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EXECUTIVE SUMMARY

This document was prepared to create a supplement to the RIMS Traffic Counting Guide. As an appendix to the original Guide, it delves deeper into the Methodology of creating the setup for the Traffic Estimation tool in RAMM and suggests approaches and procedures to get the most from this module. The document was created to bridge the gap between the RIMS guide and the RAMM user manual and provide the basis of the rationale and decision making required to create the information that needs to develop an effective traffic count programme.

The key points addressed are summarised as follows:-

- Better decision making by providing further justification for Road Controlling Authorities (RCA’s) to populate the traffic counting module by defining the value proposition.
- An overview of the RAMM traffic count module decision making process and detailing what variables need to be defined at each step, where guidance on appropriate responses for these variables is located and what processes can be undertaken in bulk using RAMM filters.
- Recommendations on the suggested ranges of traffic count data to use based on different existing data scenarios.
- Guidance on the appropriate network coverage (for the traffic count programme) and identifying what the implications of different choices are likely to be for different network types.
- Direction as to which road type profiles should be used and when. Explaining in more detail which types of roads are likely to fall in to each road type profile to assist users to group roads and subsequently assign traffic count data in bulk.
- Further background on the traffic growth groups and the relevance of each sub-group by providing examples of best practice approaches to assigning roads to traffic growth groups.
- Further clarification around the AADT band. Specifically resolve whether this should be based on relative traffic volumes within the database area or based on national criteria.
- Developing a consultant briefing template for RCA’s to use when appointing Consultants to set up and populate the traffic counting module.
- An additional overview of the appropriate traffic count upload process to RAMM. Specifically, specifying the benefits of using the Metro count upload function and encouraging its use by RCA’s.
1 INTRODUCTION

The reason for creation of the Traffic Estimation Tool was to streamline this process and standardise the approach so that it becomes a useful addition to the toolbox of the asset manager as he administers the network in a way that best optimises results. It allows others to clearly see the traffic count programme and use the information gathered to inform decision making (such as within the Treatment Selection Algorithm (TSA) and Deighton’s Total Infrastructure Management System (dTIMs) processes). Higher quality data allows more robust modelling and better informs road network decision-making.

2 BETTER DECISION MAKING

The information contained within RAMM and the outputs which can be achieved provide significant benefit to the road network and when used effectively, provide significant benefit to the decision making process. The old adage is true - “rubbish in, rubbish out”. It is therefore imperative that Road Controlling Authorities (RCA’s) ensure the data contained within RAMM provides an accurate representation of the network assets. Implementing a robust traffic count data and estimation process will provide RCA’s with another tool in their arsenal for effective decision-making. Specific benefits include:

| FUNDING | The module provides a pro-active approach to traffic counting and avoids RCA’s reacting to current areas of interest without considering the wider priorities for the network. |
| Optimising the available budget for counting traffic volumes on the RCA’s road network. The RAMM Traffic Count Estimation Model, when correctly implemented, has the potential to maximise the outcomes from the traffic counting budget and could result in fewer actual traffic counts being undertaken. Physical traffic counts which remain will be programmed to deliver greater cost effectiveness with counts focusing on the strategic and critical locations or where gaps in data exist. |
| The initial effort required to implement the process is largely offset by efficiencies in the number of counts required in future years. |
| Consistent traffic monitoring approaches allows benchmarking and comparisons to be undertaken across RCA’s relatively easily. Within the One Network Road Classification (ONRC) approach this allows a national overview of network usage. |
### OPERATION

- Ability to utilise traffic count data and estimation to build, calibrate and validate transport models. A precise overview of network usage assists in building a base model which accurately depicts the operation of the network.
- Ensuring that traffic management resources are directed to those areas of the Network of Roads with the greatest traffic volumes. The RAMM Traffic Count Estimation Model gives accurate estimates of traffic volumes when correctly implemented. This enables identification of the high volume areas and can be used to prioritise traffic management resources.
- Making decisions concerning intersection controls and Traffic Management Plans for road works and other traffic disruptions where the level of planning and control will vary dependent on the traffic volumes. More accurate traffic estimates will allow planning with confidence.
- Consistent traffic monitoring approaches allows benchmarking and comparisons to be undertaken across RCA’s relatively easily. Within the One Network Road Classification [ONRC] approach this allows a national overview of network usage.
- Assists in defining consistent Levels of Service for road users which can be used for benchmarking locally and nationally.
- Classification of traffic for noise and environment studies AADT, traffic composition and speed.
- Establishment of warrants for implementing traffic control devices.

### ASSET MANAGEMENT

- Access to robust information which can guide asset management solutions such as road widths, number of traffic lanes, intersection controls etc.
- Estimating the traffic loading on pavements and bridges through classified vehicle counts and axle configurations (in the absence of weigh-in-motion equipment).
- When using RAMM network Manager to manage your network, there are now some elements which take Traffic Count Estimation into account.
- Data can be used to undertake accurate scheme economics and allows accurate representation of likely benefits to be achieved.

