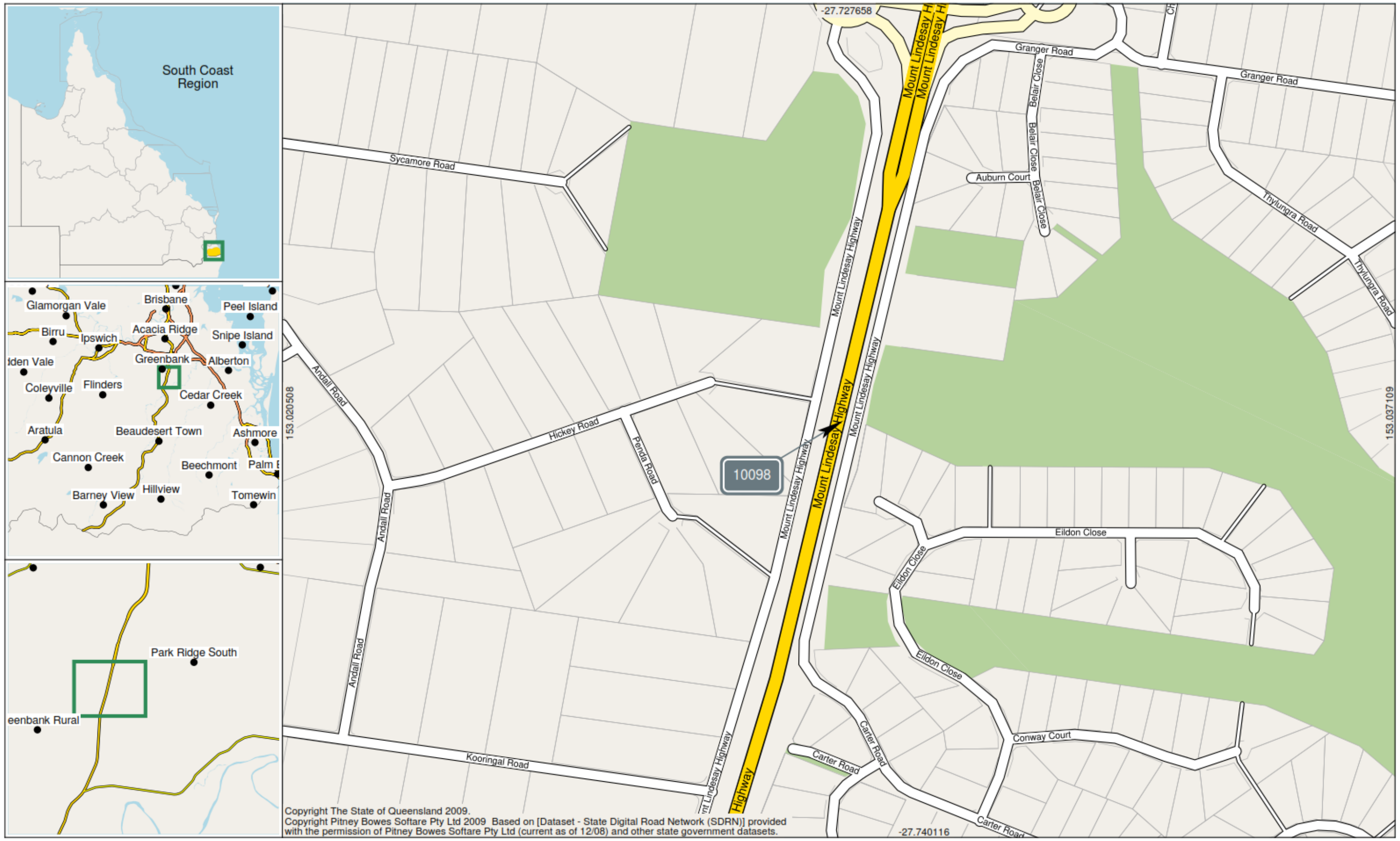
Region 210 - South Coast Road Section 25A - Mount Lindesay Highway (Brisbane-beaudesert)

Site 10098 - 700m south of Stoney Camp Rd, Munruben TDist 9.150km Speed Limit 90

Traffic Class 00 - All Vehicles Wednesday 13-Nov-2013 - Wednesday 04-Dec-2013

TARS

Page 1 of 3 (10 of 19)



Queensland Government Transport and Main Roads

21-Feb-2014 11:32

Traffic Analysis and Reporting System

Site Daily Speed Statistics

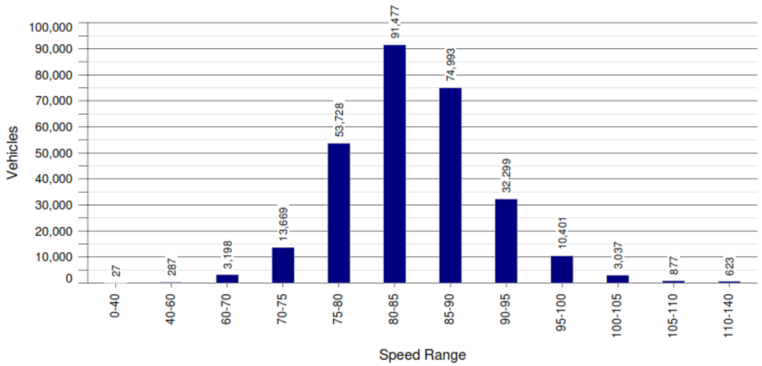
Region 210 - South Coast   Road Section 25A - Mount Lindesay Highway (Brisbane-beaudesert)
Site 10098 - 700m south of Stoney Camp Rd, Munruben   TDist 9.150km   Speed Limit 90
Traffic Class 00 - All Vehicles   Wednesday 13-Nov-2013 - Wednesday 04-Dec-2013

TARS

Page 2 of 3 (11 of 19)

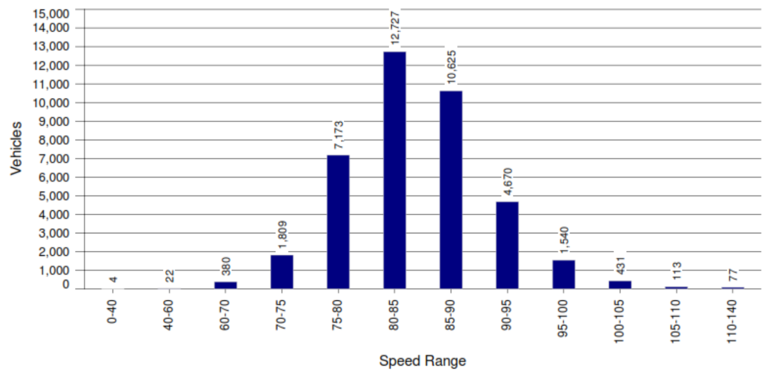
All Days

Vehicles	284,616	Median	83.9
Mean	84.2	85th Percentile	90.7
Std. Deviation	6.9	15km/h Pace	76-91



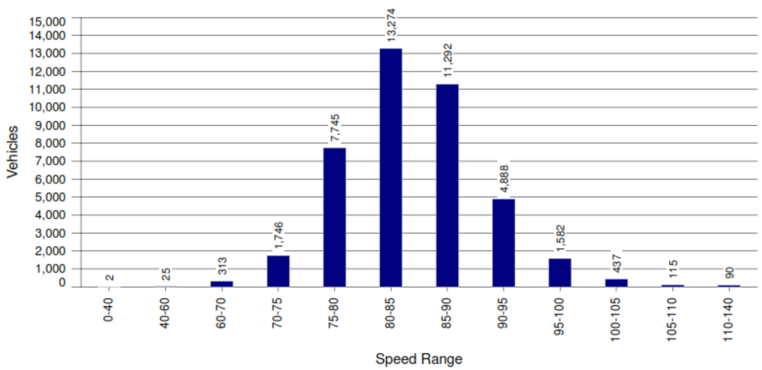
Monday

Vehicles	39,571	Median	84.1
Mean	84.4	85th Percentile	91.0
Std. Deviation	6.8	15km/h Pace	76-91



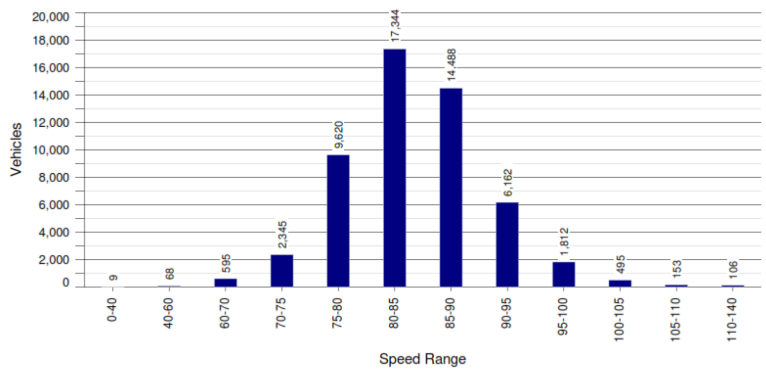
Tuesday

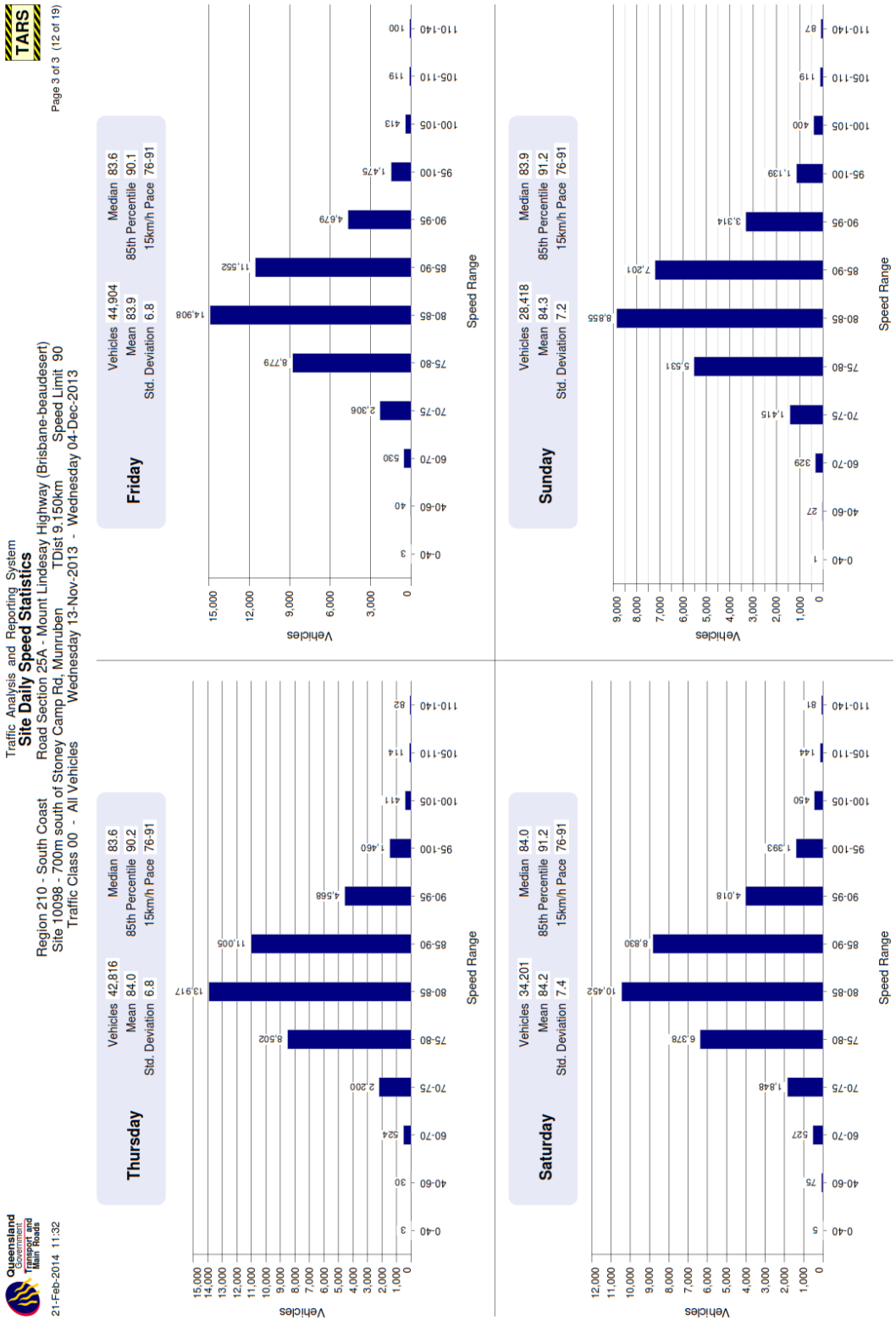
Vehicles	41,509	Median	84.1
Mean	84.5	85th Percentile	90.9
Std. Deviation	6.7	15km/h Pace	76-91



Wednesday

Vehicles	53,197	Median	84.0
Mean	84.3	85th Percentile	90.6
Std. Deviation	6.8	15km/h Pace	76-91




Traffic Analysis and Reporting System
Site Daily Speed Statistics
Region 210 - South Coast Road Section 25A - Mount Lindesay Highway (Brisbane-beaudesert)
Site 10098 - 700m south of Stoney Camp Rd, Munruben TDist 9.150km Speed Limit 90
Traffic Class 00 - All Vehicles Wednesday 13-Nov-2013 - Wednesday 04-Dec-2013
Page 3 of 3 (12 of 19)
TARS
Queensland Government Transport and Main Roads
21-Feb-2014 11:32
Thursday
Vehicles 42,816
Mean 84.0
Std. Deviation 6.8
Median 83.6
85th Percentile 90.2
15km/h Pace 76-91
Friday
Vehicles 44,904
Mean 83.9
Std. Deviation 6.8
Median 83.6
85th Percentile 90.1
15km/h Pace 76-91
Saturday
Vehicles 34,201
Mean 84.2
Std. Deviation 7.4
Median 84.0
85th Percentile 91.2
15km/h Pace 76-91
Sunday
Vehicles 28,418
Mean 84.3
Std. Deviation 7.2
Median 83.9
85th Percentile 91.2
15km/h Pace 76-91
Vehicles
Speed Range
0-40
40-60
60-70
70-75
75-80
80-85
85-90
90-95
95-100
100-105
105-110
110-140

Queensland Government
Transport and Main Roads

21-Feb-2014 11:32

Traffic Analysis and Reporting System

Site Daily Speed Statistics

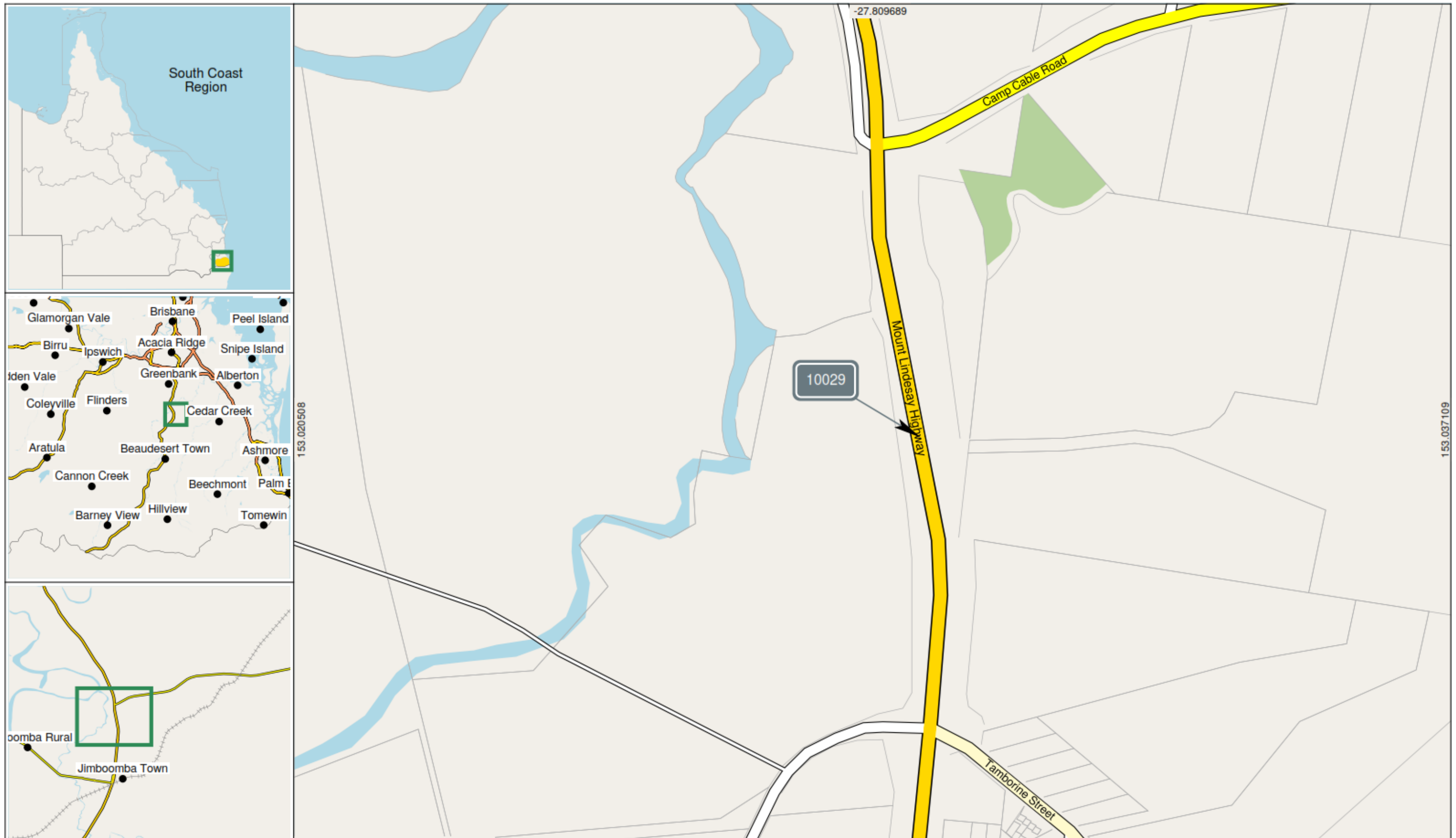
Region 210 - South Coast   Road Section 25A - Mount Lindesay Highway (Brisbane-beaudesert)

Site 10029 - 460m south of Camp Cable Rd, Jimboomba   TDist 19.460km   Speed Limit 90

Traffic Class 00 - All Vehicles   Wednesday 13-Nov-2013 - Wednesday 04-Dec-2013

TARS

Page 1 of 3 (13 of 19)



Queensland Government Transport and Main Roads

21-Feb-2014 11:32

Traffic Analysis and Reporting System

Site Daily Speed Statistics

TARS

Page 2 of 3 (14 of 19)

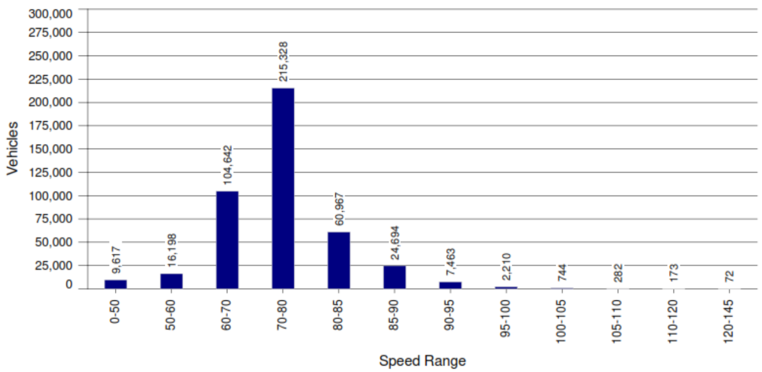
Region 210 - South Coast | Road Section 25A - Mount Lindesay Highway (Brisbane-beaudesert)

Site 10029 - 460m south of Camp Cable Rd, Jimboomba | TDist 19.460km | Speed Limit 90

Traffic Class 00 - All Vehicles | Wednesday 13-Nov-2013 - Wednesday 04-Dec-2013

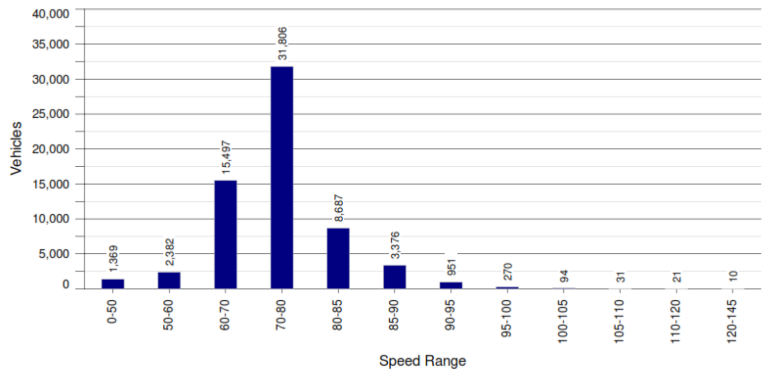
All Days

Vehicles	442,390	Median	73.7
Mean	73.0	85th Percentile	81.9
Std. Deviation	10.8	15km/h Pace	70-85



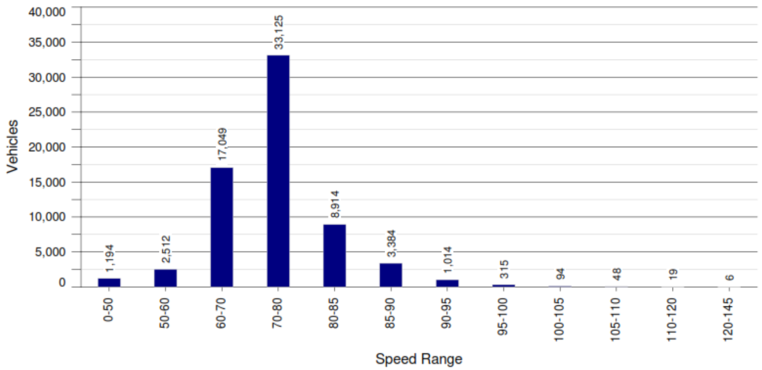
Monday

Vehicles	64,494	Median	73.6
Mean	72.9	85th Percentile	81.5
Std. Deviation	10.6	15km/h Pace	70-85



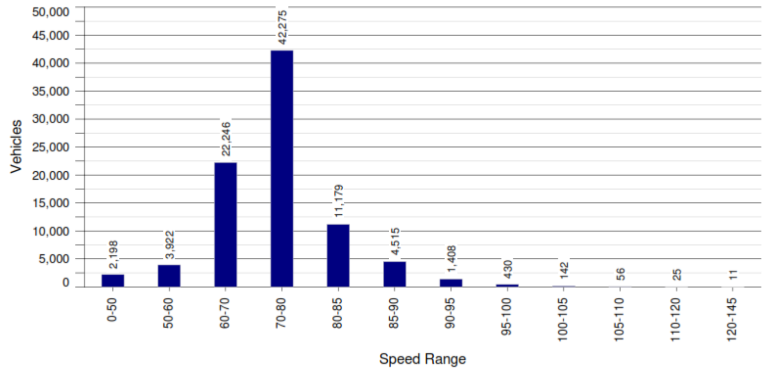
Tuesday

Vehicles	67,674	Median	73.5
Mean	72.9	85th Percentile	81.3
Std. Deviation	10.2	15km/h Pace	70-85



Wednesday

Vehicles	88,407	Median	73.3
Mean	72.4	85th Percentile	81.3
Std. Deviation	11.1	15km/h Pace	70-85



Queensland Government Transport and Main Roads

21-Feb-2014 11:32

Traffic Analysis and Reporting System

Site Daily Speed Statistics

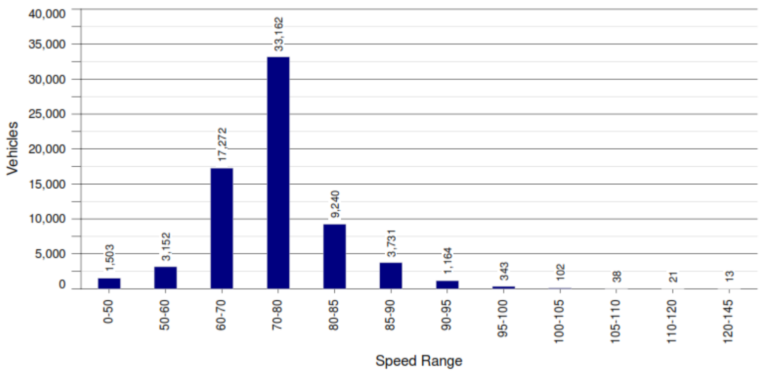
Region 210 - South Coast   Road Section 25A - Mount Lindesay Highway (Brisbane-beaudesert)
Site 10029 - 460m south of Camp Cable Rd, Jimboomba   TDist 19.460km   Speed Limit 90
Traffic Class 00 - All Vehicles   Wednesday 13-Nov-2013 - Wednesday 04-Dec-2013

TARS

Page 3 of 3 (15 of 19)

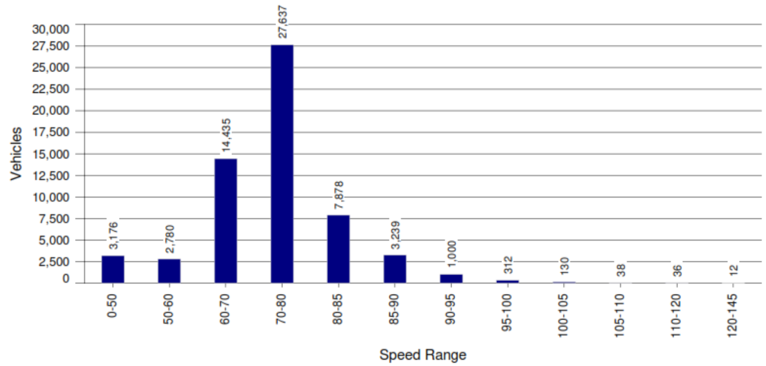
Thursday

Vehicles	69,741	Median	73.4
Mean	72.7	85th Percentile	81.6
Std. Deviation	10.8	15km/h Pace	70-85



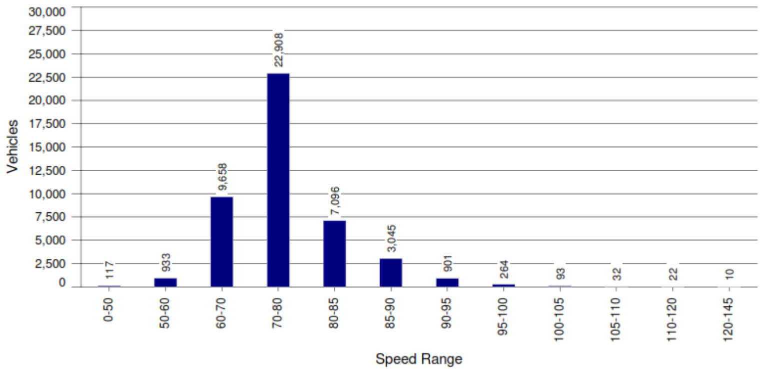
Friday

Vehicles	60,673	Median	73.1
Mean	71.2	85th Percentile	81.6
Std. Deviation	13.6	15km/h Pace	70-85



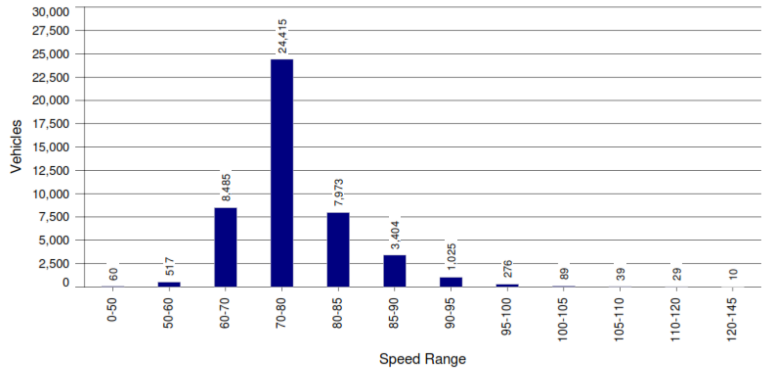
Saturday

Vehicles	45,079	Median	74.5
Mean	74.9	85th Percentile	82.9
Std. Deviation	8.3	15km/h Pace	70-85



Sunday

Vehicles	46,322	Median	75.1
Mean	75.7	85th Percentile	83.4
Std. Deviation	7.8	15km/h Pace	70-85




TARS
Page 1 of 3 (16 of 19)
Traffic Analysis and Reporting System
Site Daily Speed Statistics
Region 210 - South Coast
Road Section 25A - Mount Lindesay Highway (Brisbane-beaudesert)
Site 11988 - Between Birnam St & Tubber St
TDist 40.800km
Speed Limit 60
Traffic Class 00 - All Vehicles
Wednesday 13-Nov-2013 - Wednesday 04-Dec-2013
Queensland Government Transport and Main Roads
21-Feb-2014 11:32
11988
Brisbane Street
Helen Street
Beaudesert Town
Copyright The State of Queensland 2009.
Copyright Pitney Bowes Softare Pty Ltd 2009. Based on [Dataset - State Digital Road Network (SDRN)] provided with the permission of Pitney Bowes Softare Pty Ltd (current as of 12/08) and other state government datasets.
South Coast Region

Queensland Government
Transport and Main Roads

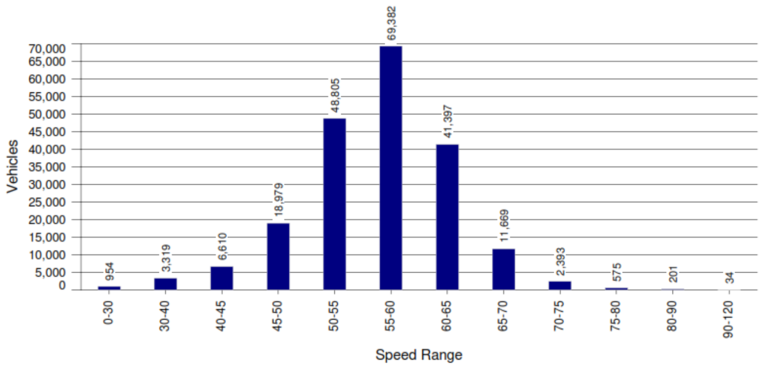
21-Feb-2014 11:32

Traffic Analysis and Reporting System
Site Daily Speed Statistics
Region 210 - South Coast   Road Section 25A - Mount Lindesay Highway (Brisbane-beaudesert)
Site 11988 - Between Birnam St & Tubber St   TDist 40.800km   Speed Limit 60
Traffic Class 00 - All Vehicles   Wednesday 13-Nov-2013 - Wednesday 04-Dec-2013

TARS

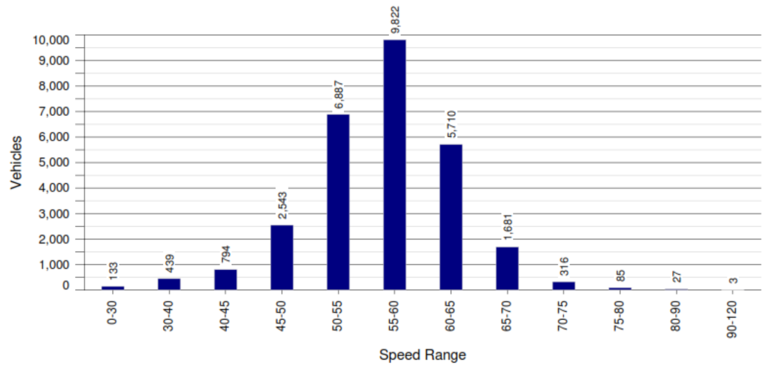
All Days

Vehicles	204,318	Median	56.7
Mean	56.2	85th Percentile	63.1
Std. Deviation	7.3	15km/h Pace	50-65



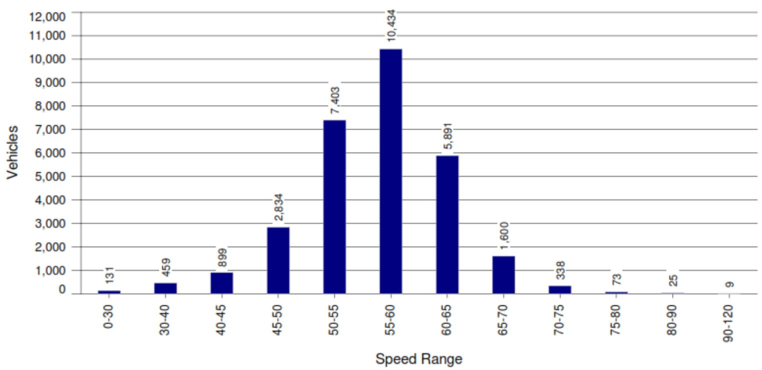
Monday

Vehicles	28,440	Median	56.7
Mean	56.3	85th Percentile	63.1
Std. Deviation	7.2	15km/h Pace	50-65



