MetroCount®

traffic data specialists

# MTE User Manual

4.03


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# RSU Software

MTE provides three programs for collecting data with MetroCount Roadside Units (RSUs):

- **MCSetup** for desktop and laptop PCs (English).
- **MCSetLite CE** for Mobile Devices based on Windows CE or Windows Mobile (multilanguage).
- **MCSetLite PC** for desktop and laptop PCs (multilanguage).

MCSetup provides complete support for all MetroCount RSUs, including RSU setup and unload, Site List management, RSU configuration and diagnostic tools. MCSetLite provides all of the required functionality for RSU control and data checking, with a multilingual user interface.

This chapter covers the fundamentals of gathering data using MCSetup, including:

- understanding RSU modes of operation and behaviour,
- configuring MCSetLite and MCSetup,
- connecting to a RSU,
- checking RSU status,
- setting up a RSU,
- viewing real-time sensor hits to check setup and installation, and
- unloading data.

Installation and usage of MCSetLite is covered in the **MCSetLite User Manual.**

Experimenting with the user interface and features in the office is recommended. This gives an opportunity to become familiar with RSU behaviour, and make field setup a smoother process.

A comprehensive discussion of issues including site selection, sensor installation and information can be found in the corresponding Roadside Unit Operator Guides.

# RSU Basics

## Philosophy

All MetroCount Roadside Units are designed to make the process of data collection as simple, and as reliable as possible. The primary mode of operation is to store time-stamped sensor hits, forming a hit stream of raw data. This approach to data collection maximizes the analysis potential and results in data unconstrained by units of measurement, classification schemes, or by binning counts. There is no need to decide, and in many cases compromise, the information required before a survey.

Most importantly, the data is auditable. Using a variety of simple software tools and techniques, data quality can be verified, and maintained.

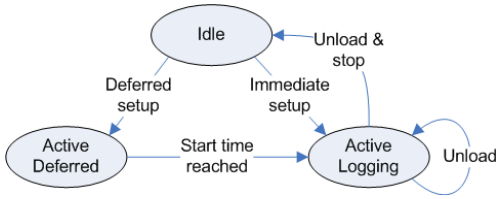
## Communication

MetroCount RSUs are controlled via a standard RS-232 serial communications port, using MCSetLite or MCSetup. The ideal scenario is to invest in a mobile PC for use in the field. This provides the advantage of software tools to ensure correct RSU operation on-site, and to verify basic data quality.

A mobile PC is not a requirement. RSUs can be successfully setup using an office PC, and the start time deferred to a time after the RSU has been placed in the field.

## Operating States

The following diagram shows the three operating states of a RSU.




RSU Operating States

The **Idle** state is the RSU's low-power, standby state. In this state, the RSU does not log any data and simply retains any existing data in memory. This results in very low battery consumption.

A survey is begun by performing a Setup operation. This is a simple process of specifying the sensor configuration and a number of site description parameters. The RSU may be set to start immediately, or deferred for up to 10 days. Once the start time is reached, the RSU enters its **Active Logging** state.

In its Active Logging state, the RSU time-stamps sensor hits. It also performs a number of maintenance tasks, such as checking battery voltages and monitoring memory usage.

The RSU does not require a stop time or logging duration. It simply continues to time-stamp sensor hits until an Unload operation is performed (with the option to stop the RSU), or its memory capacity is filled. Once the RSU is stopped, it returns to its Idle state.

Data is retained in the RSU's memory until the next setup operation is performed. Thus the data may be unloaded again if required.

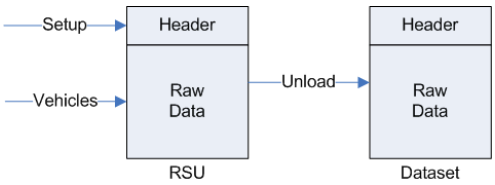
During a survey, data may be retrieved from the RSU, without interrupting the survey, by performing an Unload operation without the stop option. This allows a mid-survey data quality check to be performed.

# Datasets

## Header Details

All the survey parameters provided at setup, along with the current status of a RSU, are collectively stored in the RSU's **Header**. When checking a RSU's status, it is the unit's header that is retrieved.

When an Unload operation is performed, a **Dataset** is created, which contains the RSU's current header information, followed by the raw data. Datasets are then analysed by MTE's analysis component - MCReport.

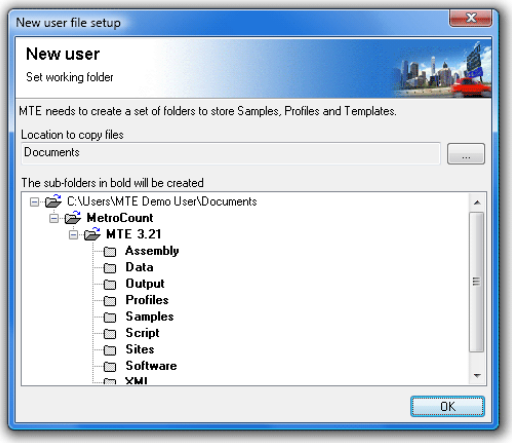



RSU Data Flow

# MCSetup Configuration

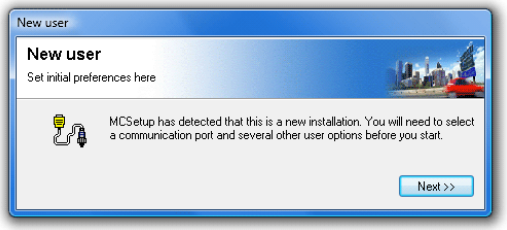
## Preferences

MCSetup can be started from the **Start Menu** by locating the **MetroCount v3xx** folder, and selecting **MCSetup**. If this is the first time MCSetup has been started, the **Preferences** dialog box will be automatically displayed. If MCReport has not been started, the **New user file setup** dialog box will also be displayed.



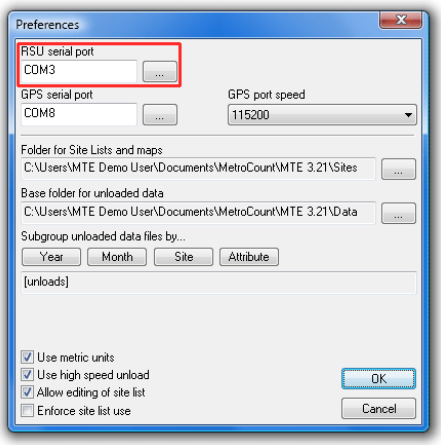

**Setting a working folder location**

MTE needs a folder location to store working files, such as MetroCount data, Profiles and templates. The default working folder location will be the current user's **Documents** folder. This is highly recommended as it is guaranteed to be accessible under all versions of Windows. To select a different folder, click the **…** button. When done, MCSetup will create the list of folders shown in the sub-folders tree, and copy a set of default working files.



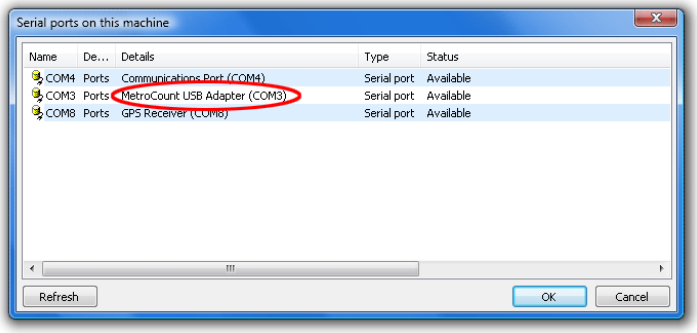

**MCSetup new user settings**

MCSetup's Preferences contain a number of options that need to be set before communicating with Roadside Units. These options can be reviewed at any time by selecting **View » Preferences** from the main menu.




**MCSetup's Preferences**

The most important setting is the **RSU serial port.** This is the serial communications port that will be used to communicate with MetroCount RSUs, which may be a MetroCount USB Adapter, or a physical serial port on a desktop or laptop. For a list of available serial ports, click the **…** button.



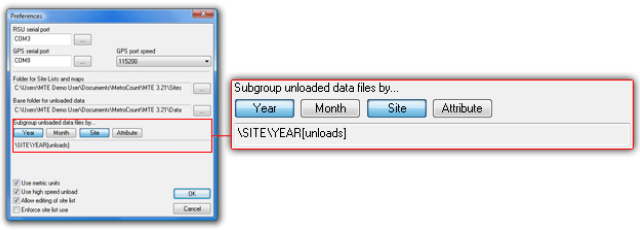

**Selecting a serial port**

A suitable serial port should have a status of **Available** with a yellow icon. A red-circle icon indicates the port is unavailable, possibly because it is already in use. Simply select the desired serial port, and click the **OK** button.

The **GPS serial port** setting is used to retrieve coordinates from a GPS unit, to be stored in a Site List or dataset header. Click the **…** button to select from a list of available ports. USB and Bluetooth GPS units generally create a virtual serial port, which can be used by MCSetup. Refer to the GPS unit's documentation for the default serial port speed.

The **Folder for Site Lists and maps** is where MCSetup will first look for Site Lists, and their associated maps. The default folder is the **Sites** folder in MTE's working folder location.

The **Base folder for unloaded data** is where MCSetup will place data unloaded from a RSU. The default folder is the **Data** folder in MTE's working folder location. MCSetup can also automatically group data into subfolders using the **Year**, **Month**, **Site** and **Attribute** buttons. Folders will be created in the order the buttons are pushed.



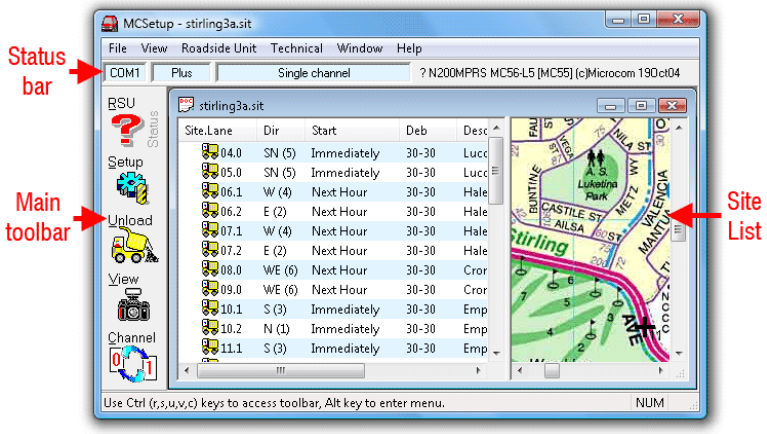

**Grouping data into subfolders**

The **Use metric units** option is for MCSetup's internal use only, such as displaying vehicle speed in the Sensor View. This option in no way affects the data being logged by a RSU. The units of measurement used for data analysis are set in MCReport.