### RISK

- The traffic module ensures staff attrition does not negatively impact on programming and/or available data.
- Proactive nature of the module ensures counts are not undertaken based solely on current interest areas and instead provides a more holistic approach to the long term data collection requirements.

Further to the above, there are a number of additional advantages which can be observed across the RCA’s business, not solely in relation to higher level planning. For example, customer services personnel will have accurate and complete data to assist them in responding more effectively when dealing with enquiries – these benefits are summarised below:

### CUSTOMER SERVICE

- Respond to enquiries quickly and with accuracy.
- Provide accurate data to aid development control and planning processes.
3 TRAFFIC COUNTING GUIDE SUPPLEMENT

The RAMM Traffic Estimation Manual has a comprehensive "how to guide" for each step of the setup process. However for a network, the decisions behind whether you choose one option over another or allow the default settings are left to the individual to define. To provide assistance on how these judgements are made, guidance is provided in Table 3-1. The 9 steps shown are listed in a logical process order and follow the same process as the flowchart detailed in Section 9.

Table 3-1: Decision Making Process

<table>
<thead>
<tr>
<th>STEP</th>
<th>ACTION</th>
<th>DECISION</th>
<th>VARIABLES</th>
<th>HELPFUL LINKS / INFORMATION</th>
</tr>
</thead>
</table>
| 1    | Ensure consistency | At this stage before setting the links for the network there should be consideration to the road classification (ONRC) and the relationship to counting, frequency and loading as it relates to each road type; Primary Collector or Arterial. | This will help with further decisions when either setting your own loading or using the RAMM default, expected growth and count frequency | ▪ Better integration across all facets of road management tools; road classifications, maintenance groupings and level of service.  
▪ Using the current hierarchy or ONRC classification is best for setting the parent and child relationships for your traffic links:  
▪ Parent roads: Arterials and Collectors  
▪ Child roads: Local or Access and low volume roads |
<table>
<thead>
<tr>
<th>STEP</th>
<th>ACTION</th>
<th>DECISION</th>
<th>VARIABLES</th>
<th>HELPFUL LINKS / INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Prior to set up, Average Daily Traffic (ADT) values and count status need to be entered into the traffic loading for each carriageway in the database</td>
<td>Potentially not all carriageways will have been counted and if they don’t have an estimate then this will need to be created. Using existing counts on adjacent sections of the road is a good base for creating estimates, consider any changes along the road ‘e.g. rural to urban and any road classification changes’.</td>
<td>Timing of actual counts can cause your estimate to be low or high. If the count was taken during winter on a road that has cropping traffic during summer, then using a seasonal variation factor from NZTA will provide a more robust process.</td>
<td>With legacy data there are some bulk update techniques that can be used if the count duration data is missing: <a href="http://www.ramm.co.nz/manuals/Traffic%20Count%20Estimation/index.htm#19827.htm">http://www.ramm.co.nz/manuals/Traffic%20Count%20Estimation/index.htm#19827.htm</a> Seasonal adjustments are also found in the RAMM manual. Once a road’s seasonal profile has been established, these can be used to create the estimates: <a href="http://www.ramm.co.nz/manuals/Traffic%20Count%20Estimation/index.htm#19786.htm">http://www.ramm.co.nz/manuals/Traffic%20Count%20Estimation/index.htm#19786.htm</a></td>
</tr>
<tr>
<td>3</td>
<td>Loading values at the detail tab of the traffic and loading screen</td>
<td>Although RAMM can potentially do this step based on previously entered data, to get better results based on the RCA’s network it may prove more beneficial to decide on the % of vehicles by class as RAMM defaults may not best represent every network.</td>
<td>The default value of 5% HCV’s is unlikely to be representative of most roads. There are four user-configurable default loadings that a network could set to encapsulate the characteristic of their roads. The defaults appear to have originated from state highways and may prove inconsistent with smaller local road networks.</td>
<td>There is no ability to do this as a bulk upload and it must be done on a road by road basis through the map. The standards in RAMM are from NZTA: <a href="http://www.ramm.co.nz/manuals/Traffic%20Count%20Estimation/index.htm#23279_1.htm">http://www.ramm.co.nz/manuals/Traffic%20Count%20Estimation/index.htm#23279_1.htm</a> They can be accessed in RAMM from the link above. A recommendation would be to set the categories based on the road types and combine those with similar traffic patterns.</td>
</tr>
<tr>
<td>STEP</td>
<td>ACTION</td>
<td>DECISION</td>
<td>VARIABLES</td>
<td>HELPFUL LINKS / INFORMATION</td>
</tr>
<tr>
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<td>-----------------------------</td>
</tr>
<tr>
<td>4</td>
<td>Traffic Links</td>
<td>How each location is linked has implications on the coverage of the count programme and the number of counts required.</td>
<td>There are three steps to creating these: 1) Complete all roads that are never expected to be updated or changed e.g. cul-de-sacs and dead-end roads, first 2) Create &quot;parent&quot; roads based on hierarchy; Arterial and Collectors = Parent 3) All other local roads become &quot;children&quot; to these parents.</td>
<td>Using the road classification or hierarchy is one method to determine &quot;parent and child&quot; relationships. <a href="http://www.ramm.co.nz/manuals/Traffic%20Count%20Estimation/index.htm#17839.htm">http://www.ramm.co.nz/manuals/Traffic%20Count%20Estimation/index.htm#17839.htm</a> Levels of service or road ADT bands are another two methods to determine the traffic links</td>
</tr>
<tr>
<td>5</td>
<td>Road type</td>
<td>It is important to accurately define the road type which has some consideration of variable factors such as peak time periods, daily usage, seasonal variation and zoning of route.</td>
<td>Using the existing hierarchy as the basis of the road type then some bulk updating can occur. See table 3-2 to see how this can be achieved. Hierarchy also provides consistency with the rest of the data in RAMM.</td>
<td>RAMM contains a flowchart to help determine the road type. <a href="http://www.ramm.co.nz/manuals/Traffic%20Count%20Estimation/index.htm#20801.htm">http://www.ramm.co.nz/manuals/Traffic%20Count%20Estimation/index.htm#20801.htm</a></td>
</tr>
</tbody>
</table>
Traffic growth factor

