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Tweed Shire Council

Report for Eviron Road Quarry and Landfill Proposal

Traffic Impact Assessment

November 2010

INFRASTRUCTURE | MINING & INDUSTRY | DEFENCE | PROPERTY & BUILDINGS | ENVIRONMENT

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1. Introduction

Tweed Shire Council's existing landfill, the Stotts Creek landfill, is predicted to reach capacity by 2012. As such, Council is seeking to develop new waste infrastructure to provide for the waste management requirements of the Tweed local government area (LGA) in the short term; and gain approval to develop additional waste infrastructure to meet the LGA's projected medium and long term needs.

Council is proposing to establish the Shire's new landfill facilities on existing Council owned land at Eviron Road, Eviron, within the Tweed LGA. Council has developed an overall Concept Plan for the proposed infrastructure. This outlines a proposed staged project to develop a landfill within the existing void space created by Quirks Quarry, the development of two further quarries to be used as landfills after exhaustion of the quarry resource, and necessary operational infrastructure such as a haul road, a dedicated acid sulfate soils treatment area, and other minor associated facilities as required. This proposed method of landfilling in quarry voids is consistent with the method of landfill creation in the Tweed Shire to date. Material won from quarrying is used for road building and other Council civil projects, and overburden stockpiled for road construction, clay liners (where appropriate) and site rehabilitation purposes.

The following report assesses the traffic impacts of the expansion of the development on the surrounding network for the operational phase of the facility only.

The site is located within the Tweed Shire Council in Northern New South Wales. The general location of the site is shown in Figure 1 below.

1.1 Objectives

This TIA is required by Council in order to assess the impact on the surrounding road network. This report will include:

- Review of background traffic;
- Review the trip generation of the facility;
- Analyse the access intersection operation and any impacted intersection; and
- Provide recommendations on improvement works required to minimise anticipated development impacts.

1.2 Methodology

The Methodology for conducting this TIA for the Quarry involves the following main tasks:

The assessment of traffic impacts involved the following main tasks:

- Assessment of Road Network Traffic Conditions;

  A site visit have been undertaken to review the proposed routing and access arrangements to/from the site. The characteristics of the route are considered in light of the type of vehicles using the route; tonnage; average trips per week; timing; and hours of operation. The road layout has been reviewed to ensure the accessibility for all vehicles are adequately catered for and in compliance with Austroads Guidelines.

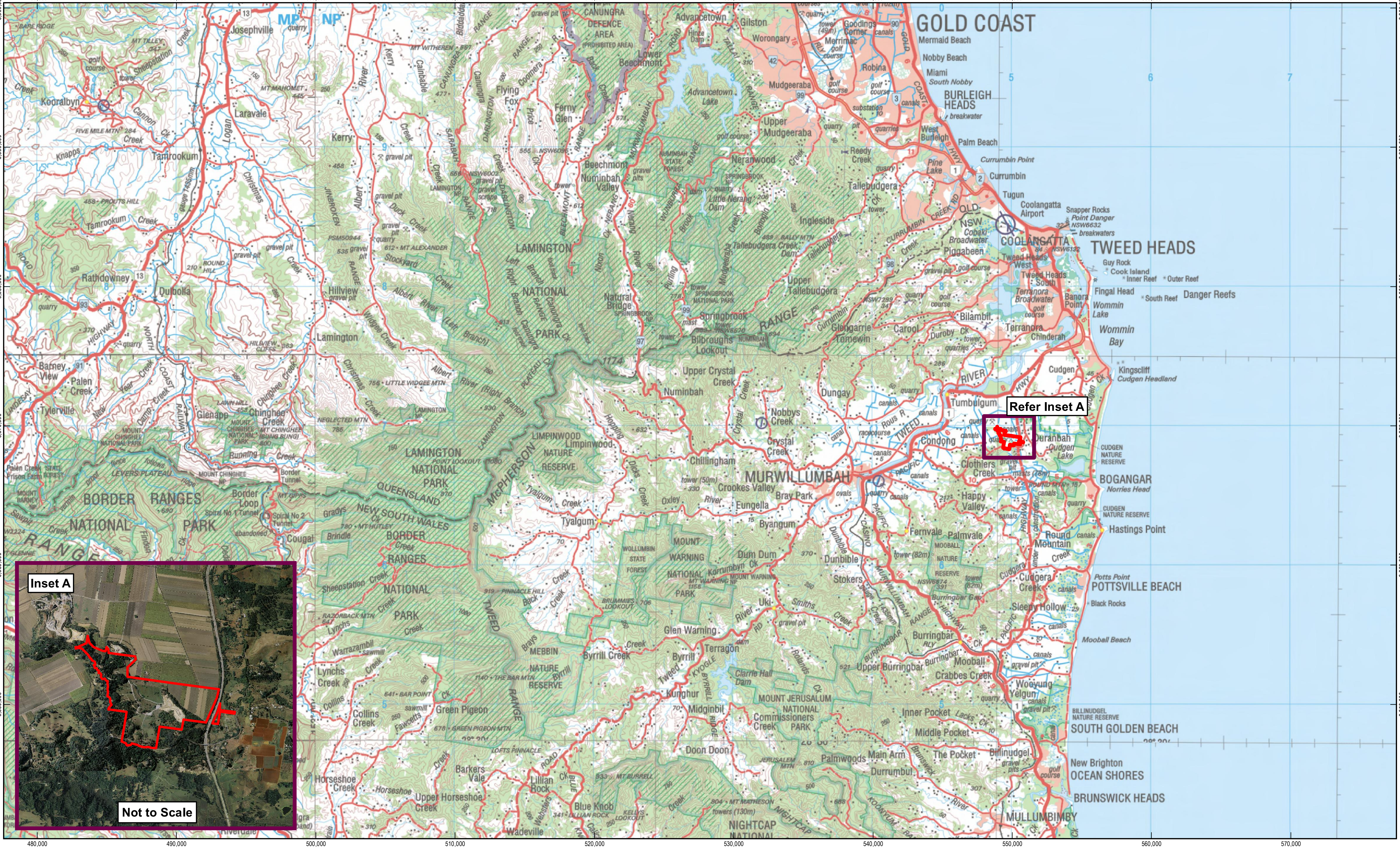
- Review of background traffic data (tube counts) provided by Council.
- Review trip generation of the proposed activities;
- Intersection Analysis;

  Analysis of intersections to access site and other impacted intersections using the intersection modelling software Sidra Intersection 4.0 (SIDRA);

  The analysis was undertaken for the AM, and PM peak hours, for the following scenarios:

  – Existing (2009);
  – Day of opening (2012); and
  – 10 year design horizon after opening (2022).
- Performance of Road Network;

  Following estimation of traffic generation, the performance of the road network was assessed to determine the construction and operational impact of the proposed Quarry and Landfill facility. The assessment is for existing conditions, day of opening and a 10 year design period. Suitable background traffic growth rates to be calculated for opening and 10 year design period.
- Access - the site access was assessed to review operation and sight distance issues.



1:250,000 (at A3)

0 2 4 6 8 10

Kilometres

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

N

LEGEND

Site Boundary

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Tweed Shire Council
Eviron Road Quarry and Landfill Environmental Assessment

Job Number	41-20806
Revision	1
Date	27 MAY 2011

Locality Plan

Figure 1

N:\AU\Toowoomba\Projects\41\20806\GIS\Maps\4120806_31.mxd

54-58 Nerang Street Nerang QLD 4211 Australia T 61 7 5557 1000 F 61 7 5557 1000 E goldcoastmail@ghd.com.au W www.ghd.com.au

Data source: Tweed Shire Council - Aerial Photography (2008). Geoscience Australia - NATMAP Raster Premium 250k (2005). GHD - Site Boundary (2011).

2. Existing Traffic Conditions

The following discuss the possible intersection that the project site will most likely use to gain access to and from the site.

2.1 Existing Road Network

The existing road network is shown in Figure 2 below. The site has access currently has access onto Eviron Road. However for the proposed activities all vehicles will access the site via the existing access to Stotts Creek RRC from Leddays Creek Road. Therefore site access to and from Eviron Road was not assessed as this access will be removed as part of the Concept Plan and the key intersections assessed were:

- Tweed Valley Way and Leddays Creek Road; and
- Facility access / Leddays Creek Road and Bartletts Road.

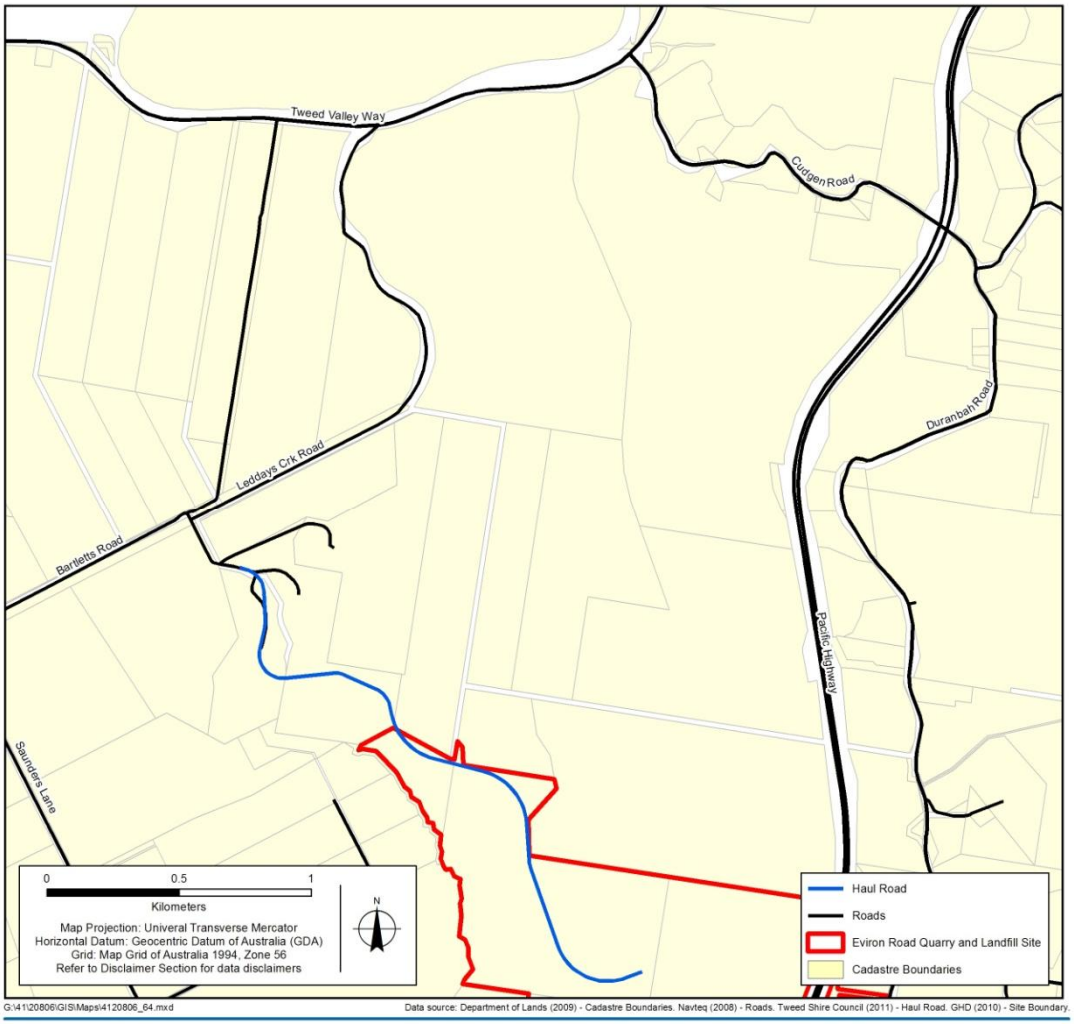


Figure 2 Surrounding Road Network

2.2 Road Network Details

Figure 3 shows the condition of Leddays Creek Road from the intersection of Bartletts Road looking north. It is a sealed two lane rural road (one lane each direction) that starts at the Quarry Access and joints on to Tweed Valley Way to the north.

Figure 3 Leddays Creek Road Looking North from Bartletts Road Intersection

Figure 4 shows the intersection of Tweed Valley Way (eastbound) and Leddays Creek Road. Tweed Valley Way is a two lane (one lane each direction) 100km/hr arterial road which follows the Tweed River and eventually loops back on to the Pacific Highway which is directly to the east of Quirks Quarry.

Figure 4 Tweed Valley Way from Leddays Creek Road Intersection

2.3 Surrounding Land Uses

The surrounding land use is predominantly rural with the majority of land sugar cane fields with some rural residential housing. Council's existing waste disposal facility Stotts Creek Resource Recovery Centre is located north west of the site aand a disused private quarry (O'Keeffe's Quarry) is located directly north of the site.