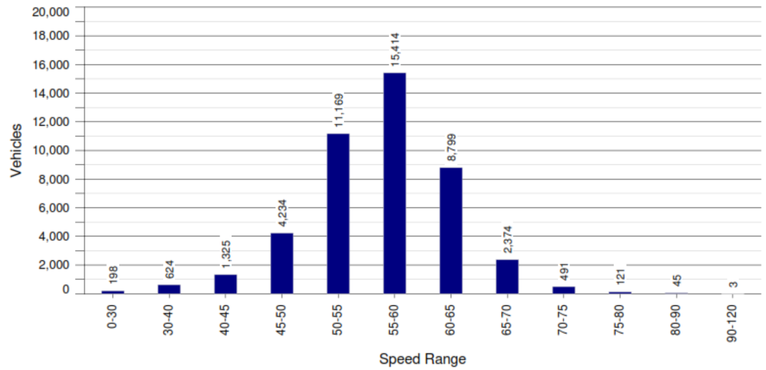
Tuesday

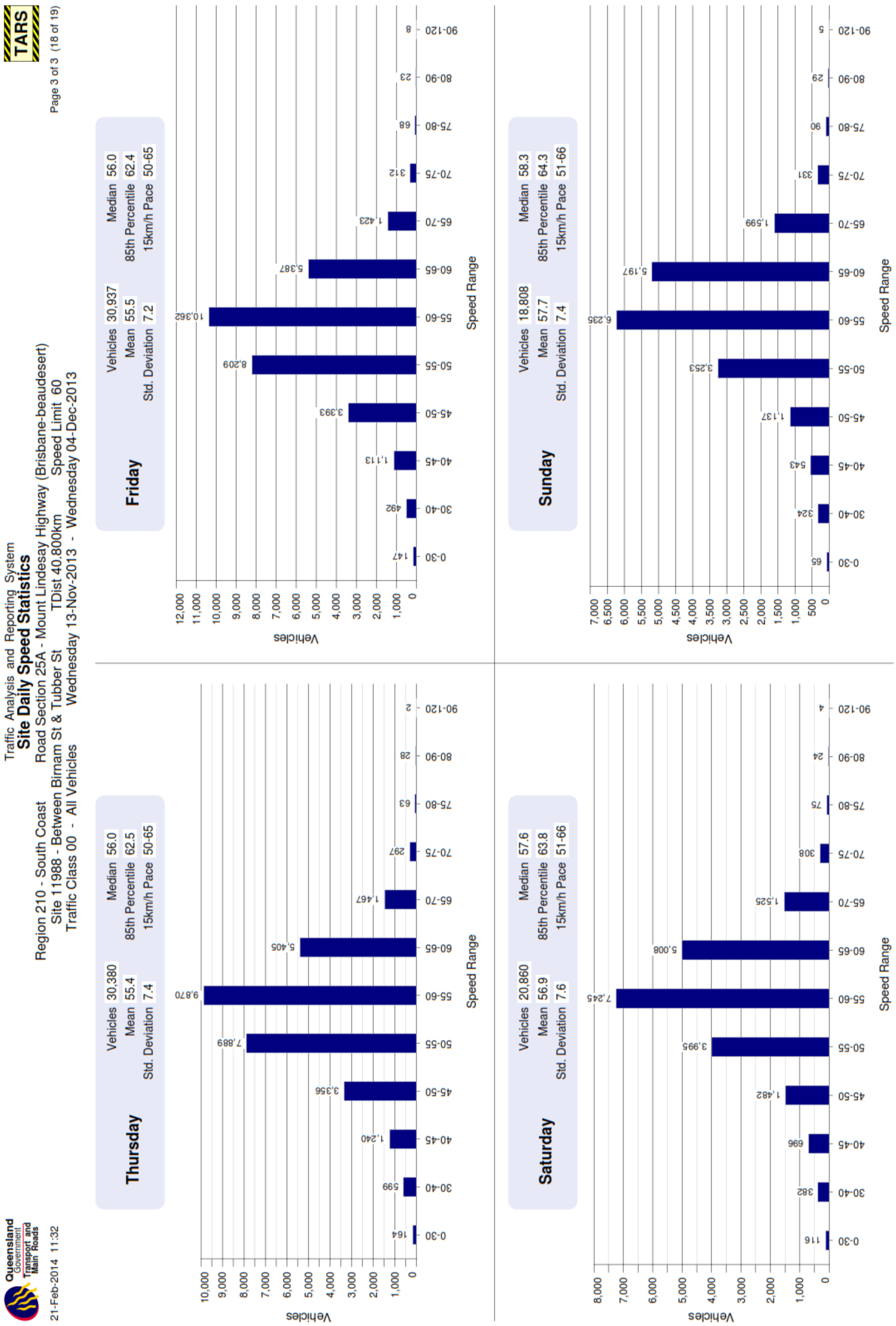
Vehicles	30,096	Median	56.6
Mean	56.1	85th Percentile	62.9
Std. Deviation	7.1	15km/h Pace	50-65



Wednesday

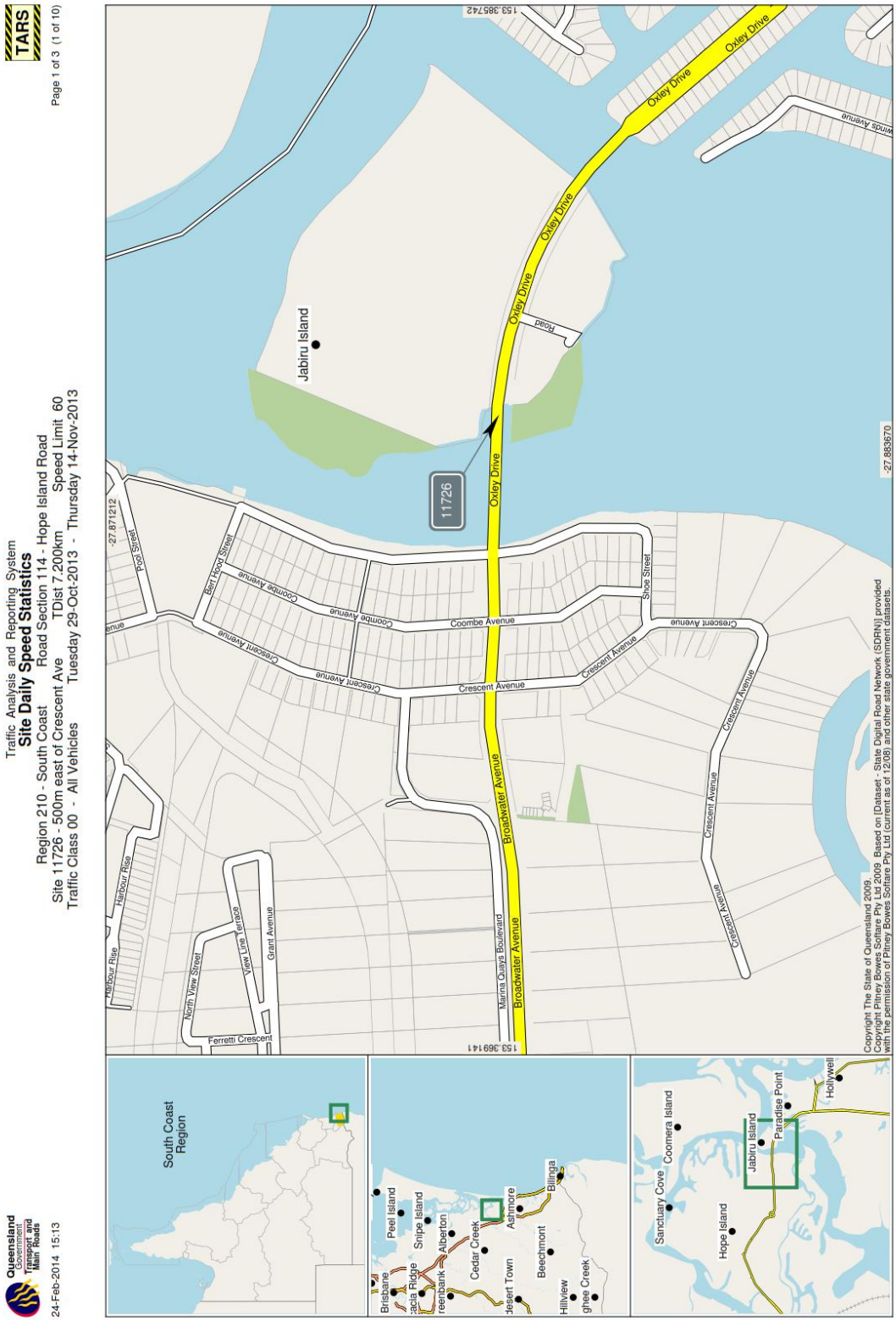
Vehicles	44,797	Median	56.6
Mean	56.1	85th Percentile	62.9
Std. Deviation	7.1	15km/h Pace	50-65

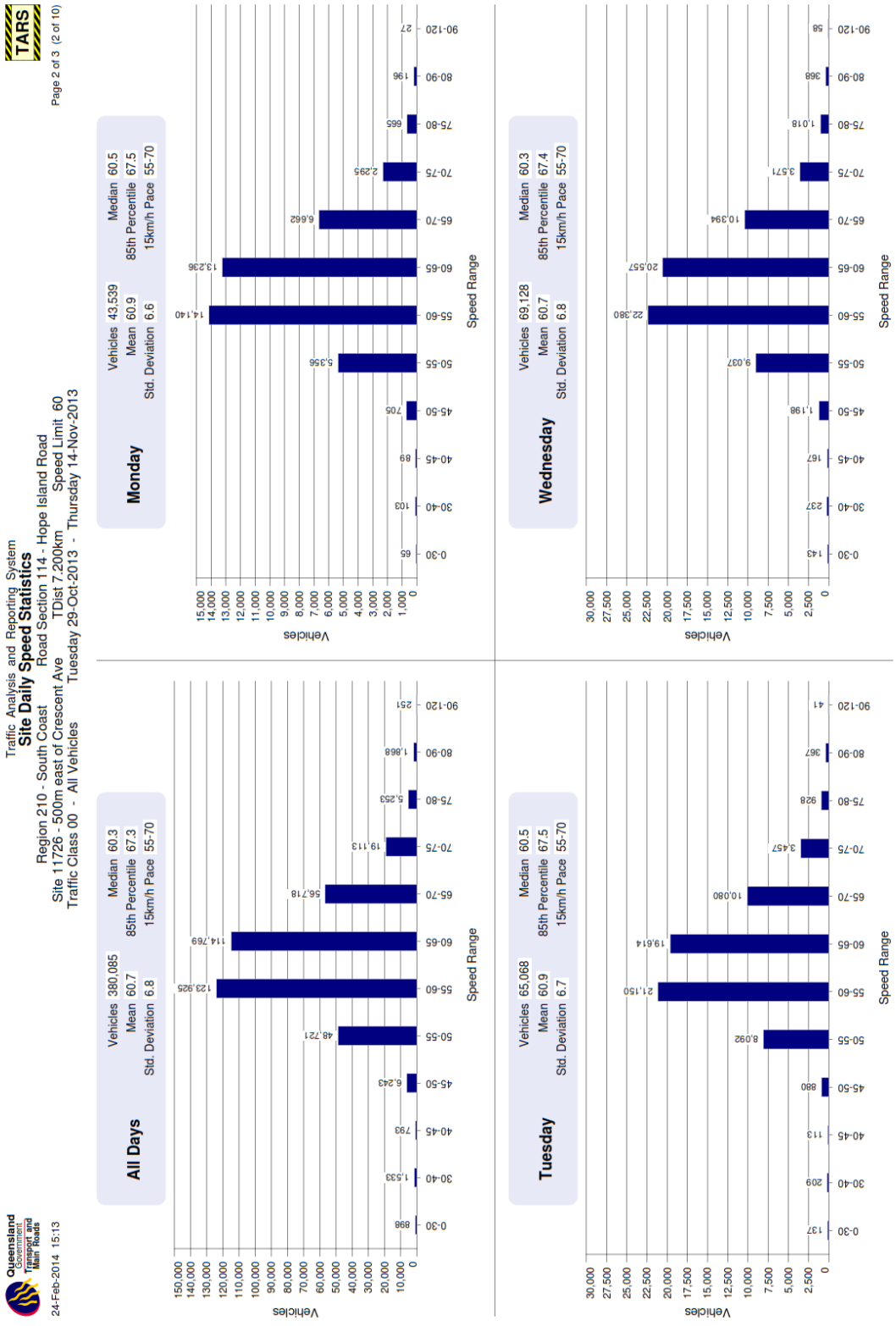


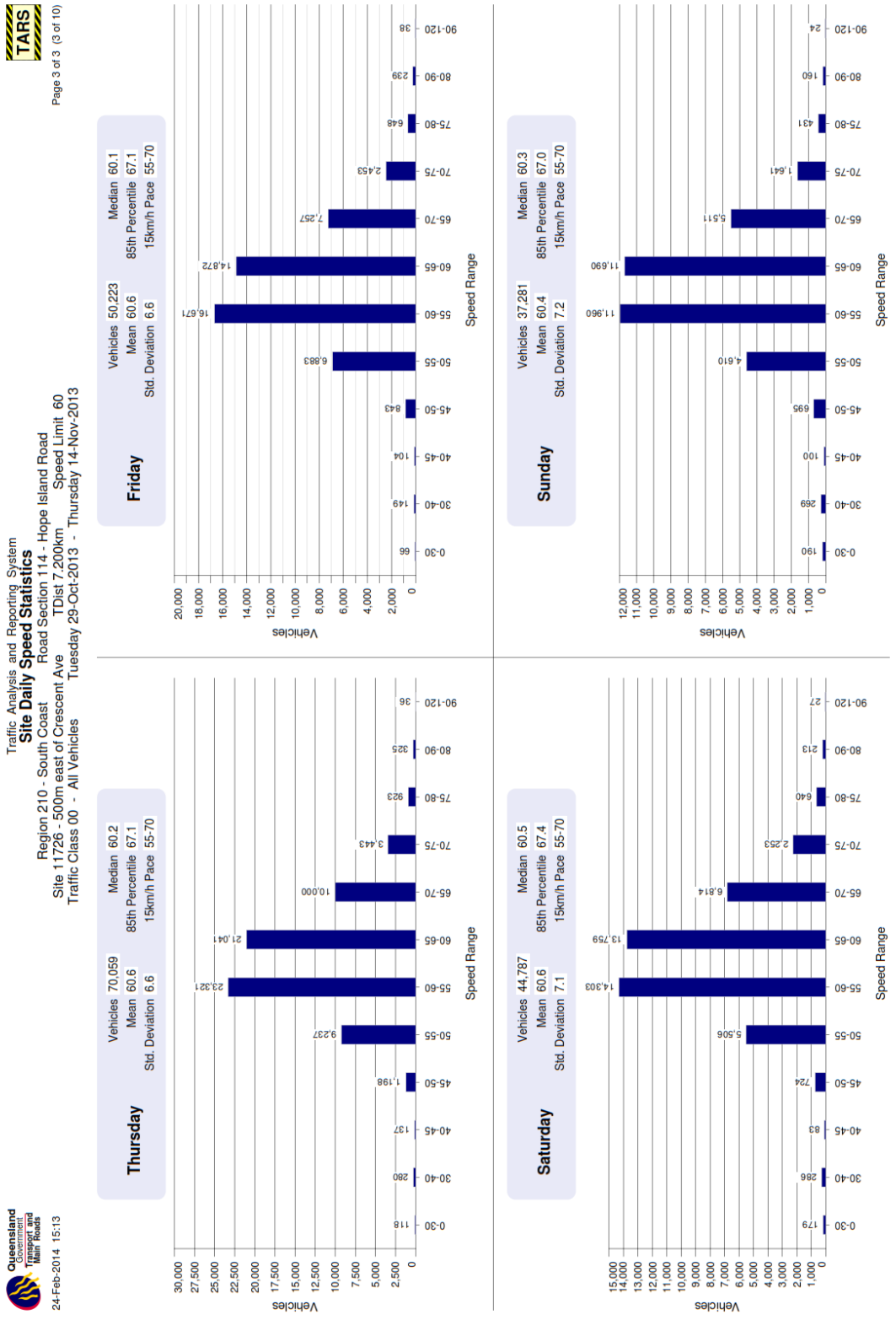


Traffic Analysis and Reporting System
Site Daily Speed Statistics
Region 210 - South Coast
Road Section 25A - Mount Lindesay Highway (Brisbane-beaudesert)
Site 11988 - Between Birnam St & Tubber St
TDist 40.800km
Speed Limit 60
Traffic Class 00 - All Vehicles
Wednesday 13-Nov-2013 - Wednesday 04-Dec-2013
21-Feb-2014 11:32
Page 3 of 3 (18 of 19)
TARS
Thursday
Vehicles 30,380
Mean 55.4
Std. Deviation 7.4
Median 56.0
85th Percentile 62.5
15km/h Pace 50-65
Friday
Vehicles 30,937
Mean 55.5
Std. Deviation 7.2
Median 56.0
85th Percentile 62.4
15km/h Pace 50-65
Saturday
Vehicles 20,860
Mean 56.9
Std. Deviation 7.6
Median 57.6
85th Percentile 63.8
15km/h Pace 51-66
Sunday
Vehicles 18,808
Mean 57.7
Std. Deviation 7.4
Median 58.3
85th Percentile 64.3
15km/h Pace 51-66
Vehicles
Speed Range

Oxley Drive


TARS
Page 1 of 3 (1 of 10)
Traffic Analysis and Reporting System
Site Daily Speed Statistics
Region 210 - South Coast Road Section 114 - Hope Island Road
Site 11726 - 500m east of Crescent Ave TDist 7.200km Speed Limit 60
Traffic Class 00 - All Vehicles Tuesday 29-Oct-2013 - Thursday 14-Nov-2013
Queensland Government Transport and Main Roads
24-Feb-2014 15:13
153.385742
153.369141
-27.871212
-27.883670
Jabiru Island
11726
Oxley Drive
Broadwater Avenue
Marina Quays Boulevard
Coombe Avenue
Crescent Avenue
Shore Street
Point Street
Bert Hoot Street
Harbour Rise
Norm View Street
View Line Terrace
Grant Avenue
Ferretti Crescent
South Coast Region
Brisbane
Peel Island
Snipe Island
Alberton
Cedar Creek
Ashmore
Billinga
Beechmont
Hillview
Coomera Island
Sanctuary Cove
Hope Island
Paradise Point
Hollywell
Copyright The State of Queensland 2009.
Copyright Pitney Bowes Software Pty Ltd 2009. Based on [Dataset - State Digital Road Network (SDRN)] provided with the permission of Pitney Bowes Software Pty Ltd (current as of 12/08) and other state government datasets.


Traffic Analysis and Reporting System
Site Daily Speed Statistics
Region 210 - South Coast Road Section 114 - Hope Island Road
Site 11726 - 500m east of Crescent Ave TDist 7.200km Speed Limit 60
Traffic Class 00 - All Vehicles Tuesday 29-Oct-2013 - Thursday 14-Nov-2013
TARS
Page 2 of 3 (2 of 10)
Queensland Government Transport and Main Roads
24-Feb-2014 15:13
All Days
Vehicles 380,085
Mean 60.7
Std. Deviation 6.8
Median 60.3
85th Percentile 67.3
15km/h Pace 55-70
Monday
Vehicles 43,539
Mean 60.9
Std. Deviation 6.6
Median 60.5
85th Percentile 67.5
15km/h Pace 55-70
Tuesday
Vehicles 65,068
Mean 60.9
Std. Deviation 6.7
Median 60.5
85th Percentile 67.5
15km/h Pace 55-70
Wednesday
Vehicles 69,128
Mean 60.7
Std. Deviation 6.8
Median 60.3
85th Percentile 67.4
15km/h Pace 55-70
Vehicles
Speed Range
0-30
30-40
40-45
45-50
50-55
55-60
60-65
65-70
70-75
75-80
80-90
90-120


Traffic Analysis and Reporting System
Site Daily Speed Statistics
Region 210 - South Coast Road Section 114 - Hope Island Road
Site 11726 - 500m east of Crescent Ave TDist 7.200km Speed Limit 60
Traffic Class 00 - All Vehicles Tuesday 29-Oct-2013 - Thursday 14-Nov-2013
TARS
Page 3 of 3 (3 of 10)
Queensland Government Transport and Main Roads
24-Feb-2014 15:13
Thursday
Vehicles 70,059
Mean 60.6
Std. Deviation 6.6
Median 60.2
85th Percentile 67.1
15km/h Pace 55-70
Friday
Vehicles 50,223
Mean 60.6
Std. Deviation 6.6
Median 60.1
85th Percentile 67.1
15km/h Pace 55-70
Saturday
Vehicles 44,787
Mean 60.6
Std. Deviation 7.1
Median 60.5
85th Percentile 67.4
15km/h Pace 55-70
Sunday
Vehicles 37,281
Mean 60.4
Std. Deviation 7.2
Median 60.3
85th Percentile 67.0
15km/h Pace 55-70
Vehicles
Speed Range
0-30
30-40
40-45
45-50
50-55
55-60
60-65
65-70
70-75
75-80
80-90
90-120

TARS

Page 1 of 3 (4 of 10)

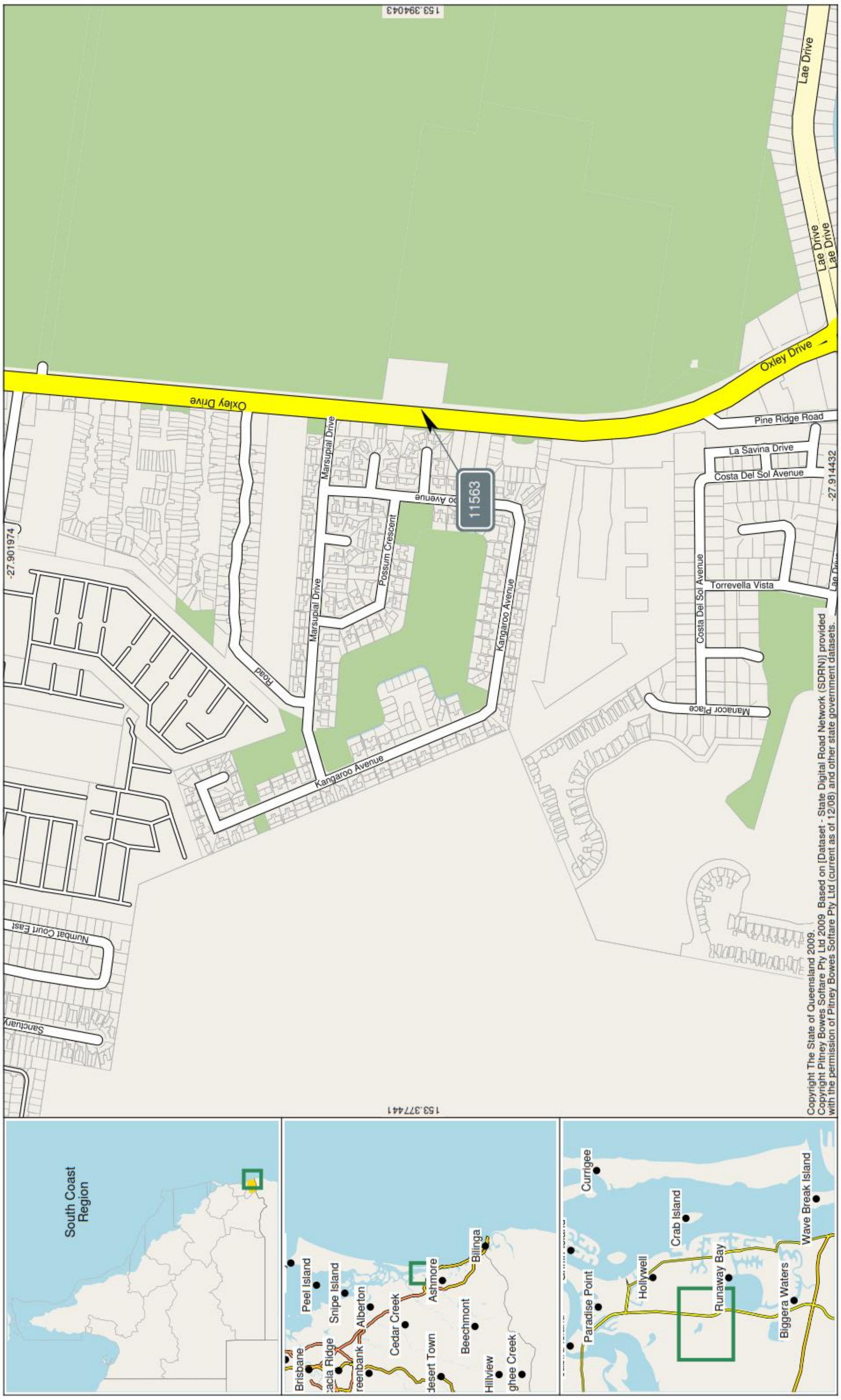
Traffic Analysis and Reporting System

Site Daily Speed Statistics

Region 210 - South Coast Road Section 114 - Hope Island Road

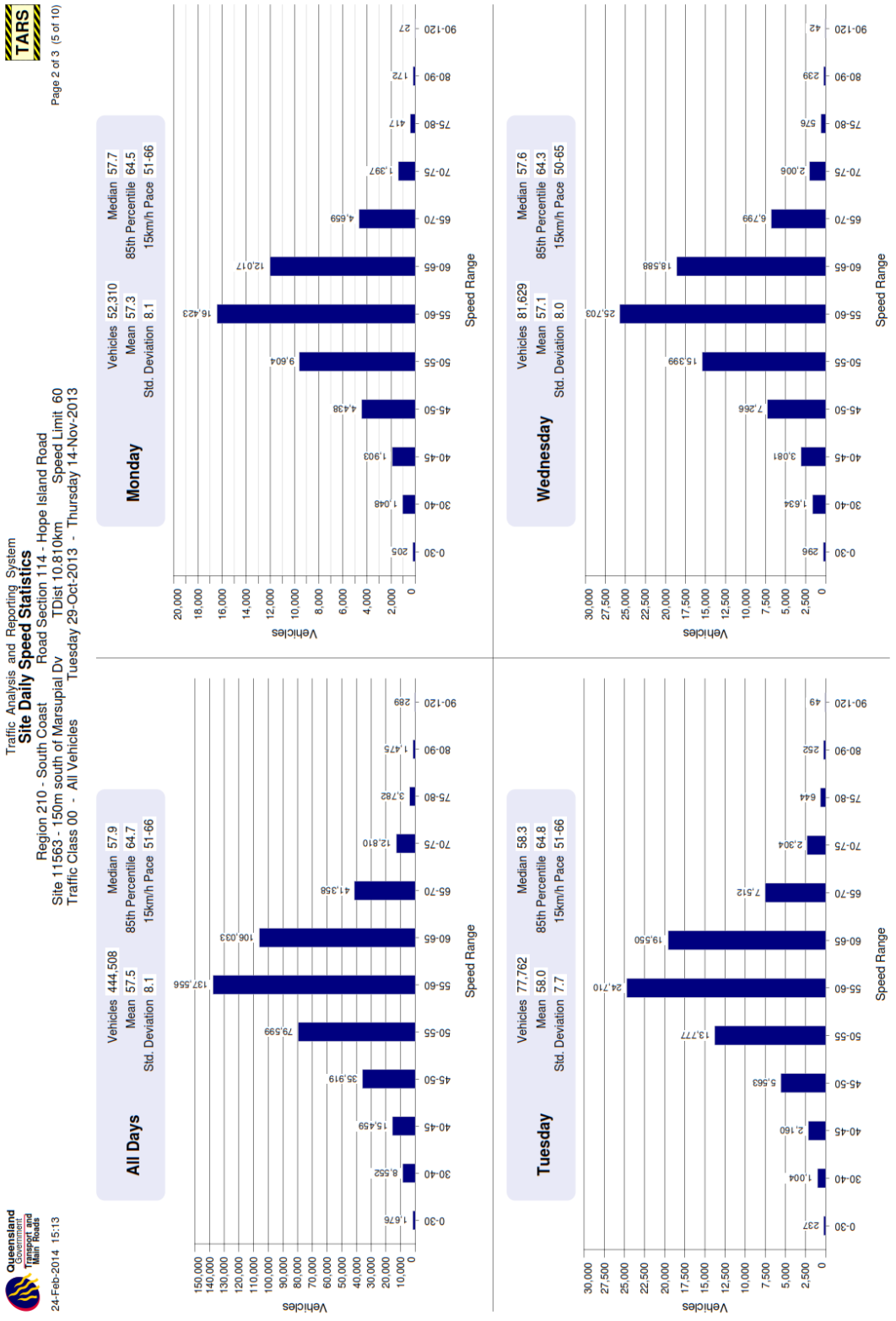
Site 11563 - 150m south of Marsupial Dv TDist 10.810km Speed Limit 60

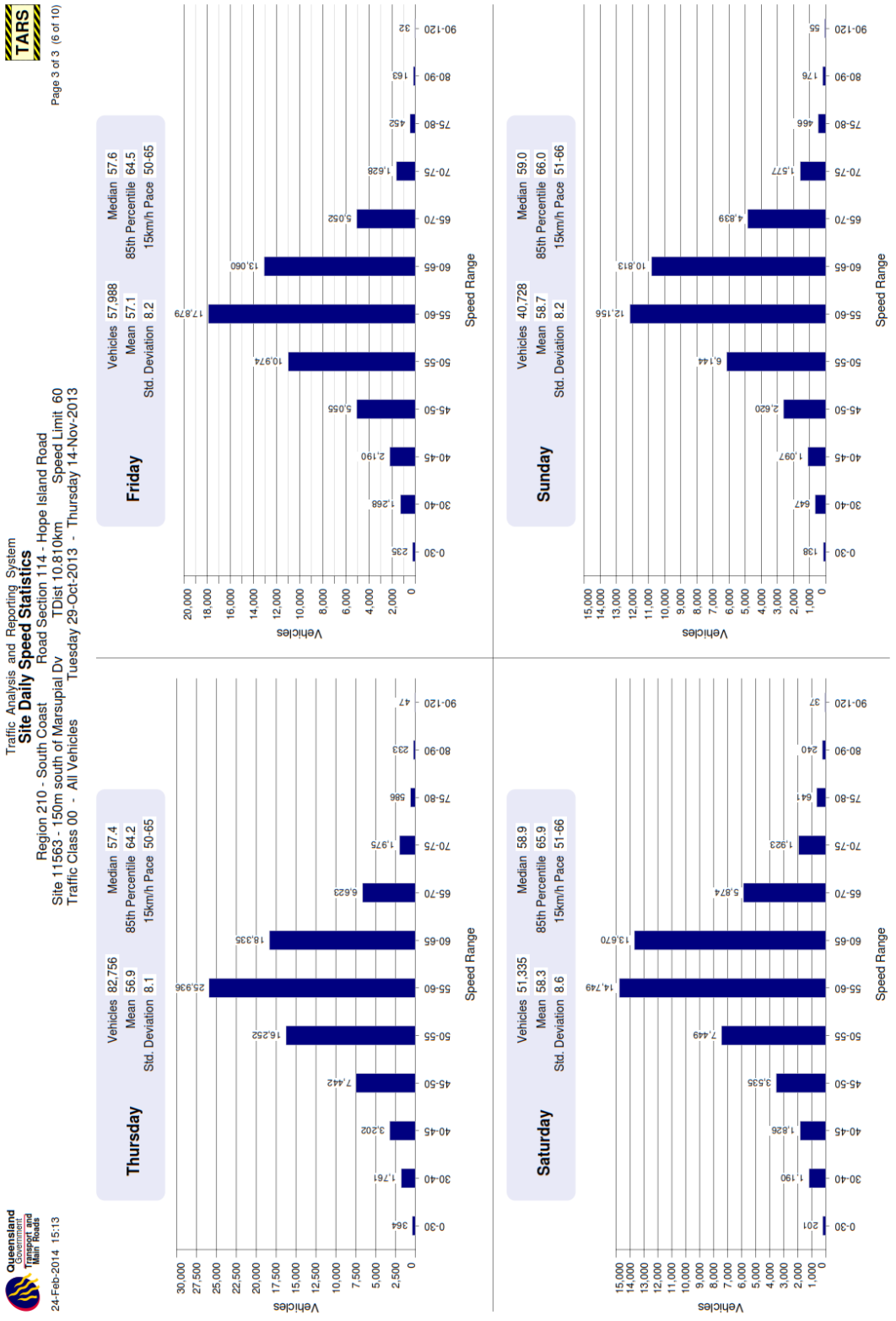
Traffic Class 00 - All Vehicles Tuesday 29-Oct-2013 - Thursday 14-Nov-2013