When creating Traffic Links, a Growth Group is assigned to each. When the Traffic and Loading Latest process is run RAMM calculates the rate of growth for each Growth Group. After each calculation it is worth viewing these to ensure they best fit the environment.

Much of this will be based on knowledge of the network and growth rates that are present when looking at historic data. The screen is accessed in RAMM Manager by following the menu path Projects > Traffic Counting > Growth Group.

If the rates of growth are not consistent with your knowledge of the network, then it is necessary to review the Count data associated with the Traffic Links within the Growth Group. There are many reasons why the rate of growth is anomalous. RSL has some of the potential problems detailed on their website (http://www.ramm.com/manuals/Nigel's%20Traffic%20Count%20Estimation%20Tips%20and%20Tricks/index.htm#27883.htm). Review and correct the Count data before running the Traffic and Loading Latest process again. The reason this is important is that the estimates from this module are used by dTIMS.

<table>
<thead>
<tr>
<th>STEP</th>
<th>ACTION</th>
<th>DECISION</th>
<th>VARIABLES</th>
<th>HELPFUL LINKS / INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Traffic growth factor</td>
<td>When creating Traffic Links, a Growth Group is assigned to each. When the Traffic and Loading Latest process is run RAMM calculates the rate of growth for each Growth Group. After each calculation it is worth viewing these to ensure they best fit the environment.</td>
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<td>If the rates of growth are not consistent with your knowledge of the network, then it is necessary to review the Count data associated with the Traffic Links within the Growth Group. There are many reasons why the rate of growth is anomalous. RSL has some of the potential problems detailed on their website (<a href="http://www.ramm.com/manuals/Nigel's%20Traffic%20Count%20Estimation%20Tips%20and%20Tricks/index.htm#27883.htm">http://www.ramm.com/manuals/Nigel's%20Traffic%20Count%20Estimation%20Tips%20and%20Tricks/index.htm#27883.htm</a>). Review and correct the Count data before running the Traffic and Loading Latest process again. The reason this is important is that the estimates from this module are used by dTIMS.</td>
</tr>
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<td>STEP</td>
<td>ACTION</td>
<td>DECISION</td>
<td>VARIABLES</td>
<td>HELPFUL LINKS / INFORMATION</td>
</tr>
<tr>
<td>------</td>
<td>--------</td>
<td>----------</td>
<td>-----------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>7</td>
<td>Generate Recommended Count Sites</td>
<td>Count Sites are created so that the sites can be appropriately positioned and scheduled. Count sites can be manually created; however, it is more efficient to accept the RAMM recommended count sites. These are based on historical counts or a random Location on traffic links which have never been counted. This process is completed in RAMM using the Map.</td>
<td>It is more efficient to allow RAMM to make these decisions and then fine tune the results. This process is based on historic sites or produced randomly. In the case of random selection it is best these are reviewed to ensure good coverage. There is no standard traffic counting programme that will suit all RCA’s. The available traffic counting budget must be taken into account against the number of sites selected. This process does not generally include any cycle only count programme and RCA’s will need to consider the coverage required for cyclists separately.</td>
<td>Prior to implementing RAMM Traffic Count Estimation, each RCA will have developed its own traffic counting programme. The implementation of RAMM Traffic Count Estimation is an opportunity for each RCA to consider improvements which they can make in the selection of the sites where traffic counts should take place and how often traffic should be counted on each road, if at all. Additionally it enables targeting of those roads that contribute most to network traffic and provides a means for monitoring the volume of that vehicle traffic on the network whilst retaining the investment in historical monitoring.</td>
</tr>
<tr>
<td>8</td>
<td>Traffic Count Schedule</td>
<td>Traffic Counts are scheduled based on the sample group of the count sites combined with the date of the most recent count entered into RAMM. For instance, if a count site were in the core monitoring - annual group, RAMM would take the date of the most recent count and schedule another for twelve months later.</td>
<td>Timing and budget are the factors that need to be considered when deciding whether to use this RAMM Module or not. Counts should not be scheduled around events as this will inflate actual counts. Grouping counts geographically can also reduce cost.</td>
<td><a href="http://www.ramm.co.nz/manuals/Traffic%20Count%20Estimation/index.htm#19593.html">http://www.ramm.co.nz/manuals/Traffic%20Count%20Estimation/index.htm#19593.html</a></td>
</tr>
</tbody>
</table>
Historical Count data