2.4 Background Traffic

With only a few residential houses within the Leddays Creek road catchment area background traffic is limited with the majority of traffic being from the quarry. Peak traffic along Tweed Valley Way occurs at 8:00-9:00 AM and 3:00-4:00 PM.

Traffic data was provided by Council for the following locations:

- Entrance to Stotts Creek RRC (Leddays Creek Road)
- Eviron Road (off Duranbah Road); and
- Tweed Valley Way (north of the southern entrance to Tumbulgum).

Key statistics for these three locations including the average daily traffic (ADT), morning and afternoon peak hour traffic volumes and the percentage of heavy vehicles[1] is provided in the following table.

Table 2-1 Traffic Count Key Statistics

	Entrance to Stotts Creek RRC (Leddays Creek Road)	Eviron Road	Tweed Valley Way
ADT – Weekday	625	345	10698
ADT – Weekend	425	390	10449
ADT – 7 days	568	358	10321
% heavy vehicles (Class 3 and above)	31%	12%	6%
AM Peak	75	38	893
PM Peak	79	43	1001

Note: all data provided by Tweed Shire Council

[1] Defined as Class 3 and above in accordance with Austroads Vehicle Classification System

3. Proposed Development

3.1 Development Profile

The development of the quarry and landfill project will be undertaken in stages over the course of 30 – 40 years. The current Concept Plan outlines the intention for progressive development of landfills within quarry voids across the site:

- Stage 1 (Project Application):
  - Construction of a haul road from Stott's Creek RRC to the site;
  - Landfill within the Quirks Quarry site; and
  - Quarrying at the West Valley site.
- Future Stages:
  - Landfill within the void formed by West Valley quarry;
  - Quarrying at North Valley; and
  - Landfill within the void formed by North Valley.

Based on the Quirks Quarry Landfill concept design, including forecast resource recovery and waste generation, it is anticipated that there will be an operational period of approximately 10 years. Similarly, based on projected extraction rates of 200,000 tonnes per annum for West Valley Quarry an approximate operational period of 10.5 years has been assumed. Taking into account the potential void created by the West Valley Quarry, approximately 12 years of landfilling may be achieved.

The quarry and landfill developments associated with the future stages are expected to be of a similar scale and nature to those investigated in Stage 1. As noted elsewhere in the Environmental Assessment, the scope of future staged application/s would be reviewed at a later stage prior to the submission of an application, and take into consideration emerging technologies in resource recovery, alternatives to landfilling and increase regulation of waste minimisation and landfill diversion targets.

As the facility is essentially a continuation of existing quarry operations and relocation of existing landfilling operations from the Stotts Creek site, there is not considered to be an official construction phase. Heavy vehicles, soil and building relocations already existing on site will not use the surrounding road network.

3.2 Site Access and Operating Hours

The existing access point for Quirks Quarry onto Eviron Road will be discontinued and access will no longer be permitted. For this reason the access on to Eviron Road has not been included in this assessment. The access point for all activities associated with the Concept Plan (including the Stage 1 Project Application) will be the existing access onto Leddays Creek Road from the Stotts Creek RRC as shown in Figure 46 below.

Waste collection vehicles will proceed through the Stotts Creek facility and along the proposed haul road to Quirks Quarry Landfill. Whilst small vehicular traffic (ie domestic and small commercial customers) will not enter the Eviron Road site and will continue to utilised the transfer station facility at the Stotts Creek RRC. Therefore this traffic is not considered further in the assessment as it is considered to be a continuation of the existing operations and not part of the Concept Plan.

As described in Section 7.2, the expected hours of operation of Quirks Quarry landfill are 7am to 4pm Monday to Friday and 9am to 4pm Saturday and Sunday, whilst quarrying activities will operate between 7am and 5pm Monday to Friday and 7am to 12pm Saturday.

Figure 5 Site Access from Leddays Creek Road

4. Traffic Generation

On the basis of the traffic data provided by Council for the existing quarry and landfill operations and the traffic counts for the identified intersection, a number of assumptions regarding the traffic generation, distribution and directional splits were made as part of this assessment to derive the turning movement traffic volumes. Overall it is noted that the traffic generation has been assumed based on information on expected maximum outputs from the Quarry and expected maximum intake at the landfill. Both facilities will use the same access and route to Tweed Valley Way.

It is recommended that during detail design, classified traffic counts should be undertaken at the Bartletts Road / Leddays Creek Rd intersection and Tweed Valley Way / Leddays Creek Rd intersection to confirm that assumptions summarised below:

- 5% traffic growth rate applied to tube counts provided by Council (refer Appendix A);
- Assumed directional split for counts on Tweed Valley Way in the AM 60% heading east, 40% heading west and reverse in the PM;
- Generated traffic in peak hours coming to / from the quarry/landfill. AM - 40% out, 60% in and reverse in PM;
- Turning movements from Leddays Creek Road for both traffic counts and generated traffic, 50% east (right), 50% west(left).
- There will be no net increase in traffic from the site during the establishment of the Quirks Quarry landfill.
- It is assumed that traffic growth is at 5% in accordance with other recent traffic data counts in the area.
- As the activities for the Stage 1 Project Application are in essence a continuation of existing Council activities in this area, from a traffic impact point of view it is considered that there is no construction phase as such with all heavy vehicles, soil and building relocations already either existing on site or utilising the site and will not add additional traffic to the surrounding road network. Staff/employee movements to site will still remain as per existing activities.

4.1 Quirks Quarry Landfill

To provide for the worst case scenario/maximum traffic generation, a waste acceptance rate of 70,000 tonnes per annum has been adopted, but it is acknowledged that this will gradually increase from 48,000 tonnes per annum from the start of operations. Heavy vehicles (ie kerbside waste collection vehicles) constitute 13% of the vehicles entering the Stotts Creek RRC (as is currently the case).

Based on the expected waste tonnages and traffic counts from Stotts Creek, in the order of 550 vehicles per day would be expected at the site initially, with approximately 10% of these vehicles being present at the peak time, equating to the following:

- 7 heavy vehicles; and
- 48 light vehicles.

Traffic associated with site employees would contribute six vehicles in peak hour.

This traffic would travel onto Leddays Creek Road and it is assumed that at the intersection with Tweed Valley Way, a 50/50 split of vehicles would occur for a left and right turn.

Since the traffic levels associated with the landfill component are currently already accounted for within the existing road network (ie due to the presence and use of the existing Stotts Creek RRC) there is no net impact (other than the anticipated growth in vehicular traffic that would have been experienced in any case) on traffic volumes on Leddays Creek Road and Tweed Valley Way associated with this activity. Traffic associated with waste disposal facilities both at Stotts Creek and Quirks Quarry Landfill will remain the dominant source of traffic on Leddays Creek Road.

4.2 West Valley Quarry

It is expected that 200,000 tonnes will be extracted and removed from the site each year. It has been assumed that haulage vehicles are truck and dog trailers with an average 25 tonnes per load capacity.

Whilst the quarry haulage regime will be highly variable and dependent of the availability and demand for quarry resource an average traffic generation of 26 vehicles a day has been adopted. This has been derived from the expected tonnages and average capacity of a truck and dog trailer. Based on the traffic count provided by Council for Eviron road, the number of Class 4 heavy vehicles generated by the proposed quarry is consistent with the existing traffic counts. During peak periods this would equate to three vehicles per hour. Traffic associated with site employees would contribute ten vehicles in peak hour

The proposed haulage route from the quarry will be through the internal haul road to Stotts Creek RRC, then right onto Leddays Creek Road and on to Tweed Valley Way.

Product haulage from the quarry will be by heavy vehicles on an as required basis. The level of activity at the quarry will be variable depending on local construction and maintenance requirements. The haulage route will also vary depend on the location of construction activity. However it is anticipated

All haulage will occur during daylight hours between the hours of 7:00am - 5:00pm Monday to Friday. Combinations of trucks will be used but it is expected that truck and dog trailers setups will mainly be used. These trucks have a payload of between 20 – 30 tonnes per load and will reduce the number of truck trips and resulting potential impacts.

Heavy vehicle traffic on Eviron Road associated with quarrying activities will be eliminated upon establishment of the proposed haul road and closure of the current Quirks Quarry site access. However this traffic will be diverted to Leddays Creek Road and the intersection with Tweed Valley Way. The split of traffic travelling east or west on Tweed Valley Way will be dependent on the required destination of quarry materials, however it is assumed that this is a 50/50 split. The addition of on average 26 heavy vehicles a day associated with the quarry, will impact upon Leddays Creek Road increasing heavy vehicles by approximately 13%, indicating that the landfill activities will still largely be responsible for the bulk of the traffic generation. In terms of the impact on overall traffic volumes on Tweed Valley Way the impact is minimal.

5. Intersection Analysis

The intersection analysis reviewed two locations, these being the site access on to Leddays Creek Road and the intersections of Leddays Creek Road with Tweed Valley Way.

5.1 Tweed Valley Way / Leddays Creek Road

Figure 6 shows the layout of the intersection of Tweed Valley Way and Leddays Creek Road. Traffic can access the site by a right or left turn lanes from the Tweed Valley Way and can also turn either way when exiting from Leddays Creek Road. An added lane is present for vehicles performing a left turn out of Leddays Creek Road onto Tweed Valley Way, however for the right turn, only a painted island refuge is provided. During detail design it is recommended that a safety audit be conducted on this intersection to ensure that the additional heavy vehicle traffic associated with the quarry does not present a safety hazard and that there are adequate sight distances both for traffic travelling on and accessing Tweed Valley Way.

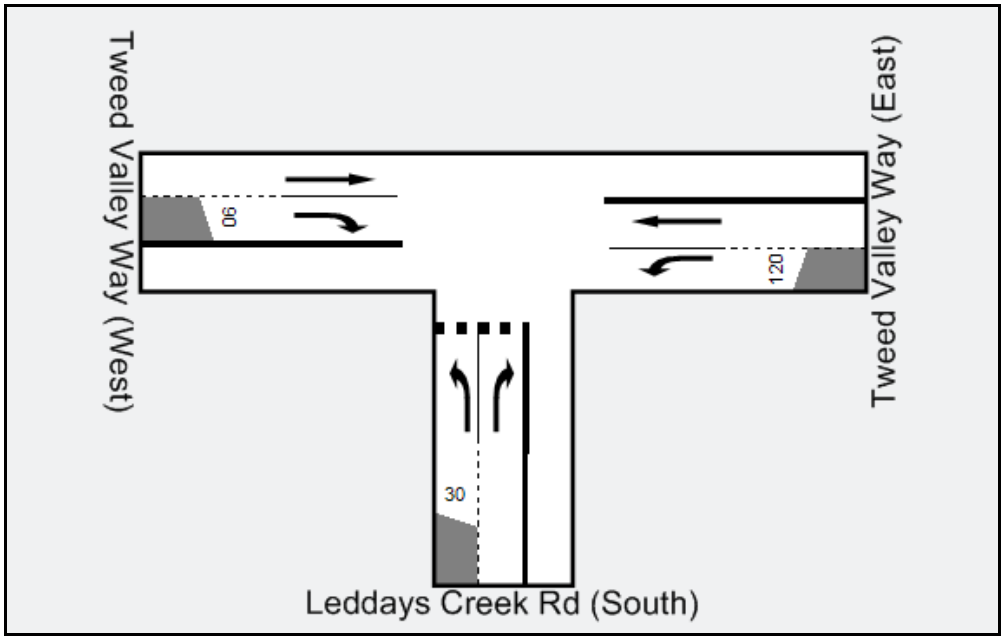


Figure 6 Intersection Layout

5.2 Site Access / Leddays Creek Road

Figure 7 below shows the intersection layout for the Bartletts Road and Leddays Creek Road (ie the site access road). Bartletts Rd is a minor unsealed (dirt) road that does appear to experience much traffic. For the traffic generation estimates it was assumed that all traffic associated with the proposed activities travels via Leddays Creek Road. As shown in Figure 8 below, there is no signage leading up to the intersection from either approach on Leddays Creek Road (ie from the north and from the site access).

Traffic on Bartletts Road is signed to give way to traffic on Leddays Creek Road, include the access road to the landfill such that traffic to and from the site access flows freely through this intersection. However with the following will require further consideration in the detail design:

- Safe access for local traffic from Bartletts Road
- Potential for increased maintenance of the pavement due to impact from heavy vehicles.