Unchecking the **Allow editing of Site List** will prevent editing of sites in a Site List, to discourage site editing in the field. The **Enforce site list use** option will disable the Setup and Unload buttons on MCSetup's main toolbar until a site is selected in a Site List.

# MCSetup Layout

MCSetup's basic layout is shown in the diagram below.




**MCSetup's layout**

The **Status bar** displays information about the currently connected RSU, including Signature type, current channel (for multi-channel RSUs), and the RSU's identifier and firmware revision.

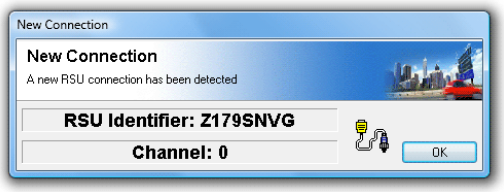
The main toolbar provides the core RSU functions. Note the shortcut keys listed at the bottom of the screen for convenient keyboard operation.

| Button | Shortcut key | Function |
|---|---|---|
|  | Ctrl + r | Get RSU status |
|  | Ctrl + s | Setup RSU |
|  | Ctrl + u | Unload data |
|  | Ctrl + v | View sensor hits |
|  | Ctrl + c | Change RSU channel (multi-channel RSUs only) |

The document area of MCSetup is used for displaying Site Lists.

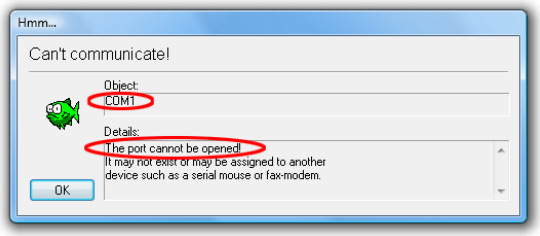
# Establishing a Connection

Once a serial port has been selected in MCSetup's Preferences, connect a RSU and click the **RSU Status** button on MCSetup's main toolbar. If the **New Connection** dialog box appears, a successful connection has been established. This dialog box appears every time a different RSU is connected to MCSetup.



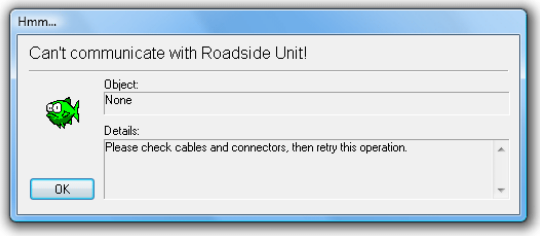

**New Connection dialog box indicates a successful connection**

If the **Can't communicate** error appears, with the details **The port cannot be opened,** either the wrong serial port has been selected in the Preferences, or the serial port is in use by another program.




**Can't communicate - port cannot be opened**

If the **Can't communicate with Roadside Unit** error appears, this indicates MCSetup was able to open the selected serial port, but did not receive a response from a RSU. With a RSU connected, click the **RSU Status** button and check whether the RSU's Status LED comes on. If the Status LED does not come on, the most likely cause is selecting the wrong serial port in the Preferences.




**Can't communicate - check the RSU's Status LED**

# RSU Status

## Overview

Clicking the **RSU Status** button on the main toolbar displays a snapshot of a RSU's current status, grouped into separate pages. It is advisable to do a status check regularly:

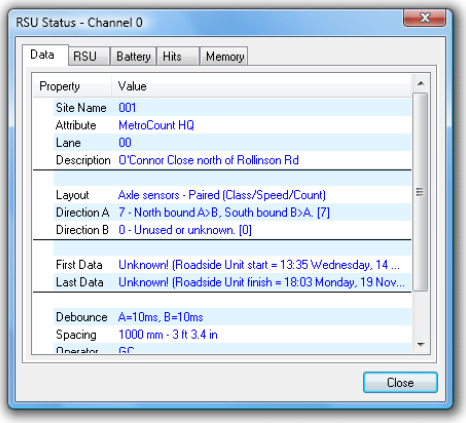
- Before setup - to check remaining battery life.
- After setup - to check the setup was successful, and the RSU is active.
- During a survey - to monitor axle statistics and memory usage.

If a potential problem exists in any of the status pages, the relevant page will be automatically displayed, along with a warning message describing the problem.

*Note:*
*Use the left and right arrow keys to step through the RSU Status pages.*

## Site Information

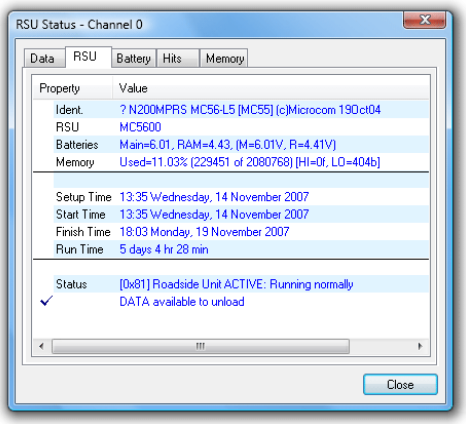
The **Data** page displays the survey parameters of the data currently in memory, as specified when the RSU was setup.




**RSU Site Information**

# RSU Activity

The **RSU** page displays information about the RSU's hardware, and the Status list at the bottom shows the RSU's current state of activity. It also lists recent events that may impact the data currently in memory, or the RSU's condition.



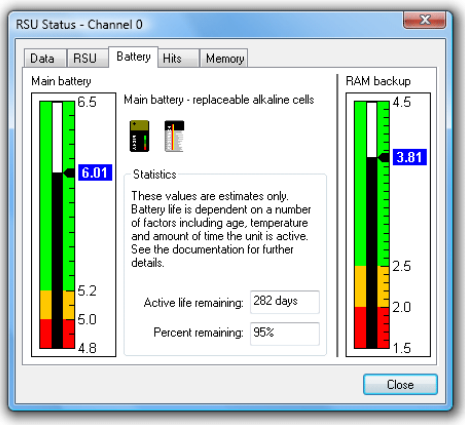

**RSU status information**

| Text | Description |
|---|---|
| Roadside Unit not ACTIVE | The RSU is in its idle state. |
| Roadside Unit ACTIVE: Waiting for start time | The RSU has been setup with a deferred start time. When the start time is reached the RSU will switch to its active state. |
| Roadside Unit ACTIVE: Running normally | The RSU is in its active state, logging data. |
| DATA available to unload | The RSU contains data that has not been unloaded. This will remain until the RSU is stopped. |
| Memory FULL | The RSU has filled to capacity, and will have stopped logging data. |
| Main battery ran down | The RSU will switch to its idle state if the main battery drops below a certain level. This ensures that there is always sufficient power to communicate, barring battery failure. This message indicates the RSU may have stopped logging sooner than expected. |
| Roadside Unit POWER was interrupted | Power was interrupted while the RSU was active. If power is interrupted the RSU will stop logging data. |
| Dropped to IDLE (No hits) | The RSU stopped logging because no hits were detected for seven days. |

# Battery Levels

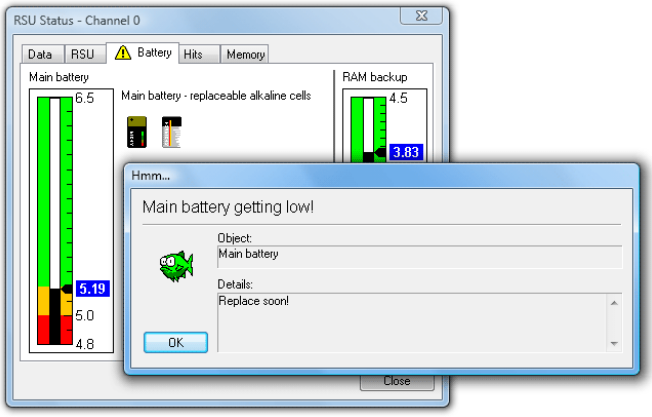
## Non-rechargeable Main Battery

For RSUs with a non-rechargeable battery pack, the RSU Status gives an estimated number of days of continuous use, until the pack will need to be replaced. This estimate is based on the typical discharge curve for a battery pack supplied by MetroCount.




**RSU battery status**

When the battery voltage enters the yellow region of the graph, a reminder to replace the pack will be issued. Once in the red region, the battery should be replaced before any further use.



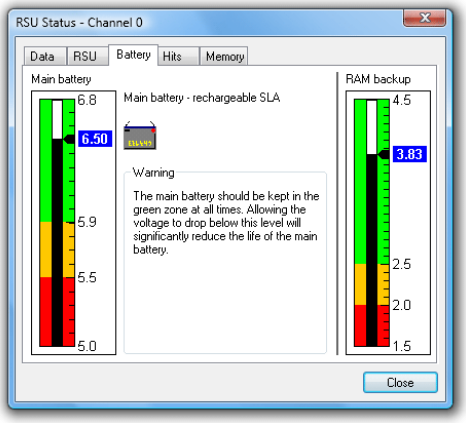

**Battery warning message**

Even if the voltage is in the red region, the battery pack still has sufficient power for the RSU to communicate, unload any data, and retain data almost indefinitely. The RSU will automatically shutdown below the red region to ensure communication will still be possible.

Some RSUs have a separate RAM backup battery to retain the RSU's memory while the main battery is changed. This is automatically charged from the main battery.

# Rechargeable Main Battery

To ensure optimal capacity and service life, RSUs with rechargeable main batteries should have their battery voltage kept in the green region at all times. Actual days of use between charging will vary depending on the age of the battery.