The decision will need to be made as to how many years of previous count data to use.

This needs to be determined by the Network Manager. 15 years is recommended as the furthest to go back and would rely on there being robust data for this period of time. Essentially, it is recommended that only data which provides an accurate representation of the network usage should be used here.

Duration of counts can be bulk updated to 7 day counts, where the value is missing. This needs to be done before launching the tool – see link.

http://www.ramm.co.nz/manuals/Traffic%20Count%20Estimation/index.htm#19803.htm

Anything less will require a time of day.

Table 3-2 below provides an overview of the relationship between roading hierarchy and the road type classifications within the traffic count module.

Table 3-2: Traffic Module Road Type Relationship to Hierarchy.

<table>
<thead>
<tr>
<th>ROAD LOCATION</th>
<th>RAMM TRAFFIC MODULE DESCRIPTION (FLOW CHART)</th>
<th>ROAD TYPE FOR TRAFFIC MODULE</th>
<th>RELATED HIERARCHY (ONRC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>URBAN</td>
<td>Industrial Zone (will have the greatest number of heavy vehicles consistent with production)</td>
<td>Urban Industrial</td>
<td>Arterial/Collector/ Access</td>
</tr>
<tr>
<td>URBAN</td>
<td>Commercial Zone (would expect more heavy vehicles but not as much as an industrial or manufacturing zone)</td>
<td>Urban Commerce</td>
<td>Collector/ Access</td>
</tr>
<tr>
<td>URBAN</td>
<td>All other urban</td>
<td>Urban Commuter Arterial</td>
<td>Arterial/Collector/ Access</td>
</tr>
<tr>
<td>RURAL</td>
<td>Within 10km of the urban boundary.</td>
<td>Urban Rural Boundary</td>
<td>Arterial/Collector/ Access</td>
</tr>
<tr>
<td>RURAL</td>
<td>Expected higher weekend counts in winter</td>
<td>Rural Recreation Winter</td>
<td>Local knowledge will be needed to locate winter hotspots mainly roads to the ski fields</td>
</tr>
</tbody>
</table>
### RURAL

<table>
<thead>
<tr>
<th>RURAL</th>
<th>Expected higher weekend counts in summer.</th>
<th>Rural Recreation Summer</th>
<th>Local knowledge will be needed to locate summer hotspots, mainly roads serving the beaches or holiday townships but excluding single destinations such as the local pool.</th>
</tr>
</thead>
<tbody>
<tr>
<td>RURAL</td>
<td>Everything else</td>
<td>Rural</td>
<td>Rural roads that are not captured in the categories above</td>
</tr>
</tbody>
</table>

Not all road networks will have each of these categories present, e.g. land locked networks will not have any beaches or summer time attractors, therefore they may have no rural summer road type.

Where a road could fall into two categories a manual process to determine best fit will need to take place.

GIS could be used to determine the roads that would fit into the urban/rural boundary road type. An RCA may already have a graphical representation of their network and their urban and rural areas. An easy way to determine an urban area is to select all roads with a speed limit of 50km/hr or less and use the property boundaries to form the urban area. Buffering this polygon area to 10km provides the Urban Rural Boundary Road Type. This approach is depicted in the map below.
4 NETWORK COVERAGE

Each RCA defines the percentage of their Network traffic to count. This is specified at the network coverage field at the traffic counting tab on the Parameter screen. It is not necessary to count traffic on every road in a network and it is a more efficient use of resources to spend most of the traffic counting budget on those roads which carry the most traffic. Therefore the decision may be made to not count traffic on the roads which carry the bottom twenty per cent of the network’s VKT. In this case the network coverage % value would be set to 80.