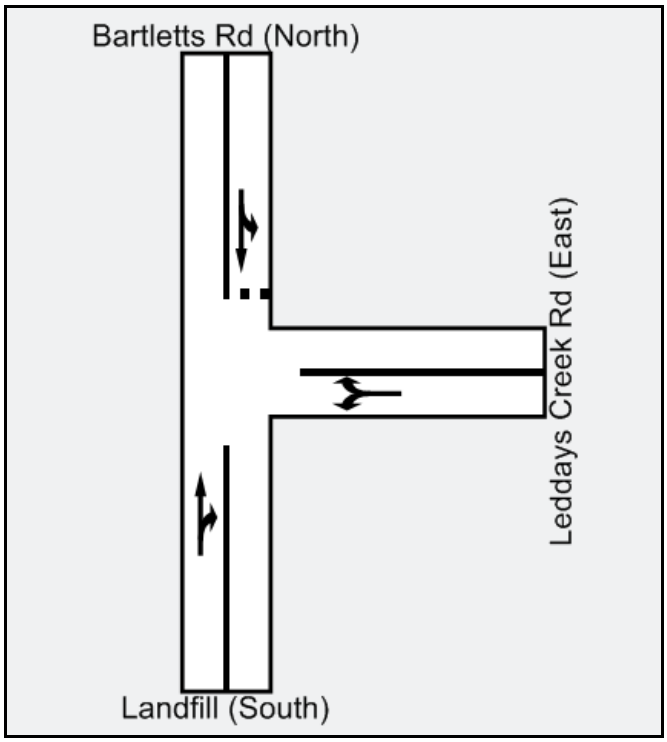


Figure 7 Intersection Layout

Figure 8 Intersection Leddays Creek Road (Site Access Road) and Bartletts Road

6. Access to Transport Routes

Part of the criteria in selecting Eviron Road for long term extractive and waste disposal activities was the proximity of the site to existing transportation routes.

The access to the Tweed Valley Way (major arterial) is approximately two kilometres from the site entrance, with access to the Pacific Highway (north and south bound) a further four kilometres north east. Currently quarry access via Eviron Road results in heavy vehicles travelling approximately 5km north along Duranbah Road which is a two lane rural road (one lane each direction) with a 60-80km/hour speed limit, passing through rural residential areas and tourist attractions (Tropical Fruit World). The closure of this access will remove this traffic from Duranbah Road and provide improved access to the Tweed Valley Way and Pacific Highway for quarry traffic.

For traffic accessing the waste disposal facilities proposed, access to major transport routes will remain unchanged.

7. Recommendations and Conclusion

During detail design a road safety audit will be undertaken to identify whether additional measures are required for the safe access/egress of heavy vehicles onto Tweed Valley Way is required. Further, a review of safe access for the low volume of local traffic entering Leddays Creek Road from Bartletts Road should also be undertaken.

The planned maintenance program for Leddays Creek Road shall be reviewed during the detail design to ascertain whether the addition of heavy vehicles associated with the quarrying activities will necessitate maintenance being brought forward.

Detail design of the proposed haul road will be in accordance with good practice for heavy vehicles and the following guidelines:

- *Road width* - (as defined) of the road to be at least 3.5 times the width of the largest vehicle regularly using the road;
- *Road grade* - generally the grade should be less than 3% (1:30) with a maximum of 10%;
- *Road profile* - the pavement shall be shaped so as to readily drain water and to provide a safe surface to travel. The road shall be crowned in the centre with a 2-3% cross-fall to each edge;
- *Curvature of bends* - In general, bend radii should be 100 metres or greater for main sections of road if a road speed of 25 km/hr is to be adopted;
- *Intersections* - all new intersections should be “T intersections” (angle of approach of at least 70 degrees). Where this is not possible, a risk assessment shall be conducted on the alternative design to ensure that persons can use the intersection with safety;
- *Safety berms or barriers* shall be installed at any point where the ‘drop off’ at the side of the road is greater than half a metre (0.5 m). This drop off situation should be avoided wherever possible by allowing a run-off slope at the side of the road battered at an angle no steeper than 1:4.
- *Guideposts* are to be of such size, shape, robustness and visibility (reflectors added) so as to adequately define the road boundaries in all conditions. The spacing of the guideposts shall be a nominal 100 metres on the haul road. Culverts unprotected by barriers or berms should be marked with pairs of guideposts;
- *Signage* - traffic control and direction signage shall be installed where necessary. The signs shall comply with AS 1742: *Manual of uniform traffic control devices;* and
- *Surface material* – the haul road should be sheeted with sufficient competent material to provide an adequate degree of traction when wet, and to enable the surface condition to be restored through normal road maintenance.

A traffic management plan will be prepared for the operation of the site that covers procedures and controls for traffic using both the Stotts Creek RRC and the facilities associated with the Stage 1 Project Application and Concept Plan.

Appendix A

Traffic Counts

MetroCount Traffic Executive
Weekly Vehicle Counts (Virtual Week)

VirtWeeklyVehicle-314 -- English (ENA)

Datasets:

Site:	**[99999] Eviron Road off Duranbah Road.**
Direction:	7 - North bound A>B, South bound B>A., **Lane:** 0
Survey Duration:	14:00 Wednesday, 30 April 2008 => 13:43 Wednesday, 7 May 2008
File:	C:\Program Files\Metro1174Count v316\User\Data\9999907May2008.EC0 (Plus)
Identifier:	E4071FHH MC56-6 [MC55] (c)Microcom 02/03/01
Algorithm:	Factory default
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**14:00 Wednesday, 30 April 2008 => 13:43 Wednesday, 7 May 2008**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
Speed range:	10 - 160 km/h.
Direction:	North, East, South, West (bound)
Separation:	All - (Headway)
Name:	Factory default profile
)heme:	Vehicle classification (AustRoads94)
Units:	Metric (meter, kilometer, m/s, km/h, kg, tonne)
In profile:	Vehicles = 2507 / 2508 (99.96%)

Weekly Vehicle Counts (Virtual Week)

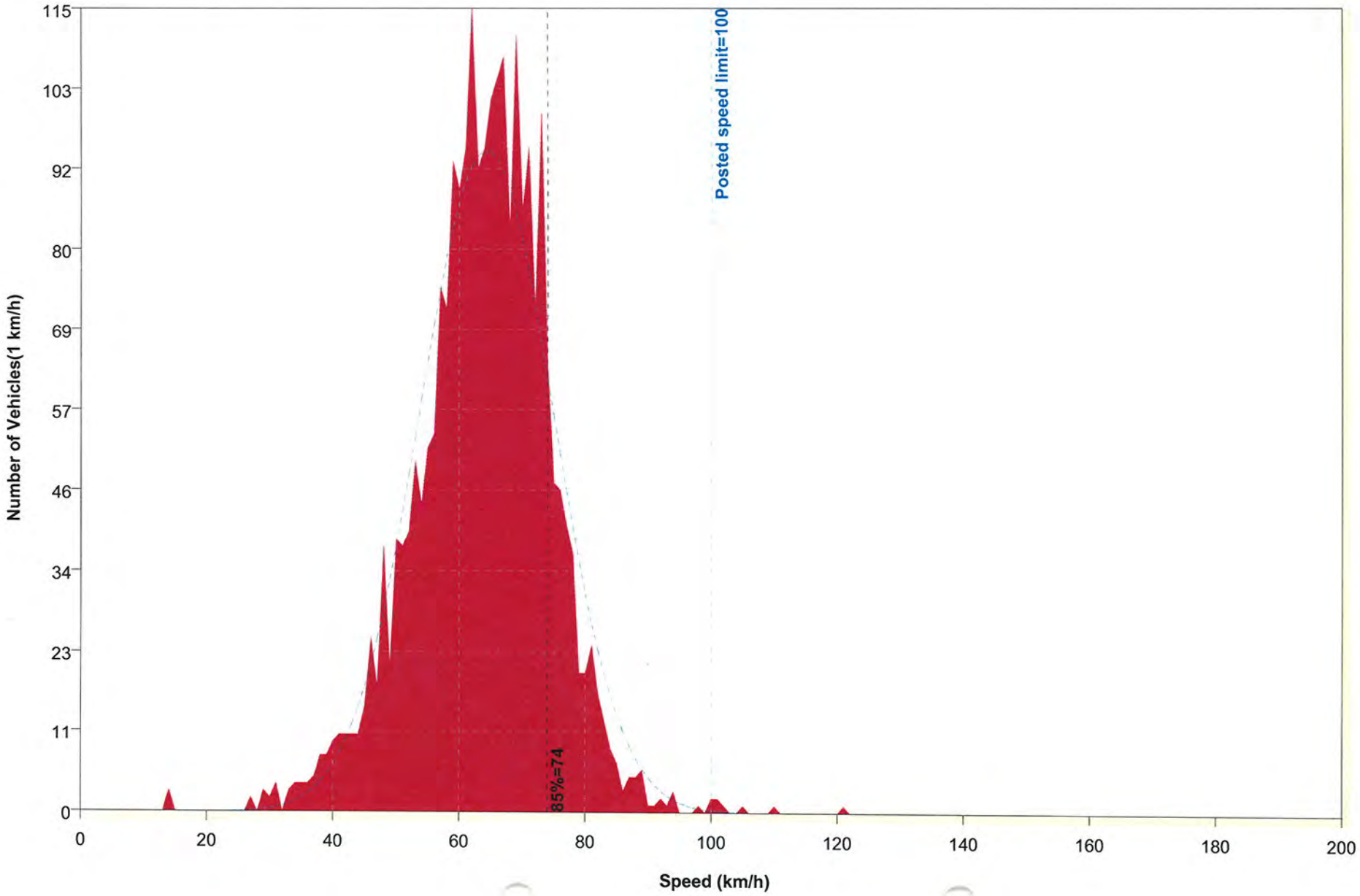
VirtWeeklyVehicle-314
Site: 99999.0SN
Description: **Eviron Road off Duranbah Road.**
Filter time: **14:00 Wednesday, 30 April 2008 => 13:43 Wednesday, 7 May 2008**
Scheme: Vehicle classification (AustRoads94)
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12) Dir(NESW) Sp(10,160) Headway(>0)

	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Averages 1 - 5	Averages 1 - 7
Hour									
0000-0100	0.0	2.0	0.0	0.0	0.0	4.0	2.0	0.4	1.1
0100-0200	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.4	0.3
0200-0300	0.0	0.0	0.0	0.0	1.0	1.0	1.0	0.2	0.4
0300-0400	3.0	0.0	1.0	0.0	0.0	1.0	3.0	0.8	1.1
0400-0500	1.0	1.0	1.0	0.0	2.0	1.0	1.0	1.0	1.0
0500-0600	6.0	13.0	6.0	0.0	9.0	3.0	0.0	6.8	5.3
0600-0700	17.0	22.0	24.0	0.0	19.0	6.0	2.0	16.4	12.9
0700-0800	32.0	31.0	28.0	0.0	18.0	21.0	15.0	21.8	20.7
0800-0900	38.0	**36.0<**	**31.0<**	0.0	**42.0<**	18.0	14.0	29.4	25.6
0900-1000	25.0	24.0	27.0	0.0	36.0	24.0	32.0	22.4	24.0
1000-1100	**42.0<**	34.0	26.0	**39.0<**	32.0	21.0	**38.0<**	**34.6<**	**33.1<**
1100-1200	39.0	26.0	0.0	26.0	28.0	**41.0<**	24.0	23.8	26.3
1200-1300	39.0	11.0	0.0	32.0	21.0	38.0	34.0	20.6	25.0
1300-1400	44.0	29.0	0.0	24.0	30.0	28.0	29.0	25.4	26.3
1400-1500	**46.0<**	**40.0<**	0.0	32.0	31.0	22.0	**44.0<**	29.8	30.7
1500-1600	37.0	37.0	0.0	32.0	**46.0<**	**90.0<**	39.0	**30.4<**	**40.1<**
1600-1700	33.0	39.0	0.0	**32.0<**	32.0	27.0	36.0	27.2	28.4
1700-1800	36.0	30.0	0.0	27.0	31.0	21.0	18.0	24.8	23.3
1800-1900	11.0	21.0	0.0	13.0	17.0	16.0	11.0	12.4	12.7
1900-2000	11.0	10.0	0.0	8.0	6.0	11.0	4.0	7.0	7.1
2000-2100	3.0	6.0	0.0	7.0	4.0	3.0	5.0	4.0	4.0
2100-2200	6.0	2.0	0.0	5.0	6.0	7.0	5.0	3.8	4.4
2200-2300	1.0	1.0	0.0	1.0	2.0	9.0	4.0	1.0	2.6
2300-2400	1.0	2.0	**0.0<**	0.0	2.0	5.0	1.0	1.0	1.6
Totals									
0700-1900	422.0	358.0	112.0	257.0	364.0	367.0	334.0	302.6	316.3
0600-2200	459.0	398.0	136.0	277.0	399.0	394.0	350.0	333.8	344.7
0600-0000	461.0	401.0	136.0	278.0	403.0	408.0	355.0	335.8	348.9
0000-0000	472.0	418.0	144.0	278.0	415.0	418.0	362.0	345.4	358.1
AM Peak	1000	0800	0800	1000	0800	1100	1000		
	42.0	36.0	31.0	39.0	42.0	41.0	38.0		
PM Peak	1400	1400	2300	1600	1500	1500	1400		
	46.0	40.0	0.0	32.0	46.0	90.0	44.0		

* - No data.