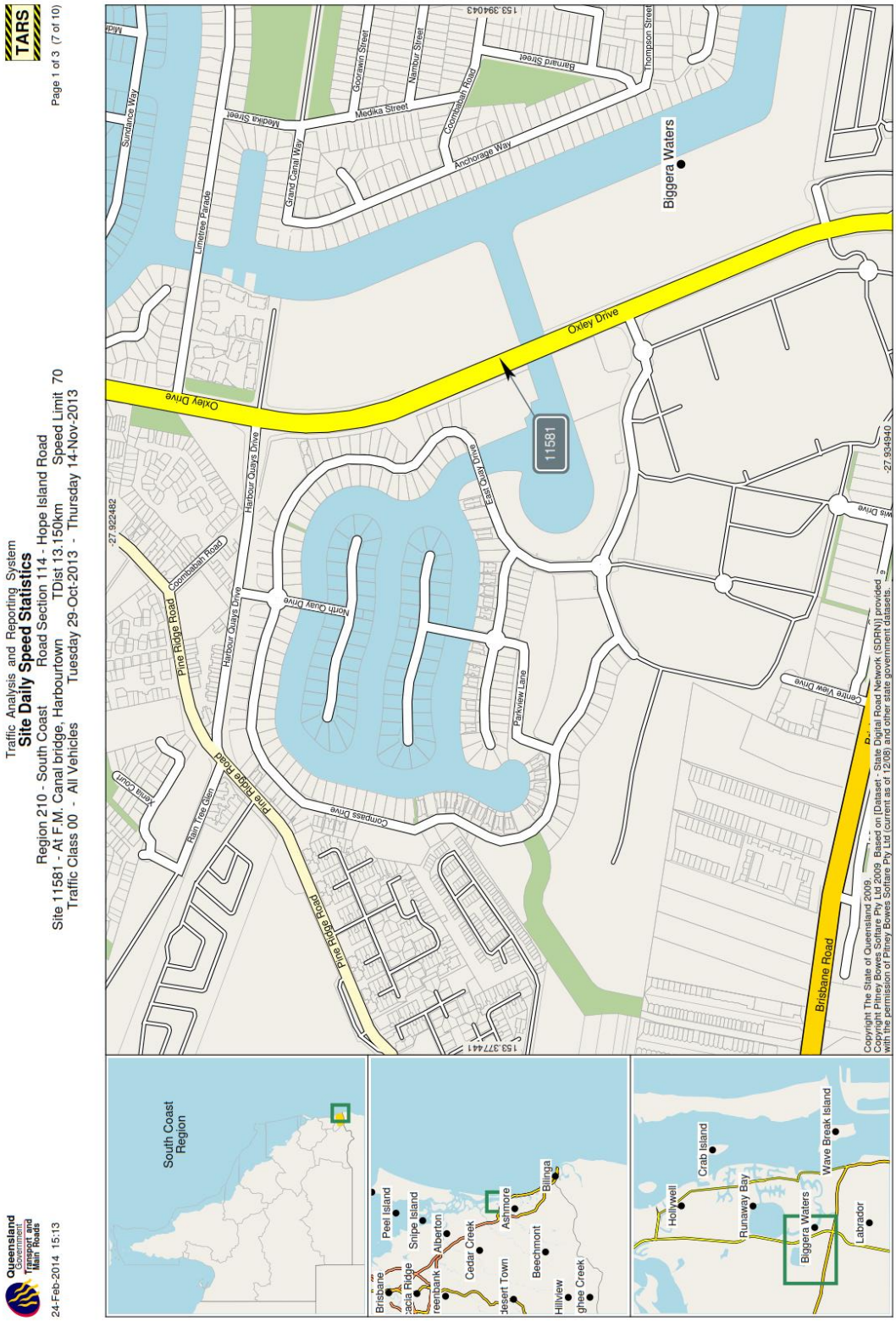


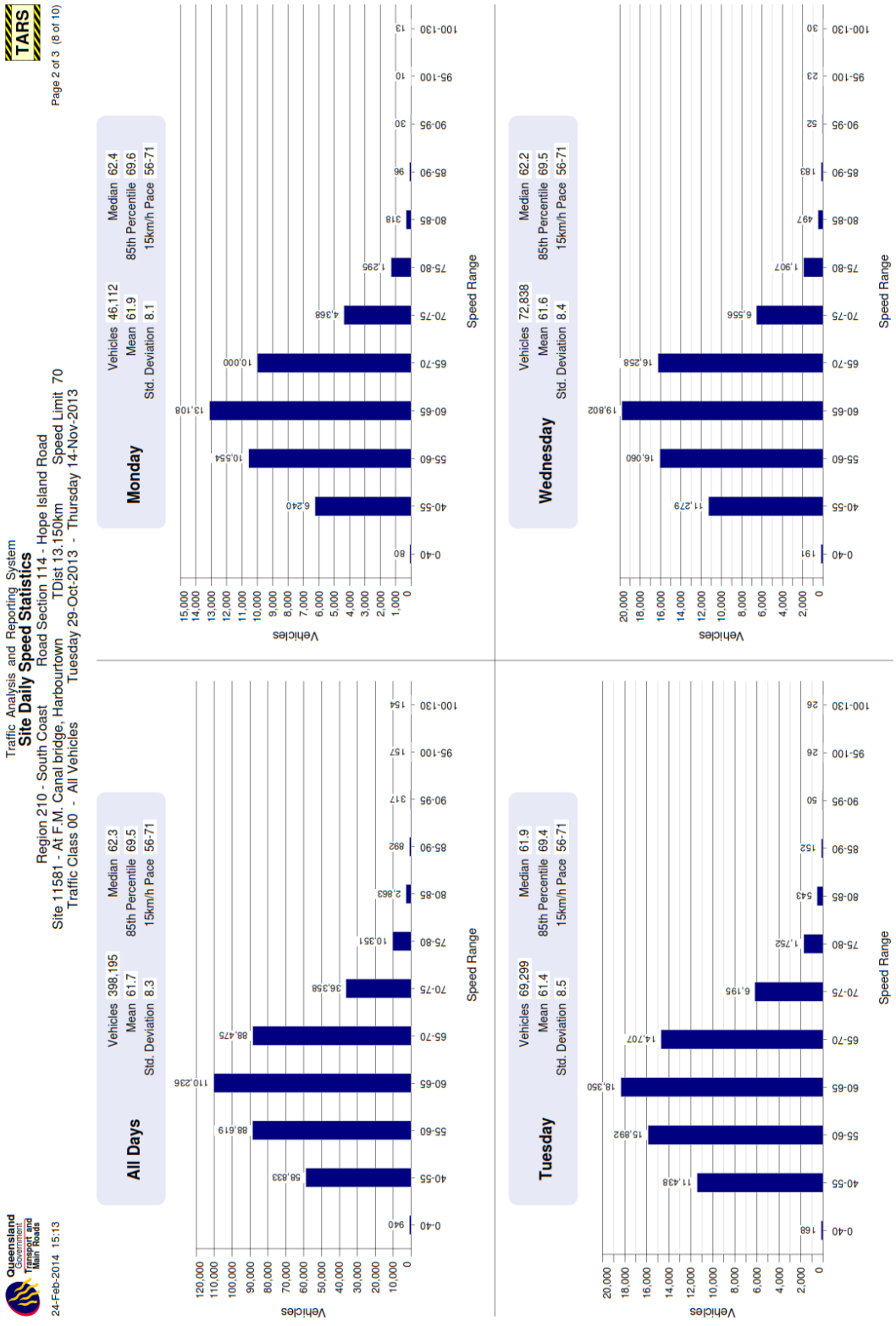
Queensland Government Transport and Main Roads

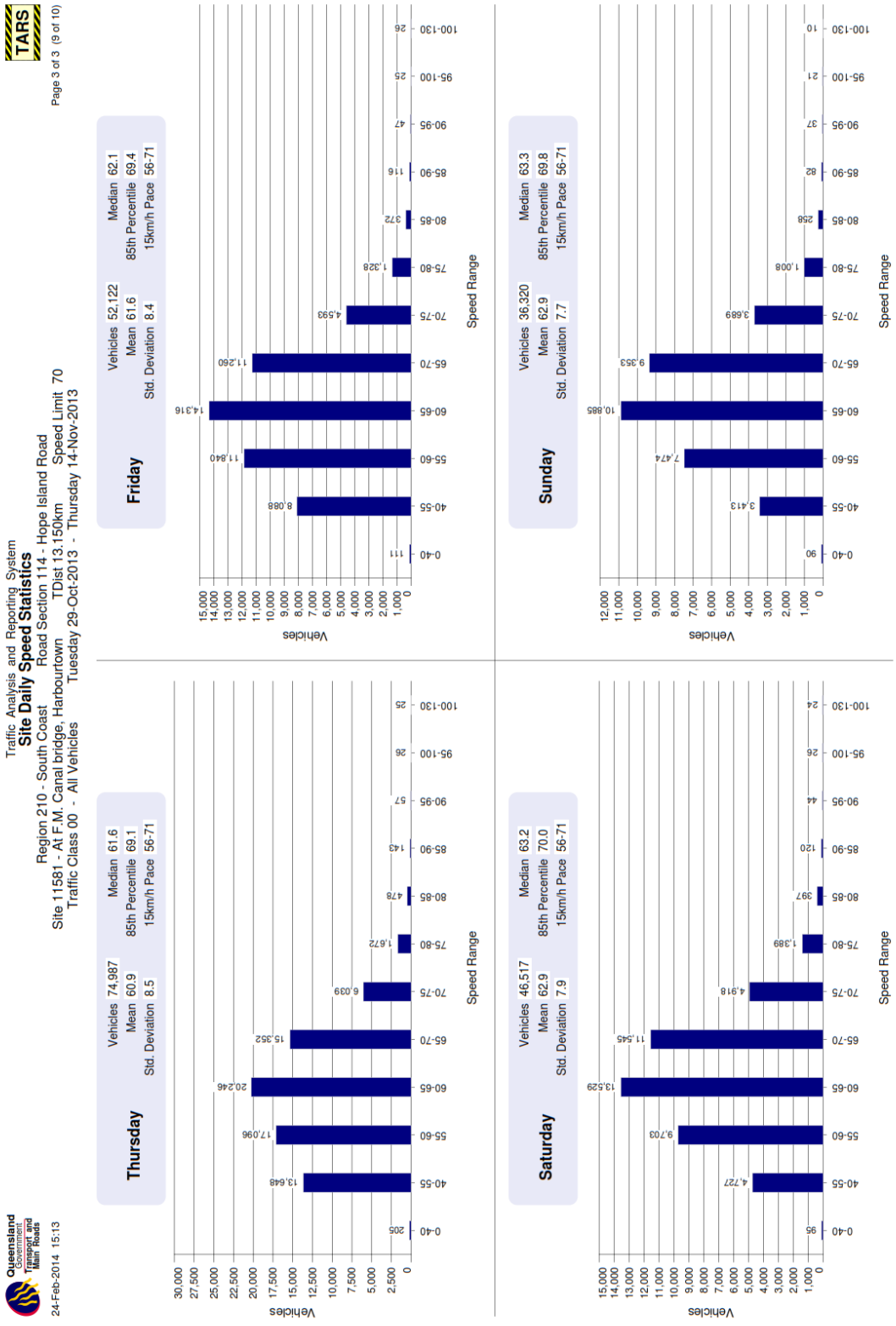
24-Feb-2014 15:13

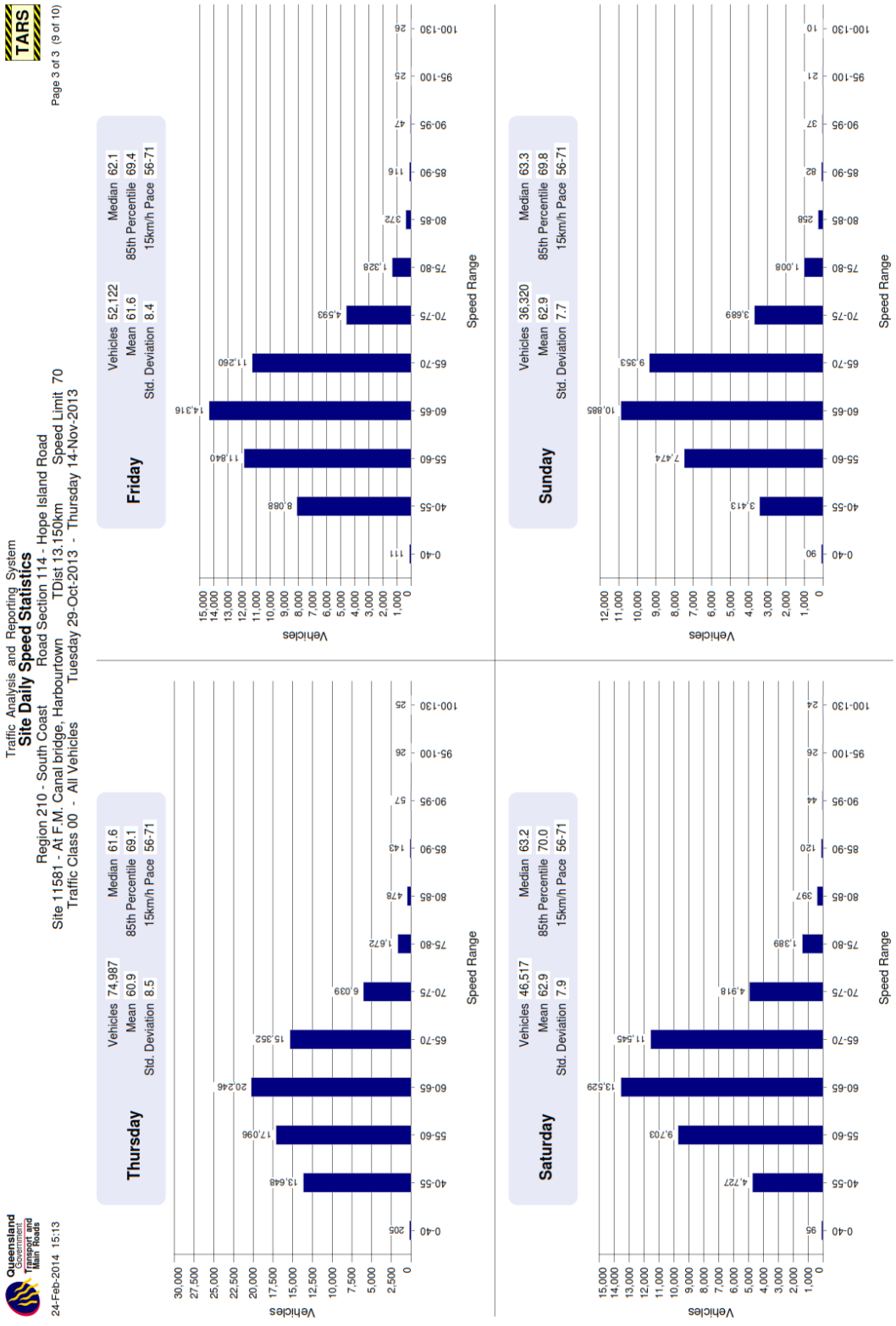

Traffic Analysis and Reporting System
Site Daily Speed Statistics
Region 210 - South Coast Road Section 114 - Hope Island Road
Site 11563 - 150m south of Marsupial Dv TDist 10.810km Speed Limit 60
Traffic Class 00 - All Vehicles Tuesday 29-Oct-2013 - Thursday 14-Nov-2013
TARS
Page 2 of 3 (5 of 10)
Queensland Government Transport and Main Roads
24-Feb-2014 15:13
All Days
Vehicles 444,508
Mean 57.5
Std. Deviation 8.1
Median 57.9
85th Percentile 64.7
15km/h Pace 51-66
Monday
Vehicles 52,310
Mean 57.3
Std. Deviation 8.1
Median 57.7
85th Percentile 64.5
15km/h Pace 51-66
Tuesday
Vehicles 77,762
Mean 58.0
Std. Deviation 7.7
Median 58.3
85th Percentile 64.8
15km/h Pace 51-66
Wednesday
Vehicles 81,629
Mean 57.1
Std. Deviation 8.0
Median 57.6
85th Percentile 64.3
15km/h Pace 50-65
Vehicles
Speed Range
0-30
30-40
40-45
45-50
50-55
55-60
60-65
65-70
70-75
75-80
80-90
90-120


Traffic Analysis and Reporting System
Site Daily Speed Statistics
Region 210 - South Coast Road Section 114 - Hope Island Road
Site 11563 - 150m south of Marsupial Dv TDist 10.810km Speed Limit 60
Traffic Class 00 - All Vehicles Tuesday 29-Oct-2013 - Thursday 14-Nov-2013
Queensland Government Transport and Main Roads
TARS
24-Feb-2014 15:13
Page 3 of 3 (6 of 10)
Thursday
Vehicles 82,756
Mean 56.9
Std. Deviation 8.1
Median 57.4
85th Percentile 64.2
15km/h Pace 50-65
Friday
Vehicles 57,988
Mean 57.1
Std. Deviation 8.2
Median 57.6
85th Percentile 64.5
15km/h Pace 50-65
Saturday
Vehicles 51,335
Mean 58.3
Std. Deviation 8.6
Median 58.9
85th Percentile 65.9
15km/h Pace 51-66
Sunday
Vehicles 40,728
Mean 58.7
Std. Deviation 8.2
Median 59.0
85th Percentile 66.0
15km/h Pace 51-66
Vehicles
Speed Range
0-30
30-40
40-45
45-50
50-55
55-60
60-65
65-70
70-75
75-80
80-90
90-120

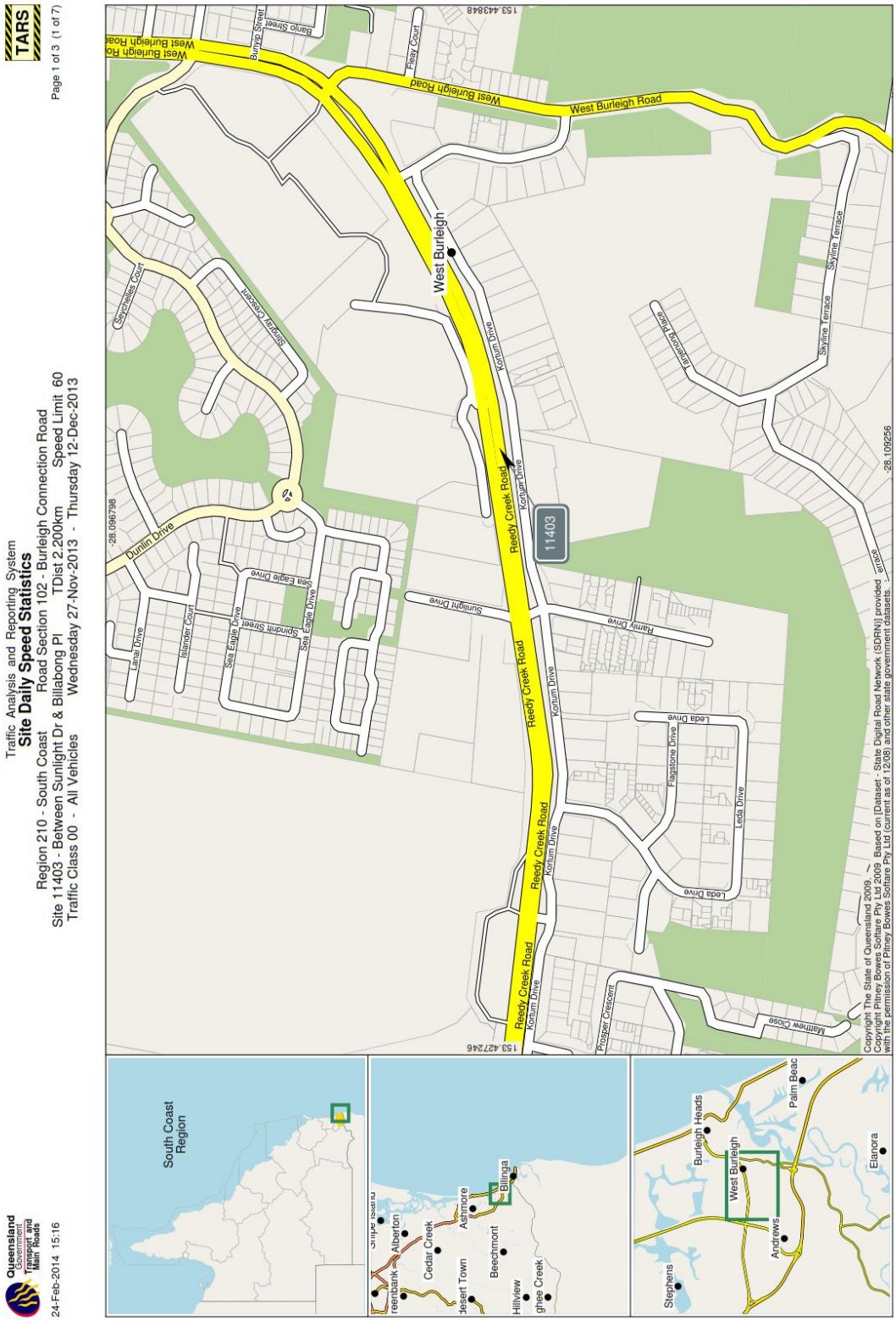

TARS
Page 1 of 3 (7 of 10)
Traffic Analysis and Reporting System
Site Daily Speed Statistics
Region 210 - South Coast Road Section 114 - Hope Island Road
Site 11581 - At F.M. Canal bridge, Harbourtown TDist 13.150km Speed Limit 70
Traffic Class 00 - All Vehicles Tuesday 29-Oct-2013 - Thursday 14-Nov-2013
Queensland Government Transport and Main Roads
24-Feb-2014 15:13
Oxley Drive
Biggera Waters
11581
Pine Ridge Road
Coombabah Road
Harbour Quays Drive
North Quay Drive
East Quay Drive
Parkview Lane
Compass Drive
Main Tree Glen
Centre View Drive
Brisbane Road
Limerence Parade
Grand Canal Way
Medika Street
Goorawin Street
Nembour Street
Barnard Street
Thompson Street
Anchorage Way
Sundance Way
153.377441
153.394043
-27.922482
-27.934940
South Coast Region
Brisbane
Peel Island
Snipe Island
Alberton
Cedar Creek
Ashmore
Billinga
Beechmont
Hillview
Hollywell
Crab Island
Runaway Bay
Wave Break Island
Labrador
Copyright The State of Queensland 2009.
Copyright Pitney Bowes Softare Pty Ltd 2009. Based on [Dataset - State Digital Road Network (SDRN)] provided with the permission of Pitney Bowes Softare Pty Ltd (current as of 12/08) and other state government datasets.

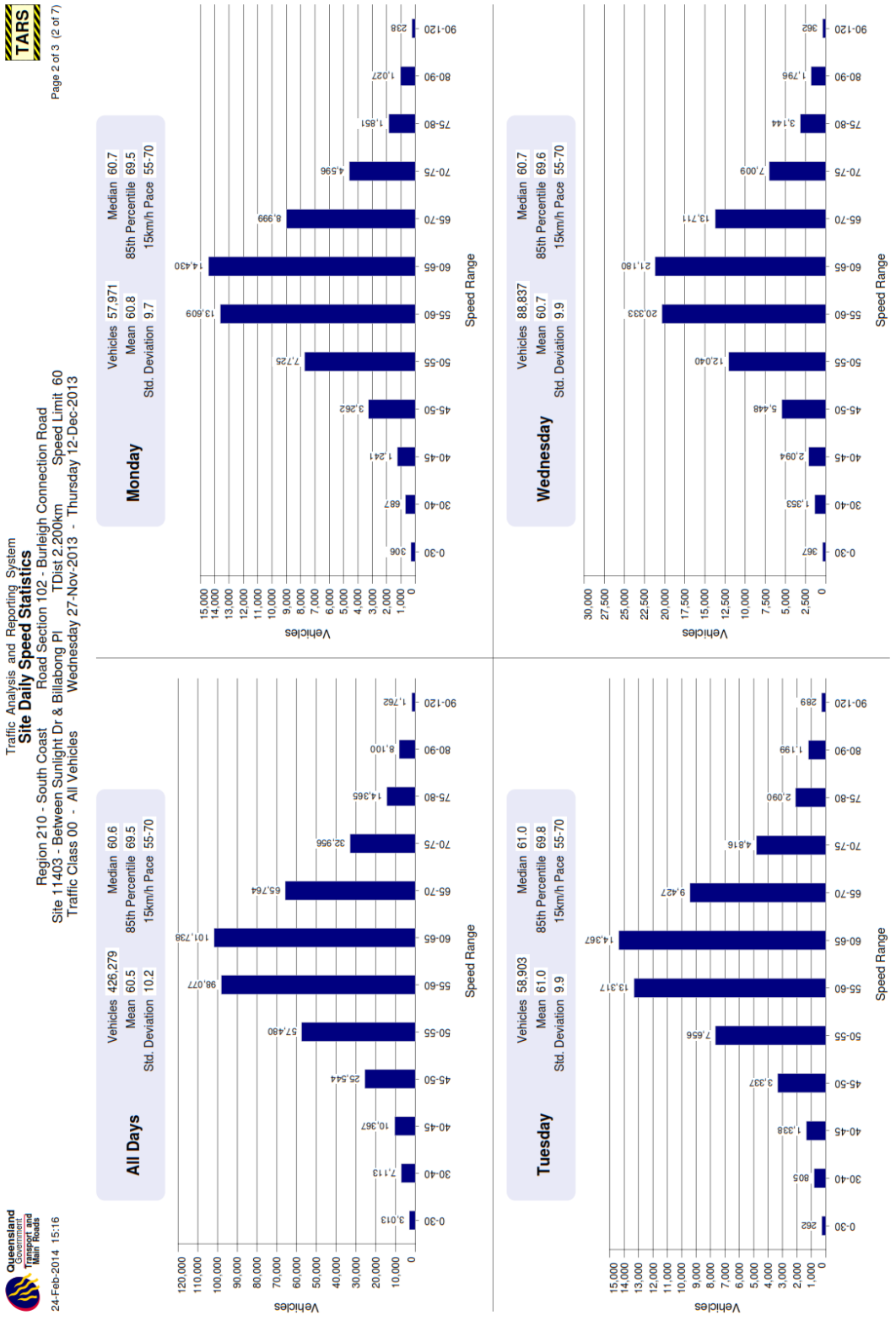

Traffic Analysis and Reporting System
Site Daily Speed Statistics
Region 210 - South Coast Road Section 114 - Hope Island Road
Site 11581 - At F.M. Canal bridge, Harbourtown TDist 13.150km Speed Limit 70
Traffic Class 00 - All Vehicles Tuesday 29-Oct-2013 - Thursday 14-Nov-2013
Queensland Government Transport and Main Roads
TARS
24-Feb-2014 15:13
Page 2 of 3 (8 of 10)
All Days
Vehicles 398,195
Mean 61.7
Std. Deviation 8.3
Median 62.3
85th Percentile 69.5
15km/h Pace 56-71
Monday
Vehicles 46,112
Mean 61.9
Std. Deviation 8.1
Median 62.4
85th Percentile 69.6
15km/h Pace 56-71
Tuesday
Vehicles 69,299
Mean 61.4
Std. Deviation 8.5
Median 61.9
85th Percentile 69.4
15km/h Pace 56-71
Wednesday
Vehicles 72,838
Mean 61.6
Std. Deviation 8.4
Median 62.2
85th Percentile 69.5
15km/h Pace 56-71
Vehicles
Speed Range
0-40
40-55
55-60
60-65
65-70
70-75
75-80
80-85
85-90
90-95
95-100
100-130

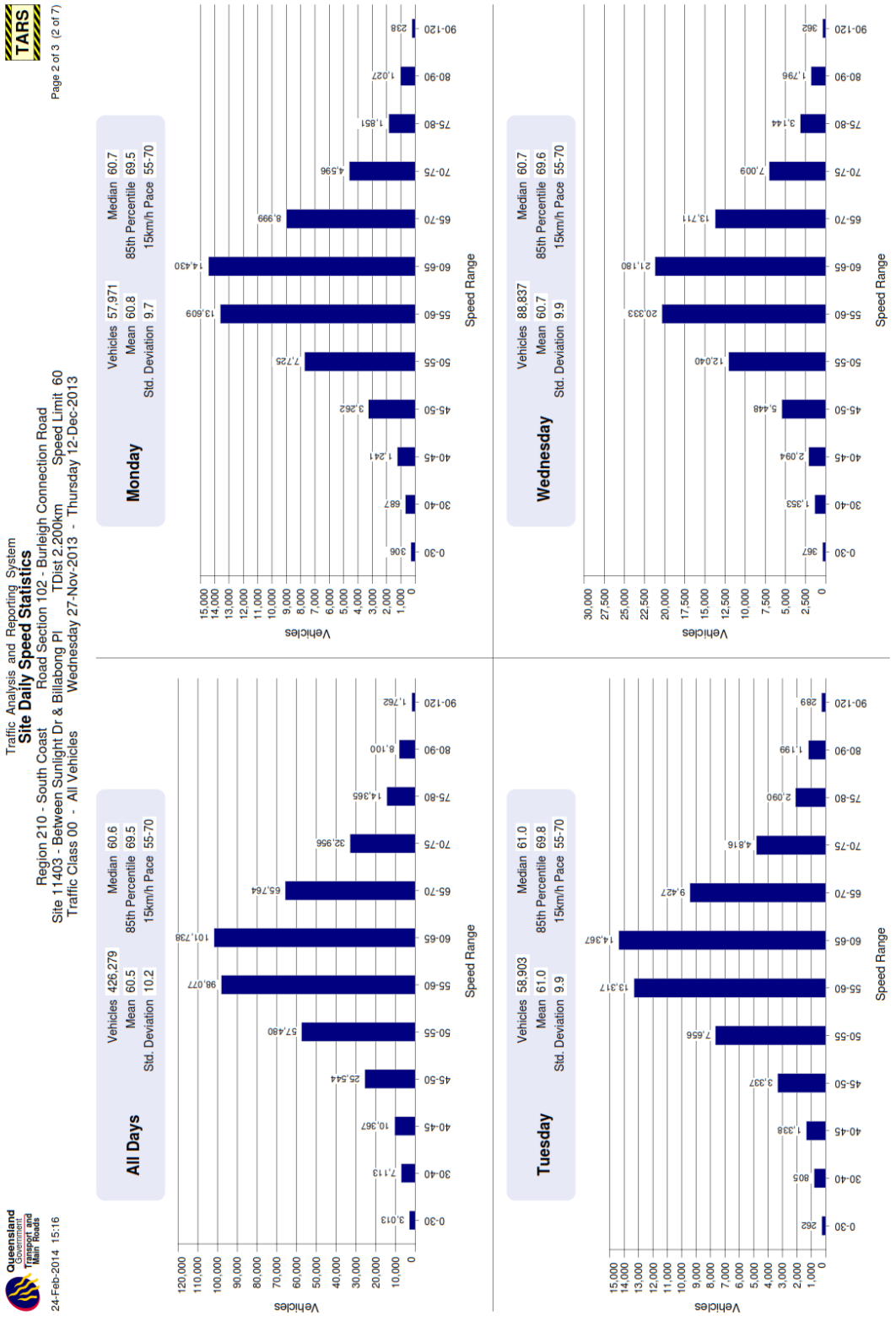

Traffic Analysis and Reporting System
Site Daily Speed Statistics
Region 210 - South Coast
Road Section 114 - Hope Island Road
Site 11581 - At F.M. Canal bridge, Harbourtown
TDist 13.150km
Speed Limit 70
Traffic Class 00 - All Vehicles
Tuesday 29-Oct-2013 - Thursday 14-Nov-2013
Queensland Government
Transport and Main Roads
TARS
24-Feb-2014 15:13
Page 3 of 3 (9 of 10)
Thursday
Vehicles 74,987
Mean 60.9
Std. Deviation 8.5
Median 61.6
85th Percentile 69.1
15km/h Pace 56-71
Friday
Vehicles 52,122
Mean 61.6
Std. Deviation 8.4
Median 62.1
85th Percentile 69.4
15km/h Pace 56-71
Saturday
Vehicles 46,517
Mean 62.9
Std. Deviation 7.9
Median 63.2
85th Percentile 70.0
15km/h Pace 56-71
Sunday
Vehicles 36,320
Mean 62.9
Std. Deviation 7.7
Median 63.3
85th Percentile 69.8
15km/h Pace 56-71
Vehicles
Speed Range
0-40
40-55
55-60
60-65
65-70
70-75
75-80
80-85
85-90
90-95
95-100
100-130

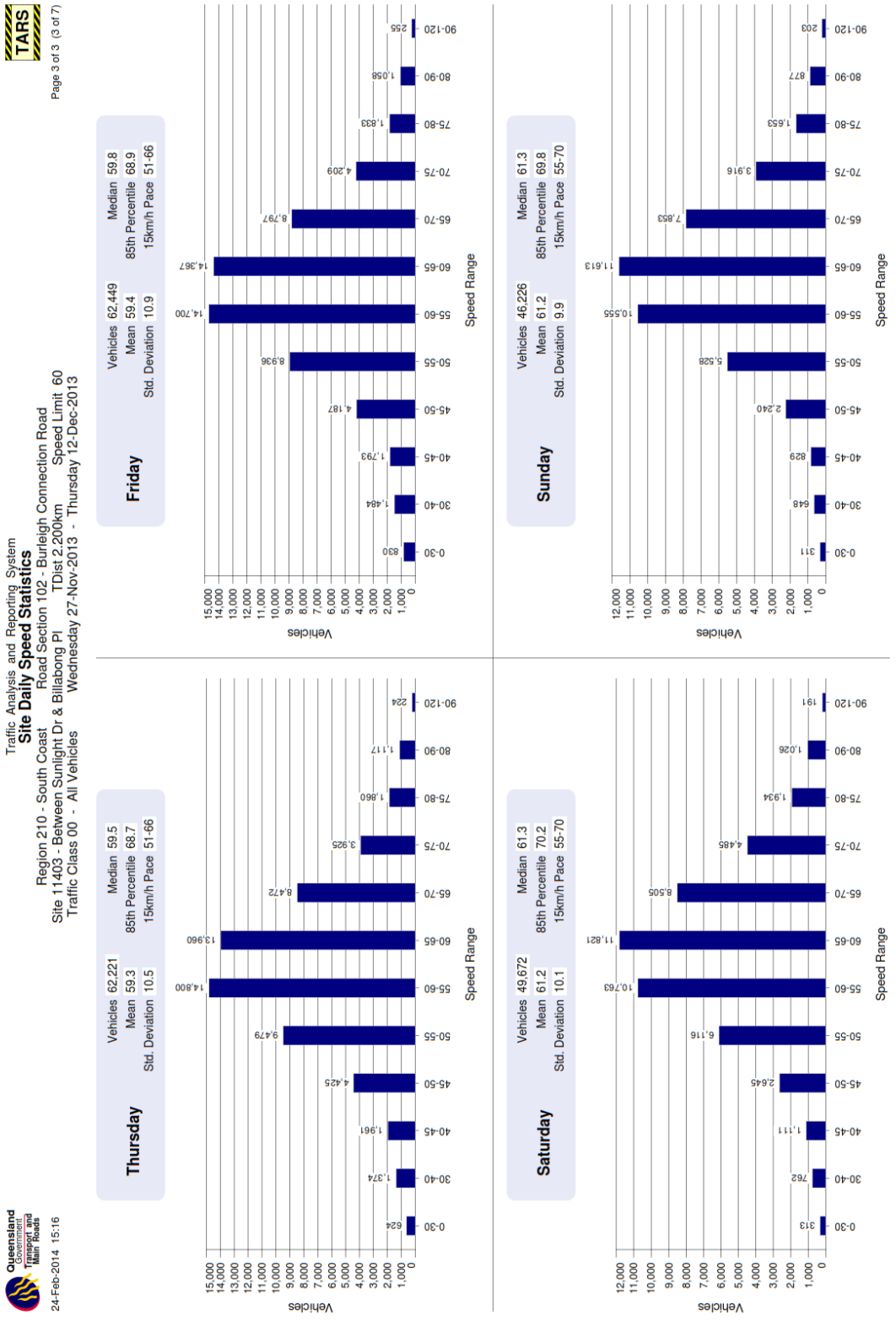

Traffic Analysis and Reporting System
Site Daily Speed Statistics
Region 210 - South Coast
Road Section 114 - Hope Island Road
Site 11581 - At F.M. Canal bridge, Harbourtown
TDist 13.150km
Speed Limit 70
Traffic Class 00 - All Vehicles
Tuesday 29-Oct-2013 - Thursday 14-Nov-2013
TARS
Page 3 of 3 (9 of 10)
Queensland Government Transport and Main Roads
24-Feb-2014 15:13
Thursday
Vehicles 74,987
Mean 60.9
Std. Deviation 8.5
Median 61.6
85th Percentile 69.1
15km/h Pace 56-71
Friday
Vehicles 52,122
Mean 61.6
Std. Deviation 8.4
Median 62.1
85th Percentile 69.4
15km/h Pace 56-71
Saturday
Vehicles 46,517
Mean 62.9
Std. Deviation 7.9
Median 63.2
85th Percentile 70.0
15km/h Pace 56-71
Sunday
Vehicles 36,320
Mean 62.9
Std. Deviation 7.7
Median 63.3
85th Percentile 69.8
15km/h Pace 56-71
Vehicles
Speed Range
0-40
40-55
55-60
60-65
65-70
70-75
75-80
80-85
85-90
90-95
95-100
100-130