Pilot studies conducted in Upper Hutt [network type – urban], Southland [network type – rural], and Hastings [network type – mixed], have shown that counting approximately 17% of the traffic links per annum would:
- Satisfy the core sampling requirements,
- Cover 80% of the total VKT [two year rotational cycle],
- Provide sufficient additional capacity to retain the investment in the historic monitoring programme.

The goal here is to still conduct enough counts to fully understand the traffic flows of the network and any changes that develop over time. Introduction of new roads may increase or alleviate congestion on the network. These are issues that an RCA must be aware of to better plan and manage their network. Growth patterns are easily identified in the traffic counts over time and therefore it is important to still schedule historical counts to gather this valuable information. Any traffic simulation software will be better calibrated and produce more accurate models when actual count data is used than estimates. One reason for this is the behavioural aspect of drivers will be captured in the count data rather than implied by an application.

The results showed that each RCA should aim to count 15 – 20% of their links annually which equates to 10-15% of carriageway sections.

Therefore as part of an annual programme a network should aim to count:
- 3-6% core monitoring sites
- 10-14% rotational monitoring sites

It is also possible to extend the rotational monitoring framework to include the next level down, and define these sites in terms of contribution to VKT such as the next 20% to 40%.

As an example, an RCA that undertook around 300 traffic counts per year on a network with 2,171 carriageway sections could be expected to reduce the total number of links to 1417 using the traffic count module where traffic sections are linked via the parent child relationship.
- The core sample of 5% monitored each year would be 71 traffic counts counted every year.
- A Rotational Sample of 20% [on a 3 year rotation] would be 94 annual traffic counts
- A Second Tier of Rotational Sample of 30% spread over five years would be 85 traffic counts in each of five years. Total 250 Traffic Counts each year.
A total of 250 traffic counts per year would ensure that over 50% of the network would be counted over a five year period, still leaving around 50 Traffic Counts per year available for one-off studies. If a RCA only does 20 special counts per year currently they could drop their count programme by 30 counts annually, or increase other types of monitoring. Here we are discussing cars, trucks and other heavy vehicles. It may allow a network to include or increase cycle and pedestrian counts to further their understanding of their network.

The recommended count sites screen in the traffic count module can be used to identify the traffic counting regime at each site and select all the count sites which are not included in the programme. These can be deleted or programmed as an ad hoc or second tier rotational for future Counts, as shown in the example above.

The counting schedule screen is used to list count sites which should be scheduled for counting within a set period. Dispatches can then be created in RAMM Contractor so the traffic count contractor knows the future count schedule.

## 5 TRAFFIC GROWTH GROUPS

A traffic growth group is a group of traffic links that are believed to have approximately the same level of traffic growth from year to year. They are used in the update Average Daily Traffic (ADT) estimates process. RAMM averages the actual traffic counts on traffic links in the traffic growth group, ignoring anything greater than 1.5 standard deviations above or below the mean growth for the group. Having found the average annual traffic growth, RAMM applies this factor to previous ADT estimates where there has been no count in the current year.

There are many factors which are thought to influence traffic growth, including:

- Population Growth/Migration
- Land Use Changes
- National/Regional Economy
- Vehicle Operating Costs
- Capacity Restraints
- Induced Traffic due to new road facilities nearby
- Vehicle ownership levels
- Availability of alternative transport modes

At the most basic level, historical growth rates have often been used as the basis for extrapolating future traffic growth. A procedure to estimate the annual % traffic growth for a single site is given in Table 5-1. This comes from a Transfund research report "Guide to Estimation and Monitoring of Traffic Counting and Traffic Growth" (Traffic Design Group, 2001).
Table 5-1: Single site growth prediction procedure

<table>
<thead>
<tr>
<th>STEP</th>
<th>ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Determine the base year (e.g. current year) AADT estimate</td>
</tr>
<tr>
<td>2</td>
<td>Subtract an earlier years AADT from the base year AADT and divide by the number of years between AADTs to obtain the annual arithmetic change (in vehicles per year)</td>
</tr>
<tr>
<td>3</td>
<td>Divide the annual arithmetic change by the base year AADT and multiply by 100%</td>
</tr>
<tr>
<td>4</td>
<td>Round the annual % growth (e.g. nearest 0.5 or 1%)</td>
</tr>
<tr>
<td>5</td>
<td>If there are 4 or more AADT estimates in the last 6 years (or 7+ in the last 10 etc.) then it is better to alternatively: Determine the equation of the best fit line using linear regression – the slope is the annual arithmetic change (vehicles per year) Complete the best fit estimate of AADT for the base year Divide the annual arithmetic change by the computed base year AADT and multiply by 100%</td>
</tr>
</tbody>
</table>

To estimate growth for several sites combined the study suggests:

- Sum the AADTs for each site and from the total sums derive the annual traffic growth or
- Determine the growth for each site and then simply average.