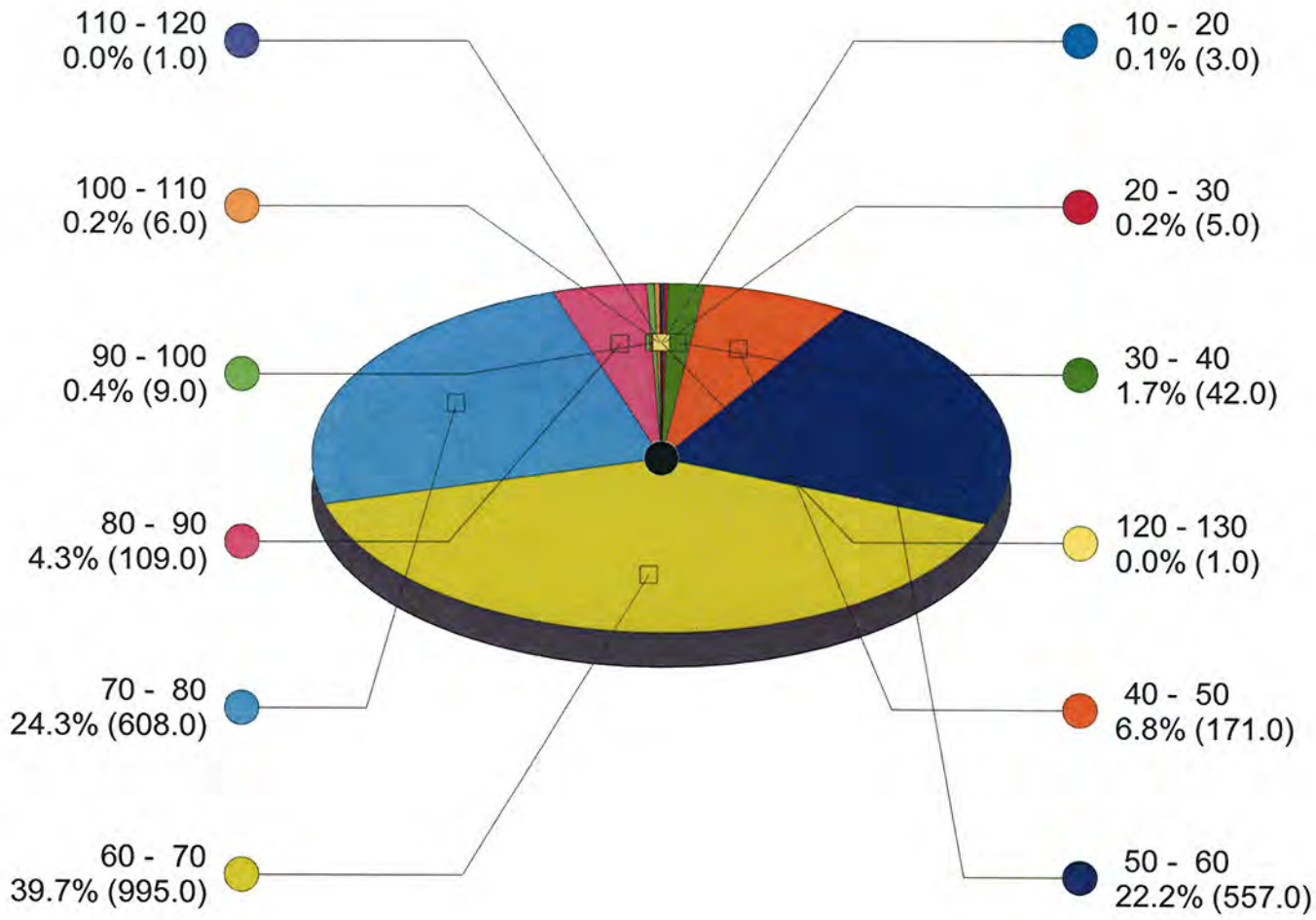
Speed Histogram

SpeedHist-316(Metric) **Site:** 99999.0SN
Description: Eviron Road off Duranbah Road.
Filter time:14:00 Wednesday, 30 April 2008 => 13:43 Wednesday, 7 May 2008
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12) Dir(NESW) Sp(10,160) Headway(>0)
Scheme: Vehicle classification (AustRoads94)



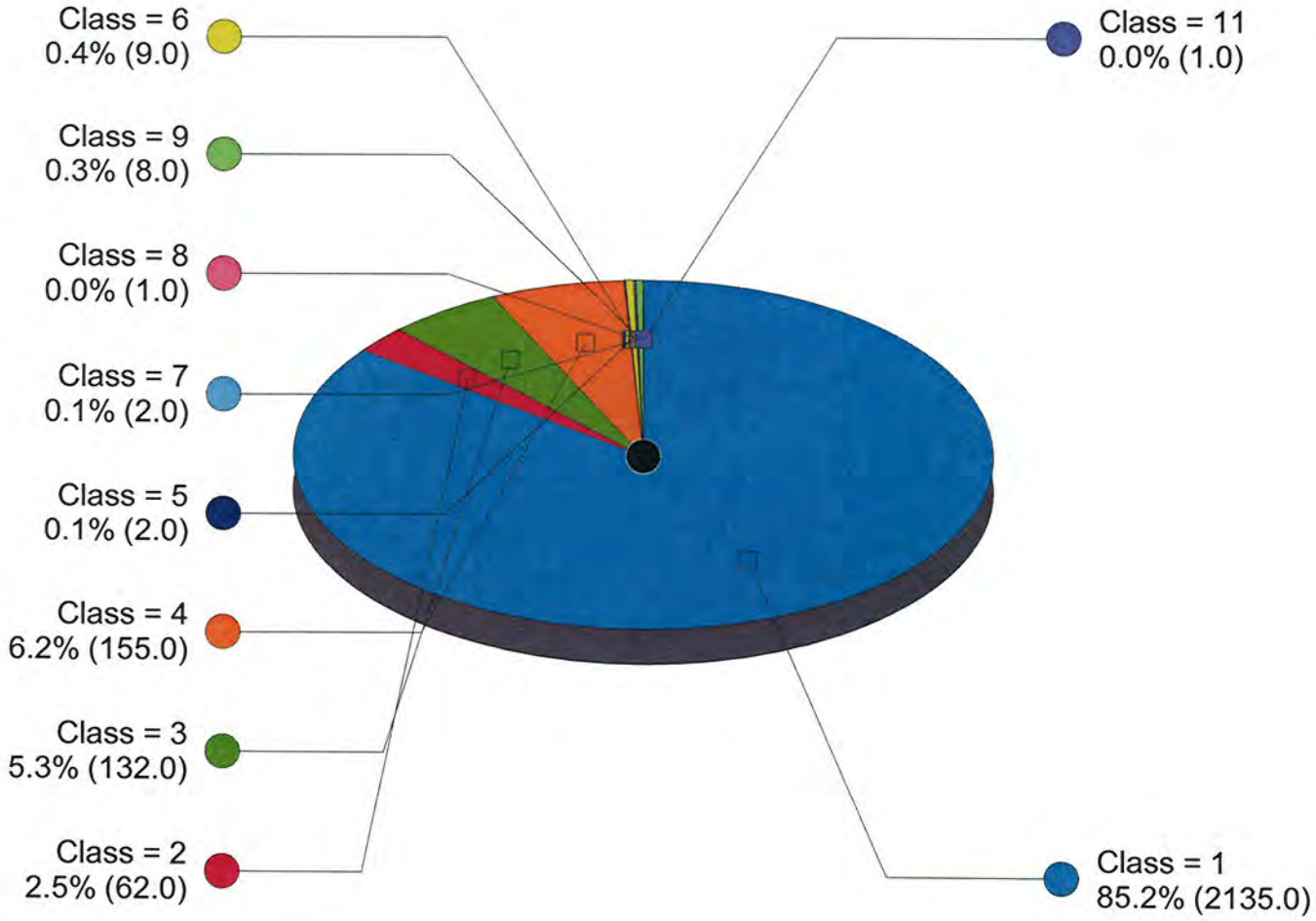
Speed Bin Chart

SpeedBin-315(Metric) **Site:** 99999.0SN
Description: Eviron Road off Duranbah Road.
Filter time: 14:00 Wednesday, 30 April 2008 => 13:43 Wednesday, 7 May 2008
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12) Dir(NESW) Sp(10,160) Headway(>0)
Scheme: Vehicle classification (AustRoads94)
Total=2507



Class Bin Chart

ClassBin-317(Metric) **Site:** 99999.0SN
Description: Eviron Road off Duranbah Road.
Filter time: 14:00 Wednesday, 30 April 2008 => 13:43 Wednesday, 7 May 2008
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12) Dir(NESW) Sp(10,160) Headway(>0)
Scheme: Vehicle classification (AustRoads94)
Total=2507



TWEED SHIRE COUNCIL

FACSIMILE TRANSMISSION

TO	:	Alison Marszalek - GHD
FAX NO	:	0755571099
FROM	:	Adam Faulkner
FAX NO	:	(02) 6670 2557
TELEPHONE	:	(02) 6670 2659
SUBJECT	:	**Tweed Shire Council Traffic Count**
FILE REFERENCE		
DATE	:	Tuesday, 23 December 2008 9:35 AM
NO OF PAGES	:	7 (inclusive)

[L22dr03

Alison,

Please find attached Tweed Shire Council Traffic Count. Apologies for it not being in spreadsheet format.

Regards
Adam

Civic & Cultural Centre, Tumbulgum Road (PO Box 816) Murwillumbah NSW 2484
Phone: (02) 6670 2400 Fax: (02) 6670 2429
ABN: 90 178 732 496 web: www.tweed.nsw.gov.au

TWEED SHIRE COUNCIL

TRAFFIC COUNT

LOCATION: Leddays Creek Road

outsid Solo Waste

DATE INSTALLED 10-12-08 TIME 1-30

DATE REMOVED 17-12-08 TIME 11.00

X Y

SITE NO 548191 6876547 MACHINE NO. 1315.

RECORDING INTERVAL Hourly

TUBE SPACING 1metre

TOP OF BIN SEVEN SPEED 85% = 51kph

SPEED BIN SIZE —

SITE CONFIGURATION —

A.D.T. 568.