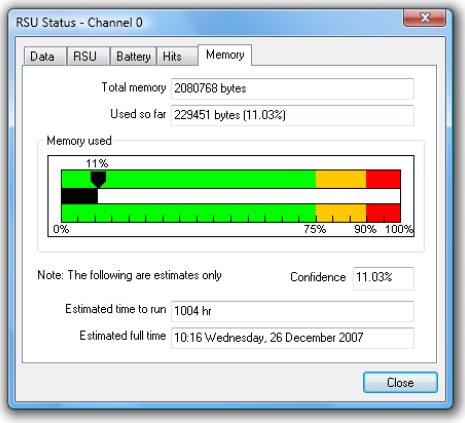

**RSU battery status (rechargeable)**

Running the main battery down to the red zone may result in irreversible damage to the battery, and it will probably need to be replaced.

# Memory Usage

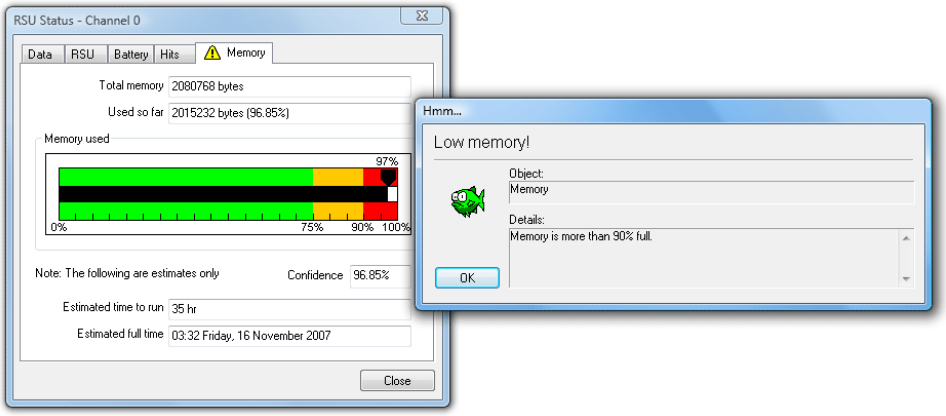
RSUs dedicate their entire memory to the current survey, and data must be unloaded onto a PC before the next setup. The RSU's Operator Guide lists an approximate hit capacity for each RSU memory size. Obviously the higher the traffic volume at a site, the shorter the survey that can be conducted. Once full, a RSU will stop logging data, and return to its idle state.

A RSU's status reports the percentage of capacity used so far, and an approximate time remaining until full. This is simply extrapolated from the amount of data logged and the Run Time (time elapsed since the RSU was setup).




**Checking memory usage**

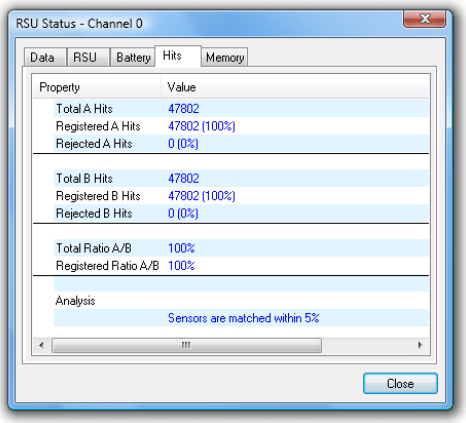
When checking a RSU's status, warning messages will be issued if the unit is more than 90% full.




**Memory usage warning message**

# Sensor Statistics

The Sensor or Hit statistics can be used as a rough guide to the quality of raw data logged by a RSU.

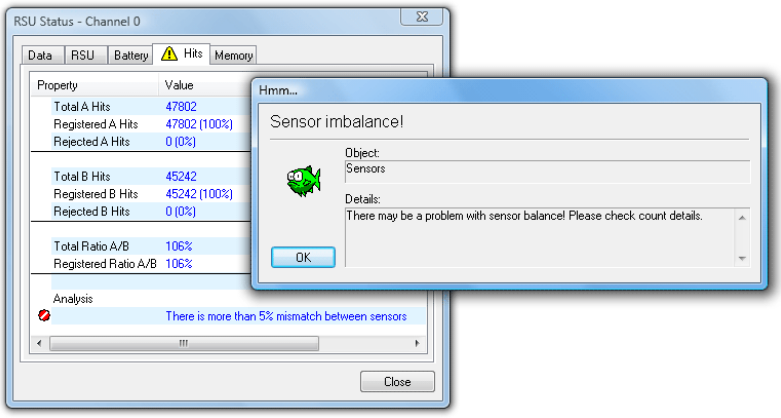



**Checking sensor hits**

| Parameter | Description |
|---|---|
| Totals | The sensor **Total** counts are the total number of hits detected by each sensor. **Registered** represents the actual number of hits stored in memory. |
| Ratios | Ratios between the number of hits on each sensor. |
| Analysis | Conclusions and warnings related to the sensor totals and ratios. Warnings will only be issued if there is at least 200 axle hits on both sensors. |

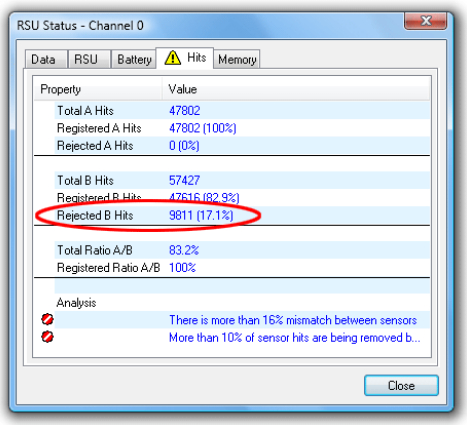
When using a Classifier Sensor Layout, a 100% match between A and B sensor hits is ideal. In reality, there will be a slight difference due to extra or missed hits.

A variation in total counts of more than 5% will give a **Sensor Imbalance** warning, highlighting a potential sensor problem at some point during the survey. The best way to examine if a problem with data quality exists is to unload the data and examine a plot of sensor hits, to determine where the mismatch occurred. For example, if a sensor problem started late in a survey, and there is sufficient usable data at the start, then the mismatch is not an issue.




**Sensor imbalance warning**

A Sensor Imbalance warning may also be triggered if more than 10% of the total hits are being removed by the debounce filter. For example, this can be caused by an incorrectly installed sensor, or vehicles traversing the sensors at an angle, giving multiple, closely-spaced hits. Again, it is simply a warning that there is something unusual about the data.




**Rejected hits warning**

# RSU Setup

## Overview

This section introduces the fundamental *software* concepts associated with setting up a RSU. For important issues relating to physically installing a RSU, refer to the *Roadside Unit Operator Guide* for the corresponding model of RSU.

Starting a RSU is an extremely simple process of describing the site via a set of **setup parameters**, and specifying a start time. For the most part, the setup parameters are purely descriptive, and do not affect RSU operation. The RSU continues logging until stopped, or filled to capacity.

For simple, infrequent surveys, RSUs can be easily configured on site. For planned surveys, **Site Lists** simplify the process even further, and minimize user error.

## Setup Parameters

### Site

The **Site** parameter is user-defined and may be up to 20 characters long. This is commonly used to represent the name or serial number assigned to the site where the RSU is placed.

The Site parameter is used as the first part of a dataset's filename when unloading data.

## Attribute

The **Attribute** parameter is user-defined and may be up to 25 characters long. This is commonly use for site coordinates, or sub-grouping sites, for example by suburb or county. The Attribute parameter can be optionally used for grouping datasets into different folders when unloading data.

## Operator

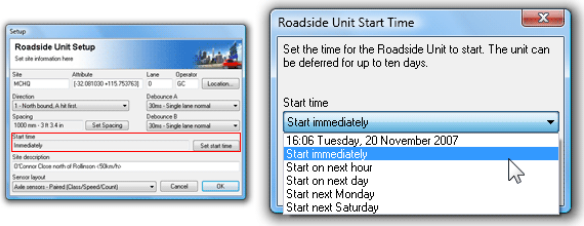
The **Operator** parameter is the initials (up to three characters) of the RSU operator's name. This is useful for identifying field operators if they need to be asked about a particular survey.

## Start Time

A RSU becomes **active** once it is setup, however the logging of sensor hits can be deferred for up to 10 days. This feature is useful for conserving memory by only logging during the specific period of interest. It is also useful when a RSU is to be setup in the office and placed in the field some time later.

Note that a survey end time is not specified. The finish time of the data is set at the point the RSU is unloaded and/or stopped. MCReport provides tools for selecting a report's period from the available data.

The default setting is to start logging immediately. To defer logging, any time in the next 10 days can be manually specified, or several automatically calculated boundaries are provided.

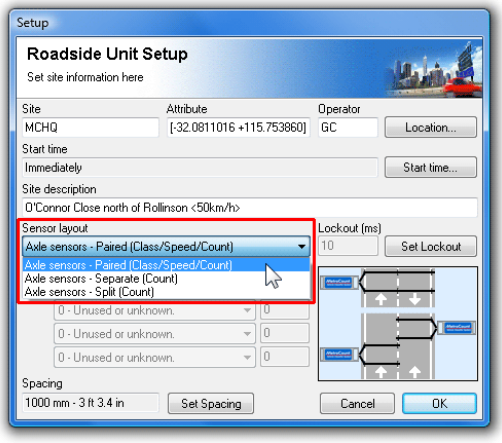



**Deferring RSU Start Time**

## Sensor Layout

### Layout Options

A RSU can be installed using a variety of **Sensor Layouts**, to obtain either classification data using a pair of sensors, or event-count data from a single sensor. The Sensor Layout *describes* the configuration of the sensors for use by MCReport during analysis - it does not affect the operation of the RSU. The options for Sensor Layout will change depending on the model of RSU connected.