The former is recommended since it gives better reflection of the VKT and can provide a growth “index”.

RAMM calculates growth rates for each Growth Group when the Traffic and Loading Latest process is run. This is an automatic process and cannot be manually overruled. Therefore, it is important to review the rates of growth for each Growth Group after each run to ensure that they are consistent with local knowledge of the network. The rates of growth are determined from recent and historical count data from count sites within the Growth Group Traffic Links. Any issues with the rate of growth need to be addressed by reviewing and correcting the Count data. The information above gives an understanding of the process and a network may want to calculate this if they feel that their network would greatly differ from the normal. However this would be in exceptional circumstances that any network would calculate the factor themselves. It is a time consuming process which RAMM has automated and generalised to each of the road types so that it is easily created for each traffic link. For the majority of all networks the 7 road types will relate to one of the default groups. Look at each growth group and choose the one closest to the nature of your roads, within each road type, as in the table below.
**Table 5-2: Growth prediction related to road type – How to apply RAMM 1-6 Growth Rates**

<table>
<thead>
<tr>
<th>RAMM TRAFFIC MODULE DESCRIPTION (FLOW CHART)</th>
<th>ROAD TYPE FOR TRAFFIC MODULE</th>
<th>RELATED GROWTH RATES THAT RAMM HAVE ALREADY CREATED WITHIN THE TRAFFIC MODULE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial Zone (will have the greatest no. of heavy vehicles consistent with production)</td>
<td>Urban Industrial</td>
<td>Potential growth area if land available for development– Growth 4-6 (dependant on network)</td>
</tr>
<tr>
<td>Commercial Zone</td>
<td>Urban Commerce</td>
<td>Little growth usually well-defined areas – Growth 1</td>
</tr>
<tr>
<td>Urban area</td>
<td>Urban Commuter</td>
<td>Little or no growth unless a new subdivision– Growth 1 or 2 (based on network knowledge)</td>
</tr>
<tr>
<td>Expected higher counts in winter</td>
<td>Rural Winter</td>
<td>Little or no growth – Growth 1</td>
</tr>
<tr>
<td>Expected higher counts in summer</td>
<td>Rural Summer</td>
<td>Little or no growth – Growth 1</td>
</tr>
<tr>
<td>Within 10km urban boundary (would expect higher heavy vehicles)</td>
<td>Urban Rural Boundary</td>
<td>Small to medium growth– Growth 3,4</td>
</tr>
<tr>
<td>Everything else</td>
<td>Rural</td>
<td>Little to no growth predicted – Growth 1</td>
</tr>
</tbody>
</table>
6 AADT BANDS

The user has to assign an AADT band to each traffic link. Traffic links are then grouped dependent on whether they have a high, medium or low AADT band. This grouping should be set relative to local conditions.

It is suggested that each network set everything to low and then work from there identifying the medium and high traffic links. This will quicken up the process as the general rule shows that: 80% of the traffic will travel on 20% of the roads; therefore 80% of roads will only see 20% of the traffic. Council’s should be focussing their efforts on the top 20% of roads and should already know which roads these are. These will be the medium and high AADT roads.

Based on the One Network Road Classification (ONRC), it would be suggested the three bands could encompass the criteria for each road type in the NZTA decision tree as follows:

Table 6-1: AADT Bands (ONRC)

<table>
<thead>
<tr>
<th>ROAD TYPE (ONRC)</th>
<th>TYPICAL DAILY TRAFFIC (ONRC)</th>
<th>RAMM AADT BAND</th>
<th>RELATIONSHIP TO HIERARCHY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access Road</td>
<td>&lt;1000 (urban)</td>
<td>LOW</td>
<td>Local low volume roads (80% of most road networks)</td>
</tr>
<tr>
<td></td>
<td>&lt;200 (rural)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>&lt;25 (HCV)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary Collector</td>
<td>&gt;1000 &lt;3000 (urban)</td>
<td>MEDIUM</td>
<td>Collectors and Distributors are usually around 15% of the road network</td>
</tr>
<tr>
<td></td>
<td>&gt;200 &lt;1000 (rural)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt;25 &lt;150 (HCV)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary Collector</td>
<td>&gt;3000 &lt;5000 (urban)</td>
<td>MEDIUM</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt;1000 &lt;3000 (rural)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt;150 &lt;300 (HCV)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arterial</td>
<td>&gt;5000 &lt;15000 (urban)</td>
<td>HIGH</td>
<td>Arterials will typically account for approx. 5% of the road network</td>
</tr>
<tr>
<td></td>
<td>&gt;3000 &lt;10000 (rural)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regional</td>
<td>&gt;15000 &lt;25000 (urban)</td>
<td>HIGH</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt;1000 &lt;15000 (rural)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt;400 &lt;800 (HCV)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>National</td>
<td>&gt;25000 (urban)</td>
<td>HIGH</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt;15000 (rural)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt;800 (HCV)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
7 TRAFFIC COUNT UPLOADING

The Metro Count upload function adds value by delivering faster uploads, data storage all in one place and better count data access. Although there have been operational issues with this facility previously, the function is now operating and allows traffic counts to be uploaded efficiently. The use of this facility is highly recommended for the majority of traffic counting data requirements and will save users time and deliver consistency and accuracy across data (avoids manual update errors).