MetroCount Traffic Executive
Weekly Vehicle Counts (Virtual Week)

VirtWeeklyVehicle-363 -- English (ENA)

Datasets:

Site:	**[99999] Outside Stotts Island Tip.**
Direction:	8 - East bound A>B, West bound B>A., **Lane:** 0
Survey Duration:	11:59 Wednesday, 10 December 2008 => 10:07 Wednesday, 17 December 2008
File:	C:\Program Files\Metro1315Count v316\User\Data\9999917Dec2008.EC0 (Plus)
Identifier:	T0341FSM MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm:	Factory default
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**11:59 Wednesday, 10 December 2008 => 10:07 Wednesday, 17 December 2008**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
Speed range:	10 - 160 km/h.
Direction:	North, East, South, West (bound)
Separation:	All - (Headway)
Name:	Factory default profile
Scheme:	Vehicle classification (AustRoads94)
Units:	Metric (meter, kilometer, m/s, km/h, kg, tonne)
In profile:	Vehicles = 3976 / 3982 (99.85%)

Weekly Vehicle Counts (Virtual Week)

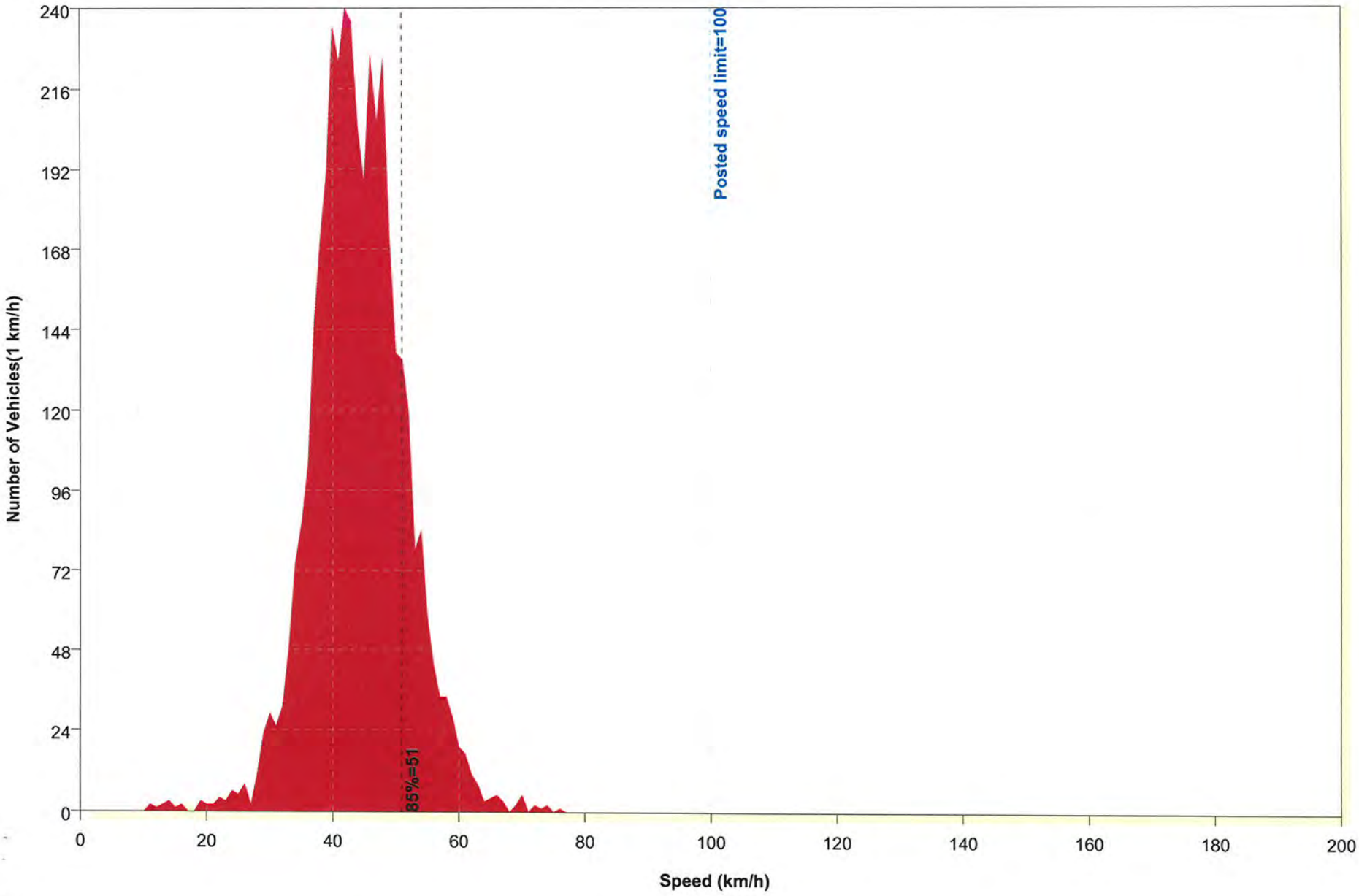
VirtWeeklyVehicle-363
Site: 99999.0WE
Description: **Outside Stotts Island Tip.**
Filter time: **11:59 Wednesday, 10 December 2008 => 10:07 Wednesday, 17 December 2008**
Scheme: Vehicle classification (AustRoads94)
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12) Dir(NESW) Sp(10,160) Headway(>0)

	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Averages 1 - 5	Averages 1 - 7
Hour									
0000-0100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0100-0200	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.4	0.3
0200-0300	2.0	2.0	0.0	2.0	2.0	0.0	0.0	1.6	1.1
0300-0400	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0400-0500	1.0	3.0	1.0	3.0	1.0	0.0	0.0	1.8	1.3
0500-0600	13.0	11.0	9.0	13.0	11.0	2.0	2.0	11.4	8.7
0600-0700	28.0	34.0	28.0	22.0	25.0	6.0	1.0	27.4	20.6
0700-0800	42.0	56.0	32.0	48.0	26.0	9.0	2.0	40.8	30.7
0800-0900	88.0	63.0	**51.0<**	62.0	61.0	22.0	7.0	**65.0<**	50.6
0900-1000	74.0	**87.0<**	35.0	55.0	60.0	39.0	13.0	62.2	51.9
1000-1100	88.0	83.0	0.0	71.0	59.0	**61.0<**	69.0	60.2	61.6
1100-1200	**92.0<**	67.0	0.0	**76.0<**	**77.0<**	55.0	**84.0<**	62.4	**64.4<**
1200-1300	94.0	69.0	0.0	57.0	53.0	**60.0<**	**84.0<**	54.6	59.6
1300-1400	82.0	**85.0<**	0.0	**79.0<**	58.0	40.0	57.0	60.8	57.3
1400-1500	**103.0<**	84.0	30.0	69.0	**75.0<**	47.0	73.0	**72.2<**	**68.7<**
1500-1600	79.0	49.0	**67.0<**	67.0	55.0	38.0	51.0	63.4	58.0
1600-1700	34.0	30.0	25.0	35.0	26.0	12.0	9.0	30.0	24.4
1700-1800	12.0	10.0	12.0	8.0	1.0	0.0	2.0	8.6	6.4
1800-1900	1.0	3.0	3.0	0.0	2.0	1.0	0.0	1.8	1.4
1900-2000	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.2	0.3
2000-2100	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.1
2100-2200	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2200-2300	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.3
2300-2400	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.4	0.3
Totals									
0700-1900	789.0	686.0	255.0	627.0	553.0	384.0	451.0	582.0	535.0
0600-2200	817.0	720.0	284.0	649.0	578.0	392.0	452.0	609.6	556.0
0600-0000	817.0	720.0	286.0	649.0	578.0	392.0	454.0	610.0	556.6
0000-0000	833.0	736.0	298.0	667.0	592.0	394.0	456.0	625.2	568.0
AM Peak	1100	0900	0800	1100	1100	1000	1100		
	92.0	87.0	51.0	76.0	77.0	61.0	84.0		
PM Peak	1400	1300	1500	1300	1400	1200	1200		
	103.0	85.0	67.0	79.0	75.0	60.0	84.0		

* - No data.

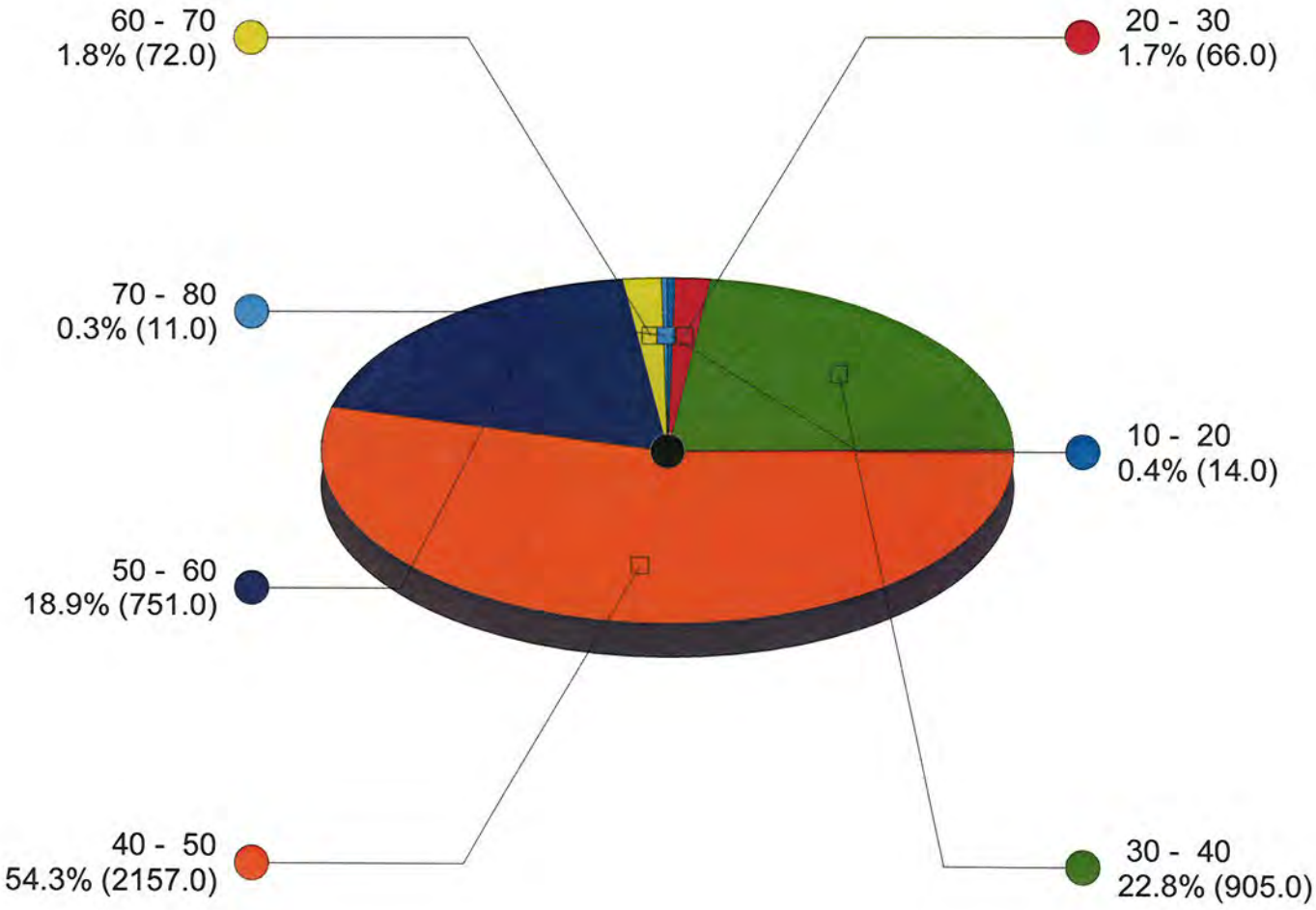
Speed Histogram

SpeedHist-348(Metric) **Site:** 99999.0WE
Description: Outside Stotts Island Tip.
Filter time:11:59 Wednesday, 10 December 2008 => 10:07 Wednesday, 17 December 2008
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12) Dir(NESW) Sp(10,160) Headway(>0)
Scheme: Vehicle classification (AustRoads94)