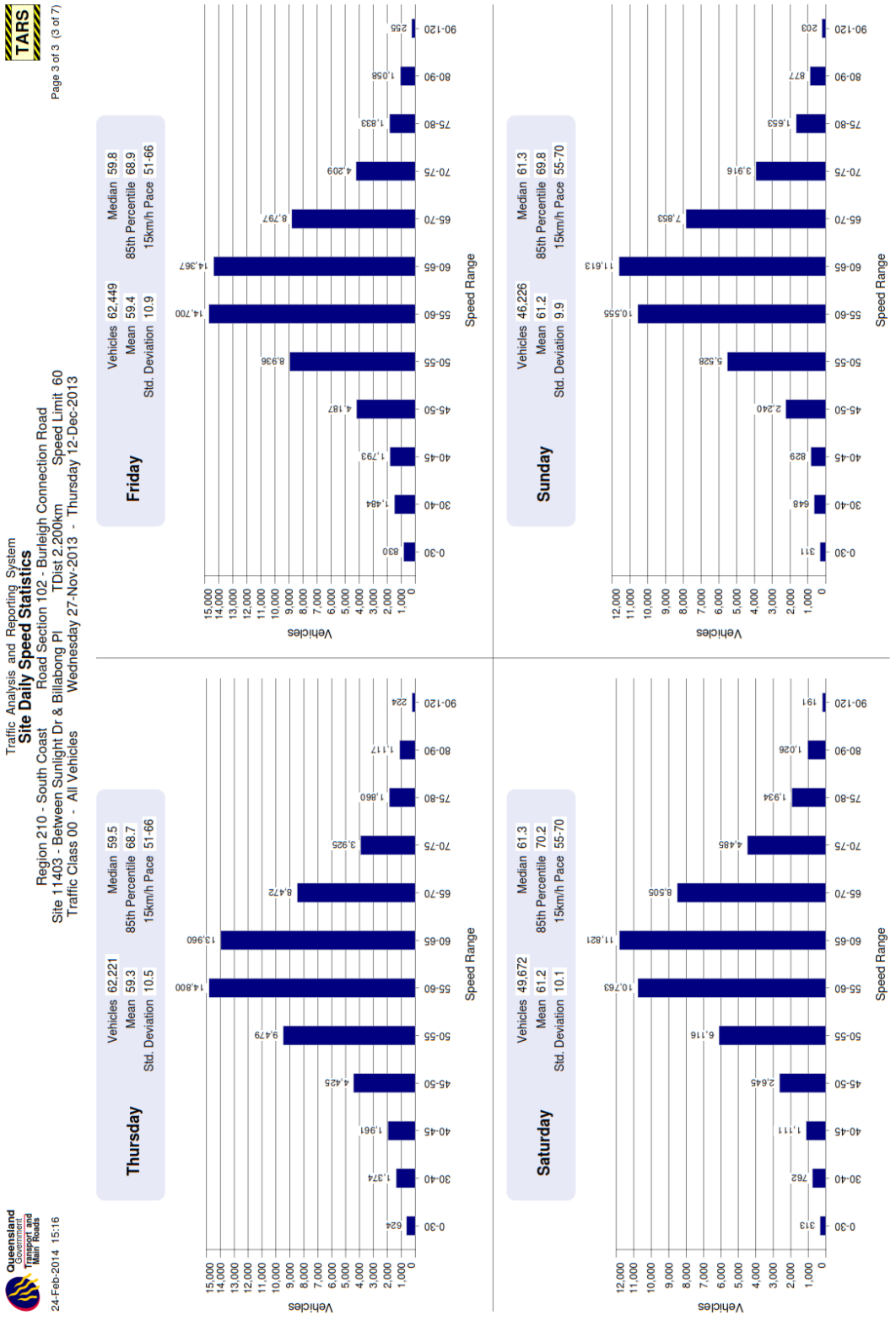
Reedy Creek Road




Traffic Analysis and Reporting System
Site Daily Speed Statistics
Region 210 - South Coast Road Section 102 - Burleigh Connection Road
Site 11403 - Between Sunlight Dr & Billabong Pl TDist 2.200km Speed Limit 60
Traffic Class 00 - All Vehicles Wednesday 27-Nov-2013 - Thursday 12-Dec-2013
TARS
Page 2 of 3 (2 of 7)
Queensland Government Transport and Main Roads
24-Feb-2014 15:16
All Days
Vehicles 426,279
Mean 60.5
Std. Deviation 10.2
Median 60.6
85th Percentile 69.5
15km/h Pace 55-70
Monday
Vehicles 57,971
Mean 60.8
Std. Deviation 9.7
Median 60.7
85th Percentile 69.5
15km/h Pace 55-70
Tuesday
Vehicles 58,903
Mean 61.0
Std. Deviation 9.9
Median 61.0
85th Percentile 69.8
15km/h Pace 55-70
Wednesday
Vehicles 88,837
Mean 60.7
Std. Deviation 9.9
Median 60.7
85th Percentile 69.6
15km/h Pace 55-70
Vehicles
Speed Range
0-30
30-40
40-45
45-50
50-55
55-60
60-65
65-70
70-75
75-80
80-90
90-120


Queensland Government Transport and Main Roads
TARS
Page 2 of 3 (2 of 7)
24-Feb-2014 15:16
Traffic Analysis and Reporting System
Site Daily Speed Statistics
Region 210 - South Coast Road Section 102 - Burleigh Connection Road
Site 11403 - Between Sunlight Dr & Billabong Pl TDist 2.200km Speed Limit 60
Traffic Class 00 - All Vehicles Wednesday 27-Nov-2013 - Thursday 12-Dec-2013
All Days
Vehicles 426,279
Mean 60.5
Std. Deviation 10.2
Median 60.6
85th Percentile 69.5
15km/h Pace 55-70
Monday
Vehicles 57,971
Mean 60.8
Std. Deviation 9.7
Median 60.7
85th Percentile 69.5
15km/h Pace 55-70
Tuesday
Vehicles 58,903
Mean 61.0
Std. Deviation 9.9
Median 61.0
85th Percentile 69.8
15km/h Pace 55-70
Wednesday
Vehicles 88,837
Mean 60.7
Std. Deviation 9.9
Median 60.7
85th Percentile 69.6
15km/h Pace 55-70
Vehicles
Speed Range
0-30
30-40
40-45
45-50
50-55
55-60
60-65
65-70
70-75
75-80
80-90
90-120


Traffic Analysis and Reporting System
Site Daily Speed Statistics
Region 210 - South Coast Road Section 102 - Burleigh Connection Road
Site 11403 - Between Sunlight Dr & Billabong Pl TDist 2.200km Speed Limit 60
Traffic Class 00 - All Vehicles Wednesday 27-Nov-2013 - Thursday 12-Dec-2013
Page 3 of 3 (3 of 7)
TARS
Queensland Government Transport and Main Roads
24-Feb-2014 15:16
Thursday
Vehicles 62,221
Mean 59.3
Std. Deviation 10.5
Median 59.5
85th Percentile 68.7
15km/h Pace 51-66
Friday
Vehicles 62,449
Mean 59.4
Std. Deviation 10.9
Median 59.8
85th Percentile 68.9
15km/h Pace 51-66
Saturday
Vehicles 49,672
Mean 61.2
Std. Deviation 10.1
Median 61.3
85th Percentile 70.2
15km/h Pace 55-70
Sunday
Vehicles 46,226
Mean 61.2
Std. Deviation 9.9
Median 61.3
85th Percentile 69.8
15km/h Pace 55-70
Vehicles
Speed Range
0-30
30-40
40-45
45-50
50-55
55-60
60-65
65-70
70-75
75-80
80-90
90-120


Traffic Analysis and Reporting System
Site Daily Speed Statistics
Region 210 - South Coast Road Section 102 - Burleigh Connection Road
Site 11403 - Between Sunlight Dr & Billabong Pl TDist 2.200km Speed Limit 60
Traffic Class 00 - All Vehicles Wednesday 27-Nov-2013 - Thursday 12-Dec-2013
Page 3 of 3 (3 of 7)
TARS
Queensland Government Transport and Main Roads
24-Feb-2014 15:16
Thursday
Vehicles 62,221
Mean 59.3
Std. Deviation 10.5
Median 59.5
85th Percentile 68.7
15km/h Pace 51-66
Friday
Vehicles 62,449
Mean 59.4
Std. Deviation 10.9
Median 59.8
85th Percentile 68.9
15km/h Pace 51-66
Saturday
Vehicles 49,672
Mean 61.2
Std. Deviation 10.1
Median 61.3
85th Percentile 70.2
15km/h Pace 55-70
Sunday
Vehicles 46,226
Mean 61.2
Std. Deviation 9.9
Median 61.3
85th Percentile 69.8
15km/h Pace 55-70
Vehicles
Speed Range
0-30
30-40
40-45
45-50
50-55
55-60
60-65
65-70
70-75
75-80
80-90
90-120

Queensland Government Transport and Main Roads

24-Feb-2014 15:16

Traffic Analysis and Reporting System

Site Daily Speed Statistics

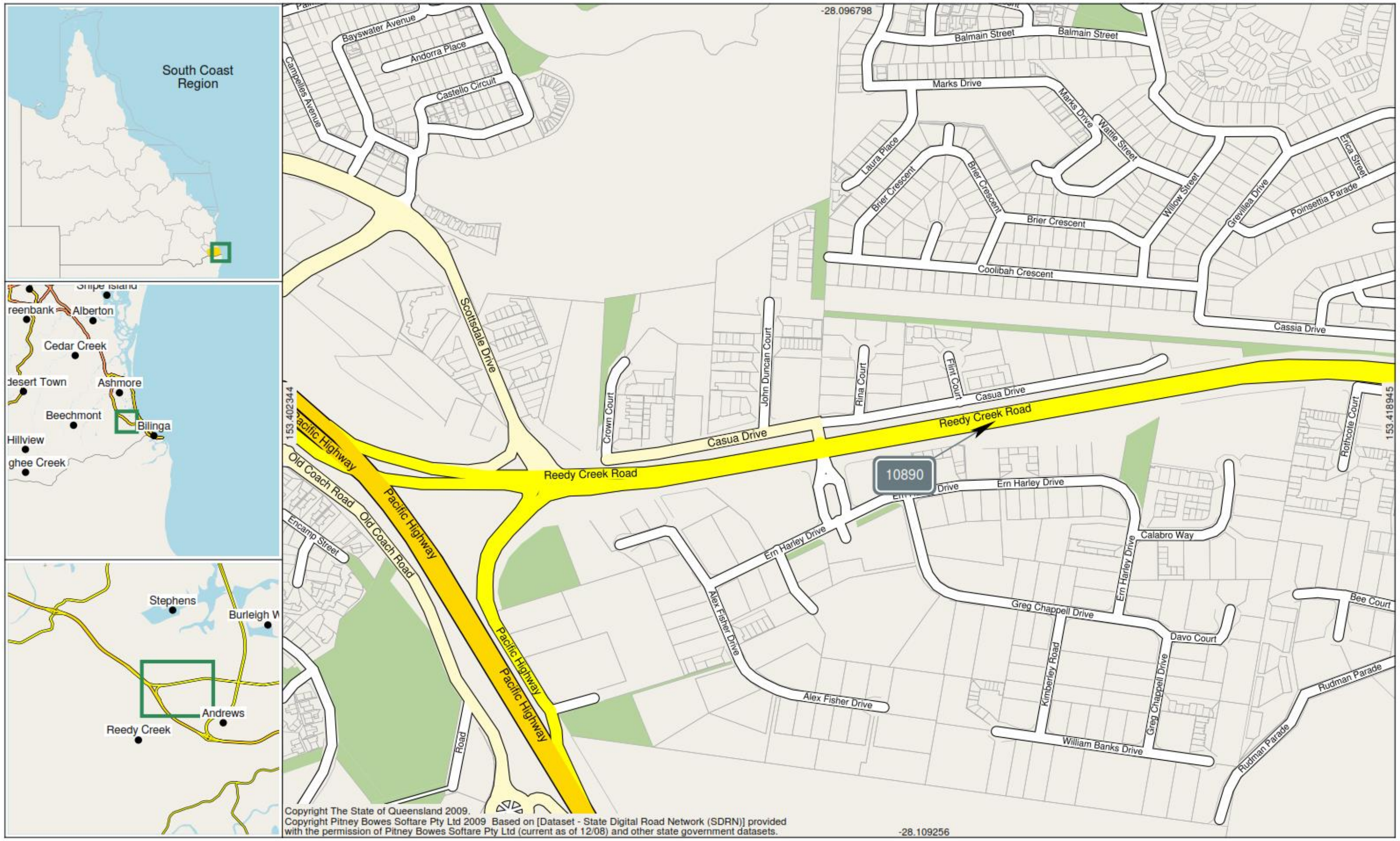
Region 210 - South Coast   Road Section 102 - Burleigh Connection Road

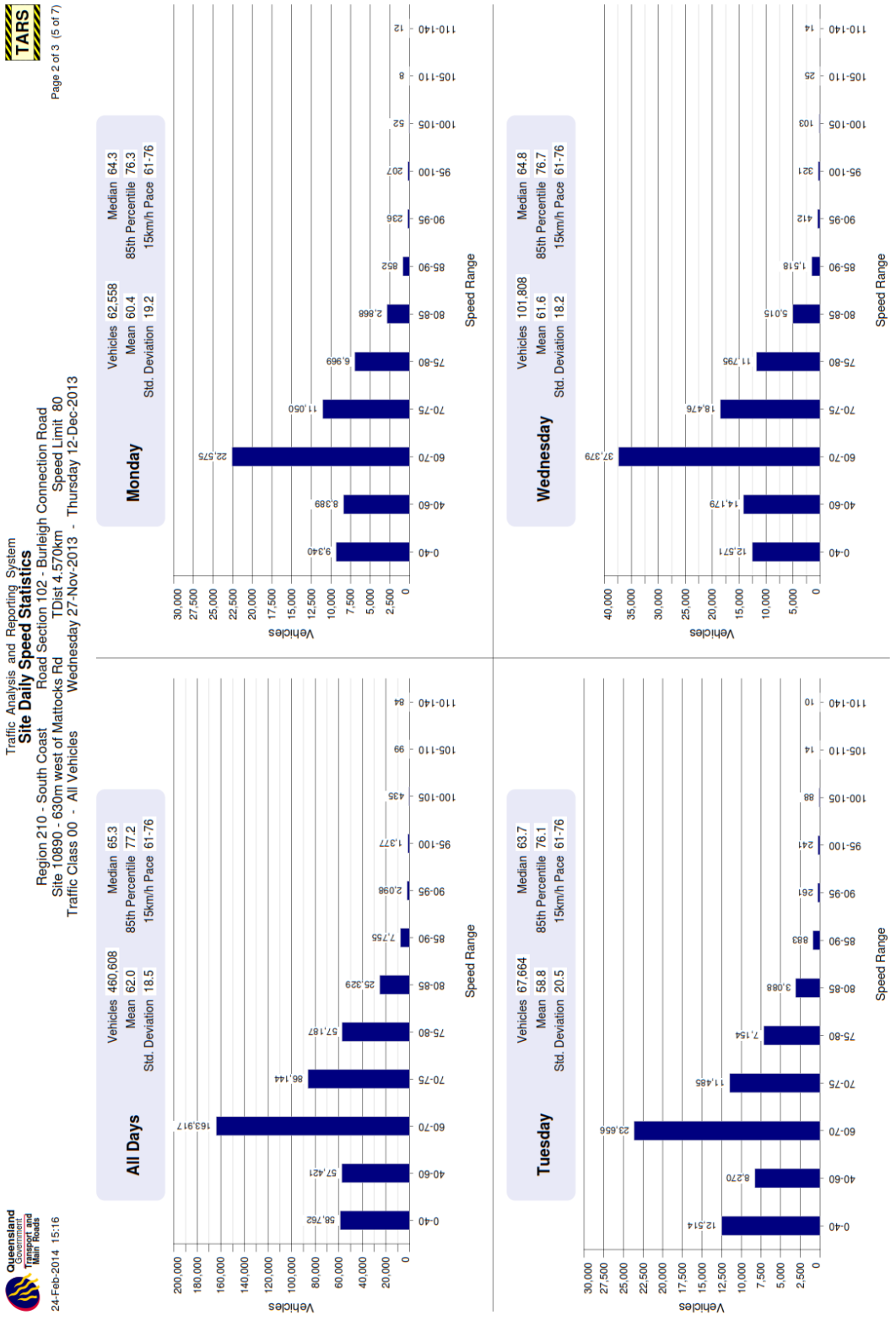
Site 10890 - 630m west of Mattocks Rd   TDist 4.570km   Speed Limit 80

Traffic Class 00 - All Vehicles   Wednesday 27-Nov-2013 - Thursday 12-Dec-2013

TARS

Page 1 of 3 (4 of 7)




Traffic Analysis and Reporting System
Site Daily Speed Statistics
Region 210 - South Coast Road Section 102 - Burleigh Connection Road
Site 10890 - 630m west of Mattocks Rd TDist 4.570km Speed Limit 80
Traffic Class 00 - All Vehicles Wednesday 27-Nov-2013 - Thursday 12-Dec-2013
Queensland Government Transport and Main Roads
TARS
24-Feb-2014 15:16
Page 2 of 3 (5 of 7)
All Days
Vehicles 460,608
Mean 62.0
Std. Deviation 18.5
Median 65.3
85th Percentile 77.2
15km/h Pace 61-76
Monday
Vehicles 62,558
Mean 60.4
Std. Deviation 19.2
Median 64.3
85th Percentile 76.3
15km/h Pace 61-76
Tuesday
Vehicles 67,664
Mean 58.8
Std. Deviation 20.5
Median 63.7
85th Percentile 76.1
15km/h Pace 61-76
Wednesday
Vehicles 101,808
Mean 61.6
Std. Deviation 18.2
Median 64.8
85th Percentile 76.7
15km/h Pace 61-76
Vehicles
Speed Range
0-40
40-60
60-70
70-75
75-80
80-85
85-90
90-95
95-100
100-105
105-110
110-140

Queensland Government Transport and Main Roads

24-Feb-2014 15:16

Traffic Analysis and Reporting System

Site Daily Speed Statistics

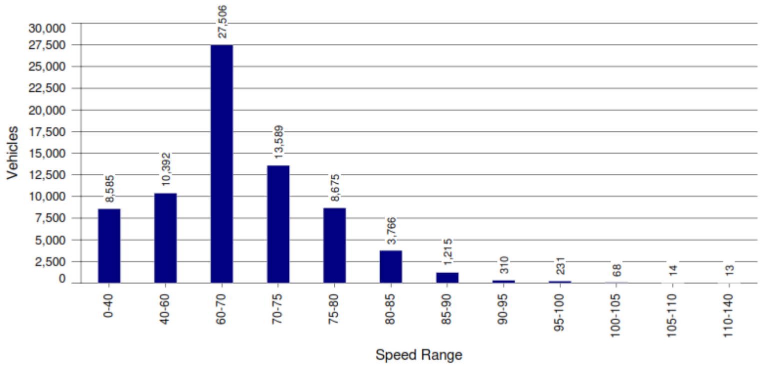
Region 210 - South Coast   Road Section 102 - Burleigh Connection Road
Site 10890 - 630m west of Mattocks Rd   TDist 4.570km   Speed Limit 80
Traffic Class 00 - All Vehicles   Wednesday 27-Nov-2013 - Thursday 12-Dec-2013

TARS

Page 3 of 3 (6 of 7)

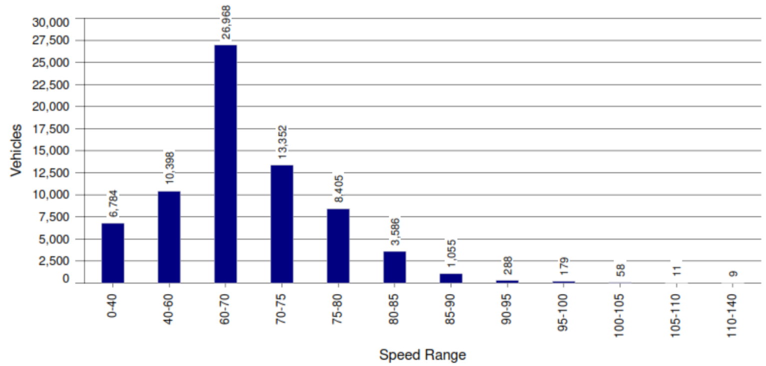
Thursday

Vehicles	74,364	Median	64.9
Mean	62.1	85th Percentile	76.8
Std. Deviation	17.8	15km/h Pace	61-76



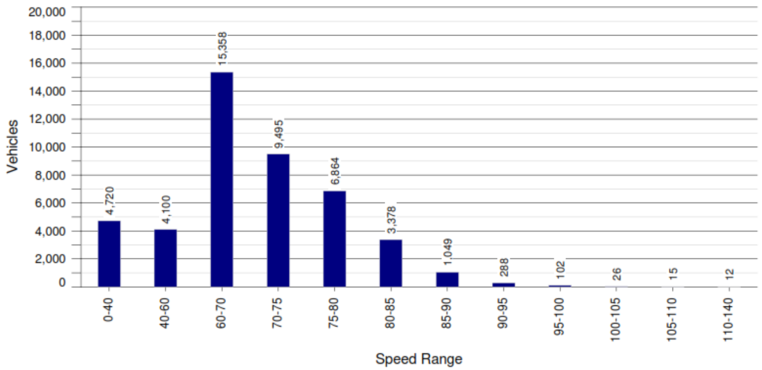
Friday

Vehicles	71,093	Median	65.2
Mean	62.9	85th Percentile	76.7
Std. Deviation	16.8	15km/h Pace	61-76



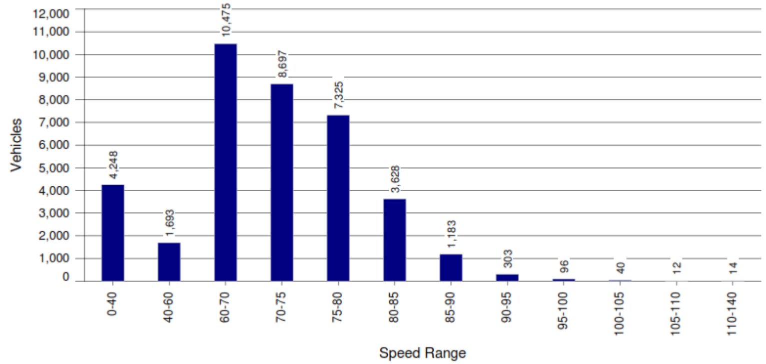
Saturday

Vehicles	45,407	Median	67.7
Mean	64.5	85th Percentile	78.6
Std. Deviation	17.6	15km/h Pace	61-76



Sunday

Vehicles	37,714	Median	70.5
Mean	66.2	85th Percentile	79.7
Std. Deviation	18.4	15km/h Pace	65-80



Appendix C

Case Study Outputs

Nerang-Murwillumbah Rd – Segment 1 – QLIMITS

Speed Limit Review – Queensland (SLR-QLD)
Detailed Assessment Report

Background Information

Recommended Speed Limit:

80

Road Name: Nerang Murwillumbah Road.
Road Location: Natural Bridge.
Suburb: Natural Bridge.
GPS Start Point : .
GPS Finish Point: .
TMR Road Number: 201.
Local Government: 230, Gold Coast City Council
Main Roads District: 1, South Coast Hinterland
The need to review the speed limit on this road has occurred due to other reasons not specified.
The length of the road section being assessed is 4.27 km
AADT on this road section is 670 vpd
The existing speed limit is 80 km/h.

Adjacent Speed Zones
Approach 1: 80 km/h - Northern approach
Approach 2: 70 km/h - Southern approach

Stage 1: Road function

This section of Nerang Murwillumbah Road being assessed is located in a rural area.
The road type is: Trunk Collector Roads and Collector Roads.
The Typical Speed Limit is: 80 km/h.
The Existing Speed Limit **does** equal the Typical Speed Limit

Stage 2: Prevailing Traffic speed

Sample data on 4688 vehicles was analysed using ' Manual methods'
The upper limit of 15 km/h pace is 80
The mean speed is 70 km/h
The 85th percentile speed is 76 km/h
Hence, the prevailing traffic speed data **does** correlate with the existing Speed Limit

Stage 3: QLIMITS

The suggested speed limit based on the speed environment analysis was **80 km/h** after allowing for site specific issues.

Comments
The presence of one lane sections and road geometry is not suitable for vehicle speeds higher than 80 km/h. The formation of the road segment is narrow carriageway width with a high number of low speed curves (with advisory signage). There are numerous blind spots within the road segment and hazards within the clear zone. The road is used for recreational purposes and transportation of rural equipment (i.e. tractors) also occurs.

Additional issues considered:

- A lower speed limit may be appropriate due to the presence of special roadside activities in the area. These include:
    - Recreational or tourist traffic

- Presence of roadside hazards
- Narrow traffic lane width
- Other special activities
- Transportation of large rural machinery i.e. over width tractors

Note: A Road safety audit has been conducted to assess roadside activities or hazards

- Adverse road conditions have been identified along the section of road. Targeted advisory signing, remedial works or lower limits should be considered if appropriate. The issues include:
  The formation of the road segment is narrow carriageway width with a high number of low speed curves (with advisory signage). There are numerous blind spots within the road segment and hazards within the clear zone. The road is used for recreational purpo

- Speed environment was assessed (Stage 3 was completed). Answers to the Speed Environment questions were as follows:
  - Has a comprehensive road safety audit been completed? YES
  - Did the road safety audit highlight deficiencies that have not been corrected? YES
  - Was the road safety audit conducted more than 3 years ago? NO
  - Is there a concern for pedestrian or cyclist safety along the road segment? NO
  - Are there high risk intersections in the road segment? YES

Frequency of Roadside Accesses

	Type of access	Number
A	Residences, small commercial establishments, small public buildings and other units which generate light and/or occasional activity. (The weighting for this type of access is 1).	36
B	Average commercial establishment, local schools, caravan parks, light industries, public buildings and units generating activity which is either: 1. Continuous light. 2. Moderate at certain times, such as commuting hours. 3. Substantial at infrequent intervals. (The weighting for this type of access is 2).	0
C	Heavy industry, schools, shopping centres and other units generating continuous moderate activity or substantial activity at certain regular times. (The weighting for this type of access is 3).	0
D	Large shopping centres and other units generating substantial and continuous activity. Some large industries which are tourist attractions or for some other reason generate substantial traffic volumes would be included in this activity. (The weighting for this type of access is 4).	0
E	Unsignalised intersecting roads of substantially lesser importance than the road being assessed, or intersecting roads where side traffic and turning movements have little effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 1).	1
F	Unsignalised intersecting roads of lesser importance than the road being assessed but where the side road traffic and turning movements are such that the intersection has appreciable effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 2).	0
G	Unsignalised intersecting roads of comparable or greater significance than the road being assessed. Intersections which have pronounced effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 3).	0

H	Roundabouts and signalised intersecting roads. (The weighting for this type of access is 3).	0
	Average number of accesses per 100 m	0.86

Freeway
This road is not a freeway

Road Geometry and Congestion
Adverse road conditions have been identified along the section of road. Targeted advisory signing, remedial works or lower limits should be considered if appropriate. The issues include: The formation of the road segment is narrow carriageway width with a high number of low speed curves (with advisory signage). There are numerous blind spots within the road segment and hazards within the clear zone. The road is used for recreational purpo

Special Roadside Activities
A lower speed limit may be appropriate due to the presence of special roadside activities in the area. These include:

- Recreational or tourist traffic
- Presence of roadside hazards
- Narrow traffic lane width
- Other special activities
- Transportation of large rural machinery i.e. over width tractors

Note: A Road safety audit has been conducted to assess roadside activities or hazards

Number of crashes in the past 5 years:

Description	No. of crashes
Head-on	0
Rear-end	0
Lane change	0
Parallel lanes, turning	0
U-turn	0
Entering roadway	0
Overtaking, same direction	0
Hit parked vehicle	0
Hit railway train	0
Pedestrian	0
Permanent obstruction on carriageway	0
Hit animal	1
Off carriageway, on straight	0
Off carriageway, on straight, hit object	0
Out of control, on straight	0
Off carriageway on curve	0
Off carriageway, on curve, hit object	0
Out of control, on curve	0

The average annual equivalent crash risk is 6.00 (10^4)

Crash Rate

The crash rate is 575 (10^4 ERUs per 10^8 VKT)

Stage 4: Speed correlation check & recommendations

The speed limit based on road function is **80 km/h.**

The speed limit suggested by current speed data is **80 km/h.**
The speed limit suggested by the speed environment (QLIMITS) is **80 km/h.**

Nerang-Murwillumbah Rd – Segment 2 – QLIMITS

Speed Limit Review – Queensland (SLR-QLD)
Detailed Assessment Report

Background Information

Interim Speed Limit:

70

Road Name: Nerang Murwillumbah Road.
Road Location: Natural Bridge.
Suburb: Natural Bridge.
GPS Start Point : .
GPS Finish Point: .
TMR Road Number: 201.
Local Government: 230, Gold Coast City Council
Main Roads District: 1, South Coast Hinterland
The need to review the speed limit on this road has occurred due to other reasons not specified.
The length of the road section being assessed is 3.12 km
AADT on this road section is 227 vpd
The existing speed limit is 70 km/h.

Adjacent Speed Zones
Approach 1: 80 km/h - Northern approach
Approach 2: 80 km/h - Southern approach

Stage 1: Road function

This section of Nerang Murwillumbah Road being assessed is located in a rural area.
The road type is: Trunk Collector Roads and Collector Roads.
The Typical Speed Limit is: 80 km/h.
The Existing Speed Limit **does not** equal the Typical Speed Limit

Stage 2: Prevailing Traffic speed

Sample data on 1588 vehicles was analysed using ' Manual methods'
The upper limit of 15 km/h pace is 71
The mean speed is 60 km/h
The 85th percentile speed is 65 km/h
Hence, the prevailing traffic speed data **does** correlate with the existing Speed Limit

Stage 3: QLIMITS

The suggested speed limit based on the speed environment analysis was **80 km/h** after allowing for site specific issues.

Comments
It is suggested that the road speed is maintained at the current speed limit of 70 km/h.

The formation of the road segment is a narrow carriageway width (with no centre line) that does not allow safe passing of two way traffic. There are a high number of low speed curves (with advisory signage). There are numerous blind spots within the road segment and hazards within the clear zone. The road is used for recreational purposes and transportation of rural equipment (i.e. tractors) also occurs.

Additional issues considered:

- A lower speed limit may be appropriate due to the presence of special roadside activities in

the area. These include:
- Recreational or tourist traffic
- Presence of roadside hazards
- Narrow traffic lane width
- Other special activities
- Transportation of rural equipment i.e. over width tractors

Note: A Road safety audit has been conducted to assess roadside activities or hazards

- The accident rate for this section of road is **significantly higher** than the average for this type of road. Further investigation of the possible causes for this increased accident rate is recommended. A review of the recommended speed limit may or may not be appropriate depending on local circumstances.

- Adverse road conditions have been identified along the section of road. Targeted advisory signing, remedial works or lower limits should be considered if appropriate. The issues include:
  The formation of the road segment is a narrow carriageway width (with no centre line) that does not allow safe passing of two way traffic. There are a high number of low speed curves (with advisory signage). There are numerous blind spots within the road

- Speed environment was assessed (Stage 3 was completed). Answers to the Speed Environment questions were as follows:
  - Has a comprehensive road safety audit been completed? YES
  - Did the road safety audit highlight deficiencies that have not been corrected? YES
  - Was the road safety audit conducted more than 3 years ago? NO
  - Is there a concern for pedestrian or cyclist safety along the road segment? NO
  - Are there high risk intersections in the road segment? NO

Frequency of Roadside Accesses

	Type of access	**Number**
A	Residences, small commercial establishments, small public buildings and other units which generate light and/or occasional activity. (The weighting for this type of access is 1).	14
B	Average commercial establishment, local schools, caravan parks, light industries, public buildings and units generating activity which is either: 1. Continuous light. 2. Moderate at certain times, such as commuting hours. 3. Substantial at infrequent intervals. (The weighting for this type of access is 2).	0
C	Heavy industry, schools, shopping centres and other units generating continuous moderate activity or substantial activity at certain regular times. (The weighting for this type of access is 3).	0
D	Large shopping centres and other units generating substantial and continuous activity. Some large industries which are tourist attractions or for some other reason generate substantial traffic volumes would be included in this activity. (The weighting for this type of access is 4).	0
E	Unsignalised intersecting roads of substantially lesser importance than the road being assessed, or intersecting roads where side traffic and turning movements have little effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 1).	0

F	Unsignalised intersecting roads of lesser importance than the road being assessed but where the side road traffic and turning movements are such that the intersection has appreciable effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 2).	0
G	Unsignalised intersecting roads of comparable or greater significance than the road being assessed. Intersections which have pronounced effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 3).	0
H	Roundabouts and signalised intersecting roads. (The weighting for this type of access is 3).	0
	Average number of accesses per 100 m	0.44

Freeway
This road is not a freeway

Road Geometry and Congestion
Adverse road conditions have been identified along the section of road. Targeted advisory signing, remedial works or lower limits should be considered if appropriate. The issues include: The formation of the road segment is a narrow carriageway width (with no centre line) that does not allow safe passing of two way traffic. There are a high number of low speed curves (with advisory signage). There are numerous blind spots within the road

Special Roadside Activities
A lower speed limit may be appropriate due to the presence of special roadside activities in the area. These include:

- Recreational or tourist traffic
- Presence of roadside hazards
- Narrow traffic lane width
- Other special activities
- Transportation of rural equipment i.e. over width tractors

Note: A Road safety audit has been conducted to assess roadside activities or hazards

Number of crashes in the past 5 years:

Description	No. of crashes
Head-on	0
Rear-end	0
Lane change	0
Parallel lanes, turning	0
U-turn	0
Entering roadway	0
Overtaking, same direction	0
Hit parked vehicle	0
Hit railway train	0
Pedestrian	0
Permanent obstruction on carriageway	0
Hit animal	1
Off carriageway, on straight	0
Off carriageway, on straight, hit object	0
Out of control, on straight	0

Off carriageway on curve	2
Off carriageway, on curve, hit object	0
Out of control, on curve	0

The average annual equivalent crash risk is 21.00 (10^4)

Crash Rate

The crash rate is 8124 (10^4 ERUs per 10^8 VKT)

Stage 4: Speed correlation check & recommendations

The speed limit based on road function is **80 km/h.**

The speed limit suggested by current speed data is **70 km/h.**
The speed limit suggested by the speed environment (QLIMITS) is **80 km/h.**

Currumbin Creek-Tomewin Road – Segment 1 – QLIMITS

Speed Limit Review – Queensland (SLR-QLD)
Detailed Assessment Report

Background Information

Recommended Speed Limit:

60

Road Name: Currumbin Creek Tomewin Road.
Road Location: CH 0.0km to 2.0km.
Suburb: Currumbin Valley.
GPS Start Point : 28°11'6.77"S, 153°25'1.41"E.
GPS Finish Point: 28°11'58.03"S,153°25'14.89"E.
TMR Road Number: 2011.
Local Government: 230, Gold Coast City Council
Main Roads District: 1, South Coast Hinterland
The need to review the speed limit on this road has occurred due to other reasons not specified.
The length of the road section being assessed is 2 km
AADT on this road section is 768 vpd
The existing speed limit is 60 km/h.