It is worth of note that the metro count upload function provides the basic reporting requirements. If RCA’s require additional detail or wish to manipulate the data further this will need to be undertaken independent of RAMM.

Central Otago District Council have developed an overview of the upload function process to assist RCA’s when using this facility for the first time. This overview is provided in Appendix A for completeness.

8 COMMON ERRORS AND ANOMALIES

There are a number of common problems found in the count data which can cause RAMM to calculate abnormally large rates of growth (both positive and negative). These common problems are described at the RSL web link: [http://www.ramm.com/manuals/Nigel’s%20Traffic%20Count%20Estimation%20Tips%20and%20Tricks/index.htm#27883.htm](http://www.ramm.com/manuals/Nigel’s%20Traffic%20Count%20Estimation%20Tips%20and%20Tricks/index.htm#27883.htm).

These common problems can be summarised as follows:

1. Typing Mistakes – Simple typing errors, particularly in the count date, can have significant impacts on outputs.

2. Ancient Counts still the latest – There are numerous examples of Latest Counts which date many decades ago. This would suggest this is a location where you no longer have a Count Site. Therefore, do not define a Count Site for it in the Traffic Count Estimation but do remember to relate it to another Traffic Link to ensure you still get an AADT Estimate for it.

3. Very short durations between counts – Historically, common method to correct Count Data was to add a new record with a Count Date a day or a few days later than the one in error. This can result in significant changes in ADT over a very short period which will distort the growth rates in the Traffic Count Estimation. The Count in error should be removed from the records to avoid this issue.

4. Counts on the same day – Under this scenario there is no way to predict which order the Counts will appear in and as such each time the Traffic Count Estimation process is run it is possible that a different Count is used. This would result in inconsistent and possibly ever changing ADT Count Data. The data should be reviewed with the incorrect Count record being deleted.
9 CONSULTANT BRIEFING TEMPLATE

It is recognised that some RCA’s may require specialist assistance when implementing this process from Consultants with the required RAMM skills. However, it is important that those involved have a high level of understanding of the local network and as such the two parties must work closely together to fulfil both roles. It is envisaged that if an RCA does not have the appropriate resources or available capacity to complete the works, the vast majority of the process can be completed by a supporting Consultant. If this approach is adopted RCA’s will need to provide inputs for a number of the stages of the process and will need to review and approve outputs from others. The following flow chart defines these inputs and outputs for each of the 9 steps defined in Table 3-1.
RCA to undertake task

RCA to identify seasonal variations and roads affected
RCA to confirm location of road classifications or locations or changes in nature of road (urban to rural)

RCA to identify routes with non-standard HCV characteristics
RCA to confirm road classifications

RCA confirm road hierarchy

1. ENSURE CONSISTENCY

2. DETERMINE ADT AND COUNT STATUS

3. SELECT TRAFFIC LOADING

4. CREATE TRAFFIC LINKS

5. DEFINE ROAD TYPE

6. CONFIRM GROWTH FACTORS

7. GENERATE RECOMMENDED COUNT SITES

8. DEFINE TRAFFIC COUNT SCHEDULE

9. CONFIRM HISTORICAL COUNT DATA

10. RUN TRAFFIC AND LOADING LATEST

Consultant to provide map of schedule and RCA to review and confirm acceptance. Required changes to be implemented.

RCA to review and confirm rates of growth and AADT estimates

RCA to review and confirm rates of growth and AADT estimates
APPENDIX A - STAGE 1

INITIAL SET UP TO CONFIGURE METRO COUNT TO UPLOAD INTO RAMM

INTRODUCTION

This document outlines what needs to happen to allow MetroCount files to be uploaded into RAMM. Please note this is for the NZTA2011 standard only.

PREREQUISITES

This NZTA2011 Metro Count Schema files must be installed in the relevant Metro Count directory for this process to work. Please see the Metro Count website for these files and instructions on how and where to install them.

CREATING THE METROCOUNT NZTA2011 IMPORT FILE

1. Open Metro Count and select a file to process

2. Click Next

3. From the Report Vortex window select Custom List Report and click Next

4. Note: If the Custom List report has a paddlock symbol instead of a tick it means your counter is not compatible and will need to be upgraded.
5. At the Report Profile screen check the settings and click the next button.