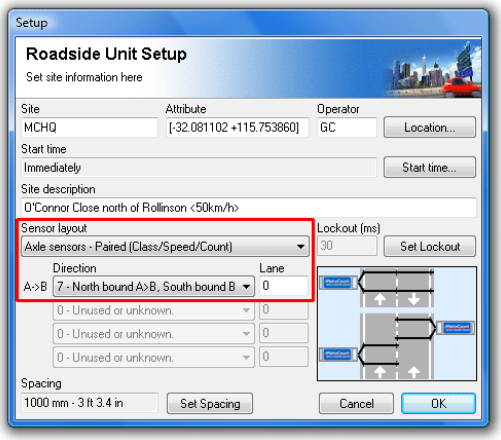



**Selecting Sensor Layout**

*Note: For Sensor Layout recommendations and limitations, refer to the Roadside Unit Operator Guide for the model of RSU.*

## Axle Sensors - Paired (Classifier Layout)

**Axle Sensors - Paired**, also referred to as a **Classifier Layout** requires a pair of parallel axle sensors (tube/hose or piezo sensors) spaced a known distance apart. This is the most commonly used sensor layout as it gives the best value-for-effort in terms of the wealth of information that can be obtained from the raw data. MCReport partitions the raw hits into vehicles, and calculates vehicle class, speed, direction, headway and so on.



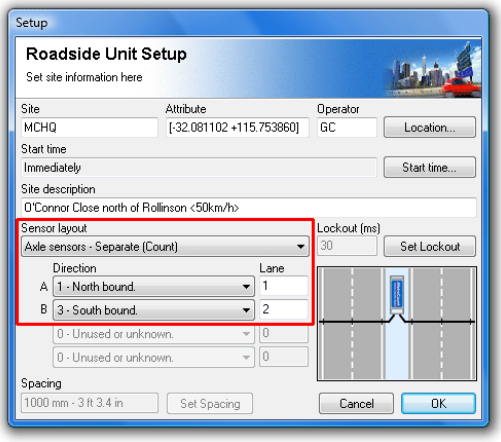

Axle Sensors - Paired

This Sensor Layout provides one **Direction** option (either unidirectional or bidirectional) and one **Lane** designator. The **Spacing** between the sensors must also be specified.

## Axle Sensors - Separate or Split (Count Layout)

The **Separate** and **Split** layouts can be used to obtain short-term counts of raw hits or events, but not classified vehicles. These layouts are useful for sites where a Classifier Layout is inappropriate, such as multiple lanes with traffic flows in the same direction.

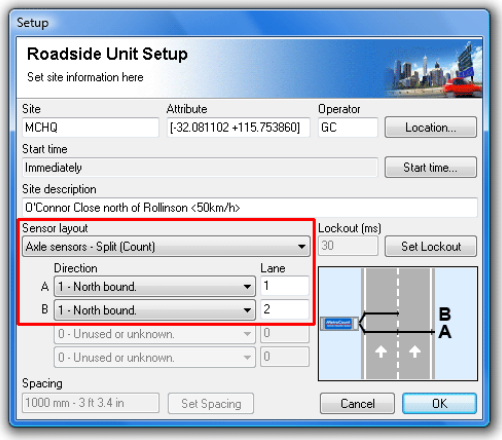
A **Separate** layout indicates the event counts on each sensor bear no relationship, such as being on opposing carriage-ways.




Axle Sensors - Separate

A **Split** layout can be used to differentiate event counts across a pair of lanes. Using a pair of sensors (one long and one short), the short sensor gives one lane, and the long minus the short gives the other lane. Using additional RSUs, this method can be extended to more than two lanes.

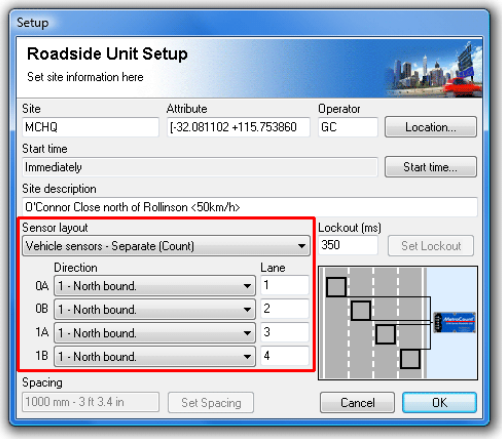
When selecting either of these layouts, a **Direction** and **Lane** number are available for both inputs.




Axle Sensors - Split

### Vehicle Sensors - Separate (Count Layout)

The **Vehicle Sensors** layout is available for RSUs with vehicle sensors (loops). The layout assumes a single sensor per lane, to provide vehicle counts. A direction and lane designator is available for each input.




Vehicle Sensors - Separate

## Site Description / Text

The **Site Description** parameter may be up to 70 characters long. It is used to identify a survey site. It is useful to settle on a convention, such as the road name and nearby intersecting roads, landmarks or sign posts.

A site's posted speed limit (PSL) can also be entered into this field. MCReport will optionally scan for a speed limit in the following form:

- Must be enclosed in angle brackets < >
- Default is km/h. Append an 'm' or 'M' for mph.
- The speed limit can appear anywhere in the description, but other angle brackets cannot be inserted when using this feature.

| Example Site Descriptions | |
|---|---|
| **km/h** | **mph** |
| Hay St <60> | <40 mph> Speed test, Euston Road |
| <60km/h> Hay Street | ACPO test, Harrow Road <40m> |
| Hay St, <50 km/h> study | Harrow Road, PSL=<40 MPH> |

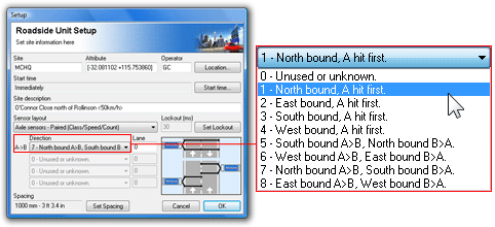
## Direction(s)

The **Direction** parameter specifies the approximate direction vehicles at the site are headed, or the overriding direction of a carriageway of a freeway or highway. Direction is specified as north, south, east or west bound, so it is simply a matter of selecting the compass point that best approximates the actual direction of travel.

For a Classifier Layout (pair of sensors), the direction a vehicle was travelling is determined by the sensor that was hit first. Vehicles travelling from A to B is known as the **primary** direction, and vehicles travelling from B to A is called the **secondary** direction.

There are eight direction codes to choose from. The first four are for single lane sites, and only the primary (A>B)

direction is specified. The second four direction codes are for bidirectional sites, and both the primary (A>B) and secondary (B>A) directions are specified.




**Direction Codes**

Remember that the direction code is a purely descriptive field, for reference during data analysis. For single lane sites, vehicles travelling in the secondary direction (for example, overtaking) will still be logged. The RSU does not filter vehicles.

When using a Count Layout, the analysis software has no concept of vehicles, so the concept of A>B and B>A is dropped. A second direction code is provided for Separate mode, when the A and B sensors can be placed independently.

## Lane

The lane number is used to distinguish data collected from multiple lanes at one site. By convention, a lane number of zero (0) is used for single-lane or bidirectional sites.

For multi-lane sites where multiple RSUs are required, each should be setup with a unique lane number starting at 1, through to a maximum of 15. When data is unloaded, the lane number is included in the file extension of the suggested dataset name. For example, the files for a multi-lane site with two RSUs can be easily recognised as having the same file name with **.ec1** and **.ec2** file extensions respectively.

A consistent numbering convention will help differentiate datasets. For example, number the lanes consecutively, start at one (1) from the west (north-south roads), or north (east-west roads).

## Lockout

For RSUs with axle-sensors, the Lockout time is used to eliminate spurious, closely-spaced sensor hits, primarily to avoid wasting data storage space. Extra hits that are actually logged will be filtered out by the data analysis software.

The **Lockout** setting specifies the time period (in milliseconds) after a logged sensor hit, for which further sensor hits will be rejected. The recommended Lockout setting are:

- 10ms if the sensor spans multiple lanes, and
- 30ms if the sensor spans a single lane.

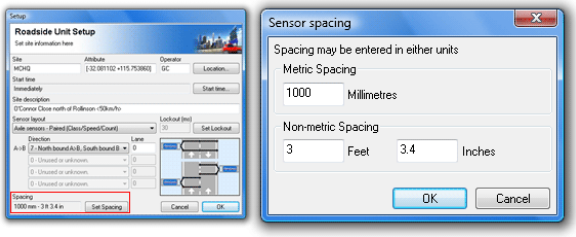
For RSUs with loop sensors, the Lockout time is used to eliminate multiple counts for long vehicles where the loop may "untrigger" mid-vehicle. The default setting is 350 milliseconds.

## Spacing

The **Spacing** parameter specifies the distance between the sensors when using a pair of sensors in a Classifier Layout. This parameter is disabled when using a Count Layout.

MCReport is optimised for a spacing of one metre (three to four feet). A longer spacing of up to three metres (or 10 feet) can be used for improved speed accuracy.

The spacing is stored by the RSU in millimetres. During setup, the spacing can be entered in either metric or non-metric units.

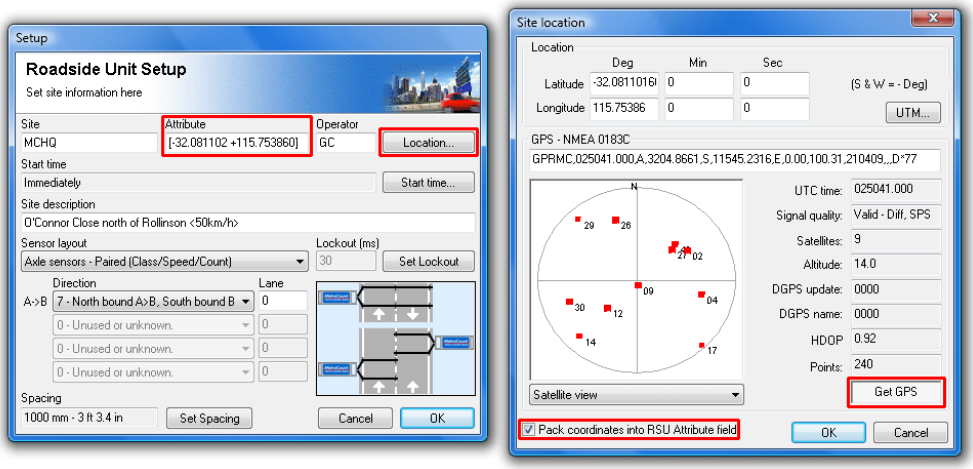



**Spacing can be entered in metric or non-metric units**

## Site Location

MCSetup provides the option to store a site's coordinates (latitude and longitude) in the **Attribute** field. Coordinates can be entered manually, or read from any serial GPS unit that supports the **NMEA 0183** data format. The serial port used by the GPS unit is set in MCSetup's Preferences. USB and Bluetooth GPS devices usually create a virtual serial

port that can be used by MCSetup, provided other GPS software it not using the port.




