DATA COLLECTION

Traffic Counting Strategy

Hastings District Council

AUGUST 2014

DRAFT IN PROGRESS
1. **Background**

The Annual Average Daily Traffic (AADT) is a figure used to describe traffic levels on the Network (how busy the roads are). A large number of asset management processes use the AADT figure to provide decision making information. AADT is derived from on-road traffic counts.

There are two principal reasons to have accurate estimates of traffic volumes for the Roads. They are:

a) Funding  
NZTA have auditors to check the accuracy of the information provided to support funding applications.

b) Better Decision Making  
More accurate information leads to more consistent and robust analysis and confidence in results. This improves credibility and allows Council to better direct resources.

Uses of traffic count data in Hastings:

<table>
<thead>
<tr>
<th>Long term planning</th>
<th>Network Renewal &amp; Development</th>
<th>Customer Service</th>
<th>Operational</th>
</tr>
</thead>
<tbody>
<tr>
<td>Understanding route use &amp; hierarchy</td>
<td>Project planning (e.g. optimum working periods)</td>
<td>Responding to enquiries</td>
<td>Traffic management requirements</td>
</tr>
<tr>
<td>Predictive condition modelling (dTIMS etc)</td>
<td>Deriving traffic loads for pavement design</td>
<td>Development control &amp; planning</td>
<td>Regulatory requirements</td>
</tr>
<tr>
<td>Safety studies</td>
<td>Deriving traffic loads bridge design</td>
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<td>Network monitoring</td>
</tr>
<tr>
<td>Traffic modelling &amp; simulation (Urban micro simulation and Heretaunga Plains macro simulation models)</td>
<td>Project economics (BCR)</td>
<td></td>
<td>Deriving traffic loads for planning and design of maintenance intervention strategies (e.g. reseal programme)</td>
</tr>
<tr>
<td>Setting and measuring levels of service</td>
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<tr>
<td>TSA</td>
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<tr>
<td>HCV &amp; HPMV management</td>
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</tbody>
</table>

2. **Objectives**

The primary objective of the traffic counting strategy is to ensure that traffic volumes across the network are known in sufficient detail and to an appropriate level of accuracy to inform the tools and processes used by Council that rely on traffic volumes. Traffic count data shall be collected in the most efficient manner possible that enables the above objective to be met.
3. **Principles**

Traffic counting needs vary depending on the intended use for the data. The following matrix describes the information demands for each core activity that the traffic volumes are used for:

<table>
<thead>
<tr>
<th>Data Req</th>
<th>Network understanding</th>
<th>Condition modelling</th>
<th>Traffic modelling &amp; simulation</th>
<th>Levels of Service</th>
<th>TSA</th>
<th>Safety studies</th>
<th>Project planning</th>
<th>Design loadings</th>
<th>Project economics</th>
<th>Responding to enquiries</th>
<th>Development control</th>
<th>Traffic management req.</th>
<th>Regulatory req.</th>
<th>Maintenance intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class volume</td>
<td>✓</td>
<td>✘</td>
<td>✓</td>
<td>✓</td>
<td>✘</td>
<td>✓</td>
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<td>✓</td>
<td>✓</td>
<td>✘</td>
<td>✘</td>
<td>✓</td>
<td>✘</td>
<td>✓</td>
</tr>
<tr>
<td>Class speed</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<td>✓</td>
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</tr>
<tr>
<td>Cycle counts</td>
<td>✓</td>
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</tbody>
</table>

The principle of the traffic counting strategy shall be to collect data to inform the above activities in a manner that accurately estimates, and is sensitive to the changes in, the traffic characteristics listed below.