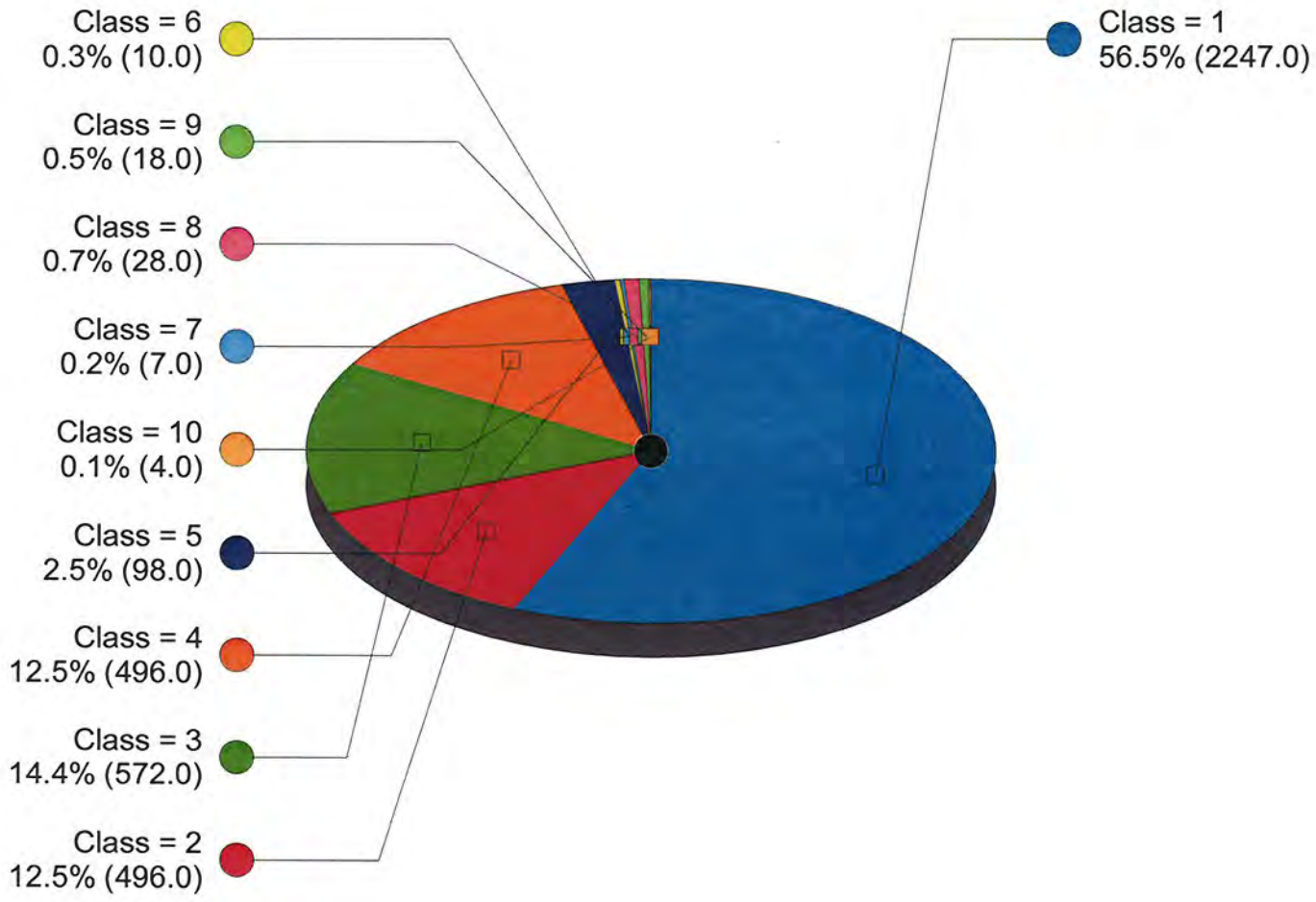
Speed Bin Chart

SpeedBin-349(Metric) **Site:** 99999.0WE
Description: Outside Stotts Island Tip.
Filter time: 11:59 Wednesday, 10 December 2008 => 10:07 Wednesday, 17 December 2008
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12) Dir(NESW) Sp(10,160) Headway(>0)
Scheme: Vehicle classification (AustRoads94)
Total=3976



Class Bin Chart

ClassBin-350(Metric) **Site:** 99999.0WE
Description: Outside Stotts Island Tip.
Filter time: 11:59 Wednesday, 10 December 2008 => 10:07 Wednesday, 17 December 2008
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12) Dir(NESW) Sp(10,160) Headway(>0)
Scheme: Vehicle classification (AustRoads94)
Total=3976



MetroCount Traffic Executive
Weekly Vehicle Counts (Virtual Week)

VirtWeeklyVehicle-27 -- English (ENA)

Datasets:

Site:	**[99999] Tweed Valley Way north of the southern entrance to Tumbulgum.**
Direction:	7 - North bound A>B, South bound B>A., **Lane:** 0
Survey Duration:	7:58 Wednesday, 2 May 2007 => 13:31 Wednesday, 9 May 2007
File:	C:\Program Files\Metro1021Count v316\User\Data\9999909May2007.EC0 (Plus)
Identifier:	L759VJMS MC56-6 [MC55] (c)Microcom 02/03/01
Algorithm:	Factory default
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**7:58 Wednesday, 2 May 2007 => 13:31 Wednesday, 9 May 2007**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
Speed range:	10 - 160 km/h.
Direction:	North, East, South, West (bound)
Separation:	All - (Headway)
Name:	Factory default profile
Scheme:	Vehicle classification (AustRoads94)
Units:	Metric (meter, kilometer, m/s, km/h, kg, tonne)
In profile:	Vehicles = 76803 / 76847 (99.94%)

Weekly Vehicle Counts (Virtual Week)

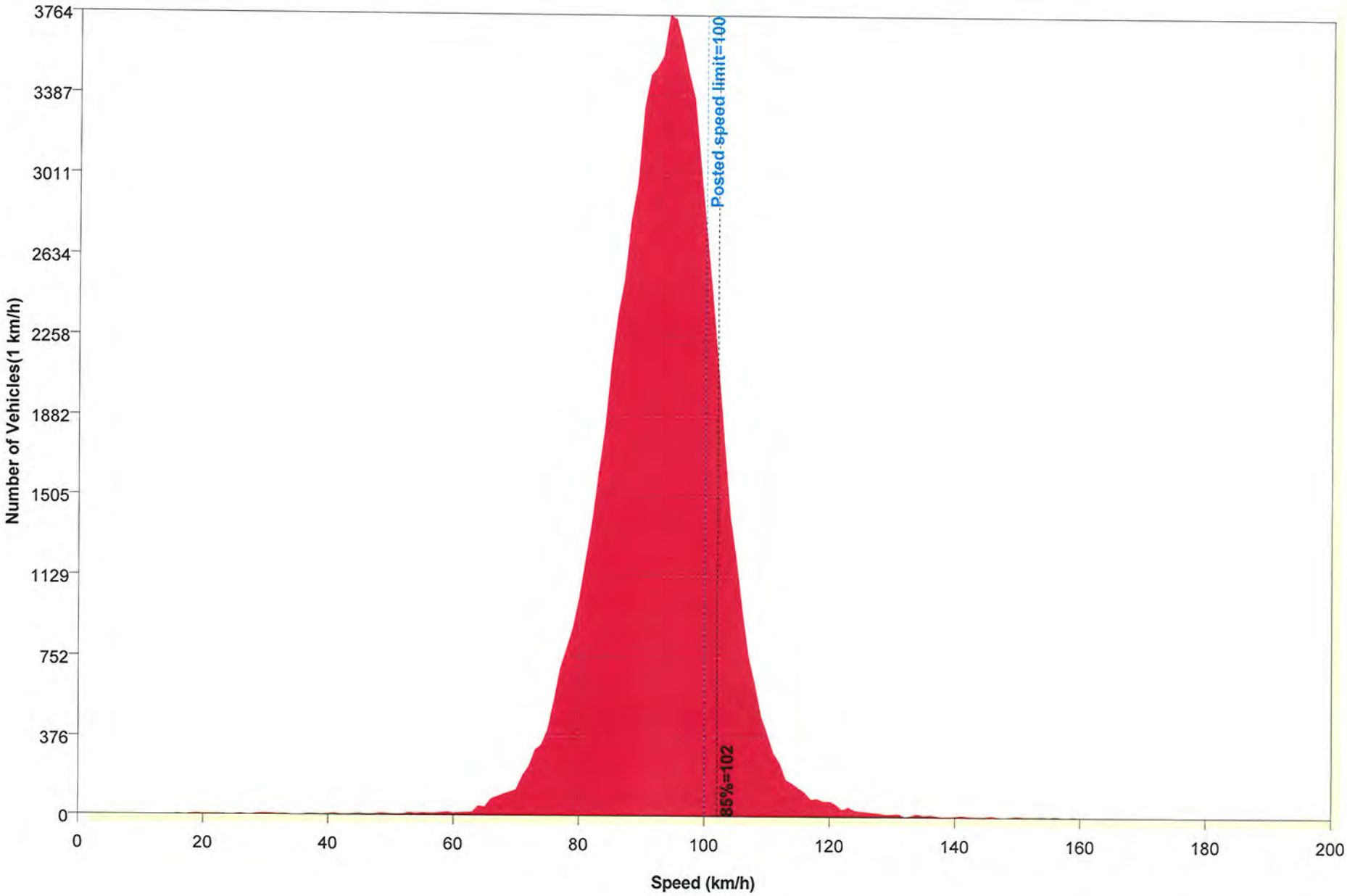
VirtWeeklyVehicle-27
Site: 99999.0SN
Description: **Tweed Valley Way north of the southern entrance to Tumbulgum.**
Filter time: **7:58 Wednesday, 2 May 2007 => 13:31 Wednesday, 9 May 2007**
Scheme: Vehicle classification (AustRoads94)
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12) Dir(NESW) Sp(10,160) Headway(>0)

	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Averages 1 - 5	Averages 1 - 7
Hour									
0000-0100	23.0	23.0	22.0	18.0	35.0	70.0	73.0	24.2	37.7
0100-0200	13.0	12.0	17.0	14.0	18.0	35.0	69.0	14.8	25.4
0200-0300	14.0	23.0	16.0	17.0	24.0	32.0	60.0	18.8	26.6
0300-0400	21.0	40.0	32.0	37.0	42.0	41.0	35.0	34.4	35.4
0400-0500	56.0	75.0	73.0	81.0	68.0	43.0	40.0	70.6	62.3
0500-0600	180.0	263.0	250.0	239.0	228.0	167.0	104.0	232.0	204.4
0600-0700	533.0	667.0	**706.0<**	695.0	658.0	336.0	186.0	651.8	540.1
0700-0800	740.0	844.0	446.0	852.0	789.0	446.0	341.0	686.2	613.0
0800-0900	**945.0<**	**949.0<**	465.0	**927.0<**	**940.0<**	703.0	439.0	**781.8<**	**729.1<**
0900-1000	719.0	686.0	332.5	712.0	690.0	781.0	599.0	578.7	606.5
1000-1100	777.0	636.0	321.0	671.0	675.0	989.0	815.0	566.8	650.6
1100-1200	812.0	652.0	320.0	646.0	721.0	**992.0<**	**891.0<**	578.5	669.3
1200-1300	775.0	625.0	330.0	662.0	685.0	**941.0<**	843.0	567.8	648.9
1300-1400	840.0	659.0	202.5	734.0	755.0	907.0	812.0	565.5	639.0
1400-1500	779.0	639.0	747.0	741.0	874.0	850.0	**876.0<**	756.0	786.6
1500-1600	1016.0	919.0	**997.0<**	**1024.0<**	**972.0<**	878.0	750.0	**985.6<**	**936.6<**
1600-1700	**1043.0<**	**967.0<**	996.0	996.0	876.0	748.0	794.0	975.6	917.1
1700-1800	859.0	934.0	954.0	931.0	912.0	765.0	640.0	918.0	856.4
1800-1900	408.0	436.0	456.0	522.0	591.0	542.0	357.0	482.6	473.1
1900-2000	219.0	211.0	212.0	262.0	409.0	290.0	246.0	262.6	264.1
2000-2100	143.0	165.0	184.0	233.0	302.0	264.0	174.0	205.4	209.3
2100-2200	165.0	177.0	163.0	198.0	244.0	260.0	133.0	189.4	191.4
2200-2300	106.0	69.0	97.0	112.0	183.0	261.0	84.0	113.4	130.3
2300-2400	34.0	44.0	57.0	54.0	89.0	151.0	44.0	55.6	67.6
Totals									
0700-1900	9713.0	8946.0	6567.0	9418.0	9480.0	9542.0	8157.0	8443.1	8526.2
0600-2200	10773.0	10166.0	7832.0	10806.0	11093.0	10692.0	8896.0	9752.3	9731.2
0600-0000	10913.0	10279.0	7986.0	10972.0	11365.0	11104.0	9024.0	9921.3	9929.1
0000-0000	11220.0	10715.0	8396.0	11378.0	11780.0	11492.0	9405.0	10316.1	10320.9
AM Peak	0800	0800	0600	0800	0800	1100	1100		
	945.0	949.0	706.0	927.0	940.0	992.0	891.0		
PM Peak	1600	1600	1500	1500	1500	1200	1400		
	1043.0	967.0	997.0	1024.0	972.0	941.0	876.0		

* - No data.