**Using a GPS unit to set a site's location**

MCSetup's GPS interface is accessed via the **Location** button in the Setup dialog box. The **Get GPS** button at the bottom will start taking continuous readings.

# Setup Procedure

A setup operation transfers a new set of setup parameters into the RSU's header, and sets the RSU active, effectively erasing the previous set of data.

*Note: A data protection feature prevents a RSU from being setup if the RSU has not been stopped using the normal unload procedure. If the RSU's data is not required, its status can be quickly cleared by performing a Factory Setup.*

It is good practice to check a RSU's status before and after a setup. Before, to check the unit is successfully communicating, and a final check of battery levels. After, to verify the setup was successful, and the RSU is active.

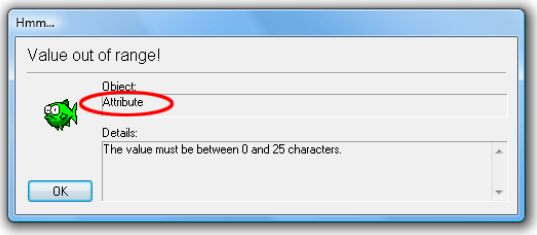
When performing a setup, the initial setup values are taken from the RSU's current header. This feature is useful when a RSU is close to or has reached full capacity, and further data is required from the same site. After the existing data has been unloaded and the RSU stopped, restarting the RSU does not require the setup parameters to be re-entered. Multiple datasets from the same site can be easily combined into a single report in MCReport.

*Note: RSU's do not have a real-time clock. The PC's time is stored in the RSU's header at setup, and the time-stamped hits are referenced from this time. Remember to check the PC's time regularly!*

## To setup a RSU

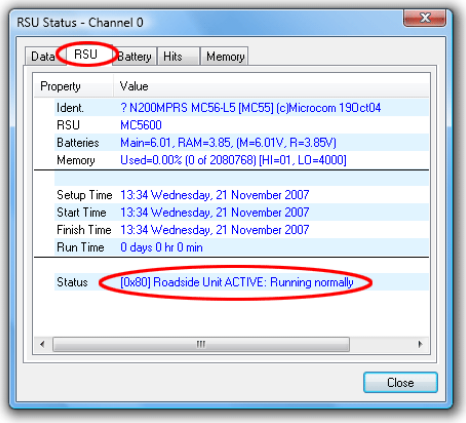
1. Connect a RSU and click the **Setup** button on MCSetup's main toolbar, or type **Ctrl + s**.
2. Fill in each of the setup parameters as described in the previous section.
3. Click the **OK** button to send the setup information to the RSU.

   Each of the setup parameters will be automatically checked before sending to the RSU. If any of the values are outside of their allowable range, a warning message will be displayed, indicating the setup parameter that is in error.




**Example setup parameter warning**

4. Check the RSU's status to confirm it is active.




**Check the RSU is active after a setup**

5. Use the Sensor View to verify sensor operation.

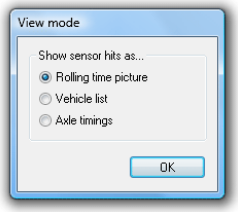
# Sensor View

## Overview

MCSetup provides several real-time views of the data being logged. The choice of view modes depends on the type of RSU connected, and the unit's current configuration and setup.

### To view sensors in real-time

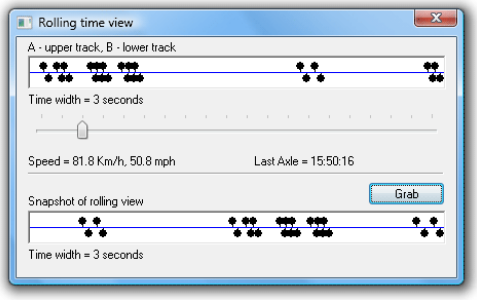
1. Setup a RSU, and click the **View** button on MCSetup's main toolbar.
2. The **View mode** dialog box will appear if more than one mode is available for the connected RSU. Select one option and click the **OK** button.




**Selecting a View Mode**

## Rolling Time View

The Rolling Time view displays a variable-width window of recently logged sensor hits. As vehicles pass over the sensors, the logged hits are displayed on the time-line at the top, providing confirmation of correct sensor installation and RSU setup.




**Rolling Time View**

When using a Classifier Layout, there should be matching A and B sensor hits for each axle. The offset between matching hits is determined by the speed and direction of the vehicle. An approximate speed is displayed for the last pair of matching hits.

The **Time width** slider bar determines how many seconds the rolling window represents. Increasing the display width will increase the number of axles visible at a time, but will decrease the resolution.

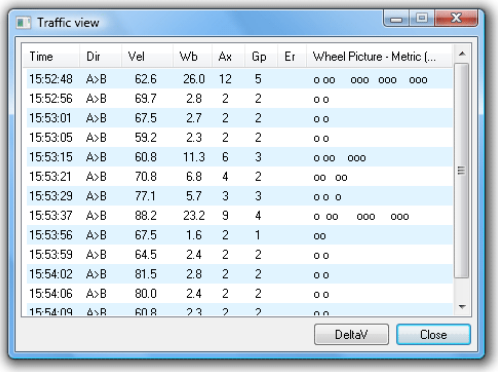
*Note:*
*The **Last axle** time is the time-stamp of the last logged sensor hit, giving the current time according to the RSU. Over the period of a survey, this time may drift from the time of the PC used to setup the RSU. If syncing manual counts at the end of a survey, remember to use the last axle time, not the PC's time.*

The **Grab** button copies the current time picture to the snapshot picture at the bottom.

## Vehicle List View

The Vehicle List mode provides a basic, on-the-fly partitioning from the immediate hit stream being logged by the RSU. It includes an array of information about each vehicle and a scaled wheel picture. The Vehicle List mode is only available when a Classifier Layout is used.

*Note: The Vehicle List mode should only be used as a rough guide. Vehicles are formed by joining hits less than a fixed time (DeltaV) apart into a vehicle. Remember that in this mode, the RSU is logging time-stamped sensor hits - not vehicles. MCReport uses a more advanced partitioning algorithm.*

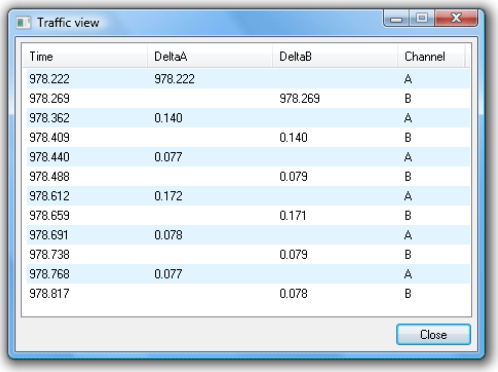



**Viewing sensor hits partitioned into vehicles**

| Parameter | Description |
|---|---|
| Time | Time of the first axle of the vehicle. |
| Direction (Dir) | Direction of the vehicle. |
| Velocity (Vel) | Speed of the vehicle. Units may be km/h or mph, depending on the selection of units in MCSetup's Preferences. |
| Wheelbase (Wb) | Wheelbase of the vehicle. Units may be metres or feet, depending on the selection of units in MCSetup's Preferences. |
| Axles (Ax) | Number of axles in the vehicle. |
| Groups (Gp) | Number of axle groupings in the vehicle. |
| Error (Er) | Error number indicating a mismatch in sensor hits. |
| Wheel Picture | Character based representation of vehicle axle groupings. |
| DeltaV | This setting is the minimum gap in the hit stream that MCSetup uses to separate vehicles. Note that this Delta-V setting does not affect the data that is being logged. |

# Axle Timing View

The Axle Timings mode displays the raw hit information that the RSU is logging. The Axle Timings mode is only available for a Classifier Sensor Layout.




**Viewing precise sensor hit timing**

| Parameter | Description |
|---|---|
| Time | Time in seconds since the RSU was setup. |
| DeltaA | Offset in seconds since the last A sensor hit. |
| DeltaB | Offset in seconds since the last B sensor hit. |
| Channel | The sensor channel that was hit. |

# Data Unload

## Overview

The Unload process transfers a RSU's header and data to a proprietary-format binary data file known as a **Dataset.** An Unload can be performed at any time, without interrupting logging. At the end of a survey, the RSU should be stopped as part of the Unload process.

*Note: Unloading data from a RSU does not erase the data from memory. All data remains until the next setup is performed, so data can be unloaded again if necessary, until the next setup.*

## Dataset Location

MCSetup uses the **Base folder for unloaded data** location specified in the Preferences to store unloaded data. MCSetup also supports automatic creation of a folder structure, based on a combination of a RSU's Site and Attribute, and the current year and month. Refer to the section **MCSetup Configuration** for details.

## Naming Conventions

When unloading data from a RSU, the dataset's filename will be automatically generated. This is based on the RSU's **Site** parameter, and the current date.

The dataset's filename need only be unique. If a file by the same name already exists, an overwrite warning will be displayed. There is no need to make the dataset filename descriptive. When browsing for datasets with MCReport, files will always be listed by their key header details.

*Note: The three character file extension is extremely important. Datasets are created with a file extension of **.ecX** where **X** is the lane number. MCReport uses this file extension to recognise MetroCount datasets. Do not change this file extension.*

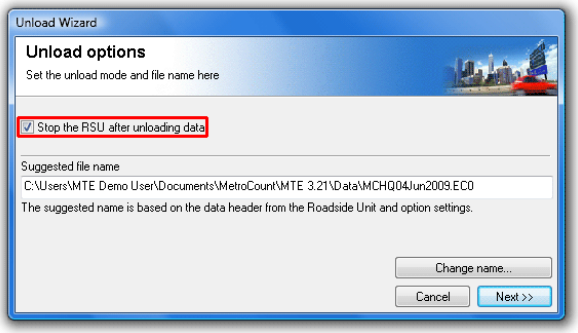
# The Unload Process

If possible, unload a RSU's data before removing from the site. This provides an opportunity to view basic data quality, and collect further data in the unlikely event of sensor failure. An Unload should complete in under 10 minutes, dependent on capacity.