Adjacent Speed Zones
Approach 1: 60 km/h
Approach 2: 60 km/h

Stage 1: Road function

This section of Currumbin Creek Tomewin Road being assessed is located in a rural settlement area.
The road type is: Trunk Collector Roads and Collector Roads.
The Typical Speed Limit is: 80 km/h.
The Existing Speed Limit **does not** equal the Typical Speed Limit

Stage 2: Prevailing Traffic speed

Sample data on 5821 vehicles was analysed using ' '
The upper limit of 15 km/h pace is 63
The mean speed is 55 km/h
The 85th percentile speed is 64 km/h
Hence, the prevailing traffic speed data **does** correlate with the existing Speed Limit

Stage 3: QLIMITS

The suggested speed limit based on the speed environment analysis was **80 km/h** after allowing for site specific issues.

Comments
80km/h (lowest possible) based on the speed environment factors including cyclists, tourist traffic and presence of roadside hazards.

Additional issues considered:

- A lower speed limit may be appropriate due to the presence of special roadside activities in the area. These include:
  - A large number of pedestrians and/or cyclists
  - Recreational or tourist traffic
  - Presence of roadside hazards

Note: A Road safety audit has been conducted to assess roadside activities or hazards

- Speed environment was assessed (Stage 3 was completed). Answers to the Speed Environment questions were as follows:
  - Has a comprehensive road safety audit been completed? YES
  - Did the road safety audit highlight deficiencies that have not been corrected? YES
  - Was the road safety audit conducted more than 3 years ago? NO
  - Is there a concern for pedestrian or cyclist safety along the road segment? NO
  - Are there high risk intersections in the road segment? NO

Frequency of Roadside Accesses

	Type of access	Number
A	Residences, small commercial establishments, small public buildings and other units which generate light and/or occasional activity. (The weighting for this type of access is 1).	13
B	Average commercial establishment, local schools, caravan parks, light industries, public buildings and units generating activity which is either: 1. Continuous light. 2. Moderate at certain times, such as commuting hours. 3. Substantial at infrequent intervals. (The weighting for this type of access is 2).	0
C	Heavy industry, schools, shopping centres and other units generating continuous moderate activity or substantial activity at certain regular times. (The weighting for this type of access is 3).	0
D	Large shopping centres and other units generating substantial and continuous activity. Some large industries which are tourist attractions or for some other reason generate substantial traffic volumes would be included in this activity. (The weighting for this type of access is 4).	0
E	Unsignalised intersecting roads of substantially lesser importance than the road being assessed, or intersecting roads where side traffic and turning movements have little effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 1).	1
F	Unsignalised intersecting roads of lesser importance than the road being assessed but where the side road traffic and turning movements are such that the intersection has appreciable effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 2).	0
G	Unsignalised intersecting roads of comparable or greater significance than the road being assessed. Intersections which have pronounced effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 3).	0
H	Roundabouts and signalised intersecting roads. (The weighting for this type of access is 3).	0
	Average number of accesses per 100 m	0.7

Freeway
This road is not a freeway

Special Roadside Activities
A lower speed limit may be appropriate due to the presence of special roadside activities in the

area. These include:

- A large number of pedestrians and/or cyclists
- Recreational or tourist traffic
- Presence of roadside hazards

Note: A Road safety audit has been conducted to assess roadside activities or hazards

Number of crashes in the past 5 years:

Description	No. of crashes
Head-on	0
Rear-end	0
Lane change	0
Parallel lanes, turning	0
U-turn	0
Entering roadway	0
Overtaking, same direction	0
Hit parked vehicle	0
Hit railway train	0
Pedestrian	0
Permanent obstruction on carriageway	0
Hit animal	0
Off carriageway, on straight	0
Off carriageway, on straight, hit object	0
Out of control, on straight	0
Off carriageway on curve	0
Off carriageway, on curve, hit object	0
Out of control, on curve	1

The average annual equivalent crash risk is 9.00 (10^4)

Crash Rate

The crash rate is 1605 (10^4 ERUs per 10^8 VKT)

Stage 4: Speed correlation check & recommendations

The speed limit based on road function is **80 km/h.**

The speed limit suggested by current speed data is **60 km/h.**
The speed limit suggested by the speed environment (QLIMITS) is **80 km/h.**

Recommendations and authorisation

THE RECOMMENDED SPEED LIMIT IS 60 km/h

Currumbin Creek-Tomewin Road – Segment 2 – QLIMITS

Speed Limit Review – Queensland (SLR-QLD)
Detailed Assessment Report

Background Information

Recommended Speed Limit:

60

Road Name: Currumbin Creek Tomewin Road.
Road Location: CH 2.0km to 3.8km.
Suburb: Currumbin Valley.
GPS Start Point : 28°11'58.03"S,153°25'14.89"E.
GPS Finish Point: 28°12'34.81"S,153°24'34.70"E.
TMR Road Number: 2011.
Local Government: 230, Gold Coast City Council
Main Roads District: 1, South Coast Hinterland
The need to review the speed limit on this road has occurred due to other reasons not specified.
The length of the road section being assessed is 1.8 km
AADT on this road section is 732 vpd
The existing speed limit is 60 km/h.

Adjacent Speed Zones
Approach 1: 80 km/h
Approach 2: 60 km/h

Stage 1: Road function

This section of Currumbin Creek Tomewin Road being assessed is located in a rural settlement area.
The road type is: Trunk Collector Roads and Collector Roads.
The Typical Speed Limit is: 80 km/h.
The Existing Speed Limit **does not** equal the Typical Speed Limit

Stage 2: Prevailing Traffic speed

Sample data on 5691 vehicles was analysed using ' '
The upper limit of 15 km/h pace is 66
The mean speed is 56 km/h
The 85th percentile speed is 66 km/h
Hence, the prevailing traffic speed data **does** correlate with the existing Speed Limit

Stage 3: QLIMITS

The suggested speed limit based on the speed environment analysis was **80 km/h** after allowing for site specific issues.

Comments
80km/h (lowest possible) based on the speed environment factors including cyclists, tourist traffic and presence of roadside hazards.

Additional issues considered:

- A lower speed limit may be appropriate due to the presence of special roadside activities in the area. These include:
  - A large number of pedestrians and/or cyclists
  - Recreational or tourist traffic
  - Presence of roadside hazards

Note: A Road safety audit has been conducted to assess roadside activities or hazards

- Speed environment was assessed (Stage 3 was completed). Answers to the Speed Environment questions were as follows:
  - Has a comprehensive road safety audit been completed? YES
  - Did the road safety audit highlight deficiencies that have not been corrected? YES
  - Was the road safety audit conducted more than 3 years ago? NO
  - Is there a concern for pedestrian or cyclist safety along the road segment? NO
  - Are there high risk intersections in the road segment? NO

Frequency of Roadside Accesses

	Type of access	Number
A	Residences, small commercial establishments, small public buildings and other units which generate light and/or occasional activity. (The weighting for this type of access is 1).	4
B	Average commercial establishment, local schools, caravan parks, light industries, public buildings and units generating activity which is either: 1. Continuous light. 2. Moderate at certain times, such as commuting hours. 3. Substantial at infrequent intervals. (The weighting for this type of access is 2).	0
C	Heavy industry, schools, shopping centres and other units generating continuous moderate activity or substantial activity at certain regular times. (The weighting for this type of access is 3).	0
D	Large shopping centres and other units generating substantial and continuous activity. Some large industries which are tourist attractions or for some other reason generate substantial traffic volumes would be included in this activity. (The weighting for this type of access is 4).	0
E	Unsignalised intersecting roads of substantially lesser importance than the road being assessed, or intersecting roads where side traffic and turning movements have little effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 1).	0
F	Unsignalised intersecting roads of lesser importance than the road being assessed but where the side road traffic and turning movements are such that the intersection has appreciable effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 2).	0
G	Unsignalised intersecting roads of comparable or greater significance than the road being assessed. Intersections which have pronounced effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 3).	0
H	Roundabouts and signalised intersecting roads. (The weighting for this type of access is 3).	0
	Average number of accesses per 100 m	0.22

Freeway
This road is not a freeway

Special Roadside Activities
A lower speed limit may be appropriate due to the presence of special roadside activities in the

area. These include:

- A large number of pedestrians and/or cyclists
- Recreational or tourist traffic
- Presence of roadside hazards

Note: A Road safety audit has been conducted to assess roadside activities or hazards

Number of crashes in the past 5 years:

Description	No. of crashes
Head-on	0
Rear-end	0
Lane change	0
Parallel lanes, turning	0
U-turn	0
Entering roadway	0
Overtaking, same direction	0
Hit parked vehicle	0
Hit railway train	0
Pedestrian	0
Permanent obstruction on carriageway	0
Hit animal	0
Off carriageway, on straight	0
Off carriageway, on straight, hit object	0
Out of control, on straight	0
Off carriageway on curve	0
Off carriageway, on curve, hit object	1
Out of control, on curve	0

The average annual equivalent crash risk is 9.00 (10^4)

Crash Rate

The crash rate is 1871 (10^4 ERUs per 10^8 VKT)

Stage 4: Speed correlation check & recommendations

The speed limit based on road function is **80 km/h.**

The speed limit suggested by current speed data is **60 km/h.**
The speed limit suggested by the speed environment (QLIMITS) is **80 km/h.**

Recommendations and authorisation

THE RECOMMENDED SPEED LIMIT IS 60 km/h

Currumbin Creek-Tomewin Road – Segment 3 – QLIMITS

Speed Limit Review – Queensland (SLR-QLD)
Detailed Assessment Report

Background Information

Recommended Speed Limit:

80

Road Name: Currumbin Creek Tomewin Road.
Road Location: CH 3.8km to 5.0km.
Suburb: Currumbin Valley.
GPS Start Point : 28°12'34.81"S,153°24'34.70"E.
GPS Finish Point: 28°12'57.74"S,153°24'2.10"E.
TMR Road Number: 2011.
Local Government: 230, Gold Coast City Council
Main Roads District: 1, South Coast Hinterland
The need to review the speed limit on this road has occurred due to other reasons not specified.
The length of the road section being assessed is 1.2 km
AADT on this road section is 747 vpd
The existing speed limit is 80 km/h.

Adjacent Speed Zones
Approach 1: 80 km/h
Approach 2: 60 km/h

Stage 1: Road function

This section of Currumbin Creek Tomewin Road being assessed is located in a rural settlement area.
The road type is: Trunk Collector Roads and Collector Roads.
The Typical Speed Limit is: 80 km/h.
The Existing Speed Limit **does** equal the Typical Speed Limit

Stage 2: Prevailing Traffic speed

Sample data on 5742 vehicles was analysed using ' '
The upper limit of 15 km/h pace is 85
The mean speed is 75 km/h
The 85th percentile speed is 88 km/h
Hence, the prevailing traffic speed data **does not** correlate with the existing Speed Limit

Stage 3: QLIMITS

The suggested speed limit based on the speed environment analysis was **80 km/h** after allowing for site specific issues.

Comments
Segment runs through hilly area and contains multiple low speed curves

Additional issues considered:

- A lower speed limit may be appropriate due to the presence of special roadside activities in the area. These include:
  - Recreational or tourist traffic
  - Presence of roadside hazards
  - Narrow traffic lane width

Note: A Road safety audit has been conducted to assess roadside activities or hazards

- Adverse road conditions have been identified along the section of road. Targeted advisory signing, remedial works or lower limits should be considered if appropriate. The issues include:
  Hilly area with many lower speed curves. Narrow cross section with little to no verge.

- Speed environment was assessed (Stage 3 was completed). Answers to the Speed Environment questions were as follows:
  - N/A (no questions were answered).

Frequency of Roadside Accesses

	Type of access	Number
A	Residences, small commercial establishments, small public buildings and other units which generate light and/or occasional activity. (The weighting for this type of access is 1).	7
B	Average commercial establishment, local schools, caravan parks, light industries, public buildings and units generating activity which is either: 1. Continuous light. 2. Moderate at certain times, such as commuting hours. 3. Substantial at infrequent intervals. (The weighting for this type of access is 2).	0
C	Heavy industry, schools, shopping centres and other units generating continuous moderate activity or substantial activity at certain regular times. (The weighting for this type of access is 3).	0
D	Large shopping centres and other units generating substantial and continuous activity. Some large industries which are tourist attractions or for some other reason generate substantial traffic volumes would be included in this activity. (The weighting for this type of access is 4).	0
E	Unsignalised intersecting roads of substantially lesser importance than the road being assessed, or intersecting roads where side traffic and turning movements have little effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 1).	2
F	Unsignalised intersecting roads of lesser importance than the road being assessed but where the side road traffic and turning movements are such that the intersection has appreciable effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 2).	0
G	Unsignalised intersecting roads of comparable or greater significance than the road being assessed. Intersections which have pronounced effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 3).	0
H	Roundabouts and signalised intersecting roads. (The weighting for this type of access is 3).	0
	Average number of accesses per 100 m	0.75

Freeway
This road is not a freeway

Road Geometry and Congestion

Adverse road conditions have been identified along the section of road. Targeted advisory signing, remedial works or lower limits should be considered if appropriate. The issues include: Hilly area with many lower speed curves. Narrow cross section with little to no verge.

Special Roadside Activities
A lower speed limit may be appropriate due to the presence of special roadside activities in the area. These include:

- Recreational or tourist traffic
- Presence of roadside hazards
- Narrow traffic lane width

Note: A Road safety audit has been conducted to assess roadside activities or hazards

Number of crashes in the past 5 years:

Description	No. of crashes
Head-on	0
Rear-end	0
Lane change	0
Parallel lanes, turning	0
U-turn	0
Entering roadway	0
Overtaking, same direction	0
Hit parked vehicle	0
Hit railway train	0
Pedestrian	0
Permanent obstruction on carriageway	0
Hit animal	0
Off carriageway, on straight	0
Off carriageway, on straight, hit object	0
Out of control, on straight	0
Off carriageway on curve	0
Off carriageway, on curve, hit object	0
Out of control, on curve	0

The average annual equivalent crash risk is 0.00 (10^4)

Stage 4: Speed correlation check & recommendations

The speed limit based on road function is **80 km/h.**
The speed limit suggested by the speed environment (QLIMITS) is **80 km/h.**

Recommendations and authorisation

THE RECOMMENDED SPEED LIMIT IS 80 km/h

Currumbin Creek-Tomewin Road – Segment 4 – QLIMITS

Speed Limit Review – Queensland (SLR-QLD)
Detailed Assessment Report

Background Information

Recommended Speed Limit:

60

Road Name: Currumbin Creek Tomewin Road.
Road Location: CH 5.0km to 7.0km.
Suburb: Currumbin Valley.
GPS Start Point : 28°12'57.74"S,153°24'2.10"E.
GPS Finish Point: 28°13'41.60"S,153°23'16.54"E.
TMR Road Number: 2011.
Local Government: 230, Gold Coast City Council
Main Roads District: 1, South Coast Hinterland
The need to review the speed limit on this road has occurred due to other reasons not specified.
The length of the road section being assessed is 2 km
AADT on this road section is 729 vpd
The existing speed limit is 80 km/h.

Adjacent Speed Zones
Approach 1: 60 km/h
Approach 2: 80 km/h

Stage 1: Road function

This section of Currumbin Creek Tomewin Road being assessed is located in a rural settlement area.
The road type is: Trunk Collector Roads and Collector Roads.
The Typical Speed Limit is: 80 km/h.
The Existing Speed Limit **does** equal the Typical Speed Limit

Stage 2: Prevailing Traffic speed

Sample data on 5610 vehicles was analysed using ' '
The upper limit of 15 km/h pace is 56
The mean speed is 48 km/h
The 85th percentile speed is 55 km/h
Hence, the prevailing traffic speed data **does not** correlate with the existing Speed Limit

Stage 3: QLIMITS

The suggested speed limit based on the speed environment analysis was **80 km/h** after allowing for site specific issues.

Comments
Hilly area with multiple curves.

Additional issues considered:

- A lower speed limit may be appropriate due to the presence of special roadside activities in the area. These include:
  - Presence of roadside hazards
  - Narrow traffic lane width

Note: A Road safety audit has been conducted to assess roadside activities or hazards

- The accident rate for this section of road is **significantly higher** than the average for this type of road. Further investigation of the possible causes for this increased accident rate is recommended. A review of the recommended speed limit may or may not be appropriate depending on local circumstances.
- Adverse road conditions have been identified along the section of road. Targeted advisory signing, remedial works or lower limits should be considered if appropriate. The issues include:
  Hilly area with many lower speed curves. Narrow cross section with little to no verge.
- Speed environment was assessed (Stage 3 was completed). Answers to the Speed Environment questions were as follows:
  - N/A (no questions were answered).

Frequency of Roadside Accesses

	Type of access	Number
A	Residences, small commercial establishments, small public buildings and other units which generate light and/or occasional activity. (The weighting for this type of access is 1).	18
B	Average commercial establishment, local schools, caravan parks, light industries, public buildings and units generating activity which is either: 1. Continuous light. 2. Moderate at certain times, such as commuting hours. 3. Substantial at infrequent intervals. (The weighting for this type of access is 2).	0
C	Heavy industry, schools, shopping centres and other units generating continuous moderate activity or substantial activity at certain regular times. (The weighting for this type of access is 3).	0
D	Large shopping centres and other units generating substantial and continuous activity. Some large industries which are tourist attractions or for some other reason generate substantial traffic volumes would be included in this activity. (The weighting for this type of access is 4).	0
E	Unsignalised intersecting roads of substantially lesser importance than the road being assessed, or intersecting roads where side traffic and turning movements have little effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 1).	0
F	Unsignalised intersecting roads of lesser importance than the road being assessed but where the side road traffic and turning movements are such that the intersection has appreciable effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 2).	0
G	Unsignalised intersecting roads of comparable or greater significance than the road being assessed. Intersections which have pronounced effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 3).	0
H	Roundabouts and signalised intersecting roads. (The weighting for this type of access is 3).	0
	Average number of accesses per 100 m	0.9

Freeway
This road is not a freeway

Road Geometry and Congestion
Adverse road conditions have been identified along the section of road. Targeted advisory signing, remedial works or lower limits should be considered if appropriate. The issues include: Hilly area with many lower speed curves. Narrow cross section with little to no verge.

Special Roadside Activities
A lower speed limit may be appropriate due to the presence of special roadside activities in the area. These include:

- Presence of roadside hazards
- Narrow traffic lane width

Note: A Road safety audit has been conducted to assess roadside activities or hazards

Number of crashes in the past 5 years:

Description	No. of crashes
Head-on	1
Rear-end	0
Lane change	0
Parallel lanes, turning	0
U-turn	0
Entering roadway	0
Overtaking, same direction	0
Hit parked vehicle	0
Hit railway train	0
Pedestrian	0
Permanent obstruction on carriageway	0
Hit animal	0
Off carriageway, on straight	0
Off carriageway, on straight, hit object	0
Out of control, on straight	0
Off carriageway on curve	0
Off carriageway, on curve, hit object	0
Out of control, on curve	0

The average annual equivalent crash risk is 38.00 (10^4)

Crash Rate
The crash rate is 7141 (10^4 ERUs per 10^8 VKT)

Stage 4: Speed correlation check & recommendations

The speed limit based on road function is **80 km/h.**

The speed limit suggested by current speed data is **50 km/h.**
The speed limit suggested by the speed environment (QLIMITS) is **80 km/h.**

Recommendations and authorisation

THE RECOMMENDED SPEED LIMIT IS 60 km/h

Currumbin Creek-Tomewin Road – Segment 5 – QLIMITS

Speed Limit Review – Queensland (SLR-QLD)
Detailed Assessment Report

Background Information

Recommended Speed Limit:

60

Road Name: Currumbin Creek Tomewin Road.
Road Location: CH 7.0km to 9.07km.
Suburb: Currumbin Valley.
GPS Start Point : 28°13'41.60"S,153°23'16.54"E.
GPS Finish Point: 28°14'26.32"S,153°22'38.49"E.
TMR Road Number: 2011.
Local Government: 230, Gold Coast City Council
Main Roads District: 1, South Coast Hinterland
The need to review the speed limit on this road has occurred due to other reasons not specified.
The length of the road section being assessed is 2.07 km
AADT on this road section is 627 vpd
The existing speed limit is 60 km/h.

Adjacent Speed Zones
Approach 1: 60 km/h
Approach 2: 80 km/h

Stage 1: Road function

This section of Currumbin Creek Tomewin Road being assessed is located in a rural settlement area.
The road type is: Trunk Collector Roads and Collector Roads.
The Typical Speed Limit is: 80 km/h.
The Existing Speed Limit **does not** equal the Typical Speed Limit

Stage 2: Prevailing Traffic speed

Sample data on 4831 vehicles was analysed using ' '
The upper limit of 15 km/h pace is 67
The mean speed is 57 km/h
The 85th percentile speed is 68 km/h
Hence, the prevailing traffic speed data **does** correlate with the existing Speed Limit

Stage 3: QLIMITS

The suggested speed limit based on the speed environment analysis was **80 km/h** after allowing for site specific issues.

Comments
80km/h (lowest possible) based on the speed environment factors including cyclists, tourist traffic and presence of roadside hazards.

Additional issues considered:

- A lower speed limit may be appropriate due to the presence of special roadside activities in the area. These include:
  - Recreational or tourist traffic
  - Presence of roadside hazards
  - Narrow traffic lane width

Note: A Road safety audit has been conducted to assess roadside activities or hazards

- Speed environment was assessed (Stage 3 was completed). Answers to the Speed Environment questions were as follows:
  - Has a comprehensive road safety audit been completed? YES
  - Did the road safety audit highlight deficiencies that have not been corrected? YES
  - Was the road safety audit conducted more than 3 years ago? NO
  - Is there a concern for pedestrian or cyclist safety along the road segment? NO
  - Are there high risk intersections in the road segment? NO

Frequency of Roadside Accesses

	Type of access	**Number**
A	Residences, small commercial establishments, small public buildings and other units which generate light and/or occasional activity. (The weighting for this type of access is 1).	11
B	Average commercial establishment, local schools, caravan parks, light industries, public buildings and units generating activity which is either: 1. Continuous light. 2. Moderate at certain times, such as commuting hours. 3. Substantial at infrequent intervals. (The weighting for this type of access is 2).	0
C	Heavy industry, schools, shopping centres and other units generating continuous moderate activity or substantial activity at certain regular times. (The weighting for this type of access is 3).	0
D	Large shopping centres and other units generating substantial and continuous activity. Some large industries which are tourist attractions or for some other reason generate substantial traffic volumes would be included in this activity. (The weighting for this type of access is 4).	0
E	Unsignalised intersecting roads of substantially lesser importance than the road being assessed, or intersecting roads where side traffic and turning movements have little effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 1).	0
F	Unsignalised intersecting roads of lesser importance than the road being assessed but where the side road traffic and turning movements are such that the intersection has appreciable effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 2).	0
G	Unsignalised intersecting roads of comparable or greater significance than the road being assessed. Intersections which have pronounced effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 3).	0
H	Roundabouts and signalised intersecting roads. (The weighting for this type of access is 3).	0
	Average number of accesses per 100 m	0.53

Freeway
This road is not a freeway

Special Roadside Activities
A lower speed limit may be appropriate due to the presence of special roadside activities in the

area. These include:

- Recreational or tourist traffic
- Presence of roadside hazards
- Narrow traffic lane width

Note: A Road safety audit has been conducted to assess roadside activities or hazards

Number of crashes in the past 5 years:

Description	No. of crashes
Head-on	0
Rear-end	0
Lane change	0
Parallel lanes, turning	0
U-turn	0
Entering roadway	0
Overtaking, same direction	0
Hit parked vehicle	0
Hit railway train	0
Pedestrian	0
Permanent obstruction on carriageway	0
Hit animal	0
Off carriageway, on straight	0
Off carriageway, on straight, hit object	0
Out of control, on straight	0
Off carriageway on curve	0
Off carriageway, on curve, hit object	0
Out of control, on curve	0

The average annual equivalent crash risk is 0.00 (10^4)

Stage 4: Speed correlation check & recommendations

The speed limit based on road function is **80 km/h.**

The speed limit suggested by current speed data is **60 km/h.**
The speed limit suggested by the speed environment (QLIMITS) is **80 km/h.**

Recommendations and authorisation

THE RECOMMENDED SPEED LIMIT IS 60 km/h

Cunningham Highway – Segment 1 – QLIMITS

Speed Limit Review – Queensland (SLR-QLD)
Detailed Assessment Report

Background Information

Recommended Speed Limit:

100

Road Name: Cunningham Highway.
Road Location: CH 55.61km to 58.0km.
Suburb: Aratula.
GPS Start Point : 27°57'37.84"S,152°34'45.21"E.
GPS Finish Point: 27°58'20.49"S,152°33'40.59"E.
TMR Road Number: 17B.
Local Government: 207, Scenic Rim Regional Council
Main Roads District: 1, South Coast Hinterland
The need to review the speed limit on this road has occurred due to other reasons not specified.
The length of the road section being assessed is 2.39 km
AADT on this road section is 6346 vpd
The existing speed limit is 100 km/h.

Adjacent Speed Zones
Approach 1: 100 km/h
Approach 2: 100 km/h

Stage 1: Road function

This section of Cunningham Highway being assessed is located in a rural area.
The road type is: Arterial and Sub-Arterial Roads.
The Typical Speed Limit is: 100 km/h.
The Existing Speed Limit **does** equal the Typical Speed Limit

Stage 2: Prevailing Traffic speed

Sample data on 53921 vehicles was analysed using ' '
The upper limit of 15 km/h pace is 105
The mean speed is 94 km/h
The 85th percentile speed is 103 km/h
Hence, the prevailing traffic speed data **does** correlate with the existing Speed Limit

Stage 3: QLIMITS

The suggested speed limit based on the speed environment analysis was **100 km/h** after allowing for site specific issues.

Additional issues considered:

- A lower speed limit may be appropriate due to the presence of special roadside activities in the area. These include:
  - Recreational or tourist traffic

  Note: A Road safety audit has NOT been conducted to assess roadside activities or hazards

- Speed environment was assessed (Stage 3 was completed). Answers to the Speed

Environment questions were as follows:

- Has a comprehensive road safety audit been completed? YES
- Did the road safety audit highlight deficiencies that have not been corrected? YES
- Was the road safety audit conducted more than 3 years ago? NO
- Is there a concern for pedestrian or cyclist safety along the road segment? NO
- Are there high risk intersections in the road segment? NO

Frequency of Roadside Accesses

	Type of access	Number
A	Residences, small commercial establishments, small public buildings and other units which generate light and/or occasional activity. (The weighting for this type of access is 1).	4
B	Average commercial establishment, local schools, caravan parks, light industries, public buildings and units generating activity which is either: 1. Continuous light. 2. Moderate at certain times, such as commuting hours. 3. Substantial at infrequent intervals. (The weighting for this type of access is 2).	0
C	Heavy industry, schools, shopping centres and other units generating continuous moderate activity or substantial activity at certain regular times. (The weighting for this type of access is 3).	0
D	Large shopping centres and other units generating substantial and continuous activity. Some large industries which are tourist attractions or for some other reason generate substantial traffic volumes would be included in this activity. (The weighting for this type of access is 4).	0
E	Unsignalised intersecting roads of substantially lesser importance than the road being assessed, or intersecting roads where side traffic and turning movements have little effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 1).	1
F	Unsignalised intersecting roads of lesser importance than the road being assessed but where the side road traffic and turning movements are such that the intersection has appreciable effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 2).	0
G	Unsignalised intersecting roads of comparable or greater significance than the road being assessed. Intersections which have pronounced effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 3).	0
H	Roundabouts and signalised intersecting roads. (The weighting for this type of access is 3).	0
	Average number of accesses per 100 m	0.2

Freeway
This road is not a freeway

Special Roadside Activities
A lower speed limit may be appropriate due to the presence of special roadside activities in the area. These include:

- Recreational or tourist traffic

Note: A Road safety audit has NOT been conducted to assess roadside activities or hazards

Number of crashes in the past 5 years:

Description	No. of crashes
Head-on	0
Rear-end	0
Lane change	0
Parallel lanes, turning	0
U-turn	0
Entering roadway	0
Overtaking, same direction	0
Hit parked vehicle	0
Hit railway train	0
Pedestrian	0
Permanent obstruction on carriageway	0
Hit animal	0
Off carriageway, on straight	1
Off carriageway, on straight, hit object	1
Out of control, on straight	0
Off carriageway on curve	0
Off carriageway, on curve, hit object	0
Out of control, on curve	0

The average annual equivalent crash risk is 21.00 (10^4)

Crash Rate

The crash rate is 379 (10^4 ERUs per 10^8 VKT)

Stage 4: Speed correlation check & recommendations

The speed limit based on road function is **100 km/h.**

The speed limit suggested by current speed data is **100 km/h.**
The speed limit suggested by the speed environment (QLIMITS) is **100 km/h.**

Recommendations and authorisation

THE RECOMMENDED SPEED LIMIT IS 100 km/h

Cunningham Highway – Segment 2 – QLIMITS

Speed Limit Review – Queensland (SLR-QLD)
Detailed Assessment Report

Background Information

Recommended Speed Limit:

100

Road Name: Cunningham Highway.
Road Location: CH 58.0km to 58.9km.
Suburb: Aratula.
GPS Start Point : 27°58'20.49"S,152°33'40.59"E.
GPS Finish Point: 27°58'37.79"S,152°33'14.05"E.
TMR Road Number: 17B.
Local Government: 207, Scenic Rim Regional Council
Main Roads District: 1, South Coast Hinterland
The need to review the speed limit on this road has occurred due to other reasons not specified.
The length of the road section being assessed is 0.9 km
AADT on this road section is 6667 vpd
The existing speed limit is 100 km/h.

Adjacent Speed Zones
Approach 1: 70 km/h - AG
Approach 2: 100 km/h - G

Stage 1: Road function

This section of Cunningham Highway being assessed is located in a rural area.
The road type is: Arterial and Sub-Arterial Roads.
The Typical Speed Limit is: 100 km/h.
The Existing Speed Limit **does** equal the Typical Speed Limit

Stage 2: Prevailing Traffic speed

Sample data on 56487 vehicles was analysed using ' '
The upper limit of 15 km/h pace is 98
The mean speed is 87 km/h
The 85th percentile speed is 99 km/h
Hence, the prevailing traffic speed data **does not** correlate with the existing Speed Limit

Stage 3: QLIMITS

The suggested speed limit based on the speed environment analysis was **100 km/h** after allowing for site specific issues.

Additional issues considered:

- A lower speed limit may be appropriate due to the presence of special roadside activities in the area. These include:
  - Recreational or tourist traffic
  - Presence of roadside hazards

  Note: A Road safety audit has been conducted to assess roadside activities or hazards

- Speed environment was assessed (Stage 3 was completed). Answers to the Speed

Environment questions were as follows:
- N/A (no questions were answered).

Frequency of Roadside Accesses

	Type of access	Number
A	Residences, small commercial establishments, small public buildings and other units which generate light and/or occasional activity. (The weighting for this type of access is 1).	2
B	Average commercial establishment, local schools, caravan parks, light industries, public buildings and units generating activity which is either: 1. Continuous light. 2. Moderate at certain times, such as commuting hours. 3. Substantial at infrequent intervals. (The weighting for this type of access is 2).	1
C	Heavy industry, schools, shopping centres and other units generating continuous moderate activity or substantial activity at certain regular times. (The weighting for this type of access is 3).	0
D	Large shopping centres and other units generating substantial and continuous activity. Some large industries which are tourist attractions or for some other reason generate substantial traffic volumes would be included in this activity. (The weighting for this type of access is 4).	0
E	Unsignalised intersecting roads of substantially lesser importance than the road being assessed, or intersecting roads where side traffic and turning movements have little effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 1).	0
F	Unsignalised intersecting roads of lesser importance than the road being assessed but where the side road traffic and turning movements are such that the intersection has appreciable effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 2).	0
G	Unsignalised intersecting roads of comparable or greater significance than the road being assessed. Intersections which have pronounced effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 3).	0
H	Roundabouts and signalised intersecting roads. (The weighting for this type of access is 3).	0
	Average number of accesses per 100 m	0.44

Freeway
This road is not a freeway

Special Roadside Activities
A lower speed limit may be appropriate due to the presence of special roadside activities in the area. These include:
- Recreational or tourist traffic
- Presence of roadside hazards

Note: A Road safety audit has been conducted to assess roadside activities or hazards

Number of crashes in the past 5 years:

Description	No. of crashes
Head-on	0
Rear-end	0
Lane change	0
Parallel lanes, turning	0
U-turn	0
Entering roadway	0
Overtaking, same direction	0
Hit parked vehicle	0
Hit railway train	0
Pedestrian	0
Permanent obstruction on carriageway	0
Hit animal	0
Off carriageway, on straight	0
Off carriageway, on straight, hit object	0
Out of control, on straight	0
Off carriageway on curve	0
Off carriageway, on curve, hit object	0
Out of control, on curve	0

The average annual equivalent crash risk is 0.00 (10^4)

Stage 4: Speed correlation check & recommendations

The speed limit based on road function is **100 km/h.**
The speed limit suggested by the speed environment (QLIMITS) is **100 km/h.**

Recommendations and authorisation

THE RECOMMENDED SPEED LIMIT IS 100 km/h

Cunningham Highway – Segment 3 – QLIMITS

Speed Limit Review – Queensland (SLR-QLD)
Detailed Assessment Report

Background Information

Recommended Speed Limit:

60

Road Name: Cunningham Highway.
Road Location: CH 58.9km to 60.0km.
Suburb: Aratula.
GPS Start Point : 27°58'37.79"S,152°33'14.05"E.
GPS Finish Point: 27°59'2.77"S, 152°32'45.85"E.
TMR Road Number: 17B.
Local Government: 207, Scenic Rim Regional Council
Main Roads District: 1, South Coast Hinterland
The need to review the speed limit on this road has occurred due to other reasons not specified.
The length of the road section being assessed is 1.1 km
AADT on this road section is 5639 vpd
The existing speed limit is 60 km/h.