**Traffic Characteristic** | **Influences**
--- | ---
Network Use / Volume | Urban/rural split
 | Mode split
 | Hierarchy
Speed | Urban/rural split
 | Mode split
 | Hierarchy
Growth | Hierarchy
 | Residential growth strategy
 | Industrial growth strategy
Seasonal variation | Industrial activity
 | Tourism/holiday activity

4. **Strategies**

The RAMM Traffic Count Estimation model is particularly robust when correctly implemented. The RAMM Traffic Count Estimation model will be used to develop a counting programme that meets Council’s traffic data needs. This programme will be adjusted to achieve the best balance between the need for data accuracy and Council’s budget allocation for counting traffic volumes on the network of roads.

There is a fundamental difference in the relationship between links for private vehicles and heavy commercial vehicles, particularly HPMVs that operate on permitted routes only. The RAMM module is not currently designed to establish different link relationships for different vehicle classifications so this element requires a manual audit after the annual update of link volumes.
Transportation Asset Management Plan

TRAFFIC COUNTING STRATEGY

Approach
Traffic count data shall be collected using Metro tube counters. (N.B. special equipment may be required to count cyclists on the network separate to the standard traffic counts.

The traffic counting budget shall be split into programmed counts and special counts:

<table>
<thead>
<tr>
<th></th>
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<th>Condition modelling</th>
<th>Traffic modelling &amp; simulation</th>
<th>Levels of Service</th>
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<th>Project planning</th>
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<th>Traffic management req.</th>
<th>Regulatory Req.</th>
<th>Maintenance intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Programmed Counts</td>
<td>1 1 1 1 1 1 2 2 2 2 2 2 2 2 1 1</td>
<td></td>
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</tr>
<tr>
<td>Special Counts</td>
<td>2 2 2 2 2 1 1 1 1 1 1 2 2</td>
<td></td>
<td></td>
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</tbody>
</table>

Note: 1 = Primary Data Source
2 = Secondary Data Source

Programmed counts shall all be carried out “static” count sites and special counts shall be carried out locations as required by the purpose of the count.

Programmed traffic counts are split into two groups: [A] traffic; and [B] cycling, and the base framework for the programmed counts shall be the road hierarchy (traffic or cycling as appropriate to the count group).

Programmed count sites shall be split into the following types and allocated a sub-type equal to the District Plan land use zone that the count site is in:

1. **VKT:** (Vehicles Kilometre Travelled) - Core network volume count sites
   - Top 20% of network overall treatment lengths (TL) sorted by VKT.
   - Heavy Vehicle VKT is also calculated and the to 20% Heavy VKT TL sites are cross matched for any that have no corresponding Traffic VKT.

2. **Growth Node:** Sites tracking strategic growth trends]. Also absorbing the representative sites for verifying low volume road and growth estimation.

3. **Seasonal:** Sites tracking key tourism and industrial fluctuations.

4. **Screenline:** Establishment of a north/south and an east/west screen line through the Hastings urban area and plains. This to assist in calibration of both the strategic regional transport model & the Hastings urban model.

5. **Cycle:** Establishment of count sites for cycle counting using cycle specific counting equipment and aligned with cycling strategy. Cycle counts will be a five day count, Mon – Fri. Sites will not be counted during school holidays.
Counting frequency shall be determined on the basis of the following matrix:

<table>
<thead>
<tr>
<th>Count Type</th>
<th>Purpose</th>
<th>Location</th>
<th>Criteria</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>VKT Counts</td>
<td>Monitoring traffic flows to capture 80% of VKT on the network</td>
<td>Arterial, Collector, Distributor, Regional Arterial</td>
<td>High Level Traffic VKT &gt;5000 ADT + all Heavy Traffic VKT sites</td>
<td>Annually: randomly selected count dates.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Local, Local CBD)</td>
<td>Based on Low Level VKT &lt;5000 ADT</td>
<td>Bi-Annually: randomly selected count dates.</td>
</tr>
<tr>
<td>Growth Counts</td>
<td>Track strategic growth trends</td>
<td>Nominated development areas and representative sites for verifying growth on low volume roads</td>
<td>Urban and Rural count sites selected on their strategic and base line value.</td>
<td>Annually: counted in the same month each year.</td>
</tr>
<tr>
<td>Seasonal Counts</td>
<td>Track key tourism and industrial fluctuations</td>
<td>Key tourism and industrial roads</td>
<td>All</td>
<td>Each count site used once every 5 years. Seven day counts every month within the count year.</td>
</tr>
<tr>
<td>Screenline Counts</td>
<td>Assist with calibration of the strategic regional transport model and Hastings Urban model.</td>
<td>Located on North/South and East/West screen lines through Hastings Urban and Plains.</td>
<td>All roads crossing screenlines</td>
<td>As per VKT sites</td>
</tr>
<tr>
<td>Cycle Counts</td>
<td>Monitoring cycle flows to capture use of designated cycle routes</td>
<td>Routes as defined by cycling strategy</td>
<td>Urban and Rural count sites selected on their strategic and base line value.</td>
<td>Annually: counted in the same month as the Growth Counts</td>
</tr>
</tbody>
</table>