## To unload data from a RSU

1. Connect a RSU, and click the **Unload** button on MCSetup's main toolbar.

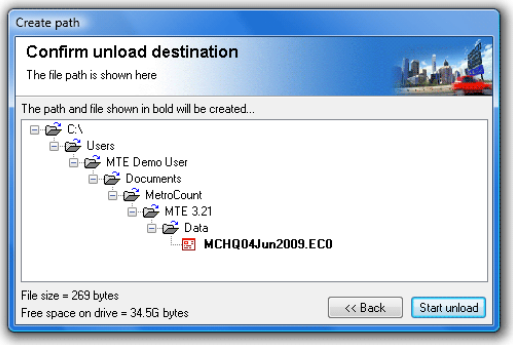
   If this is the first connection to the RSU, the "New connection" dialog will appear. A quick status check prior to an Unload is always good practice.




**Start of the Unload Wizard**

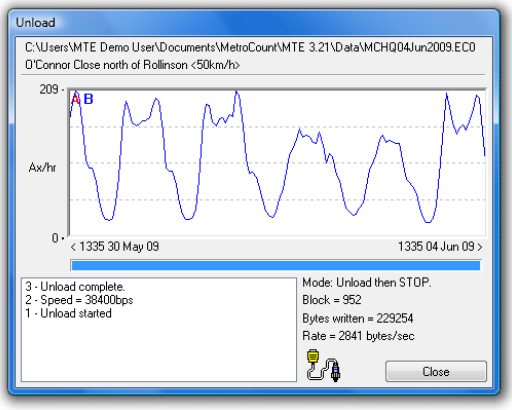
2. If this is the end of a survey, check the **Stop RSU after Unload** option.

   Upon successful completion of the Unload, the RSU will be set to its **Idle** state, ready for a new setup. With this option unchecked, logging will not be interrupted.
3. The suggested folder and file name will be as described previously. In the unlikely event that it needs to be changed, click the **Change name** button, remembering to keep the **.ecX** file extension.
4. Click the **Next** button to continue the wizard.
5. A confirmation dialog box is shown next, with any folders that will be automatically created shown in bold. Click the **Start unload** button to continue.




**Confirmation of folders and dataset to be created**

6. During the Unload, a dynamic plot of the A and B hits is displayed as the data is transferred. For ideal classification data, the A and B plots will perfectly overlay.




**Unload progress showing sensor hits**

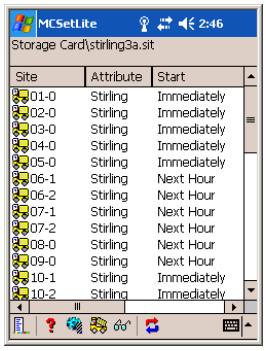
7. When the Unload is complete, click the **Close** button.

   If the option to stop the RSU was checked, use a quick status check or the RSU's status LEDs to verify the RSU is now inactive, to prevent unnecessary battery drain.

# Overview

Site Lists provide an excellent means of managing the process of collecting data. Using the familiar RSU setup dialog box, site setup information can be compiled into associated lists. Field setup then only requires connection to a RSU and selection of a site from a Site List. This removes the need for any manual entry in the field, greatly improving efficiency and accuracy of setup, especially with Pocket PCs.

Site Lists are created using MCSetup, and can be used in either MCSetLite or MCSetup. Site Lists are stored in a simple comma-delimited text file, so they can also be created and edited using a spreadsheet program.




**MCSetLite with a Site List loaded**

MCSetup supports a few advanced Site List features not supported by MCSetLite, including:

- Maps based on bitmap images, with support for common compressed bitmap images.
- Checklist feature for tracking sites that have been setup, and unloaded.
- Site List usage enforcement, to force RSUs to be setup from a Site List.

*Note:*
*A Site List window in MCSetup is split into two panes, called the **List** pane and the **Map** pane. Most Site List operations are performed by **right-clicking** in one of the panes. Each pane has a different menu.*


**Site List with map in MCSetup - note the right-click menu**

# Site List Construction

## Creating Site Lists

Newly created Site Lists are stored in the folder specified in MCSetup's Preferences. The default location is the **User \ Sites** folder located where MTE is installed.

A single Site List may contain thousands of sites, however small groups of related sites per Site List is much more practical.

### To create a new Site List

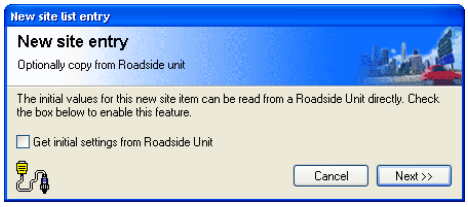
1. In MCSetup, select **File » New Site List.**
2. In the **New Site List file** box, enter a filename.
3. Click the **Save** button and an empty Site List will be displayed.
   Existing Site Lists are opened by selecting **File » Open sites.**
   When a Site List is closed, MCSetup will ask to save any changes.

## Editing Sites

Adding sites to a Site List uses the same dialog box used for RSU setup. The default setup parameters used for the new site can be copied from an existing site, or copied from the header of a RSU.

### To add a new site to a Site List

1. Right-click in a Site List's list pane, and select **New site.**
   Right-click on an existing site to use its parameters as a starting point.
2. To create a new site from a RSU that has been manually setup, check the **Get initial settings from Roadside Unit** option.



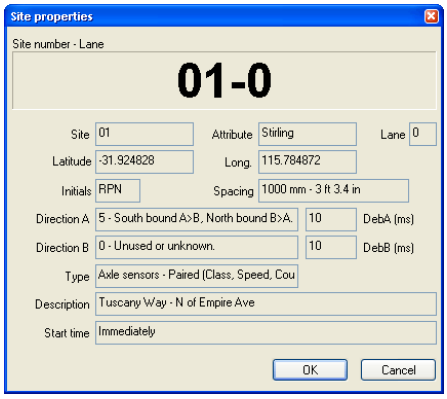

**Optionally copy setup parameters from a RSU**

3. Click the **Next** button to display the setup dialog box.
4. Enter the setup parameters per normal RSU setup.
   Start times such as **Next hour** or **Next day** will be automatically calculated at the time a RSU is setup.
5. When done, click the **OK** button.
   Again per normal setup, each parameter will be range-checked, and warnings displayed if necessary.
   The site's icon indicates the type of Sensor Layout selected.

| Icon | Description |
|---|---|
| | Site uses Classifier Layout. |
| | Site uses Count Layout. |

### To edit an existing site

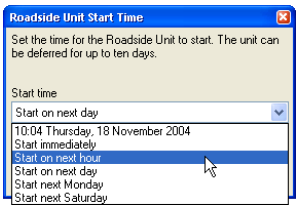
1. Right-click on an existing site, and select **Edit site.**
2. Edit as required, and click **OK.**
   To display a read-only summary of a site, simply double-click.




**Displaying all site parameters**

### To change the start time for a group of sites

1. In a Site List's list pane, **Shift** or **Ctrl** select a group of sites.
2. Right-click on one of the selected sites, and select **Set times**.
3. Confirm changing the selected sites' start time by clicking **Yes**.
4. In the **Roadside Unit Start Time** dialog box, select one of the automatically calculated start times. Remember, the actual time will not be calculated until a RSU is setup.




**Setting the start time for a group of sites**

5. Click **OK** to apply the new start times.

# Spreadsheet Editing

Site Lists' comma-separated-values **(CSV)** format has been designed to provide maximum compatibility with spreadsheet programs. Importing, editing and exporting a Site List through a spreadsheet program should be a seamless process.

The first column on each row indicates the row type. **METAMAP** and **MAP** are used for including map files, **DOC** for comments, and **SITE** for each site. For Site Lists created by MCSetup, a comment row is included above the site rows to form the column headings when imported into a spreadsheet.

```
METAMAP,perth.mpz
MAP,Churchlands.mpz
MAP,MtLawley.mpz
DOC,Site,Attrib,Init,Desc,Ln,DirA,DirB,Mode,State,Spac,StrtTm,DebA,DebB,Lat,Long,
SITE,01,Stirling,RPN,Tuscany Way - N of Empire Ave,0,5,0,0,1,1000,0,10,10,-31.924828,115.784872
SITE,02,Stirling,RPN,Tuscany Way - S of Dolomite Court,0,5,0,1,1,1000,0,10,10,-31.922364,115.786673
SITE,03,Stirling,RPN,Tuscany Way - S of Memory Place,0,5,0,2,1,1000,0,10,10,-31.920731,115.786814
```

**Site List CSV format**

Each column must adhere to the normal restrictions for that parameter. The following table is a quick-reference.

| Column | Description |
|---|---|
| Site & Attrib | Site & Attribute - maximum 20 characters. |
| Init | Operator Initials - maximum 3 characters. |
| Desc | Site Description - maximum 70 characters. |
| Ln | Lane Number - number less than 16. |
| DirA & DirB | Directions A and B - for Classifier Layout use A only and leave B as zero.<br>• 0 - Unused or unknown.<br>• 1 - North bound, A hit first.<br>• 2 - East bound, A hit first.<br>• 3 - South bound, A hit first.<br>• 4 - West bound, A hit first.<br>• 5 - South bound A>B, North bound B>A.<br>• 6 - West bound A>B, East bound B>A.<br>• 7 - North bound A>B, South bound B>A.<br>• 8 - East bound A>B, West bound B>A. |

| Column | Description |
|---|---|
| Mode | Sensor Layout<br>• 0 - Axle sensors - Paired (Class, Speed, Count)<br>• 1 - Axle sensors - Separate (Count)<br>• 2 - Axle sensors - Split (Count)<br>• 3 - Vehicle sensors - Separate (Count) |
| State | Checklist state (MCSetup only).<br>• 0 - No state.<br>• 1 - Site setup.<br>• 2 - Site unloaded.<br>• 3 - Site unloaded and stopped. |
| Spac | Spacing - must be entered in millimetres (mm). Range is 200 - 3050mm. |
| StrtTm | Start Time.<br>• 0 - Start immediately.<br>• 1 - Start next hour.<br>• 2 - Start next day.<br>• 3 - Start next Monday.<br>• 4 - Start next Saturday. |
| DebA & DebB | Debounce for A and B Sensor - in milliseconds (ms). Recommended is 30 for single lane, 10 for multiple lanes. |
| Lat & Long | Latitude and Longitude - in degrees. South and West are negative. |

# Site List Usage

## RSU Setup from a Site List

Using a Site List to setup a RSU is the same as the normal setup process, except the setup parameters are derived from the Site List, rather than manual entry.