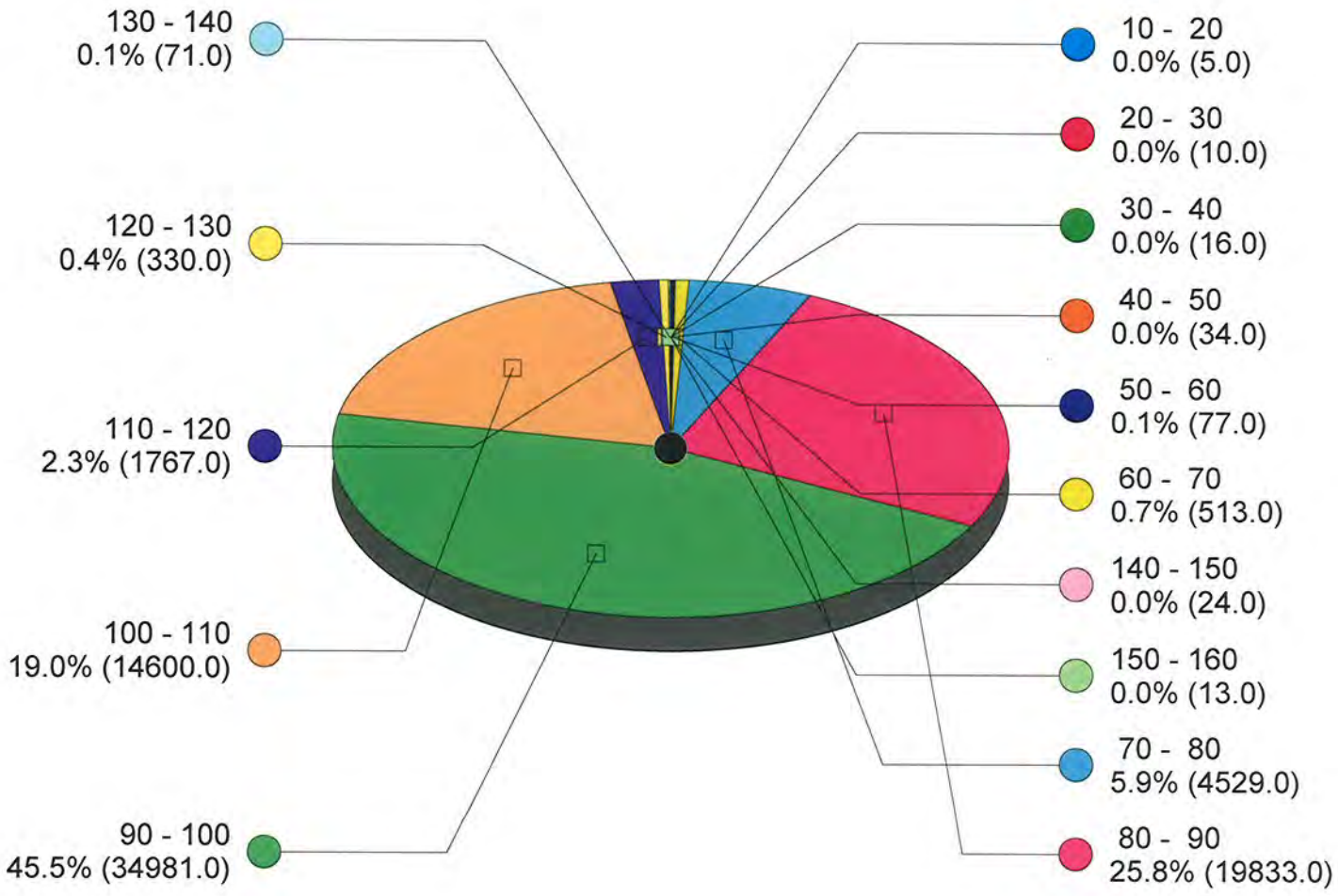
Speed Histogram

SpeedHist-26 (Metric) **Site:** 99999.0SN
Description: Tweed Valley Way north of the southern entrance to Tumbulgum.
Filter time: 7:58 Wednesday, 2 May 2007 => 13:31 Wednesday, 9 May 2007
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12) Dir(NESW) Sp(10,160) Headway(>0)
Scheme: Vehicle classification (AustRoads94)



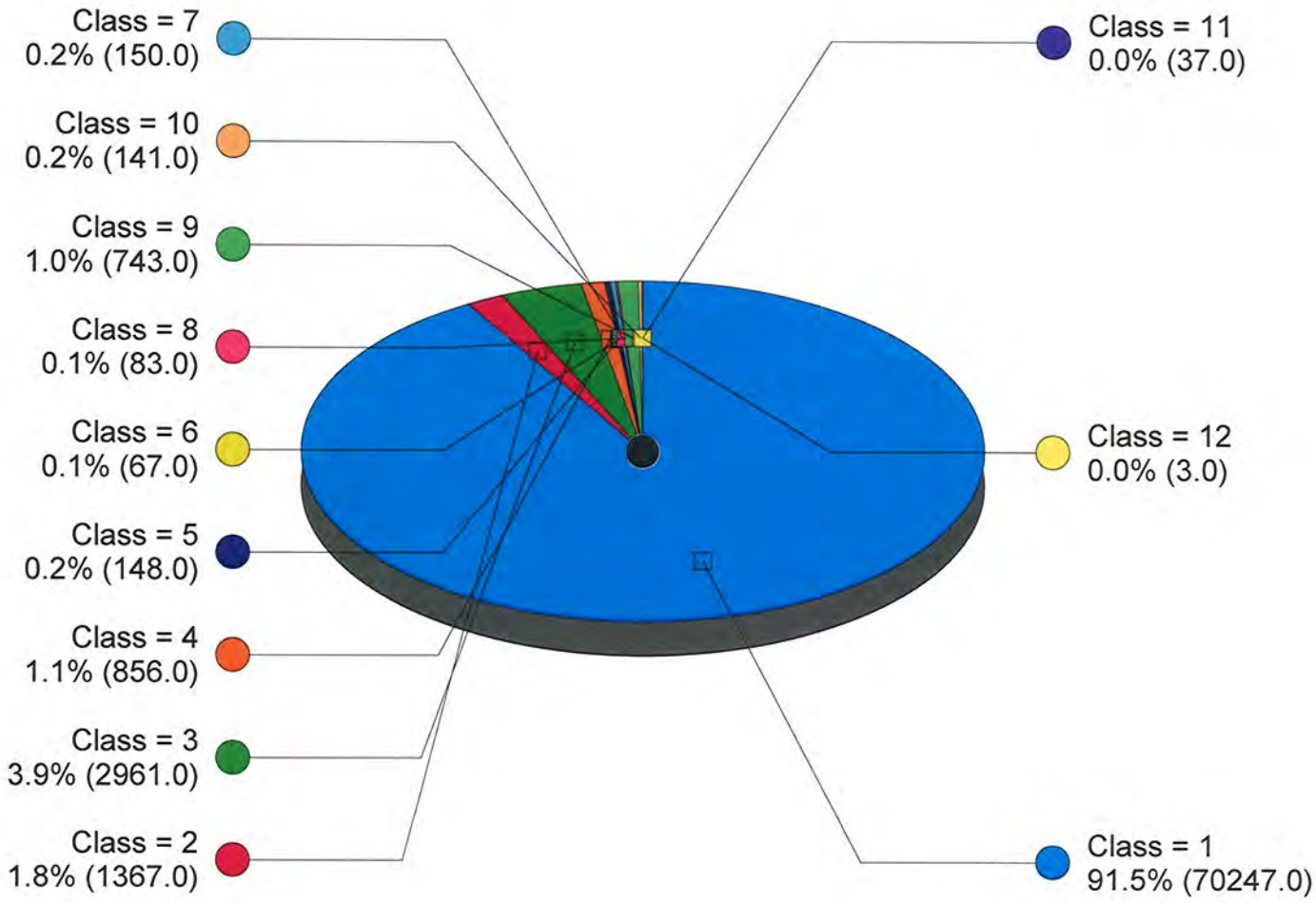
Speed Bin Chart

SpeedBin-24 (Metric) **Site:** 99999.0SN
Description: Tweed Valley Way north of the southern entrance to Tumbulgum.
Filter time: 7:58 Wednesday, 2 May 2007 => 13:31 Wednesday, 9 May 2007
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12) Dir(NESW) Sp(10,160) Headway(>0)
Scheme: Vehicle classification (AustRoads94)
Total=76803



Class Bin Chart

ClassBin-25 (Metric) **Site:** 99999.0SN
Description: Tweed Valley Way north of the southern entrance to Tumbulgum.
Filter time: 7:58 Wednesday, 2 May 2007 => 13:31 Wednesday, 9 May 2007
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12) Dir(NESW) Sp(10,160) Headway(>0)
Scheme: Vehicle classification (AustRoads94)
Total=76803



Class Speed Matrix

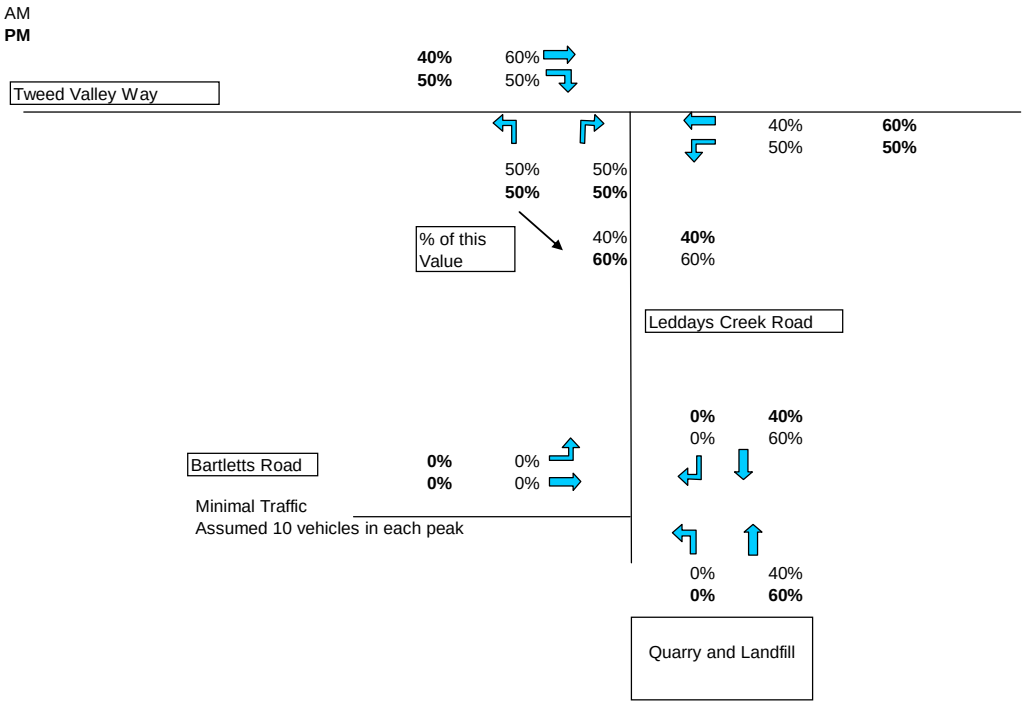
ClassMatrix-23
Site: 99999.0SN
Description: **Tweed Valley Way north of the southern entrance to Tumbulgum.**
Filter time: **7:58 Wednesday, 2 May 2007 => 13:31 Wednesday, 9 May 2007**
Scheme: Vehicle classification (AustRoads94)
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12) Dir(NESW) Sp(10,160) Headway(>0)

Speed (km/h)	Class 1	2	3	4	5	6	7	8	9	10	11	12	Speed Totals	
10 - 20	4	.	.	1	.	.	.	.	.	.	.	.	5	0.0%
20 - 30	10	.	.	.	.	.	.	.	.	.	.	.	10	0.0%
30 - 40	15	.	.	1	.	.	.	.	.	.	.	.	16	0.0%
40 - 50	27	1	1	1	1	.	.	.	2	1	.	.	34	0.0%
50 - 60	68	4	2	1	.	1	.	.	1	.	.	.	77	0.1%
60 - 70	447	14	28	8	5	1	1	.	7	1	1	.	513	0.7%
70 - 80	4061	141	191	54	8	8	18	3	32	11	2	.	4529	5.9%
80 - 90	17811	503	913	260	37	25	54	30	160	30	8	2	19833	25.8%
90 - 100	32097	562	1282	411	57	24	59	41	368	60	19	1	34981	45.5%
100 - 110	13609	131	480	103	34	6	16	9	168	38	6	.	14600	19.0%
110 - 120	1686	8	52	13	3	1	.	.	4	.	.	.	1767	2.3%
120 - 130	307	3	10	3	3	1	1	.	1	.	1	.	330	0.4%
130 - 140	70	.	.	.	.	.	1	.	.	.	.	.	71	0.1%
140 - 150	22	.	2	.	.	.	.	.	.	.	.	.	24	0.0%
150 - 160	13	.	.	.	.	.	.	.	.	.	.	.	13	0.0%
	70247	1367	2961	856	148	67	150	83	743	141	37	3	76803	
	91.5%	1.8%	3.9%	1.1%	0.2%	0.1%	0.2%	0.1%	1.0%	0.2%	0.0%	0.0%		