Adjacent Speed Zones
Approach 1: 60 km/h
Approach 2: 100 km/h

Stage 1: Road function

This section of Cunningham Highway being assessed is located in a rural settlement area.
The road type is: Arterial and Sub-Arterial Roads.
The Typical Speed Limit is: 60 km/h.
The Existing Speed Limit **does** equal the Typical Speed Limit

Stage 2: Prevailing Traffic speed

Sample data on 48503 vehicles was analysed using ' '
The upper limit of 15 km/h pace is 72
The mean speed is 62 km/h
The 85th percentile speed is 70 km/h
Hence, the prevailing traffic speed data **does not** correlate with the existing Speed Limit

Stage 3: QLIMITS

The suggested speed limit based on the speed environment analysis was **60 km/h** after allowing for site specific issues.

Comments
Large number of pedestrians.

Additional issues considered:

- The upper limit of pace speed of 72 km/h is significantly higher than the recommended speed limit of 60 km/h. This represents a significant difference between the current behaviour of drivers and the recommended limit. Further investigation should be undertaken.
- A lower speed limit may be appropriate due to the presence of special roadside activities in the area. These include:

- A large number of pedestrians and/or cyclists
- Frequent parking manoeuvres
- Substantial crossing and turning traffic
- Recreational or tourist traffic
- Presence of aged and/or disabled persons
- Presence of roadside hazards

Note: A Road safety audit has been conducted to assess roadside activities or hazards

- Speed environment was assessed (Stage 3 was completed). Answers to the Speed Environment questions were as follows:
  - N/A (no questions were answered).

Frequency of Roadside Accesses

	Type of access	Number
A	Residences, small commercial establishments, small public buildings and other units which generate light and/or occasional activity. (The weighting for this type of access is 1).	18
B	Average commercial establishment, local schools, caravan parks, light industries, public buildings and units generating activity which is either: 1. Continuous light. 2. Moderate at certain times, such as commuting hours. 3. Substantial at infrequent intervals. (The weighting for this type of access is 2).	3
C	Heavy industry, schools, shopping centres and other units generating continuous moderate activity or substantial activity at certain regular times. (The weighting for this type of access is 3).	1
D	Large shopping centres and other units generating substantial and continuous activity. Some large industries which are tourist attractions or for some other reason generate substantial traffic volumes would be included in this activity. (The weighting for this type of access is 4).	0
E	Unsignalised intersecting roads of substantially lesser importance than the road being assessed, or intersecting roads where side traffic and turning movements have little effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 1).	3
F	Unsignalised intersecting roads of lesser importance than the road being assessed but where the side road traffic and turning movements are such that the intersection has appreciable effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 2).	0
G	Unsignalised intersecting roads of comparable or greater significance than the road being assessed. Intersections which have pronounced effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 3).	0
H	Roundabouts and signalised intersecting roads. (The weighting for this type of access is 3).	0
	Average number of accesses per 100 m	2.72

Road Cross Section
The road is **Divided**

Function of Road
The road is primarily used for **Access to abutting properties (Traffic carrying)**

Special Roadside Activities
A lower speed limit may be appropriate due to the presence of special roadside activities in the area. These include:

- A large number of pedestrians and/or cyclists
- Frequent parking manoeuvres
- Substantial crossing and turning traffic
- Recreational or tourist traffic
- Presence of aged and/or disabled persons
- Presence of roadside hazards

Note: A Road safety audit has been conducted to assess roadside activities or hazards

Number of crashes in the past 5 years:

Description	No. of crashes
Head-on	0
Rear-end	1
Lane change	0
Parallel lanes, turning	0
U-turn	0
Entering roadway	0
Overtaking, same direction	0
Hit parked vehicle	0
Hit railway train	0
Pedestrian	0
Permanent obstruction on carriageway	0
Hit animal	0
Off carriageway, on straight	0
Off carriageway, on straight, hit object	1
Out of control, on straight	0
Off carriageway on curve	0
Off carriageway, on curve, hit object	0
Out of control, on curve	0

The average annual equivalent crash risk is 10.00 (10^4)

Crash Rate
The crash rate is 442 (10^4 ERUs per 10^8 VKT)

Stage 4: Speed correlation check & recommendations

The speed limit based on road function is **60 km/h.**

The speed limit suggested by current speed data is **70 km/h.**
The speed limit suggested by the speed environment (QLIMITS) is **60 km/h.**

Recommendations and authorisation

THE RECOMMENDED SPEED LIMIT IS 60 km/h

Cunningham Highway – Segment 4 – QLIMITS

Speed Limit Review – Queensland (SLR-QLD)
Detailed Assessment Report

Background Information

Recommended Speed Limit:

80

Road Name: Cunningham Highway.
Road Location: CH 60.0km to 60.74km.
Suburb: Aratula.
GPS Start Point : 27°59'2.77"S,152°32'45.85"E.
GPS Finish Point: 27°59'20.81"S,152°32'28.42"E.
TMR Road Number: 17B.
Local Government: 207, Scenic Rim Regional Council
Main Roads District: 1, South Coast Hinterland
The need to review the speed limit on this road has occurred due to other reasons not specified.
The length of the road section being assessed is 0.74 km
AADT on this road section is 5479 vpd
The existing speed limit is 70 km/h.

Adjacent Speed Zones
Approach 1: 100 km/h
Approach 2: 70 km/h
The recommended speed limit is different to the speed limits for the adjacent approaches. The length of the section of road being assessed is insufficient for a separate speed zone. A review of site conditions is required.

Stage 1: Road function

This section of Cunningham Highway being assessed is located in a rural settlement area.
The road type is: Arterial and Sub-Arterial Roads.
The Typical Speed Limit is: 80 km/h.
The Existing Speed Limit **does not** equal the Typical Speed Limit

Stage 2: Prevailing Traffic speed

Sample data on 46820 vehicles was analysed using ' '
The upper limit of 15 km/h pace is 80
The mean speed is 71 km/h
The 85th percentile speed is 80 km/h
Hence, the prevailing traffic speed data **does not** correlate with the existing Speed Limit

Stage 3: QLIMITS

The suggested speed limit based on the speed environment analysis was **80 km/h** after allowing for site specific issues.

Additional issues considered:

- The recommended speed limit is different to the speed limits for the adjacent approaches. The length of the section of road being assessed is insufficient for a separate speed zone. A review of site conditions is required.
- A lower speed limit may be appropriate due to the presence of special roadside activities in

the area. These include:
- Recreational or tourist traffic
- Presence of roadside hazards

Note: A Road safety audit has been conducted to assess roadside activities or hazards

- Speed environment was assessed (Stage 3 was completed). Answers to the Speed Environment questions were as follows:
  - N/A (no questions were answered).

Frequency of Roadside Accesses

	Type of access	Number
A	Residences, small commercial establishments, small public buildings and other units which generate light and/or occasional activity. (The weighting for this type of access is 1).	3
B	Average commercial establishment, local schools, caravan parks, light industries, public buildings and units generating activity which is either: 1. Continuous light. 2. Moderate at certain times, such as commuting hours. 3. Substantial at infrequent intervals. (The weighting for this type of access is 2).	1
C	Heavy industry, schools, shopping centres and other units generating continuous moderate activity or substantial activity at certain regular times. (The weighting for this type of access is 3).	0
D	Large shopping centres and other units generating substantial and continuous activity. Some large industries which are tourist attractions or for some other reason generate substantial traffic volumes would be included in this activity. (The weighting for this type of access is 4).	0
E	Unsignalised intersecting roads of substantially lesser importance than the road being assessed, or intersecting roads where side traffic and turning movements have little effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 1).	1
F	Unsignalised intersecting roads of lesser importance than the road being assessed but where the side road traffic and turning movements are such that the intersection has appreciable effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 2).	0
G	Unsignalised intersecting roads of comparable or greater significance than the road being assessed. Intersections which have pronounced effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 3).	0
H	Roundabouts and signalised intersecting roads. (The weighting for this type of access is 3).	0
	Average number of accesses per 100 m	0.81

Freeway
This road is not a freeway

Special Roadside Activities
A lower speed limit may be appropriate due to the presence of special roadside activities in the

area. These include:

- Recreational or tourist traffic
- Presence of roadside hazards

Note: A Road safety audit has been conducted to assess roadside activities or hazards

Number of crashes in the past 5 years:

Description	No. of crashes
Head-on	0
Rear-end	0
Lane change	0
Parallel lanes, turning	0
U-turn	0
Entering roadway	0
Overtaking, same direction	0
Hit parked vehicle	0
Hit railway train	0
Pedestrian	0
Permanent obstruction on carriageway	0
Hit animal	0
Off carriageway, on straight	0
Off carriageway, on straight, hit object	0
Out of control, on straight	0
Off carriageway on curve	0
Off carriageway, on curve, hit object	0
Out of control, on curve	0

The average annual equivalent crash risk is 0.00 (10^4)

Stage 4: Speed correlation check & recommendations

The speed limit based on road function is **80 km/h.**

The speed limit suggested by current speed data is **80 km/h.**
The speed limit suggested by the speed environment (QLIMITS) is **80 km/h.**

Recommendations and authorisation

THE RECOMMENDED SPEED LIMIT IS 80 km/h

Cunningham Highway – Segment 5 – QLIMITS

Speed Limit Review – Queensland (SLR-QLD)
Detailed Assessment Report

Background Information

Recommended Speed Limit:

100

Road Name: Cunningham Highway.
Road Location: CH 60.74km to 64.92km.
Suburb: Aratula.
GPS Start Point : 27°59'20.81"S,152°32'28.42"E.
GPS Finish Point: 28° 1'11.87"S,152°31'3.05"E.
TMR Road Number: 17B.
Local Government: 207, Scenic Rim Regional Council
Main Roads District: 1, South Coast Hinterland
The need to review the speed limit on this road has occurred due to other reasons not specified.
The length of the road section being assessed is 4.18 km
AADT on this road section is 4890 vpd
The existing speed limit is 100 km/h.

Adjacent Speed Zones
Approach 1: 100 km/h
Approach 2: 70 km/h

Stage 1: Road function

This section of Cunningham Highway being assessed is located in a rural area.
The road type is: Arterial and Sub-Arterial Roads.
The Typical Speed Limit is: 100 km/h.
The Existing Speed Limit **does** equal the Typical Speed Limit

Stage 2: Prevailing Traffic speed

Sample data on 41852 vehicles was analysed using ' '
The upper limit of 15 km/h pace is 106
The mean speed is 98 km/h
The 85th percentile speed is 105 km/h
Hence, the prevailing traffic speed data **does not** correlate with the existing Speed Limit

Stage 3: QLIMITS

The suggested speed limit based on the speed environment analysis was **100 km/h** after allowing for site specific issues.

Additional issues considered:

- A lower speed limit may be appropriate due to the presence of special roadside activities in the area. These include:
  - Recreational or tourist traffic
  - Presence of roadside hazards

  Note: A Road safety audit has been conducted to assess roadside activities or hazards

- Speed environment was assessed (Stage 3 was completed). Answers to the Speed

Environment questions were as follows:
- N/A (no questions were answered).

Frequency of Roadside Accesses

	Type of access	Number
A	Residences, small commercial establishments, small public buildings and other units which generate light and/or occasional activity. (The weighting for this type of access is 1).	12
B	Average commercial establishment, local schools, caravan parks, light industries, public buildings and units generating activity which is either: 1. Continuous light. 2. Moderate at certain times, such as commuting hours. 3. Substantial at infrequent intervals. (The weighting for this type of access is 2).	0
C	Heavy industry, schools, shopping centres and other units generating continuous moderate activity or substantial activity at certain regular times. (The weighting for this type of access is 3).	0
D	Large shopping centres and other units generating substantial and continuous activity. Some large industries which are tourist attractions or for some other reason generate substantial traffic volumes would be included in this activity. (The weighting for this type of access is 4).	0
E	Unsignalised intersecting roads of substantially lesser importance than the road being assessed, or intersecting roads where side traffic and turning movements have little effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 1).	0
F	Unsignalised intersecting roads of lesser importance than the road being assessed but where the side road traffic and turning movements are such that the intersection has appreciable effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 2).	0
G	Unsignalised intersecting roads of comparable or greater significance than the road being assessed. Intersections which have pronounced effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 3).	0
H	Roundabouts and signalised intersecting roads. (The weighting for this type of access is 3).	0
	Average number of accesses per 100 m	0.28

Freeway
This road is not a freeway

Special Roadside Activities
A lower speed limit may be appropriate due to the presence of special roadside activities in the area. These include:
- Recreational or tourist traffic
- Presence of roadside hazards

Note: A Road safety audit has been conducted to assess roadside activities or hazards

Number of crashes in the past 5 years:

Description	No. of crashes
Head-on	0
Rear-end	0
Lane change	1
Parallel lanes, turning	0
U-turn	0
Entering roadway	0
Overtaking, same direction	0
Hit parked vehicle	0
Hit railway train	0
Pedestrian	0
Permanent obstruction on carriageway	0
Hit animal	0
Off carriageway, on straight	0
Off carriageway, on straight, hit object	2
Out of control, on straight	0
Off carriageway on curve	0
Off carriageway, on curve, hit object	1
Out of control, on curve	0

The average annual equivalent crash risk is 42.00 (10^4)

Crash Rate

The crash rate is 563 (10^4 ERUs per 10^8 VKT)

Stage 4: Speed correlation check & recommendations

The speed limit based on road function is **100 km/h.**
The speed limit suggested by the speed environment (QLIMITS) is **100 km/h.**

Recommendations and authorisation

THE RECOMMENDED SPEED LIMIT IS 100 km/h

Mount Lindesay Highway – Segment 1 – QLIMITS

Speed Limit Review – Queensland (SLR-QLD)
Detailed Assessment Report

Background Information

Recommended Speed Limit:

80

Road Name: Mt Lindesay Hwy.
Road Location: Browns Plains.
Suburb: Browns Plains.
GPS Start Point : .
GPS Finish Point: .
TMR Road Number: 25A
Local Government: 240, Logan City Council
Main Roads District: 1, South Coast Hinterland
The need to review the speed limit on this road has occurred due to community request.
The length of the road section being assessed is 3.1 km
AADT on this road section is 40719 vpd
The existing speed limit is 80 km/h.

Adjacent Speed Zones
Approach 1: 80 km/h - Northern approach
Approach 2: 80 km/h - Southern approach

Stage 1: Road function

This section of Mt Lindesay Hwy being assessed is located in a urban area.
The road type is: Arterial and Sub-Arterial Roads.
The Typical Speed Limit is: 80 km/h.
The Existing Speed Limit **does** equal the Typical Speed Limit

Stage 2: Prevailing Traffic speed

Sample data on 608793 vehicles was analysed using ' Other methods'
The upper limit of 15 km/h pace is 90
The mean speed is 80 km/h
The 85th percentile speed is 88 km/h
Hence, the prevailing traffic speed data **does not** correlate with the existing Speed Limit

Stage 3: QLIMITS

The suggested speed limit based on the speed environment analysis was **80 km/h** after allowing for site specific issues.

Additional issues considered: See technical note for discussion

- Note: A Road safety audit has NOT been conducted to assess roadside activities or hazards

- The accident rate for this section of road is **significantly higher** than the average for this type of road. Further investigation of the possible causes for this increased accident rate is recommended. A review of the recommended speed limit may or may not be

appropriate depending on local circumstances.

- Adverse road conditions have been identified along the section of road. Targeted advisory signing, remedial works or lower limits should be considered if appropriate. The issues include:
  Congestion

- Speed environment was assessed (Stage 3 was completed).Answers to the Speed Environment questions were as follows:
  - Has a comprehensive road safety audit been completed? NO
  - Did the road safety audit highlight deficiencies that have not been corrected? NO
  - Was the road safety audit conducted more than 3 years ago? NO
  - Is there a concern for pedestrian or cyclist safety along the road segment? NO
  - Are there high risk intersections in the road segment? YES - stop-controlled right turn

Frequency of Roadside Accesses

	Type of access	**Number**
A	Residences, small commercial establishments, small public buildings and other units which generate light and/or occasional activity. (The weighting for this type of access is 1).	0
B	Average commercial establishment, local schools, caravan parks, light industries, public buildings and units generating activity which is either: 1. Continuous light. 2. Moderate at certain times, such as commuting hours. 3. Substantial at infrequent intervals. (The weighting for this type of access is 2).	0
C	Heavy industry, schools, shopping centres and other units generating continuous moderate activity or substantial activity at certain regular times. (The weighting for this type of access is 3).	0
D	Large shopping centres and other units generating substantial and continuous activity. Some large industries which are tourist attractions or for some other reason generate substantial traffic volumes would be included in this activity. (The weighting for this type of access is 4).	0
E	Unsignalised intersecting roads of substantially lesser importance than the road being assessed, or intersecting roads where side traffic and turning movements have little effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 1).	4
F	Unsignalised intersecting roads of lesser importance than the road being assessed but where the side road traffic and turning movements are such that the intersection has appreciable effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 2).	3
G	Unsignalised intersecting roads of comparable or greater significance than the road being assessed. Intersections which have pronounced effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 3).	0
H	Roundabouts and signalised intersecting roads. (The weighting for this type of access is 3).	0
	Average number of accesses per 100 m	0.32

Road Cross Section
The road is **Divided**

Function of Road
The road is primarily used for **Traffic movement (freeway/arterial/sub arterial/trunk collector)**

Restrictions of Access
There are **restrictions on both sides.**

Median Width
The width of the median is **>= 4.5 m**

Freeway
This road is not a freeway

Road Geometry and Congestion
Adverse road conditions have been identified along the section of road. Targeted advisory signing, remedial works or lower limits should be considered if appropriate. The issues include: Congestion

Special Roadside Activities

Note: A Road safety audit has NOT been conducted to assess roadside activities or hazards

Number of crashes in the past 5 years:

Description	No. of crashes
Head-on	0
Rear-end	9
Lane change	1
Parallel lanes, turning	0
U-turn	0
Entering roadway	1
Overtaking, same direction	0
Hit parked vehicle	0
Hit railway train	0
Pedestrian	0
Permanent obstruction on carriageway	0
Hit animal	0
Off carriageway, on straight	0
Off carriageway, on straight, hit object	1
Out of control, on straight	2
Off carriageway on curve	1
Off carriageway, on curve, hit object	3
Out of control, on curve	1

The average annual equivalent crash risk is 159.00 (10^4)

Crash Rate
The crash rate is 345 (10^4 ERUs per 10^8 VKT)

Stage 4: Speed correlation check & recommendations

The speed limit based on road function is **80 km/h.**

The speed limit suggested by current speed data is **90 km/h.**
The speed limit suggested by the speed environment (QLIMITS) is **80 km/h.**

Mount Lindesay Highway – Segment 2 – QLIMITS

Speed Limit Review – Queensland (SLR-QLD)
Detailed Assessment Report

Background Information

Recommended Speed Limit:

80

Road Name: Mt Lindesay Hwy.
Road Location: Hillcrest.
Suburb: Hillcrest.
GPS Start Point : .
GPS Finish Point: .
TMR Road Number: 25A
Local Government: 240, Logan City Council
Main Roads District: 1, South Coast Hinterland
The need to review the speed limit on this road has occurred due to community request.
The length of the road section being assessed is 3 km
AADT on this road section is 33821 vpd
The existing speed limit is 80 km/h.

Adjacent Speed Zones
Approach 1: 80 km/h - Northern approach
Approach 2: 80 km/h - Southern approach

Stage 1: Road function

This section of Mt Lindesay Hwy being assessed is located in a urban area.
The road type is: Arterial and Sub-Arterial Roads.
The Typical Speed Limit is: 80 km/h.
The Existing Speed Limit **does** equal the Typical Speed Limit

Stage 2: Prevailing Traffic speed

Sample data on 527293 vehicles was analysed using ' Other methods'
The upper limit of 15 km/h pace is 85
The mean speed is 72 km/h
The 85th percentile speed is 82 km/h
Hence, the prevailing traffic speed data **does** correlate with the existing Speed Limit

Stage 3: QLIMITS

The suggested speed limit based on the speed environment analysis was **80 km/h** after allowing for site specific issues.

Additional issues considered: See technical note for discussion

- Note: A Road safety audit has NOT been conducted to assess roadside activities or hazards

- Adverse road conditions have been identified along the section of road. Targeted advisory signing, remedial works or lower limits should be considered if appropriate. The issues include:

Congestion, horizontal curves

- Speed environment was assessed (Stage 3 was completed).Answers to the Speed Environment questions were as follows:
  - Has a comprehensive road safety audit been completed? NO
  - Did the road safety audit highlight deficiencies that have not been corrected? NO
  - Was the road safety audit conducted more than 3 years ago? NO
  - Is there a concern for pedestrian or cyclist safety along the road segment? NO
  - Are there high risk intersections in the road segment? NO

Frequency of Roadside Accesses

	Type of access	**Number**
A	Residences, small commercial establishments, small public buildings and other units which generate light and/or occasional activity. (The weighting for this type of access is 1).	0
B	Average commercial establishment, local schools, caravan parks, light industries, public buildings and units generating activity which is either: 1. Continuous light. 2. Moderate at certain times, such as commuting hours. 3. Substantial at infrequent intervals. (The weighting for this type of access is 2).	0
C	Heavy industry, schools, shopping centres and other units generating continuous moderate activity or substantial activity at certain regular times. (The weighting for this type of access is 3).	0
D	Large shopping centres and other units generating substantial and continuous activity. Some large industries which are tourist attractions or for some other reason generate substantial traffic volumes would be included in this activity. (The weighting for this type of access is 4).	0
E	Unsignalised intersecting roads of substantially lesser importance than the road being assessed, or intersecting roads where side traffic and turning movements have little effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 1).	3
F	Unsignalised intersecting roads of lesser importance than the road being assessed but where the side road traffic and turning movements are such that the intersection has appreciable effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 2).	0
G	Unsignalised intersecting roads of comparable or greater significance than the road being assessed. Intersections which have pronounced effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 3).	0
H	Roundabouts and signalised intersecting roads. (The weighting for this type of access is 3).	2
	Average number of accesses per 100 m	0.3

Road Cross Section
The road is **Divided**

Function of Road

The road is primarily used for **Traffic movement (freeway/arterial/sub arterial/trunk collector)**

Restrictions of Access
There are **restrictions on both sides.**

Median Width
The width of the median is **>= 4.5 m**

Freeway
This road is not a freeway

Signals
There are traffic signals or unprotected pedestrian crossings located along this road section.

Road Geometry and Congestion
Adverse road conditions have been identified along the section of road. Targeted advisory signing, remedial works or lower limits should be considered if appropriate. The issues include: Congestion, horizontal curves

Special Roadside Activities

Note: A Road safety audit has NOT been conducted to assess roadside activities or hazards

Number of crashes in the past 5 years:

Description	No. of crashes
Head-on	0
Rear-end	2
Lane change	1
Parallel lanes, turning	0
U-turn	0
Entering roadway	1
Overtaking, same direction	0
Hit parked vehicle	0
Hit railway train	0
Pedestrian	0
Permanent obstruction on carriageway	0
Hit animal	0
Off carriageway, on straight	0
Off carriageway, on straight, hit object	0
Out of control, on straight	0
Off carriageway on curve	0
Off carriageway, on curve, hit object	0
Out of control, on curve	0

The average annual equivalent crash risk is 29.00 (10^4)

Crash Rate
The crash rate is 78 (10^4 ERUs per 10^8 VKT)

Stage 4: Speed correlation check & recommendations

The speed limit based on road function is **80 km/h.**

The speed limit suggested by current speed data is **80 km/h.**
The speed limit suggested by the speed environment (QLIMITS) is **80 km/h.**

Mount Lindesay Highway – Segment 3 – QLIMITS

Speed Limit Review – Queensland (SLR-QLD)
Detailed Assessment Report

Background Information

Recommended Speed Limit:

80

Road Name: Mt Lindesay Hwy.
Road Location: Park Ridge.
Suburb: Park Ridge.
GPS Start Point : .
GPS Finish Point: .
TMR Road Number: 25A
Local Government: 240, Logan City Council
Main Roads District: 1, South Coast Hinterland
The need to review the speed limit on this road has occurred due to community request.
The length of the road section being assessed is 3.1 km
AADT on this road section is 22088 vpd
The existing speed limit is 80 km/h.

Adjacent Speed Zones
Approach 1: 80 km/h - Northern approach
Approach 2: 80 km/h - Southern approach

Stage 1: Road function

This section of Mt Lindesay Hwy being assessed is located in a urban fringe area.
The road type is: Arterial and Sub-Arterial Roads.
The Typical Speed Limit is: 80 km/h.
The Existing Speed Limit **does** equal the Typical Speed Limit

Stage 2: Prevailing Traffic speed

Sample data on 363273 vehicles was analysed using ' Other methods'
The upper limit of 15 km/h pace is 86
The mean speed is 76 km/h
The 85th percentile speed is 85 km/h
Hence, the prevailing traffic speed data **does** correlate with the existing Speed Limit

Stage 3: QLIMITS

The suggested speed limit based on the speed environment analysis was **80 km/h** after allowing for site specific issues.

Additional issues considered: See technical note for discussion

- Note: A Road safety audit has NOT been conducted to assess roadside activities or hazards

- Speed environment was assessed (Stage 3 was completed).Answers to the Speed Environment questions were as follows:
  - Has a comprehensive road safety audit been completed? NO
  - Did the road safety audit highlight deficiencies that have not been corrected? NO

- Was the road safety audit conducted more than 3 years ago? NO
- Is there a concern for pedestrian or cyclist safety along the road segment? NO
- Are there high risk intersections in the road segment? NO

Frequency of Roadside Accesses

	Type of access	Number
A	Residences, small commercial establishments, small public buildings and other units which generate light and/or occasional activity. (The weighting for this type of access is 1).	0
B	Average commercial establishment, local schools, caravan parks, light industries, public buildings and units generating activity which is either: 1. Continuous light. 2. Moderate at certain times, such as commuting hours. 3. Substantial at infrequent intervals. (The weighting for this type of access is 2).	0
C	Heavy industry, schools, shopping centres and other units generating continuous moderate activity or substantial activity at certain regular times. (The weighting for this type of access is 3).	0
D	Large shopping centres and other units generating substantial and continuous activity. Some large industries which are tourist attractions or for some other reason generate substantial traffic volumes would be included in this activity. (The weighting for this type of access is 4).	0
E	Unsignalised intersecting roads of substantially lesser importance than the road being assessed, or intersecting roads where side traffic and turning movements have little effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 1).	2
F	Unsignalised intersecting roads of lesser importance than the road being assessed but where the side road traffic and turning movements are such that the intersection has appreciable effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 2).	0
G	Unsignalised intersecting roads of comparable or greater significance than the road being assessed. Intersections which have pronounced effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 3).	0
H	Roundabouts and signalised intersecting roads. (The weighting for this type of access is 3).	0
	Average number of accesses per 100 m	0.06

Function of Road
The road is primarily used for **Traffic movement (freeway/arterial/sub arterial/trunk collector)**

Freeway
This road is not a freeway

Special Roadside Activities

Note: A Road safety audit has NOT been conducted to assess roadside activities or hazards

Number of crashes in the past 5 years:

Description	No. of crashes
Head-on	0
Rear-end	0
Lane change	0
Parallel lanes, turning	0
U-turn	0
Entering roadway	0
Overtaking, same direction	0
Hit parked vehicle	0
Hit railway train	0
Pedestrian	0
Permanent obstruction on carriageway	0
Hit animal	0
Off carriageway, on straight	1
Off carriageway, on straight, hit object	0
Out of control, on straight	0
Off carriageway on curve	0
Off carriageway, on curve, hit object	0
Out of control, on curve	0

The average annual equivalent crash risk is 11.00 (10^4)

Crash Rate
The crash rate is 44 (10^4 ERUs per 10^8 VKT)

Stage 4: Speed correlation check & recommendations

The speed limit based on road function is **80 km/h.**

The speed limit suggested by current speed data is **80 km/h.**
The speed limit suggested by the speed environment (QLIMITS) is **80 km/h.**

Oxley Drive – Segment 1 – QLIMITS

Speed Limit Review – Queensland (SLR-QLD)
Detailed Assessment Report

Background Information

Recommended Speed Limit:

70

Road Name: Oxley Drive.
Road Location: Biggera Waters.
Suburb: Biggera Waters.
GPS Start Point : .
GPS Finish Point: .
TMR Road Number: 114.
Local Government: 230, Gold Coast City Council
Main Roads District: 1, South Coast Hinterland
The need to review the speed limit on this road has occurred due to community request.
The length of the road section being assessed is 2.3 km
AADT on this road section is 22602 vpd
The existing speed limit is 70 km/h.

Adjacent Speed Zones

Approach 2: 60 km/h - Northern approach

Stage 1: Road function

This section of Oxley Drive being assessed is located in a urban area.
The road type is: Arterial and Sub-Arterial Roads.
The Typical Speed Limit is: 60 km/h.
The Existing Speed Limit **does not** equal the Typical Speed Limit

Stage 2: Prevailing Traffic speed

Sample data on 398195 vehicles was analysed using ' Other methods'
The upper limit of 15 km/h pace is 71
The mean speed is 62 km/h
The 85th percentile speed is 70 km/h
Hence, the prevailing traffic speed data **does** correlate with the existing Speed Limit

Stage 3: QLIMITS

The suggested speed limit based on the speed environment analysis was **70 km/h** after allowing for site specific issues.

Additional issues considered:

- A lower speed limit may be appropriate due to the presence of special roadside activities in the area. These include:
  - Frequent parking manoeuvres
  - Substantial crossing and turning traffic
  - Recreational or tourist traffic

  Note: A Road safety audit has NOT been conducted to assess roadside activities or hazards

- Speed environment was assessed (Stage 3 was completed).Answers to the Speed Environment questions were as follows:
  - Has a comprehensive road safety audit been completed? NO
  - Did the road safety audit highlight deficiencies that have not been corrected? NO
  - Was the road safety audit conducted more than 3 years ago? NO
  - Is there a concern for pedestrian or cyclist safety along the road segment? NO
  - Are there high risk intersections in the road segment? NO

Frequency of Roadside Accesses

	Type of access	**Number**
A	Residences, small commercial establishments, small public buildings and other units which generate light and/or occasional activity. (The weighting for this type of access is 1).	53
B	Average commercial establishment, local schools, caravan parks, light industries, public buildings and units generating activity which is either: 1. Continuous light. 2. Moderate at certain times, such as commuting hours. 3. Substantial at infrequent intervals. (The weighting for this type of access is 2).	3
C	Heavy industry, schools, shopping centres and other units generating continuous moderate activity or substantial activity at certain regular times. (The weighting for this type of access is 3).	0
D	Large shopping centres and other units generating substantial and continuous activity. Some large industries which are tourist attractions or for some other reason generate substantial traffic volumes would be included in this activity. (The weighting for this type of access is 4).	2
E	Unsignalised intersecting roads of substantially lesser importance than the road being assessed, or intersecting roads where side traffic and turning movements have little effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 1).	4
F	Unsignalised intersecting roads of lesser importance than the road being assessed but where the side road traffic and turning movements are such that the intersection has appreciable effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 2).	0
G	Unsignalised intersecting roads of comparable or greater significance than the road being assessed. Intersections which have pronounced effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 3).	0
H	Roundabouts and signalised intersecting roads. (The weighting for this type of access is 3).	6
	Average number of accesses per 100 m	3.86

Road Cross Section
The road is **Divided**

Function of Road

The road is primarily used for **Traffic movement (freeway/arterial/sub arterial/trunk collector)**

Restrictions of Access
There are **no restrictions.**

Setback
The setback from the fence line is **>= 4 to 10 m**

Median Width
The width of the median is **>= 4.5 m**

Special Roadside Activities
A lower speed limit may be appropriate due to the presence of special roadside activities in the area. These include:

- Frequent parking manoeuvres
- Substantial crossing and turning traffic
- Recreational or tourist traffic

Note: A Road safety audit has NOT been conducted to assess roadside activities or hazards

Number of crashes in the past 5 years:

Description	No. of crashes
Head-on	1
Rear-end	3
Lane change	2
Parallel lanes, turning	0
U-turn	0
Entering roadway	0
Overtaking, same direction	0
Hit parked vehicle	0
Hit railway train	0
Pedestrian	0
Permanent obstruction on carriageway	0
Hit animal	0
Off carriageway, on straight	0
Off carriageway, on straight, hit object	1
Out of control, on straight	0
Off carriageway on curve	0
Off carriageway, on curve, hit object	1
Out of control, on curve	0

The average annual equivalent crash risk is 44.00 (10^4)

Crash Rate
The crash rate is 232 (10^4 ERUs per 10^8 VKT)

Stage 4: Speed correlation check & recommendations

The speed limit based on road function is **60 km/h.**

The speed limit suggested by current speed data is **70 km/h.**
The speed limit suggested by the speed environment (QLIMITS) is **70 km/h.**

Oxley Drive – Segment 2 – QLIMITS

Speed Limit Review – Queensland (SLR-QLD)
Detailed Assessment Report

Background Information

Recommended Speed Limit:

60

Road Name: Oxley Drive.
Road Location: Biggera Waters.
Suburb: Biggera Waters.
GPS Start Point : .
GPS Finish Point: .
TMR Road Number: 114.
Local Government: 230, Gold Coast City Council
Main Roads District: 1, South Coast Hinterland
The need to review the speed limit on this road has occurred due to community request.
The length of the road section being assessed is 3.8 km
AADT on this road section is 24688 vpd
The existing speed limit is 60 km/h.

Adjacent Speed Zones
Approach 1: 70 km/h - Southern approach
Approach 2: 60 km/h - Northern approach

Stage 1: Road function

This section of Oxley Drive being assessed is located in a urban area.
The road type is: Arterial and Sub-Arterial Roads.
The Typical Speed Limit is: 60 km/h.
The Existing Speed Limit **does** equal the Typical Speed Limit

Stage 2: Prevailing Traffic speed

Sample data on 444508 vehicles was analysed using ' Other methods'
The upper limit of 15 km/h pace is 66
The mean speed is 58 km/h
The 85th percentile speed is 65 km/h
Hence, the prevailing traffic speed data **does** correlate with the existing Speed Limit

Stage 3: QLIMITS

The suggested speed limit based on the speed environment analysis was **60 km/h** after allowing for site specific issues.