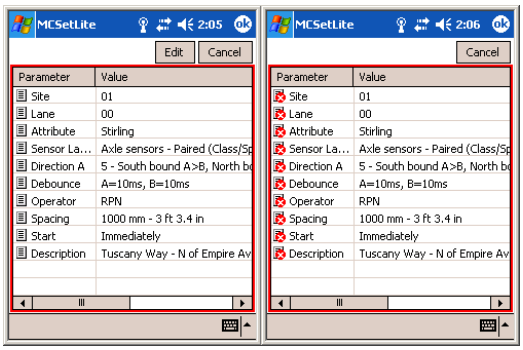
### To setup a RSU from a Site List with MCSetLite

1. Open a Site List by selecting **Tools » Open Site List** from MCSetLite's menu button. Browse for and select a Site List, and tap the **OK** button.
2. Select a site by tapping it.
3. With a RSU connected, tap the **Setup** button.
4. Tap **OK** to use the selected site. Tapping **Cancel** will proceed with a normal setup.


**Confirming Site List use**

5. The standard setup dialog box is now displayed with the setup parameters from the selected site. Edit any parameters if necessary.

   The **Lock Site List** option in MCSetLite's Preferences will prevent editing setup parameters at this point. This feature is to discourage users from changing settings away from those specified in the Site List.

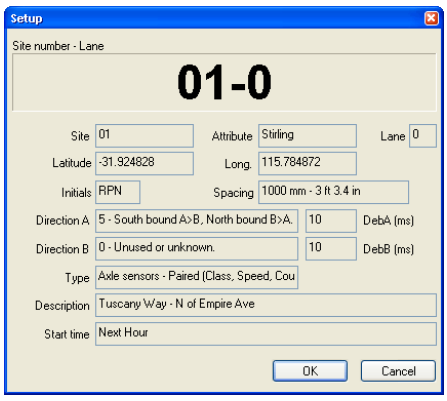



**RSU setup from Site List - normal and locked.**

6. Tap the **OK** button to proceed with the setup.
7. Check the RSU's status to confirm the setup.

### To setup a RSU from a Site List with MCSetup

1. Open a Site List by selecting **File » Open sites** . Browse for and select a Site List, and click the **Open** button. MCSetup can have more than one Site List open at the same time.
2. Select a site.
3. With a RSU connected, click the **Setup** button.
4. The selected site's setup parameters will be displayed in a read-only form. Confirm the details and click **OK** to proceed with the setup.




**Confirmation of site setup parameters**

5. Check the RSU's status to confirm the setup.

# RSU Unload from a Site List

When there is a Site List open in MCSetup, the Unload procedure is slightly different. MCSetup will retrieve the RSU's header, and attempt to match it to an item in the currently active Site List. This is to support MCSetup's Data Collection Checklist feature.

To unload data for a site that does not exist in a Site List, firstly close all open Site Lists, and then proceed with the Unload.

### To unload data using a Site List

1. Open the Site List that contains the site that the connected RSU was setup with.
2. Click the **Unload** button on MCSetup's main toolbar.
3. MCSetup will locate the site in the Site List and start the Unload procedure.

# Maps (MCSetup)

## Overview

A map in MCSetup consists of a Map File, which uses a **.mpz** file extension. This file contains a pointer to the location of the map's bitmap image, and additional information about the map, such as latitude and longitude.

A Site List can have several attached maps, with sites distributed across them. Also, a single map can be shared amongst several Site Lists.

Each Site List can also have a map designated as the Metamap. This is usually a low detail map that encompasses each of a group of smaller, high detail maps.

## Preparing Maps

Site Lists support maps in the form of bitmap images, including common compressed bitmap formats, such as JPEG. Such images can be sourced from many locations, including local street directories, or exported from a vector-based mapping system.

Suitable bitmap images should contain sufficient detail to allow sites to be placed with reasonable accuracy, based on the screen size where MCSetup will be used. Remember that multiple maps can be associated with each Site List, as well as a low-detail Metamap.

In order to use a bitmap image, the corresponding Map File must first be generated. A Map File contains a pointer to the bitmap image for the map, and the latitude and longitude of the bounding rectangle of the map. The Map File is then attached to Site Lists as required.

Note that when generating a Map File, the latitude of the top and bottom boundaries, and the longitude of the left and right boundaries of the image will be beneficial. These coordinates are used for a number of purposes:

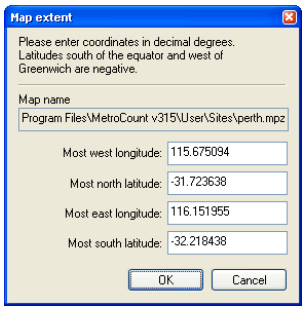
- Assigning coordinates to sites placed on a map.
- Locating sites on a map.
- Displaying the bounding rectangles of each attached map on the Metamap.
- Locating and placing sites using a GPS unit.

If the bounding coordinate information is not available, it is still possible to use maps in Site Lists, however the functionality listed above may be limited. Alternatively, for adjoining maps, simply make up coordinates that reflect the maps' relationships. This will still allow sites to be placed and located on the map.

### To generate a Map File

1. For convenience, the images to be used for maps should be copied to the Site List folder specified in MCSetup's Preferences. The default folder is the **User \ Sites** folder located where MTE is installed.
2. In MCSetup, select **File » Create map.**
3. In the **Open map image** dialog box, select an image for the new map. Note the image-type filter at the bottom. When done, click the **OK** button.
4. In the **Map extent** dialog box, enter the coordinates for the bounding lines of the map.

   Coordinates south of the equator and west of Greenwich are negative.

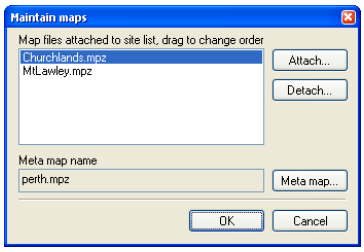



**Entering the map's bounding latitude and longitude**

5. Click the **OK** button. A Map File with the same name as the bitmap image, and a **.mpz** file extension will be created in the Site Lists folder.

## Attaching Maps to a Site List

To display maps in a Site List, the respective Map Files must first be attached to the Site List. The **Maintain maps** dialog box is used to manage the list of maps associated with a Site List.




**Attaching maps**

Note that the items in the list have a descending priority (the top of the list has the highest priority). When locating sites, if the area of two or more maps intersect, the map with the higher priority will be displayed.

### To attach maps to a Site List

1. Right-click in the list pane of a Site List, and select **Maintain maps** from the pop-up menu.
2. In the **Maintain maps** dialog box, click the **Attach** button.
3. Select one or more Map Files to attach to this Site List, and click the **OK** button.
4. Reorder the attached maps list as required by dragging the map items.

   Note that maps can be disassociated from the Site List selecting, and clicking the **Detach** button.
5. Click the **OK** button to return to the Site List.

## Navigating Maps

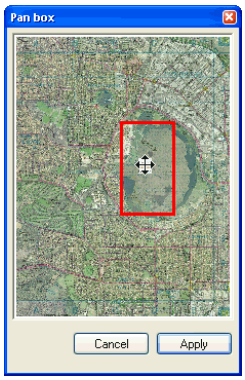
When placing sites on a map, the target map will first need to be selected from the list of attached maps, and displayed. Depending on screen size, the target map may need to panned and scrolled to locate the desired position for a site.

### To switch the displayed map

1. Right-click in the list pane of a Site List, and select **Maintain maps** from the pop-up menu.
2. Select the desired map, and click the **OK** button. The selected map will be displayed in the map pane of the Site List.

### To pan around a map

1. The **Pan box** dialog box displays a smaller version of the entire map. The rectangle indicates the area of the map currently being displayed. Click and drag this rectangle to display a new area of the map.

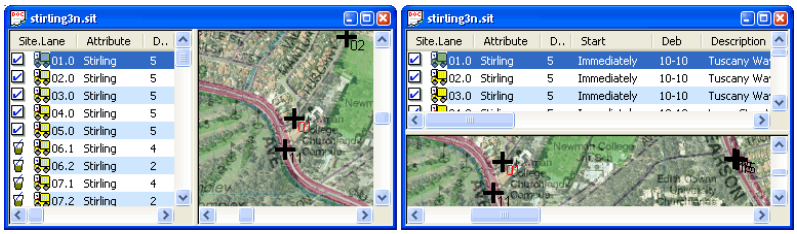



Panning around a map

2. Click the **Apply** button.

### To toggle the Site List splitter position

- Select **View » Toggle splitter.** This will toggle the orientation of the splitter bar between the list pane and the map pane.




Optionally toggle the splitter bar position

# Using the Metamap

The Metamap is intended to be a map that encompasses the other maps attached to a given Site List. When the Metamap is displayed, the bounding rectangles of each of the attached maps will be overlaid, assuming the correct coordinates have been entered for each map. Detail maps can be selected directly from the Metamap.

## To set the Metamap for a Site List

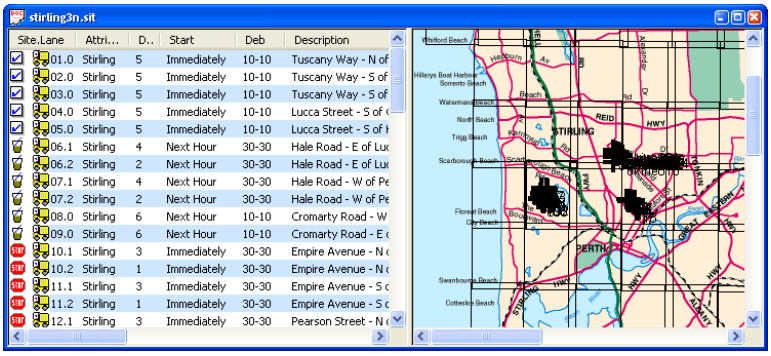
1. Right-click in the list pane of a Site List, and select **Maintain maps** from the pop-up menu.
2. In the **Maintain maps** dialog box, click the **Metamap** button.
3. Select the desired Map File, and click the **Open** button.
4. Click the **OK** button to return to the Site List.