Class Totals

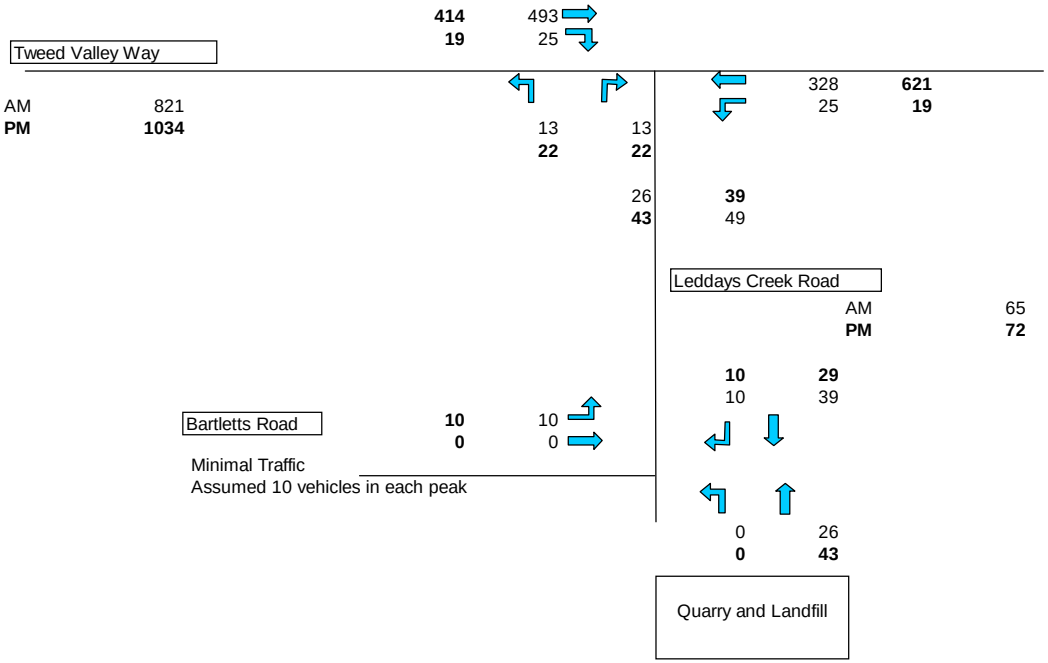
Appendix B

SIDRA Output

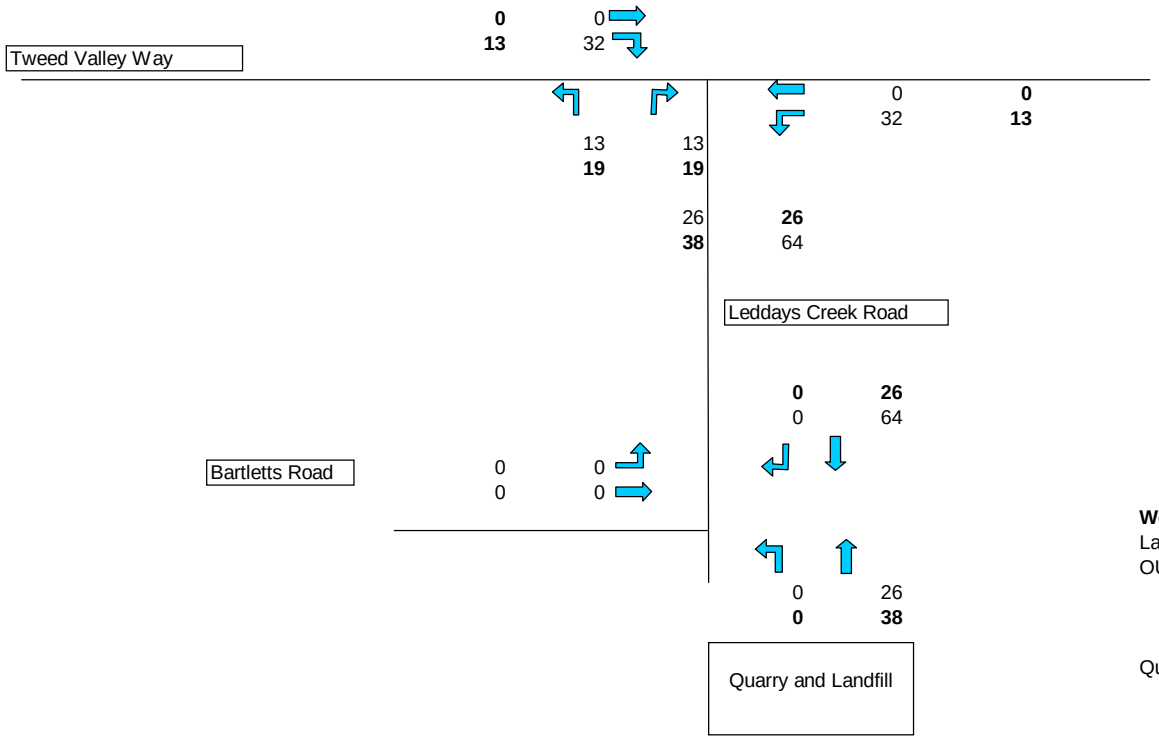


Percentage Splits

Physical Traffic Counts
Assumptions
Traffic counts have been combinded together
5% per year Traffic Growth on Counts
Assumed all traffic on Ledday Creek Road is using Quarry so no growth applied



Base AM and PM



Worst Case

Landfill				
OUT	IN			
45	45	HV Vehicles peak		
6	6	Staff		
Quarry				
3	3	HV Vehicles peak		
10	10	Staff		
Total	64	64		

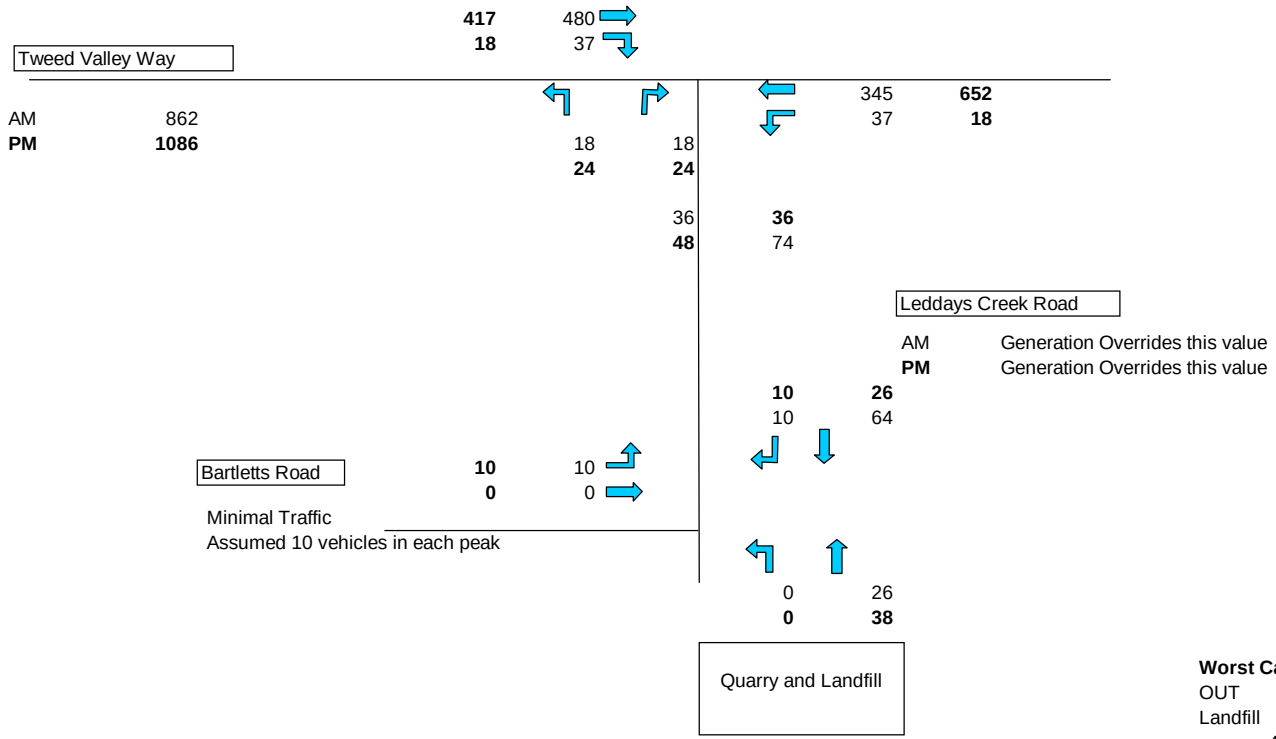
AM

Landfill				
OUT	IN			
45	45	private		
0	6	Staff		
Quarry				
3	0	HV Vehicles peak		
0	10	Staff		

PM

Landfill				
OUT	IN			
45	45	private		
6	0	Staff		
Quarry				
0	3	HV Vehicles peak		
10	0	Staff		

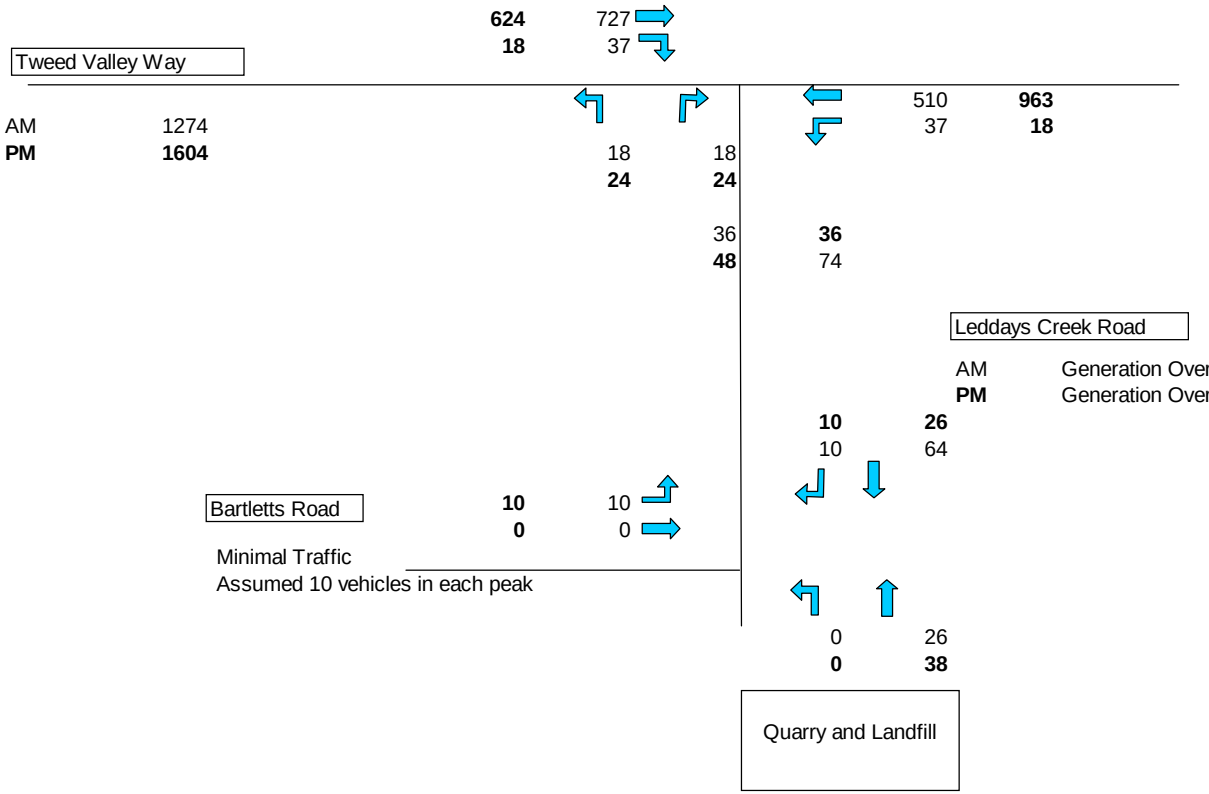
2012
Opening Year
Assumptions
5% per year Traffic Growth
Assumed all traffic on Ledday Creek Road is using Quarry/landfill
Assummed 50/50 Split for all movements
traffic on Ledday Creek Road is private vehicles using landfill so no growth applied



Worst Case

	OUT	IN		
Landfill				
	45	45	Private	
	6	6	Staff	
Quarry				
	3	3	HV Vehicles peak	Class 4
	10	10	Staff	
Total	64	64		

2012 Opening Year
Assumptions
5% per year Traffic Growth
Assumed all traffic on Ledday Creek Road is using Quarry/landfill
Assummed 50/50 Split for all movements
traffic on Ledday Creek Road is private vehicles using landfill so no growth applied



Worst Case

	OUT	IN		
Landfill				
	45	45	Private	
	6	6	Staff	
Quarry				
	3	3	HV Vehicles peak	Class 4
	10	10	Staff	
Total	64	64		

10 Year Combine AM and PM

GHD

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Document Status

Rev No.	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
0	R. Ward/M Fletcher	G. Nicholls		B. Van Heerden		