Comments
Primary school within segment

Additional issues considered:

- A lower speed limit may be appropriate due to the presence of special roadside activities in the area. These include:
  - Schools or school crossings
  - Frequent on-street bus stops
  - Frequent parking manoeuvres
  - Recreational or tourist traffic

Note: A Road safety audit has NOT been conducted to assess roadside activities or hazards

- Speed environment was assessed (Stage 3 was completed).Answers to the Speed Environment questions were as follows:
  - Has a comprehensive road safety audit been completed? NO
  - Did the road safety audit highlight deficiencies that have not been corrected? NO
  - Was the road safety audit conducted more than 3 years ago? NO
  - Is there a concern for pedestrian or cyclist safety along the road segment? NO
  - Are there high risk intersections in the road segment? NO

Frequency of Roadside Accesses

	Type of access	**Number**
A	Residences, small commercial establishments, small public buildings and other units which generate light and/or occasional activity. (The weighting for this type of access is 1).	190
B	Average commercial establishment, local schools, caravan parks, light industries, public buildings and units generating activity which is either: 1. Continuous light. 2. Moderate at certain times, such as commuting hours. 3. Substantial at infrequent intervals. (The weighting for this type of access is 2).	7
C	Heavy industry, schools, shopping centres and other units generating continuous moderate activity or substantial activity at certain regular times. (The weighting for this type of access is 3).	2
D	Large shopping centres and other units generating substantial and continuous activity. Some large industries which are tourist attractions or for some other reason generate substantial traffic volumes would be included in this activity. (The weighting for this type of access is 4).	0
E	Unsignalised intersecting roads of substantially lesser importance than the road being assessed, or intersecting roads where side traffic and turning movements have little effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 1).	7
F	Unsignalised intersecting roads of lesser importance than the road being assessed but where the side road traffic and turning movements are such that the intersection has appreciable effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 2).	1
G	Unsignalised intersecting roads of comparable or greater significance than the road being assessed. Intersections which have pronounced effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 3).	0
H	Roundabouts and signalised intersecting roads. (The weighting for this type of access is 3).	14
	Average number of accesses per 100 m	6.86

Road Cross Section
The road is **Divided**

Function of Road
The road is primarily used for **Traffic movement (freeway/arterial/sub arterial/trunk collector)**

Restrictions of Access
There are **no restrictions.**

Setback
The setback from the fence line is **>= 4 to 10 m**

Median Width
The width of the median is **>= 4.5 m**

Special Roadside Activities
A lower speed limit may be appropriate due to the presence of special roadside activities in the area. These include:

- Schools or school crossings
- Frequent on-street bus stops
- Frequent parking manoeuvres
- Recreational or tourist traffic

Note: A Road safety audit has NOT been conducted to assess roadside activities or hazards

Number of crashes in the past 5 years:

Description	No. of crashes
Head-on	0
Rear-end	3
Lane change	1
Parallel lanes, turning	0
U-turn	0
Entering roadway	1
Overtaking, same direction	0
Hit parked vehicle	0
Hit railway train	0
Pedestrian	0
Permanent obstruction on carriageway	0
Hit animal	0
Off carriageway, on straight	0
Off carriageway, on straight, hit object	3
Out of control, on straight	1
Off carriageway on curve	0
Off carriageway, on curve, hit object	0
Out of control, on curve	1

The average annual equivalent crash risk is 51.00 (10^4)

Crash Rate
The crash rate is 149 (10^4 ERUs per 10^8 VKT)

Stage 4: Speed correlation check & recommendations

The speed limit based on road function is **60 km/h.**

The speed limit suggested by current speed data is **60 km/h.**
The speed limit suggested by the speed environment (QLIMITS) is **60 km/h.**

Oxley Drive – Segment 3 – QLIMITS

Speed Limit Review – Queensland (SLR-QLD)
Detailed Assessment Report

Background Information

Recommended Speed Limit:

60

Road Name: Oxley Drive.
Road Location: Biggera Waters.
Suburb: Biggera Waters.
GPS Start Point : .
GPS Finish Point: .
TMR Road Number: 114.
Local Government: 230, Gold Coast City Council
Main Roads District: 1, South Coast Hinterland
The need to review the speed limit on this road has occurred due to community request.
The length of the road section being assessed is 1.2 km
AADT on this road section is 21657 vpd
The existing speed limit is 60 km/h.

Adjacent Speed Zones
Approach 1: 60 km/h - Southern approach
Approach 2: 70 km/h - Northern approach

Stage 1: Road function

This section of Oxley Drive being assessed is located in a urban area.
The road type is: Arterial and Sub-Arterial Roads.
The Typical Speed Limit is: 60 km/h.
The Existing Speed Limit **does** equal the Typical Speed Limit

Stage 2: Prevailing Traffic speed

Sample data on 380085 vehicles was analysed using ' Other methods'
The upper limit of 15 km/h pace is 70
The mean speed is 61 km/h
The 85th percentile speed is 67 km/h
Hence, the prevailing traffic speed data **does not** correlate with the existing Speed Limit

Stage 3: QLIMITS

The suggested speed limit based on the speed environment analysis was **60 km/h** after allowing for site specific issues.

Comments
Narrow lanes and shoulders on bridges

Additional issues considered:

- A lower speed limit may be appropriate due to the presence of special roadside activities in the area. These include:
  - Recreational or tourist traffic
  - Presence of roadside hazards
  - Narrow traffic lane width

Note: A Road safety audit has NOT been conducted to assess roadside activities or hazards

- Speed environment was assessed (Stage 3 was completed).Answers to the Speed Environment questions were as follows:
  - Has a comprehensive road safety audit been completed? NO
  - Did the road safety audit highlight deficiencies that have not been corrected? NO
  - Was the road safety audit conducted more than 3 years ago? NO
  - Is there a concern for pedestrian or cyclist safety along the road segment? NO
  - Are there high risk intersections in the road segment? NO

Frequency of Roadside Accesses

	Type of access	**Number**
A	Residences, small commercial establishments, small public buildings and other units which generate light and/or occasional activity. (The weighting for this type of access is 1).	4
B	Average commercial establishment, local schools, caravan parks, light industries, public buildings and units generating activity which is either: 1. Continuous light. 2. Moderate at certain times, such as commuting hours. 3. Substantial at infrequent intervals. (The weighting for this type of access is 2).	0
C	Heavy industry, schools, shopping centres and other units generating continuous moderate activity or substantial activity at certain regular times. (The weighting for this type of access is 3).	0
D	Large shopping centres and other units generating substantial and continuous activity. Some large industries which are tourist attractions or for some other reason generate substantial traffic volumes would be included in this activity. (The weighting for this type of access is 4).	0
E	Unsignalised intersecting roads of substantially lesser importance than the road being assessed, or intersecting roads where side traffic and turning movements have little effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 1).	2
F	Unsignalised intersecting roads of lesser importance than the road being assessed but where the side road traffic and turning movements are such that the intersection has appreciable effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 2).	0
G	Unsignalised intersecting roads of comparable or greater significance than the road being assessed. Intersections which have pronounced effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 3).	0
H	Roundabouts and signalised intersecting roads. (The weighting for this type of access is 3).	0
	Average number of accesses per 100 m	0.5

Road Cross Section
The road is **Undivided**

Number of Lanes
The total number of traffic lanes on this section of road is **2**

Function of Road
The road is primarily used for **Traffic movement (freeway/arterial/sub arterial/trunk collector)**

Restrictions of Access
There are **restrictions on both sides.**

Special Roadside Activities
A lower speed limit may be appropriate due to the presence of special roadside activities in the area. These include:

- Recreational or tourist traffic
- Presence of roadside hazards
- Narrow traffic lane width

Note: A Road safety audit has NOT been conducted to assess roadside activities or hazards

Number of crashes in the past 5 years:

Description	No. of crashes
Head-on	0
Rear-end	1
Lane change	0
Parallel lanes, turning	1
U-turn	0
Entering roadway	0
Overtaking, same direction	0
Hit parked vehicle	0
Hit railway train	0
Pedestrian	0
Permanent obstruction on carriageway	0
Hit animal	0
Off carriageway, on straight	0
Off carriageway, on straight, hit object	1
Out of control, on straight	0
Off carriageway on curve	0
Off carriageway, on curve, hit object	0
Out of control, on curve	0

The average annual equivalent crash risk is 14.00 (10^4)

Crash Rate
The crash rate is 148 (10^4 ERUs per 10^8 VKT)

Stage 4: Speed correlation check & recommendations

The speed limit based on road function is **60 km/h.**

The speed limit suggested by current speed data is **70 km/h.**
The speed limit suggested by the speed environment (QLIMITS) is **60 km/h.**

Reedy Creek Road – Segment 1 – QLIMITS

Speed Limit Review – Queensland (SLR-QLD)
Detailed Assessment Report

Background Information

Recommended Speed Limit:

80

Road Name: Reedy Creek Road.
Road Location: Burleigh Heads.
Suburb: Burleigh Heads.
GPS Start Point : .
GPS Finish Point: .
TMR Road Number: 102.
Local Government: 230, Gold Coast City Council
Main Roads District: 1, South Coast Hinterland
The need to review the speed limit on this road has occurred due to community request.
The length of the road section being assessed is 2.8 km
AADT on this road section is 28388 vpd
The existing speed limit is 80 km/h.

Adjacent Speed Zones

Approach 2: 60 km/h - Eastern approach

Stage 1: Road function

This section of Reedy Creek Road being assessed is located in a urban area.
The road type is: Arterial and Sub-Arterial Roads.
The Typical Speed Limit is: 80 km/h.
The Existing Speed Limit **does** equal the Typical Speed Limit

Stage 2: Prevailing Traffic speed

Sample data on 460608 vehicles was analysed using ' Other methods'
The upper limit of 15 km/h pace is 76
The mean speed is 62 km/h
The 85th percentile speed is 77 km/h
Hence, the prevailing traffic speed data **does not** correlate with the existing Speed Limit

Stage 3: QLIMITS

The suggested speed limit based on the speed environment analysis was **80 km/h** after allowing for site specific issues.

Additional issues considered:

- A lower speed limit may be appropriate due to the presence of special roadside activities in the area. These include:
  - Schools or school crossings

  Note: A Road safety audit has NOT been conducted to assess roadside activities or hazards

- The accident rate for this section of road is **significantly higher** than the average for this type of road. Further investigation of the possible causes for this increased accident rate is recommended. A review of the recommended speed limit may or may not be appropriate depending on local circumstances.

- Speed environment was assessed (Stage 3 was completed).Answers to the Speed Environment questions were as follows:
  - Has a comprehensive road safety audit been completed? NO
  - Did the road safety audit highlight deficiencies that have not been corrected? NO
  - Was the road safety audit conducted more than 3 years ago? NO
  - Is there a concern for pedestrian or cyclist safety along the road segment? NO
  - Are there high risk intersections in the road segment? NO

Frequency of Roadside Accesses

	Type of access	**Number**
A	Residences, small commercial establishments, small public buildings and other units which generate light and/or occasional activity. (The weighting for this type of access is 1).	0
B	Average commercial establishment, local schools, caravan parks, light industries, public buildings and units generating activity which is either: 1. Continuous light. 2. Moderate at certain times, such as commuting hours. 3. Substantial at infrequent intervals. (The weighting for this type of access is 2).	0
C	Heavy industry, schools, shopping centres and other units generating continuous moderate activity or substantial activity at certain regular times. (The weighting for this type of access is 3).	0
D	Large shopping centres and other units generating substantial and continuous activity. Some large industries which are tourist attractions or for some other reason generate substantial traffic volumes would be included in this activity. (The weighting for this type of access is 4).	0
E	Unsignalised intersecting roads of substantially lesser importance than the road being assessed, or intersecting roads where side traffic and turning movements have little effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 1).	1
F	Unsignalised intersecting roads of lesser importance than the road being assessed but where the side road traffic and turning movements are such that the intersection has appreciable effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 2).	0
G	Unsignalised intersecting roads of comparable or greater significance than the road being assessed. Intersections which have pronounced effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 3).	0
H	Roundabouts and signalised intersecting roads. (The weighting for this type of access is 3).	10
	Average number of accesses per 100 m	1.1

Road Cross Section

The road is **Divided**

Function of Road
The road is primarily used for **Traffic movement (freeway/arterial/sub arterial/trunk collector)**

Restrictions of Access
There are **restrictions on both sides.**

Median Width
The width of the median is **>= 4.5 m**

Signals
There are traffic signals or unprotected pedestrian crossings located along this road section.

Special Roadside Activities
A lower speed limit may be appropriate due to the presence of special roadside activities in the area. These include:

- Schools or school crossings

Note: A Road safety audit has NOT been conducted to assess roadside activities or hazards

Number of crashes in the past 5 years:

Description	No. of crashes
Head-on	1
Rear-end	9
Lane change	0
Parallel lanes, turning	0
U-turn	0
Entering roadway	0
Overtaking, same direction	0
Hit parked vehicle	0
Hit railway train	0
Pedestrian	0
Permanent obstruction on carriageway	0
Hit animal	0
Off carriageway, on straight	0
Off carriageway, on straight, hit object	2
Out of control, on straight	0
Off carriageway on curve	0
Off carriageway, on curve, hit object	0
Out of control, on curve	0

The average annual equivalent crash risk is 106.00 (10^4)

Crash Rate
The crash rate is 365 (10^4 ERUs per 10^8 VKT)

Stage 4: Speed correlation check & recommendations

The speed limit based on road function is **80 km/h.**

The speed limit suggested by current speed data is **70 km/h.**
The speed limit suggested by the speed environment (QLIMITS) is **80 km/h.**

Reedy Creek Road – Segment 2 – QLIMITS

Speed Limit Review – Queensland (SLR-QLD)
Detailed Assessment Report

Background Information

Recommended Speed Limit:

70

Road Name: Reedy Creek Rd.
Road Location: Burleigh Heads.
Suburb: Burleigh Heads.
GPS Start Point : .
GPS Finish Point: .
TMR Road Number: 102.
Local Government: 230, Gold Coast City Council
Main Roads District: 1, South Coast Hinterland
The need to review the speed limit on this road has occurred due to community request.
The length of the road section being assessed is 0.9 km
AADT on this road section is 26424 vpd
The existing speed limit is 60 km/h.

Adjacent Speed Zones
Approach 1: 60 km/h - Eastern approach
Approach 2: 80 km/h - Western approach

Stage 1: Road function

This section of Reedy Creek Rd being assessed is located in a urban area.
The road type is: Arterial and Sub-Arterial Roads.
The Typical Speed Limit is: 60 km/h.
The Existing Speed Limit **does** equal the Typical Speed Limit

Stage 2: Prevailing Traffic speed

Sample data on 426279 vehicles was analysed using ' Other methods'
The upper limit of 15 km/h pace is 70
The mean speed is 60 km/h
The 85th percentile speed is 70 km/h
Hence, the prevailing traffic speed data **does not** correlate with the existing Speed Limit

Stage 3: QLIMITS

The suggested speed limit based on the speed environment analysis was **70 km/h** after allowing for site specific issues.

Additional issues considered:

- A lower speed limit may be appropriate due to the presence of special roadside activities in the area. These include:
  - Frequent on-street bus stops
  - Substantial crossing and turning traffic

  Note: A Road safety audit has NOT been conducted to assess roadside activities or hazards

- Adverse road conditions have been identified along the section of road. Targeted advisory signing, remedial works or lower limits should be considered if appropriate. The issues include:
  Congestion, horizontal and vertical curves

- Speed environment was assessed (Stage 3 was completed).Answers to the Speed Environment questions were as follows:
  - Has a comprehensive road safety audit been completed? NO
  - Did the road safety audit highlight deficiencies that have not been corrected? NO
  - Was the road safety audit conducted more than 3 years ago? NO
  - Is there a concern for pedestrian or cyclist safety along the road segment? NO
  - Are there high risk intersections in the road segment? NO

Frequency of Roadside Accesses

	Type of access	**Number**
A	Residences, small commercial establishments, small public buildings and other units which generate light and/or occasional activity. (The weighting for this type of access is 1).	0
B	Average commercial establishment, local schools, caravan parks, light industries, public buildings and units generating activity which is either: 1. Continuous light. 2. Moderate at certain times, such as commuting hours. 3. Substantial at infrequent intervals. (The weighting for this type of access is 2).	0
C	Heavy industry, schools, shopping centres and other units generating continuous moderate activity or substantial activity at certain regular times. (The weighting for this type of access is 3).	0
D	Large shopping centres and other units generating substantial and continuous activity. Some large industries which are tourist attractions or for some other reason generate substantial traffic volumes would be included in this activity. (The weighting for this type of access is 4).	0
E	Unsignalised intersecting roads of substantially lesser importance than the road being assessed, or intersecting roads where side traffic and turning movements have little effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 1).	2
F	Unsignalised intersecting roads of lesser importance than the road being assessed but where the side road traffic and turning movements are such that the intersection has appreciable effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 2).	0
G	Unsignalised intersecting roads of comparable or greater significance than the road being assessed. Intersections which have pronounced effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 3).	0
H	Roundabouts and signalised intersecting roads. (The weighting for this type of access is 3).	1
	Average number of accesses per 100 m	0.55

Road Cross Section

The road is **Divided**

Function of Road
The road is primarily used for **Traffic movement (freeway/arterial/sub arterial/trunk collector)**

Restrictions of Access
There are **restrictions on both sides.**

Median Width
The width of the median is **>= 4.5 m**

Road Geometry and Congestion
Adverse road conditions have been identified along the section of road. Targeted advisory signing, remedial works or lower limits should be considered if appropriate. The issues include: Congestion, horizontal and vertical curves

Special Roadside Activities
A lower speed limit may be appropriate due to the presence of special roadside activities in the area. These include:

- Frequent on-street bus stops
- Substantial crossing and turning traffic

Note: A Road safety audit has NOT been conducted to assess roadside activities or hazards

Number of crashes in the past 5 years:

Description	No. of crashes
Head-on	0
Rear-end	2
Lane change	0
Parallel lanes, turning	0
U-turn	0
Entering roadway	0
Overtaking, same direction	0
Hit parked vehicle	0
Hit railway train	0
Pedestrian	0
Permanent obstruction on carriageway	0
Hit animal	0
Off carriageway, on straight	0
Off carriageway, on straight, hit object	0
Out of control, on straight	0
Off carriageway on curve	0
Off carriageway, on curve, hit object	0
Out of control, on curve	0

The average annual equivalent crash risk is 6.00 (10^4)

Crash Rate
The crash rate is 69 (10^4 ERUs per 10^8 VKT)

Stage 4: Speed correlation check & recommendations

The speed limit based on road function is **60 km/h.**

The speed limit suggested by current speed data is **70 km/h.**
The speed limit suggested by the speed environment (QLIMITS) is **70 km/h.**

Reedy Creek Road – Segment 3 – QLIMITS

Speed Limit Review – Queensland (SLR-QLD)
Detailed Assessment Report

Background Information

Recommended Speed Limit:

60

Road Name: Reedy Creek Rd.
Road Location: Burleigh Heads.
Suburb: Burleigh Heads.
GPS Start Point : .
GPS Finish Point: .
TMR Road Number: 102
Local Government: 230, Gold Coast City Council
Main Roads District: 1, South Coast Hinterland
The need to review the speed limit on this road has occurred due to community request.
The length of the road section being assessed is 1.5 km
AADT on this road section is 24000 vpd
The existing speed limit is 60 km/h.

Adjacent Speed Zones

Approach 2: 60 km/h - Western approach

Stage 1: Road function

This section of Reedy Creek Rd being assessed is located in a urban area.
The road type is: Arterial and Sub-Arterial Roads.
The Typical Speed Limit is: 60 km/h.
The Existing Speed Limit **does** equal the Typical Speed Limit

Stage 2: Prevailing Traffic speed

Sample data on 426279 vehicles was analysed using ' Other methods'
The upper limit of 15 km/h pace is 70
The mean speed is 60 km/h
The 85th percentile speed is 70 km/h
Hence, the prevailing traffic speed data **does not** correlate with the existing Speed Limit

Stage 3: QLIMITS

The suggested speed limit based on the speed environment analysis was **60 km/h** after allowing for site specific issues.

Comments
Congestion, turning vehicles, parking manoeuvres, bus stops

Additional issues considered:

- A lower speed limit may be appropriate due to the presence of special roadside activities in the area. These include:
  - Frequent on-street bus stops
  - Frequent parking manoeuvres
  - Substantial crossing and turning traffic
  - Presence of roadside hazards

Note: A Road safety audit has NOT been conducted to assess roadside activities or hazards

- Speed environment was assessed (Stage 3 was completed).Answers to the Speed Environment questions were as follows:
  - Has a comprehensive road safety audit been completed? NO
  - Did the road safety audit highlight deficiencies that have not been corrected? NO
  - Was the road safety audit conducted more than 3 years ago? NO
  - Is there a concern for pedestrian or cyclist safety along the road segment? NO
  - Are there high risk intersections in the road segment? NO

Frequency of Roadside Accesses

	Type of access	**Number**
A	Residences, small commercial establishments, small public buildings and other units which generate light and/or occasional activity. (The weighting for this type of access is 1).	38
B	Average commercial establishment, local schools, caravan parks, light industries, public buildings and units generating activity which is either: 1. Continuous light. 2. Moderate at certain times, such as commuting hours. 3. Substantial at infrequent intervals. (The weighting for this type of access is 2).	15
C	Heavy industry, schools, shopping centres and other units generating continuous moderate activity or substantial activity at certain regular times. (The weighting for this type of access is 3).	0
D	Large shopping centres and other units generating substantial and continuous activity. Some large industries which are tourist attractions or for some other reason generate substantial traffic volumes would be included in this activity. (The weighting for this type of access is 4).	0
E	Unsignalised intersecting roads of substantially lesser importance than the road being assessed, or intersecting roads where side traffic and turning movements have little effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 1).	9
F	Unsignalised intersecting roads of lesser importance than the road being assessed but where the side road traffic and turning movements are such that the intersection has appreciable effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 2).	0
G	Unsignalised intersecting roads of comparable or greater significance than the road being assessed. Intersections which have pronounced effect on the traffic flow pattern of the road being considered. (The weighting for this type of access is 3).	0
H	Roundabouts and signalised intersecting roads. (The weighting for this type of access is 3).	4
	Average number of accesses per 100 m	5.93

Road Cross Section
The road is **Divided**

Function of Road
The road is primarily used for **Traffic movement (freeway/arterial/sub arterial/trunk collector)**

Restrictions of Access
There are **no restrictions.**

Setback
The setback from the fence line is **>= 4 to 10 m**

Median Width
The width of the median is **>= 4.5 m**

Special Roadside Activities
A lower speed limit may be appropriate due to the presence of special roadside activities in the area. These include:

- Frequent on-street bus stops
- Frequent parking manoeuvres
- Substantial crossing and turning traffic
- Presence of roadside hazards

Note: A Road safety audit has NOT been conducted to assess roadside activities or hazards

Number of crashes in the past 5 years:

Description	No. of crashes
Head-on	0
Rear-end	1
Lane change	1
Parallel lanes, turning	0
U-turn	0
Entering roadway	0
Overtaking, same direction	0
Hit parked vehicle	0
Hit railway train	0
Pedestrian	0
Permanent obstruction on carriageway	0
Hit animal	0
Off carriageway, on straight	0
Off carriageway, on straight, hit object	0
Out of control, on straight	0
Off carriageway on curve	0
Off carriageway, on curve, hit object	1
Out of control, on curve	1

The average annual equivalent crash risk is 25.00 (10^4)

Crash Rate
The crash rate is 190 (10^4 ERUs per 10^8 VKT)

Stage 4: Speed correlation check & recommendations

The speed limit based on road function is **60 km/h.**

The speed limit suggested by current speed data is **70 km/h.**
The speed limit suggested by the speed environment (QLIMITS) is **60 km/h.**

Nerang-Murwillumbah Rd – Segment 1 – SLNZ

Nerang Murwillumbah Road - Segment 1											
Chainage		Development Rating			Roadway Rating						
Start	End	SLNZ 4	SLNZ 5	Sub-total	SLNZ 6	SLNZ 7	SLNZ 8	SLNZ 9	SLNZ10	SLNZ11	Sub-total
0	0.1	1	0	1	0	1	1	1	0	0	3
0.1	0.2	0	0	0	0	1	1	1	0	0	3
0.2	0.3	1	0	1	0	1	1	1	0	0	3
0.3	0.4	1	0	1	0	1	1	1	0	0	3
0.4	0.5	1	0	1	0	1	1	1	0	0	3
0.5	0.6	2	0	2	0	1	1	1	0	0	3
0.6	0.7	2	0	2	0	1	1	1	0	0	3
0.7	0.8	0	0	0	0	1	1	1	0	0	3
0.8	0.9	1	0	1	0	1	1	1	0	0	3
0.9	1	0	0	0	0	1	1	1	0	0	3
1	1.1	0	0	0	0	1	1	0	0	0	2
1.1	1.2	0	0	0	0	1	1	0	0	0	2
1.2	1.3	0	0	0	0	1	1	0	0	0	2
1.3	1.4	0	0	0	0	1	1	1	0	0	3
1.4	1.5	1	0	1	0	1	1	1	0	0	3
1.5	1.6	0	1	1	0	1	1	1	0	0	3
1.6	1.7	0	0	0	0	1	1	0	0	0	2
1.7	1.8	0	0	0	0	1	1	0	0	0	2
1.8	1.9	0	0	0	0	1	1	1	0	0	3
1.9	2	0	0	0	0	1	1	1	0	0	3
2	2.1	1	0	1	0	1	1	0	0	0	2
2.1	2.2	0	1	1	0	1	1	0	0	0	2
2.2	2.3	0	0	0	0	1	1	1	0	0	3
2.3	2.4	1	0	1	0	1	1	1	0	0	3
2.4	2.5	1	0	1	0	1	1	1	0	0	3
2.5	2.6	0	0	0	0	1	1	1	0	0	3
2.6	2.7	1	0	1	0	1	1	0	0	0	2
2.7	2.8	1	0	1	0	1	1	0	0	0	2
2.8	2.9	3	0	3	0	1	1	1	0	0	3
2.9	3	0	0	0	0	1	1	1	0	0	3
3	3.1	0	0	0	0	1	1	0	0	0	2
3.1	3.2	0	0	0	0	1	1	0	0	0	2
3.2	3.3	0	0	0	0	1	1	0	0	0	2
3.3	3.4	0	0	0	0	1	1	1	0	0	3
3.4	3.5	1	0	1	0	1	1	1	0	0	3
3.5	3.6	4	0	4	0	1	1	1	0	0	3
3.6	3.7	0	0	0	0	1	1	1	0	0	3
3.7	3.8	0	0	0	0	1	1	1	0	0	3
3.8	3.9	0	0	0	0	1	1	1	0	0	3
3.9	4	0	1	1	0	1	1	1	0	0	3

4	4.1	2	0	2	0	1	1	1	2	0	5
4.1	4.2	0	0	0	0	1	1	1	0	0	3
4.2	4.3	0	0	0	0	1	1	1	0	0	3
			Total	28					Total		119
									Combined Total		147
									Average		3.42
									R Score - 80 km/h for rural		

Nerang-Murwillumbah Rd – Segment 2 – SLNZ

Nerang Murwillumbah Road - Segment 2											
Chainage		Development Rating			Roadway Rating						
Start	End	SLNZ 4	SLNZ 5	Sub-total	SLNZ 6	SLNZ 7	SLNZ 8	SLNZ 9	SLNZ10	SLNZ11	Sub-total
0	0.1	0	0	0	0	1	1	1	0	0	3
0.1	0.2	0	0	0	0	1	1	1	0	0	3
0.2	0.3	0	0	0	0	1	1	1	0	0	3
0.3	0.4	0	0	0	0	1	1	1	0	0	3
0.4	0.5	1	0	1	0	1	1	1	0	0	3
0.5	0.6	0	0	0	0	1	1	0	0	0	2
0.6	0.7	1	0	1	0	1	1	0	0	0	2
0.7	0.8	0	0	0	0	1	1	2	0	0	4
0.8	0.9	0	0	0	0	1	1	2	0	0	4
0.9	1	0	0	0	0	1	1	2	0	0	4
1	1.1	0	0	0	0	1	1	2	0	0	4
1.1	1.2	0	0	0	0	1	1	2	0	0	4
1.2	1.3	0	0	0	0	1	1	2	0	0	4
1.3	1.4	1	0	1	0	1	1	2	0	0	4
1.4	1.5	1	0	1	0	1	1	2	0	0	4
1.5	1.6	0	0	0	0	1	1	2	0	0	4
1.6	1.7	0	0	0	0	1	1	2	0	0	4
1.7	1.8	0	0	0	0	1	1	2	0	0	4
1.8	1.9	0	0	0	0	1	1	2	0	0	4
1.9	2	0	0	0	0	1	1	0	0	0	2
2	2.1	2	0	2	1	1	1	0	0	0	3
2.1	2.2	2	0	2	1	1	1	0	0	0	3
2.2	2.3	0	0	0	0	1	1	0	0	0	2
2.3	2.4	2	0	2	1	1	1	0	0	0	3
2.4	2.5	0	0	0	0	1	1	0	0	0	2
2.5	2.6	1	0	1	0	1	0	1	0	0	2
2.6	2.7	0	0	0	0	1	0	1	0	0	2
2.7	2.8	0	0	0	0	1	0	2	0	0	3
2.8	2.9	0	0	0	0	1	0	2	0	0	3
2.9	3	0	0	0	0	1	0	2	0	0	3
3	3.1	0	0	0	0	1	0	2	0	0	3
			Total	11					Total		98
									Combined Total		109
									Average		3.52
									R Score - 80 km/h for rural		

Currumbin Creek-Tomewin Road – Segment 1 – SLNZ

Currumbin Creek-Tomewin Road - Segment 1											
Chainage		Development Rating			Roadway Rating						
Start	End	SLNZ 4	SLNZ 5	Sub-total	SLNZ 6	SLNZ 7	SLNZ 8	SLNZ 9	SLNZ10	SLNZ11	Sub-total
0	0.1	0	0	0	0	1	0	1	0	0	2
0.1	0.2	1	0	1	0	1	0	1	0	0	2
0.2	0.3	0	0	0	0	1	0	1	0	0	2
0.3	0.4	3	0	3	0	1	0	1	0	0	2
0.4	0.5	0	0	0	0	1	0	1	0	0	2
0.5	0.6	3	0	3	0	1	0	1	0	0	2
0.6	0.7	3	0	3	0	1	0	1	0	0	2
0.7	0.8	3	0	3	0	1	1	1	0	0	3
0.8	0.9	0	0	0	0	1	1	1	0	0	3
0.9	1	0	0	0	0	1	1	1	0	0	3
1	1.1	0	1	1	0	1	1	1	2	0	5
1.1	1.2	0	0	0	0	1	1	1	0	0	3
1.2	1.3	2	0	2	0	1	1	1	0	0	3
1.3	1.4	0	0	0	0	1	1	1	0	0	3
1.4	1.5	0	0	0	0	1	1	1	0	0	3
1.5	1.6	1	0	1	0	1	1	1	0	0	3
1.6	1.7	1	0	1	0	1	1	1	0	0	3
1.7	1.8	0	0	0	0	1	1	1	0	0	3
1.8	1.9	1	0	1	0	1	1	1	0	0	3
1.9	2	0	0	0	0	1	1	1	0	0	3
			Total	19					Total		55
									Combined Total		74
									Average		3.70
									R Score - 80 km/h for rural		

Currumbin Creek-Tomewin Road – Segment 2 – SLNZ

Currumbin Creek-Tomewin Road - Segment 2											
Chainage		Development Rating			Roadway Rating						
Start	End	SLNZ 4	SLNZ 5	Sub-total	SLNZ 6	SLNZ 7	SLNZ 8	SLNZ 9	SLNZ10	SLNZ11	Sub-total
0	0.1	1	0	1	0	1	0	2	0	0	3
0.1	0.2	0	0	0	0	1	1	2	0	0	4
0.2	0.3	0	0	0	0	1	1	2	0	0	4
0.3	0.4	0	1	1	0	1	0	2	0	0	3
0.4	0.5	0	0	0	0	1	0	2	0	0	3
0.5	0.6	0	0	0	0	1	0	2	0	0	3
0.6	0.7	0	0	0	0	1	0	2	0	0	3
0.7	0.8	0	0	0	0	1	0	2	0	0	3

0.8	0.9	0	0	0	0	1	0	2	0	0	3
0.9	1	0	0	0	0	1	0	2	0	0	3
1	1.1	0	0	0	0	1	0	2	0	0	3
1.1	1.2	0	0	0	0	1	0	2	0	0	3
1.2	1.3	0	0	0	0	1	0	2	0	0	3
1.3	1.4	0	0	0	0	1	0	2	0	0	3
1.4	1.5	0	0	0	0	1	0	2	0	0	3
1.5	1.6	2	0	2	0	1	0	2	0	0	3
1.6	1.7	0	0	0	0	1	0	2	0	0	3
1.7	1.8	0	0	0	0	1	0	2	0	0	3
			Total	4					Total		56
									Combined Total		60
									Average		3.33
									R Score - 80 km/h for rural		

Currumbin Creek-Tomewin Road – Segment 3 – SLNZ

Currumbin Creek-Tomewin Road - Segment 3											
Chainage		Development Rating			Roadway Rating						
Start	End	SLNZ 4	SLNZ 5	Sub-total	SLNZ 6	SLNZ 7	SLNZ 8	SLNZ 9	SLNZ10	SLNZ11	Sub-total
0	0.1	0	0	0	1	1	1	1	0	0	4
0.1	0.2	0	1	1	1	1	1	1	2	0	6
0.2	0.3	0	0	0	1	1	1	1	0	0	4
0.3	0.4	0	1	1	1	1	1	1	2	0	6
0.4	0.5	0	0	0	1	1	1	1	0	0	4
0.5	0.6	1	0	1	1	1	1	1	0	0	4
0.6	0.7	0	0	0	1	1	1	1	0	0	4
0.7	0.8	0	0	0	1	1	1	1	0	0	4
0.8	0.9	0	0	0	1	1	1	1	0	0	4
0.9	1	0	0	0	1	1	1	1	0	0	4
1	1.1	0	0	0	1	1	1	1	0	0	4
1.1	1.2	1	0	1	1	1	1	1	0	0	4
			Total	4					Total		52
									Combined Total		56
									Average		4.67
									R Score - 80 km/h for rural		