6. From the Custom Lists reports screen double click the RAMM_NZTA2011_Mar12 Custom List. It is vital that the RAMM_NZTA2011_Mar12 appears at the top for the report to work!!

7. Click the Okay button. MetroCount will now produce the report.

8. Once the report is produced, right click on the report and select Local Profile.
9. Now click on the Classes section

10. Now click on class 14 then OK

11. This will then add 14 to the Classes sections
12. Click on the OK button to re-generate the report with Class 14 added

13. Go to the File menu and select Save Report As

14. Select the Save As Type of Plain Text Format. Leave the file name as what was self generated by MetroCount. Hit the Save button

15. This has now created a NZTA2011 formatted MetroCount report ready for import into RAMM.
UPLOADING THE FILE INTO RAMM

1. Log into RAMM and Select the MetroCount Import Special function or if not available choose MetroCount Import function

Note: If you are using MetroCount Import and the upload is unsuccessful you should contact RAMM to be upgraded to MetroCount Import Special.

2. Click on the Add button and create a Survey. Hit the Save button to save this survey

Please note adding info to the above sheet is not required provided you click Add then Save then Import the next panel will appear showing your files.
3. Click on the Import button. The below window will appear

![Import window](image)

4. Navigate to where you have saved the NZTA2011 MetroCount files. Select the relevant file and hit the Open button

5. RAMM will now import the MetroCount file. Once the import process is done the below box will appear.

![Import completed](image)

6. You can choose to view the reports if you wish. The error report will show you any problems encountered during the import process. For more detail on this process please see the RAMM documentation

**SAVING THE NZTA CLASS CHANGES TO THE LOCAL PROFILE**

1. Produce a NZTA2011 report as per the above steps

2. Once the report is produced, right click on the report and select Local Profile
3. Click on the Classes section

4. In the Included Vehicle Classes window select Class 14 then click OK.

5. This will then add 14 to the Classes sections
6. Click on the icon to the right of the Advanced button

7. Click on File and then on Save Profile

8. Click RAMM NZTA2011 then save

9. This will save the current NZTA2011 profile settings to the Local Profile. With this done you won’t have to add the Class 14 in each time. Follow the directions as shown in version 2 for all future imports.

Any queries: Mick Sparrow at Central Otago District Council, telephone 03 440 0640
APPENDIX B: STAGE 2

CONFIGURE METRO COUNT TO UPLOAD TRAFFIC COUNT DATA INTO RAMM

INTRODUCTION

This document outlines what needs to happen to allow MetroCount files to be uploaded into RAMM.

Please note this is for the NZTA2011 standard only.

PREREQUISITES

This NZTA2011 Metro Count Schema files must be installed in the relevant Metro Count directory for this process to work. Please see the Metro Count website for these files and instructions on how and where to install them.

CREATING THE METROCOUNT NZTA2011 IMPORT FILE

1. Open Metro Count and select a file to process

2. Click Next

3. From the Report Vortex window select Custom List Report and click Next

4. Note: If the Custom List report has a paddlock symbol instead of a tick on the left it means your counter is not compatible and will need to be upgraded.

Will not import into RAMM
5. At the Report Profile screen check the settings and click the next button

![Vehicle and report settings](image1)

6. From the Custom Lists reports screen double click the RAMM_NZTA2011_Mar12 Custom List. It is vital that the RAMM_NZTA2011_Mar12 appears at the top for the report to work!!!

![Custom List reports](image2)

RAMM_NZTA2011_MAR12 must be shown here

DOUBLE CLICK THIS

7. Click the Okay button. MetroCount will now produce the report
8. Go to the File menu and select Save Report As

9. Select the Save As Type of Plain Text Format. Leave the file name that was self generated by MetroCount. Hit the Save button.

10. This has now created a NZTA2011 formatted MetroCount report ready for import into RAMM.
UPLOADING THE FILE INTO RAMM

1. Log into RAMM and Select the MetroCount Import Special or if not available choose the MetroCount Import function
   Note: If you are using MetroCount Import and the upload is unsuccessful you should contact RAMM to be upgraded to MetroCount Import Special

2. Click on the Add button and create a Survey. Hit the Save button to save this survey

3. Click on the Import button. The below window will appear
4. Navigate to where you have saved the NZTA2011 MetroCount files. Select the relevant file and hit the Open button.

5. RAMM will now import the MetroCount file. Once the import process is done the below box will appear.

![MetroCount Import completed]

6. You can choose the view the reports if you wish. The error report will show you any problems encountered during the import process. For more detail on this process please see the RAMM documentation.

Any queries: Mick Sparrow at Central Otago District Council, telephone 03 440 0640