* Note: Count Frequency

1. Monthly
   Seasonal counts will be counted once per every five years. Within the year of counting a count will be on site for one week every month for that year.

2. Annually [1]
   Growth, Cycle: Sites will be counted each year within the same month.

3. Annually [2]
   High Level VKT and Screen Line count sites (>5000 adt OR Road Hierarchy, Arterial, Collector, Distributor, Region Arterial) These sites will be counted every year but the month is randomly selected.

4. Bi-Annually
   Low Level (<5000 adt OR Road Hierarchy Local, Local CBD) VKT and Screen Line counts. These sites will be counted every other year; the month counted will be randomly selected.

Background seasonal variation shall be obtained from NZTA’s permanent count station data and a budget for special counts shall be allocated each year and used as required.
Cordon Counts
Cordon Count stations shall include the establishment of a north/south and an east/west screen line through the Hastings urban area and plains. This is to assist in calibration of both the strategic regional transport model & the Hastings urban model:

Figure 1: Cordon Screen Lines
Growth Node Counts
Count stations to monitor network growth shall be located to monitor growth around key strategic sites and on the main arterials. Growth Node Counts at a specific station shall take place in the same week each year:

Figure 2: Urban Vehicle

1. Pakowhai Road
2. Karamu Road
3. Napier Road
4. Havelock Road
5. Te Aute Road
6. Railway Road
7. Maraekakaho Road
8. Omahu Road
Figure 3: Urban Cycle

1. Frederick Street  
2. Crosses Road  
3. Te Mata Road  
4. Havelock Road  
5. St Aubyn Street  
6. Railway Road  
7. York Road  
8. Maraekakaho Road  
9. Omahu Road
Figure 4: Rural Vehicle

1. Puketitri Road
2. Taihape Road
3. Kereru Road
4. Raukawa Road
5. Middle Road
6. Waimarama Road
5. **Seasonal Counts**

Count stations to monitor seasonal variation shall be located to monitor traffic fluctuations around key strategic sites:

1. Clifton Road (tourism)
2. Waimarama Road (tourism)
3. Taihape Road (tourism & forestry produce)
4. Whakatu Road (plains produce processing)
5. Tomoana Road (plains produce processing)
6. **Outputs**

Standard output reports processed and stored for each count shall consist, as a minimum, of:

- 7 day hourly count distribution
- 7 day speed / class distribution
- 7 day speed histogram

In addition to the above, an annual report shall be produced showing growth trends at all strategic growth nodes and seasonal variation at all seasonal count sites.

7. **Responsibilities**

The person responsible for the traffic counting strategy is the Transportation Asset Manager.

8. **Review Cycle**

The traffic counting strategy shall be reviewed every 3 years as indicated below.

<table>
<thead>
<tr>
<th>Review date</th>
<th>Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>In progress</td>
</tr>
<tr>
<td>2017</td>
<td>Future review</td>
</tr>
<tr>
<td>2020</td>
<td>Future review</td>
</tr>
</tbody>
</table>
APPENDIX A

1. Traffic Count Station Maps – RA1 & RA2
2. Traffic Counting Programme