Currumbin Creek-Tomewin Road – Segment 4 – SLNZ

Currumbin Creek-Tomewin Road - Segment 4											
Chainage		Development Rating			Roadway Rating						
Start	End	SLNZ 4	SLNZ 5	Sub-total	SLNZ 6	SLNZ 7	SLNZ 8	SLNZ 9	SLNZ10	SLNZ11	Sub-total
0	0.1	0	0	0	0	1	1	1	0	0	3
0.1	0.2	0	0	0	0	1	1	1	0	0	3
0.2	0.3	0	0	0	0	1	1	1	0	0	3
0.3	0.4	0	0	0	0	1	1	1	0	0	3
0.4	0.5	0	0	0	0	1	1	1	0	0	3
0.5	0.6	1	0	1	0	1	1	1	0	0	3
0.6	0.7	1	0	1	0	1	1	1	0	0	3
0.7	0.8	0	0	0	0	1	1	1	0	0	3
0.8	0.9	1	0	1	0	1	1	1	0	0	3
0.9	1	0	0	0	0	1	1	1	0	0	3
1	1.1	0	0	0	0	1	1	1	0	0	3
1.1	1.2	3	0	3	0	1	1	1	0	0	3
1.2	1.3	0	0	0	0	1	1	1	0	0	3
1.3	1.4	1	0	1	0	1	1	1	0	0	3
1.4	1.5	2	0	2	0	1	1	1	0	0	3
1.5	1.6	0	0	0	0	1	1	1	0	0	3
1.6	1.7	0	0	0	0	1	1	1	0	0	3
1.7	1.8	2	0	2	0	1	1	1	0	0	3
1.8	1.9	0	0	0	0	1	1	1	0	0	3
1.9	2	2	0	2	0	1	1	1	0	0	3
			Total	13					Total		60
									Combined Total		73
									Average		3.65
									R Score - 80 km/h for rural		

Currumbin Creek-Tomewin Road – Segment 5 – SLNZ

Currumbin Creek-Tomewin Road - Segment 5											
Chainage		Development Rating			Roadway Rating						
Start	End	SLNZ 4	SLNZ 5	Sub-total	SLNZ 6	SLNZ 7	SLNZ 8	SLNZ 9	SLNZ10	SLNZ11	Sub-total
0	0.1	2	0	2	0	1	2	1	0	0	4
0.1	0.2	0	0	0	0	1	2	1	0	0	4
0.2	0.3	3	0	3	0	1	2	1	0	0	4
0.3	0.4	0	0	0	0	1	2	1	0	0	4
0.4	0.5	0	0	0	0	1	2	1	0	0	4
0.5	0.6	1	0	1	0	1	2	1	0	0	4
0.6	0.7	0	0	0	0	1	2	1	0	0	4
0.7	0.8	1	0	1	0	1	2	1	0	0	4

0.8	0.9	1	0	1	0	1	2	1	0	0	4
0.9	1	0	0	0	0	1	2	1	0	0	4
1	1.1	0	0	0	0	1	2	1	0	0	4
1.1	1.2	2	0	2	0	1	2	1	0	0	4
1.2	1.3	0	0	0	0	1	2	1	0	0	4
1.3	1.4	0	0	0	0	1	2	1	0	0	4
1.4	1.5	0	0	0	0	1	2	1	0	0	4
1.5	1.6	1	0	1	0	1	2	1	0	0	4
1.6	1.7	0	0	0	0	1	2	1	0	0	4
1.7	1.8	0	0	0	0	1	2	1	0	0	4
1.8	1.9	0	0	0	0	1	2	1	0	0	4
1.9	2	1	0	1	0	1	2	1	0	0	4
			Total	12					Total		80
									Combined Total		92
									Average		4.60
									R Score - 80 km/h for rural		

Cunningham Highway – Segment 1 – SLNZ

Cunningham Highway - Segment 1											
Chainage		Development Rating			Roadway Rating						
Start	End	SLNZ 4	SLNZ 5	Sub-total	SLNZ 6	SLNZ 7	SLNZ 8	SLNZ 9	SLNZ10	SLNZ11	Sub-total
0	0.1	0		0	0	1	0	0	1	0	2
0.1	0.2	0		0	0	1	0	0	0	0	1
0.2	0.3	0		0	0	1	0	0	0	0	1
0.3	0.4	0		0	0	1	0	0	0	0	1
0.4	0.5	2		2	0	1	0	0	0	0	1
0.5	0.6	0		0	0	1	0	0	0	0	1
0.6	0.7	0		0	0	1	0	0	0	0	1
0.7	0.8	0		0	0	1	0	0	0	0	1
0.8	0.9	0		0	0	1	0	0	0	0	1
0.9	1	0		0	0	1	0	0	0	0	1
1	1.1	0		0	0	1	0	0	0	0	1
1.1	1.2	0		0	0	1	0	0	0	0	1
1.2	1.3	0		0	0	1	0	0	0	0	1
1.3	1.4	0		0	0	1	0	0	0	0	1
1.4	1.5	0	2	2	0	1	0	0	0	0	1
1.5	1.6	0		0	0	1	0	0	0	0	1
1.6	1.7	0		0	0	1	0	0	0	0	1
1.7	1.8	0		0	0	1	0	0	0	0	1
1.8	1.9	0		0	0	1	0	0	0	0	1
1.9	2	0		0	0	1	0	0	0	0	1
2	2.1	3	0	3	0	1	0	0	0	0	1
2.1	2.2	0		0	0	1	0	0	0	0	1

2.2	2.3	0		0	0	1	0	0	0	0	1
2.3	2.4	0		0	0	1	0	0	0	0	1
			Total	7					Total		25
									Combined Total		32
									Average		1.33
									R Score - 100 km/h for rural		

Cunningham Highway – Segment 2 – SLNZ

Cunningham Highway - Segment 2											
Chainage		Development Rating			Roadway Rating						
Start	End	SLNZ 4	SLNZ 5	Sub-total	SLNZ 6	SLNZ 7	SLNZ 8	SLNZ 9	SLNZ10	SLNZ11	Sub-total
0	0.1	0	0	0	0	1	0	0	0	0	1
0.1	0.2	3	0	3	0	1	0	0	0	0	1
0.2	0.3	0	0	0	0	1	0	0	0	0	1
0.3	0.4	0	0	0	0	1	0	0	0	0	1
0.4	0.5	0	0	0	0	1	0	0	0	0	1
0.5	0.6	0	0	0	0	1	0	0	0	0	1
0.6	0.7	0	0	0	0	1	0	0	0	0	1
0.7	0.8	1	0	1	0	1	0	0	0	0	1
0.8	0.9	2	0	2	0	1	0	0	0	0	1
			Total	6					Total		9
									Combined Total		15
									Average		1.67
									R Score - 100 km/h for rural		

Cunningham Highway – Segment 3 – SLNZ

Cunningham Highway - Segment 3											
Chainage		Development Rating			Roadway Rating						
Start	End	SLNZ 4	SLNZ 5	Sub-total	SLNZ 6	SLNZ 7	SLNZ 8	SLNZ 9	SLNZ10	SLNZ11	Sub-total
0	0.1	0	0	0	0	1	0	0	0	0	1
0.1	0.2	3	0	3	0	1	0	0	0	0	1
0.2	0.3	6	0	6	0	1	0	0	0	0	1
0.3	0.4	2	0	2	0	1	0	0	0	0	1
0.4	0.5	7	0	7	0	1	0	0	0	0	1
0.5	0.6	3	1	4	0	1	3	0	0	0	4
0.6	0.7	9	0	9	0	1	3	0	0	0	4
0.7	0.8	3	2	5	0	1	3	0	0	0	4
0.8	0.9	6	0	6	0	1	3	0	0	0	4
0.9	1	4	0	4	0	1	0	0	0	0	1
1	1.1	9	0	9	0	1	0	0	0	0	1
			Total	55					Total		23
									Combined Total		78
									Average		7.09
									R Score - 70 km/h for rural		

Cunningham Highway – Segment 4 – SLNZ

Cunningham Highway - Segment 4											
Chainage		Development Rating			Roadway Rating						
Start	End	SLNZ 4	SLNZ 5	Sub-total	SLNZ 6	SLNZ 7	SLNZ 8	SLNZ 9	SLNZ10	SLNZ11	Sub-total
0	0.1	3	0	3	0	1	1	0	0	0	2
0.1	0.2	2	0	2	0	1	1	0	0	0	2
0.2	0.3	0	0	0	0	1	1	0	0	0	2
0.3	0.4	0	0	0	0	1	1	0	0	0	2
0.4	0.5	0	0	0	0	1	1	0	0	0	2
0.5	0.6	0	1	1	0	1	1	0	0	0	2
0.6	0.7	3	0	3	0	1	1	0	0	0	2
			Total	9					Total		14
									Combined Total		23
									Average		3.29
									R Score - 80 km/h for rural		

Cunningham Highway – Segment 5 – SLNZ

Cunningham Highway - Segment 5											
Chainage		Development Rating			Roadway Rating						
Start	End	SLNZ 4	SLNZ 5	Sub-total	SLNZ 6	SLNZ 7	SLNZ 8	SLNZ 9	SLNZ10	SLNZ11	Sub-total
0	0.1	0	0	0	0	1	1	0	0	0	2
0.1	0.2	0	0	0	0	1	1	0	0	0	2
0.2	0.3	0	0	0	0	1	1	0	0	0	2
0.3	0.4	1	0	1	0	1	1	0	0	0	2
0.4	0.5	1	0	1	0	1	1	0	0	0	2
0.5	0.6	0	0	0	0	1	1	0	0	0	2
0.6	0.7	0	0	0	0	1	1	0	0	0	2
0.7	0.8	0	0	0	0	1	1	0	0	0	2
0.8	0.9	0	0	0	0	1	1	0	0	0	2
0.9	1	0	0	0	0	1	1	0	0	0	2
1	1.1	0	0	0	0	1	1	0	0	0	2
1.1	1.2	0	0	0	0	1	1	0	0	0	2
1.2	1.3	0	0	0	0	1	1	0	0	0	2
1.3	1.4	0	0	0	0	1	1	0	0	0	2
1.4	1.5	0	0	0	0	1	1	0	0	0	2
1.5	1.6	0	0	0	0	1	1	0	0	0	2
1.6	1.7	0	0	0	0	1	1	0	0	0	2
1.7	1.8	0	0	0	0	1	1	0	0	0	2
1.8	1.9	0	0	0	0	1	1	0	0	0	2
1.9	2	0	0	0	0	1	1	0	0	0	2
2	2.1	0	0	0	0	1	1	0	0	0	2
2.1	2.2	0	0	0	0	1	1	0	0	0	2
2.2	2.3	1	0	1	0	1	1	0	0	0	2
2.3	2.4	2	0	2	0	1	1	0	0	0	2
2.4	2.5	0	0	0	0	1	1	0	0	0	2
2.5	2.6	0	0	0	0	1	1	0	0	0	2
2.6	2.7	0	0	0	0	1	1	0	0	0	2
2.7	2.8	0	0	0	0	1	1	0	0	0	2
2.8	2.9	0	0	0	0	1	1	0	0	0	2
2.9	3	0	0	0	0	1	1	0	0	0	2
3	3.1	0	0	0	0	1	1	0	0	0	2
3.1	3.2	0	0	0	0	1	1	0	0	0	2
3.2	3.3	0	0	0	0	1	1	0	0	0	2
3.3	3.4	1	0	1	0	1	1	0	0	0	2
3.4	3.5	0	0	0	0	1	1	0	0	0	2
3.5	3.6	0	0	0	0	1	1	0	0	0	2
3.6	3.7	1	0	1	0	1	1	0	0	0	2
3.7	3.8	2	0	2	0	1	1	0	0	0	2
3.8	3.9	0	0	0	0	1	1	0	0	0	2
3.9	4	0	0	0	0	1	1	0	0	0	2

4	4.1	0	0	0	0	1	1	0	0	0	2
4.1	4.2	0	0	0	0	1	1	0	0	0	2
			Total	9					Total		84
									Combined Total		93
									Average		2.21
									R Score - 100 km/h for rural		

Mount Lindesay Highway – Segment 1 – SLNZ

Mount Lindesay Highway - Segment 1											
Chainage		Development Rating			Roadway Rating						
Start	End	SLNZ 4	SLNZ 5	Sub-total	SLNZ 6	SLNZ 7	SLNZ 8	SLNZ 9	SLNZ10	SLNZ11	Sub-total
0	0.1	0	0	0	0	0	1	0	0	0	1
0.1	0.2	0	0	0	0	0	1	0	0	0	1
0.2	0.3	0	0	0	0	0	1	0	0	0	1
0.3	0.4	0	0	0	0	0	1	0	0	0	1
0.4	0.5	0	0	0	0	0	1	0	0	0	1
0.5	0.6	0	0	0	0	0	1	0	0	0	1
0.6	0.7	0	2	2	0	0	1	0	0	0	1
0.7	0.8	0	0	0	0	0	1	0	0	0	1
0.8	0.9	0	0	0	0	0	1	0	0	0	1
0.9	1	0	3	3	0	0	1	0	0	0	1
1	1.1	0	0	0	0	0	1	0	0	0	1
1.1	1.2	0	0	0	0	0	1	0	0	0	1
1.2	1.3	0	0	0	0	0	1	0	0	0	1
1.3	1.4	0	0	0	0	0	1	0	0	0	1
1.4	1.5	0	0	0	0	0	1	0	0	0	1
1.5	1.6	0	2	2	0	0	1	0	0	0	1
1.6	1.7	0	0	0	0	0	1	0	0	0	1
1.7	1.8	0	0	0	0	0	1	0	0	0	1
1.8	1.9	0	0	0	0	0	1	0	0	0	1
1.9	2	0	0	0	0	0	1	0	0	0	1
2	2.1	0	0	0	0	0	1	0	0	0	1
2.1	2.2	0	0	0	0	0	1	0	0	0	1
2.2	2.3	0	0	0	0	0	1	0	0	0	1
2.3	2.4	0	0	0	0	0	1	0	0	0	1
2.4	2.5	0	0	0	0	0	1	0	0	0	1
2.5	2.6	0	0	0	0	0	1	0	0	0	1
2.6	2.7	0	2	2	0	0	1	0	0	0	1
2.7	2.8	0	0	0	0	0	1	0	0	0	1
2.8	2.9	0	0	0	0	0	1	0	0	0	1
2.9	3	0	0	0	0	0	1	0	0	0	1
3	3.1	0	0	0	0	0	1	0	0	0	1
			Total	9					Total		31
									Combined Total		40
									Average		1.29
									R Score - 100 km/h		

Mount Lindesay Highway – Segment 2 – SLNZ

Mount Lindesay Highway - Segment 2											
Chainage		Development Rating			Roadway Rating						
Start	End	SLNZ 4	SLNZ 5	Sub-total	SLNZ 6	SLNZ 7	SLNZ 8	SLNZ 9	SLNZ10	SLNZ11	Sub-total
0	0.1	0	2	2	0	0	1	0	0	0	1
0.1	0.2	0	0	0	0	0	1	0	0	0	1
0.2	0.3	0	0	0	0	0	1	0	0	0	1
0.3	0.4	0	0	0	0	0	1	0	0	0	1
0.4	0.5	0	0	0	0	0	1	0	0	0	1
0.5	0.6	0	0	0	0	0	1	0	0	0	1
0.6	0.7	0	0	0	0	0	1	0	0	0	1
0.7	0.8	0	0	0	0	0	1	0	0	0	1
0.8	0.9	0	0	0	0	0	1	0	0	0	1
0.9	1	0	0	0	0	0	1	0	0	0	1
1	1.1	0	0	0	0	0	1	0	0	0	1
1.1	1.2	0	0	0	0	0	1	0	0	0	1
1.2	1.3	0	0	0	0	0	1	0	0	0	1
1.3	1.4	0	0	0	0	0	1	0	0	0	1
1.4	1.5	0	8	8	0	0	1	0	2	0	3
1.5	1.6	0	0	0	0	0	1	0	0	0	1
1.6	1.7	0	0	0	0	0	1	0	0	0	1
1.7	1.8	0	0	0	0	0	1	0	0	0	1
1.8	1.9	0	0	0	0	0	1	0	0	0	1
1.9	2	0	0	0	0	0	1	0	0	0	1
2	2.1	0	0	0	0	0	1	0	0	0	1
2.1	2.2	0	3	3	0	0	1	0	0	0	1
2.2	2.3	0	0	0	0	0	1	0	0	0	1
2.3	2.4	0	0	0	0	0	1	0	0	0	1
2.4	2.5	0	0	0	0	0	1	0	0	0	1
2.5	2.6	0	0	0	0	0	1	0	0	0	1
2.6	2.7	0	0	0	0	0	1	0	0	0	1
2.7	2.8	0	0	0	0	0	1	0	0	0	1
2.8	2.9	0	0	0	0	0	1	0	0	0	1
2.9	3	0	0	0	0	0	1	0	0	0	1
			Total	13					Total		32
									Combined Total		45
									Average		1.50
									R Score - 100 km/h		

Mount Lindesay Highway – Segment 3 – SLNZ

Mount Lindesay Highway - Segment 3											
Chainage		Development Rating			Roadway Rating						
Start	End	SLNZ 4	SLNZ 5	Sub-total	SLNZ 6	SLNZ 7	SLNZ 8	SLNZ 9	SLNZ10	SLNZ11	Sub-total
0	0.1	0	0	0	0	0	1	0	0	0	1
0.1	0.2	0	0	0	0	0	1	0	0	0	1
0.2	0.3	0	0	0	0	0	1	0	0	0	1
0.3	0.4	0	0	0	0	0	1	0	0	0	1
0.4	0.5	0	3	3	0	0	1	0	0	0	1
0.5	0.6	0	0	0	0	0	1	0	0	0	1
0.6	0.7	0	0	0	0	0	1	0	0	0	1
0.7	0.8	0	0	0	0	0	1	0	0	0	1
0.8	0.9	0	0	0	0	0	1	0	0	0	1
0.9	1	0	0	0	0	0	1	0	0	0	1
1	1.1	0	0	0	0	0	1	0	0	0	1
1.1	1.2	0	0	0	0	0	1	0	0	0	1
1.2	1.3	0	0	0	0	0	1	0	0	0	1
1.3	1.4	0	0	0	0	0	1	0	0	0	1
1.4	1.5	0	0	0	0	0	1	0	0	0	1
1.5	1.6	0	0	0	0	0	1	0	0	0	1
1.6	1.7	0	0	0	0	0	1	0	0	0	1
1.7	1.8	0	0	0	0	0	1	0	0	0	1
1.8	1.9	0	0	0	0	0	1	0	0	0	1
1.9	2	0	0	0	0	0	1	0	0	0	1
2	2.1	0	0	0	0	0	1	0	0	0	1
2.1	2.2	0	0	0	0	0	1	0	0	0	1
2.2	2.3	0	0	0	0	0	1	0	0	0	1
2.3	2.4	0	0	0	0	0	1	0	0	0	1
2.4	2.5	0	0	0	0	0	1	0	0	0	1
2.5	2.6	0	0	0	0	0	1	0	0	0	1
2.6	2.7	0	0	0	0	0	1	0	0	0	1
2.7	2.8	0	0	0	0	0	1	0	0	0	1
2.8	2.9	0	0	0	0	0	1	0	0	0	1
2.9	3	0	0	0	0	0	1	0	0	0	1
3	3.1	0	0	0	0	0	1	0	0	0	1
			Total	3					Total		31
									Combined Total		34
									Average		1.10
									R Score - 100 km/h		

Oxley Drive – Segment 1 – SLNZ

Oxley Drive - Segment 1											
Chainage		Development Rating			Roadway Rating						
Start	End	SLNZ 4	SLNZ 5	Sub-total	SLNZ 6	SLNZ 7	SLNZ 8	SLNZ 9	SLNZ10	SLNZ11	Sub-total
0	0.1	8	0	8	0	2	1	0	2	0	5
0.1	0.2	4	0	4	0	2	1	0	0	0	3
0.2	0.3	4	2	6	0	2	1	0	2	0	5
0.3	0.4	0	0	0	0	2	1	0	0	0	3
0.4	0.5	0	0	0	0	2	1	0	0	0	3
0.5	0.6	0	0	0	0	2	1	0	0	0	3
0.6	0.7	0	4	4	0	2	1	0	2	0	5
0.7	0.8	0	0	0	0	2	1	0	0	0	3
0.8	0.9	0	0	0	0	2	1	0	0	0	3
0.9	1	0	0	0	0	2	1	0	0	0	3
1	1.1	0	0	0	0	2	1	0	0	0	3
1.1	1.2	0	0	0	0	2	1	0	0	0	3
1.2	1.3	0	0	0	0	2	1	0	0	0	3
1.3	1.4	0	2	2	0	2	1	0	2	0	5
1.4	1.5	0	0	0	0	2	1	0	0	0	3
1.5	1.6	0	4	4	0	2	1	0	0	0	3
1.6	1.7	8	3	11	0	2	1	0	0	0	3
1.7	1.8	8	0	8	0	2	1	0	0	0	3
1.8	1.9	6	0	6	0	2	1	0	0	0	3
1.9	2	7	0	7	0	2	1	0	0	0	3
2	2.1	18	0	18	0	2	1	0	0	0	3
2.1	2.2	7	2	9	0	2	1	0	0	0	3
2.2	2.3	11	0	11	0	2	1	0	0	0	3
2.3	2.4	13	0	13	0	2	1	0	0	0	3
			Total	111					Total		80
									Combined Total		191
									Average		7.96
									R Score - 70 km/h		

Oxley Drive – Segment 2 – SLNZ

Oxley Drive - Segment 2											
Chainage		Development Rating			Roadway Rating						
Start	End	SLNZ 4	SLNZ 5	Sub-total	SLNZ 6	SLNZ 7	SLNZ 8	SLNZ 9	SLNZ10	SLNZ11	Sub-total
0	0.1	8	0	8	0	2	2	0	0	0	4
0.1	0.2	0	8	8	0	2	2	0	1	0	5
0.2	0.3	20	0	20	0	2	2	0	0	0	4
0.3	0.4	10	0	10	0	2	2	0	0	0	4
0.4	0.5	0	0	0	0	2	2	0	2	0	6

0.5	0.6	0	4	4	0	2	2	0	0	0	4
0.6	0.7	0	0	0	0	2	2	0	0	0	4
0.7	0.8	3	0	3	0	2	2	0	0	0	4
0.8	0.9	4	0	4	0	2	2	0	0	0	4
0.9	1	3	0	3	0	2	2	0	0	0	4
1	1.1	2	0	2	0	2	2	0	2	0	6
1.1	1.2	4	0	4	0	2	2	0	0	0	4
1.2	1.3	3	3	6	0	2	2	0	0	0	4
1.3	1.4	3	0	3	0	2	2	0	0	0	4
1.4	1.5	8	0	8	0	2	2	0	0	0	4
1.5	1.6	4	0	4	0	2	2	0	0	0	4
1.6	1.7	2	4	6	0	2	2	0	2	0	6
1.7	1.8	6	0	6	0	2	2	0	0	0	4
1.8	1.9	12	0	12	0	2	2	0	0	0	4
1.9	2	6	0	6	0	2	2	0	0	0	4
2	2.1	6	0	6	0	2	2	0	0	0	4
2.1	2.2	4	3	7	0	2	2	0	0	0	4
2.2	2.3	14	0	14	0	2	2	0	0	0	4
2.3	2.4	0	0	0	0	2	2	0	2	0	6
2.4	2.5	4	0	4	0	2	2	0	0	0	4
2.5	2.6	0	6	6	0	2	2	0	2	0	6
2.6	2.7	4	0	4	0	2	2	0	0	0	4
2.7	2.8	2	3	5	0	2	2	0	0	0	4
2.8	2.9	11	0	11	0	2	2	0	0	0	4
2.9	3	6	4	10	0	2	2	0	2	0	6
3	3.1	3	5	8	0	2	2	0	2	0	6
3.1	3.2	10	0	10	0	2	2	0	0	0	4
3.2	3.3	8	1	9	0	2	2	0	0	0	4
3.3	3.4	7	3	10	0	2	2	0	2	0	6
3.4	3.5	11	0	11	0	2	2	0	0	0	4
3.5	3.6	12	0	12	0	2	2	0	0	0	4
3.6	3.7	10	0	10	0	2	2	0	0	0	4
3.7	3.8	10	0	10	0	2	2	0	0	0	4
			Total	264					Total		169
									Combined Total		433
									Average		11.39
									R Score - 60 km/h		

Oxley Drive – Segment 3 – SLNZ

Oxley Drive - Segment 3											
Chainage		Development Rating			Roadway Rating						
Start	End	SLNZ 4	SLNZ 5	Sub-total	SLNZ 6	SLNZ 7	SLNZ 8	SLNZ 9	SLNZ10	SLNZ11	Sub-total
0	0.1	10	0	10	0	2	2	0	0	0	4
0.1	0.2	10	0	10	0	2	2	0	0	0	4
0.2	0.3	7	0	7	0	2	2	1	0	0	5
0.3	0.4	0	0	0	0	2	2	1	0	0	5
0.4	0.5	0	0	0	0	2	2	1	0	0	5
0.5	0.6	0	0	0	0	2	2	0	0	0	4
0.6	0.7	3	0	3	0	2	0	0	0	0	2
0.7	0.8	0	0	0	0	2	2	1	0	0	5
0.8	0.9	0	0	0	0	2	2	1	0	0	5
0.9	1	0	0	0	0	2	2	1	0	0	5
1	1.1	0	0	0	0	2	2	1	0	0	5
			Total	30					Total		49
									Combined Total		79
									Average		7.18
									R Score - 70 km/h		

Reedy Creek Road – Segment 1 – SLNZ

Reedy Creek Road - Segment 1											
Chainage		Development Rating			Roadway Rating						
Start	End	SLNZ 4	SLNZ 5	Sub-total	SLNZ 6	SLNZ 7	SLNZ 8	SLNZ 9	SLNZ10	SLNZ11	Sub-total
0	0.1	0	5	5	0	1	1	0	2	0	4
0.1	0.2	0	0	0	0	1	1	0	0	0	2
0.2	0.3	0	0	0	0	1	1	0	0	0	2
0.3	0.4	0	7	7	0	1	1	0	2	0	4
0.4	0.5	0	0	0	0	1	1	0	0	0	2
0.5	0.6	0	0	0	0	1	1	0	0	0	2
0.6	0.7	0	0	0	0	1	1	0	0	0	2
0.7	0.8	0	0	0	0	1	1	0	0	0	2
0.8	0.9	0	0	0	0	1	1	0	0	0	2
0.9	1	0	0	0	0	1	1	0	0	0	2
1	1.1	0	0	0	0	1	1	0	0	0	2
1.1	1.2	0	0	0	0	1	1	0	0	0	2
1.2	1.3	0	4	4	0	1	1	0	2	0	4
1.3	1.4	0	0	0	0	1	1	0	0	0	2
1.4	1.5	0	0	0	0	1	1	0	0	0	2
1.5	1.6	0	0	0	0	1	1	0	0	0	2
1.6	1.7	0	8	8	0	1	1	0	2	0	4
1.7	1.8	0	0	0	0	1	1	0	0	0	2

1.8	1.9	0	0	0	0	1	1	0	0	0	2
1.9	2	0	4	4	0	1	1	0	2	0	4
2	2.1	0	0	0	0	1	1	0	0	0	2
2.1	2.2	0	0	0	0	1	1	0	0	0	2
2.2	2.3	8	0	8	0	1	1	0	2	0	4
2.3	2.4	0	0	0	0	1	1	0	0	0	2
2.4	2.5	0	0	0	0	1	1	0	0	0	2
2.5	2.6	0	0	0	0	1	1	0	0	0	2
2.6	2.7	0	0	0	0	1	1	0	0	0	2
2.7	2.8	8	0	8	0	1	1	0	2	0	4
2.8	2.9	0	0	0	0	1	1	0	0	0	2
			Total	44					Total		72
									Combined Total		116
									Average		4.00
									R Score - 80 km/h		

Reedy Creek Road – Segment 2 – SLNZ

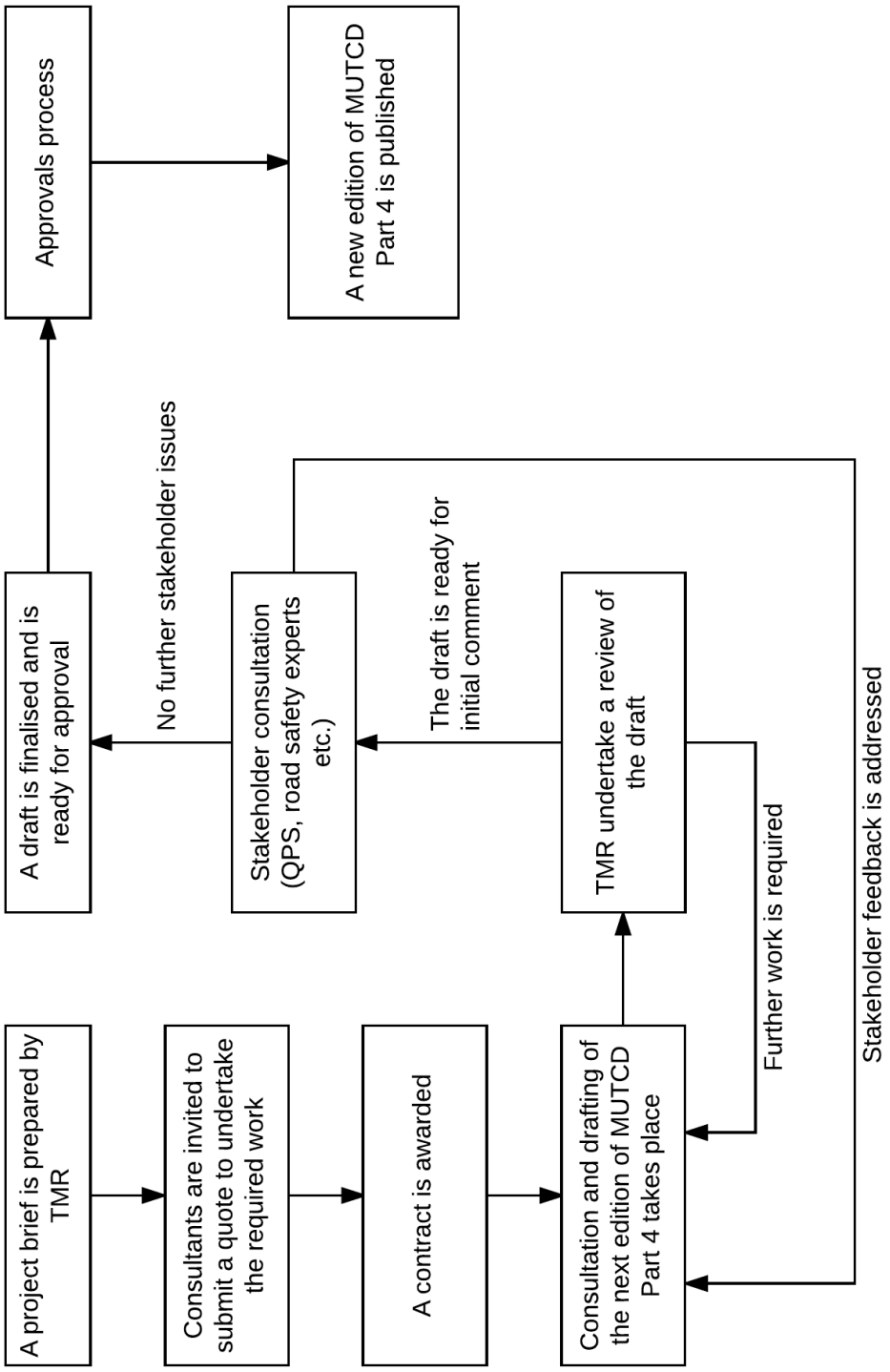
Reedy Creek Road - Segment 2											
Chainage		Development Rating			Roadway Rating						
Start	End	SLNZ 4	SLNZ 5	Sub-total	SLNZ 6	SLNZ 7	SLNZ 8	SLNZ 9	SLNZ10	SLNZ11	Sub-total
0	0.1	0	0	0	0	1	1	0	0	0	2
0.1	0.2	0	0	0	0	1	1	0	0	0	2
0.2	0.3	0	4	4	0	1	1	0	2	0	4
0.3	0.4	0	0	0	0	1	1	0	0	0	2
0.4	0.5	0	0	0	0	1	1	0	0	0	2
0.5	0.6	0	0	0	0	1	1	0	0	0	2
0.6	0.7	0	0	0	0	1	1	0	0	0	2
0.7	0.8	0	0	0	0	1	1	0	0	0	2
0.8	0.9	0	8	8	0	1	1	0	2	0	4
			Total	12					Total		22
									Combined Total		34
									Average		3.78
									R Score - 80 km/h		

Reedy Creek Road – Segment 3 - SLNZ

Reedy Creek Road - Segment 3											
Chainage		Development Rating			Roadway Rating						
Start	End	SLNZ 4	SLNZ 5	Sub-total	SLNZ 6	SLNZ 7	SLNZ 8	SLNZ 9	SLNZ10	SLNZ11	Sub-total
0	0.1	0	8	8	0	1	1	0	2	0	4
0.1	0.2	2	3	5	0	1	1	0	0	0	2
0.2	0.3	1	7	8	0	1	1	0	2	0	4
0.3	0.4	4	0	4	0	1	1	0	0	0	2
0.4	0.5	8	3	11	0	1	1	0	0	0	2
0.5	0.6	17	0	17	0	1	1	0	0	0	2
0.6	0.7	15	0	15	0	1	1	0	0	0	2
0.7	0.8	17	0	17	0	1	1	0	0	0	2
0.8	0.9	13	2	15	0	1	1	0	0	0	2
0.9	1	13	0	13	0	1	1	0	0	0	2
1	1.1	15	0	15	0	1	1	0	0	0	2
1.1	1.2	9	1	10	0	1	1	0	0	0	2
1.2	1.3	0	3	3	0	1	1	0	0	0	2
1.3	1.4	0	3	3	0	1	0	0	2	0	3
1.4	1.5	0	4	4	0	1	0	0	2	0	3
			Total	148					Total		36
									Combined Total		184
									Average		12.27
									R Score - 60 km/h		

Appendix D

MUTCD Part 4 Revision Process


A project brief is prepared by TMR
Consultants are invited to submit a quote to undertake the required work
A contract is awarded
Consultation and drafting of the next edition of MUTCD Part 4 takes place
TMR undertake a review of the draft
Stakeholder consultation (QPS, road safety experts etc.)
A draft is finalised and is ready for approval
Approvals process
A new edition of MUTCD Part 4 is published
Further work is required
The draft is ready for initial comment
No further stakeholder issues
Stakeholder feedback is addressed