## To display the Metamap

- Right-click in the map pane of a Site List, and select **Show metamap** from the pop-up menu. Note that if a Metamap has not been designated, this option will be unavailable.

## To select an attached map from the Metamap

- With the correct latitude and longitude entered for each map, the Metamap will contain black rectangles for the bounding area of each of the attached maps. Right-click within a rectangle, and select **Find detail map** to display that location.




**Example Metamap - the bounding rectangles are the attached maps**

# Placing Sites on a Map

Each site in a Site List has an associated latitude and longitude for placing and locating the site on a map. The location of a site can be set in a number of ways:

- Create a new site directly on a map.
- Drag an existing site onto the map.
- Manually enter a site's coordinates.
- Use a GPS unit to automatically set a site's coordinates.

Using the first two methods described above, the site's coordinates are derived from the map's bounding latitude and longitude coordinates.

Using the last two methods where the coordinates are specified, if one of the attached maps contains these coordinates, MCSetup will automatically display the site on that map.

### To create a new site on a map

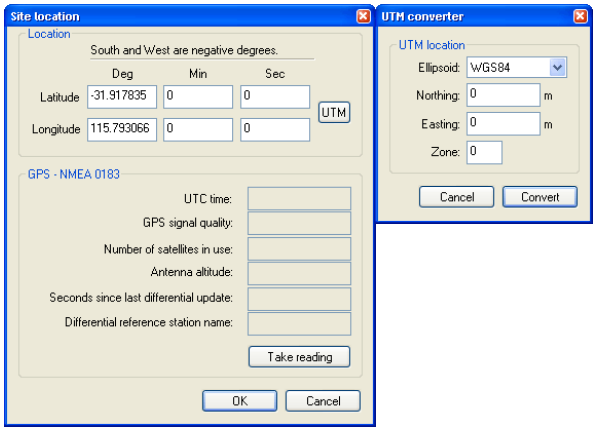
1. Display the map that will contain the new site, and scroll to the desired location.
2. Place the mouse pointer at the precise location, right-click and select **New site** from the pop-up menu.
3. Follow the usual procedure for adding a site.

### To place an existing site on a map

1. Display the map that will contain the existing site, and scroll to the desired location.
2. In the list pane, locate the site to be placed on a map.
3. Click-and-drag the site onto the map, dropping it at the precise location. Note that a group of sites can be selected and dragged to place them at the same location, such as multi-lane sites.
4. Confirm the site location by clicking the **OK** button. The selected site(s) will appear.

### To manually enter a site's coordinates

1. While creating or editing a site, click the **Location** button.
2. Enter the coordinates in the **Latitude** and **Longitude** edit boxes. To enter the coordinates using Universal Transverse Mercator, click the **UTM** button, and enter the site coordinates using Eastings, Northings and the UTM zone.




Setting the coordinates for a site

3. Click the **OK** button to update the site's coordinates.

# Locating Sites

Using a Site List's attached maps is the simplest method for locating the correct list item for a given site. Once a site has been located on a map, MCSetup can automatically select the corresponding item in the list pane, which can then be easily setup. Conversely, MCSetup can automatically display the map location for a selected site in the list pane.

### To toggle the site highlight

- Double-click a map, or right-click a map and select **Flash sites** from the pop-up menu. This will shade the map to make visually finding sites easier.

### To locate a site from a map

- Locate a site on a map, right-click on top of the site, and select **Locate site** from the pop-up menu. The corresponding site will be selected in the list pane. Note that if there are multiple sites extremely close together at the point selected, all of those sites will be selected in the list pane.

### To locate a site's location on a map

1. In the list pane of a Site List, right-click a site to be located, and select **Find on map** from the pop-up menu. If the site can be found within one of the Site List's attached maps, MCSetup will display that map with the selected site centred in the Map pane. The selected site name will also be displayed in red.
2. MCSetup will automatically enable the site highlight feature that will shade the map. If necessary, double-click the map to turn the shading off.

# Data Collection Checklist (MCSetup)

The Checklist feature provides a basic means of tracking the setup and data collection of a group of sites in MCSetup. An icon next to each site indicates the current state of the site. Initially, the Checklist icon will be blank. MCSetup will automatically change this icon when a site is setup, and then when the site has been unloaded, and ultimately stopped.

| Icon | Description |
|---|---|
|  | Site has been setup. (Survey started) |
|  | Site has been unloaded, but not stopped. (Mid-survey inspection) |
|  | Site has been unloaded and stopped. (Survey complete) |

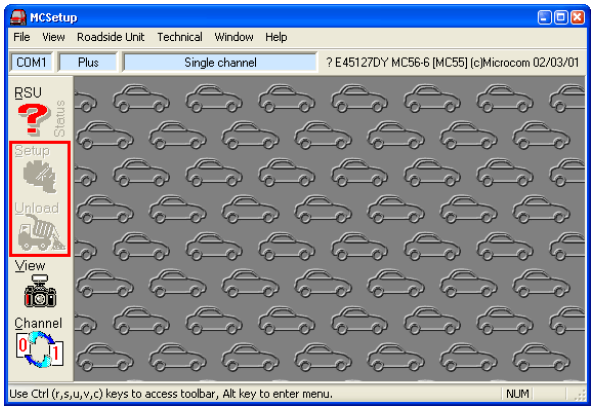
### To reset the Checklist icon for a group of sites

1. In a Site List's list pane, **Shift** or **Ctrl** select a group of sites.
2. Right-click one of the selected sites, and select **Reset states** from the pop-up menu.

# Enforce Site List (MCSetup)

The Enforce Site List feature only allows RSUs to be setup from a Site List, by disabling the **Setup** and **Unload** buttons when there is no Site List open. Enforcing the usage of a Site List ensures that a given site exists in a Site List, and that a RSU was setup adhering to that information.

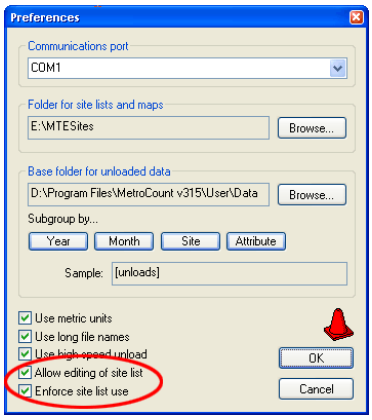
When the Enforce Site List feature is enabled, a Site List must be open to make the Setup button available. When unloading data from a RSU, MCSetup will attempt to match the RSU's header to a site in the currently active Site List. Unloading of the data will only continue if the site is found.




**Effect of the Enforce Site List feature**

A further option exists to prevent accidental editing of Site Lists. In order to change a Site List this option must be toggled.

Both options can be found in MCSetup's Preferences.




**Enforce Site List option in MCSetup**

# Overview

MCReport is the data analysis component of MTE. The power of MCReport lies in the time-stamped raw data produced by MetroCount RSUs. MCReport takes the raw sensor-hit stream stored in MetroCount data files, also known as **datasets**, and interprets the data to produce almost any conceivable report.

This section introduces the process of generating a report using the **Report Wizard**.

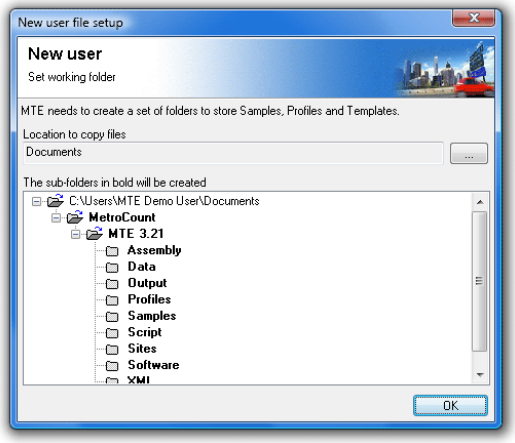
# New User Options

## Starting MCReport

MCReport has a huge array of options relating to classification, binning and filtering of vehicles, and to the formatting of reports. Most options have generic default values, however the default units of measurement and default classification scheme are highly region-specific. MCReport also requires a location to create folders for working files, such as data files, Profiles and saved reports. The first time MCReport is run after a new installation, two dialog boxes will be displayed, providing an opportunity to set these options.

### To start MCReport

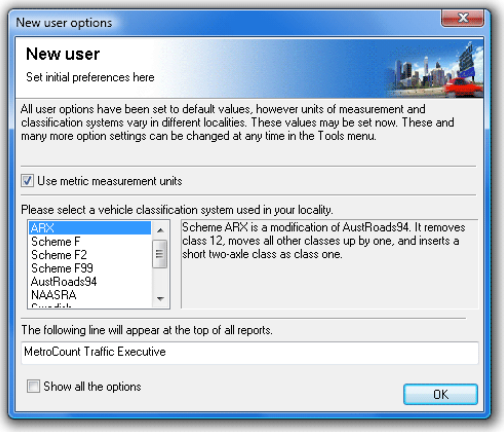
1. Run MCReport from the **Start Menu** by locating the **MetroCount v3xx** folder, and selecting **MCReport.** If this is the first time MCReport or MCSetup have been run, the **New User File Setup** dialog box will be displayed.




**Setting a working folder location**

2. MTE needs a folder location to store working files, such as MetroCount data, Profiles and templates. The default working folder location will be the current user's **Documents** folder. This is highly recommended as it is guaranteed to be accessible under all versions of Windows. To select a different folder, click the **…** button.

   Click the **OK** button, and MCReport will create the list of folders shown in the sub-folders tree, and copy a set of default working files. When copying is complete, the **New User Options** dialog box will be displayed.




**MCReport's New User Options**

3. Leave the **Use metric measurement units** option checked for metric **(km/h)**, or uncheck it for non-metric **(mph)**.

   This only affects the values in reports - MCReport always performs calculations using SI units.

4. Select a Classification Scheme from the list provided.

   The list of schemes is MCReport's built-in OEM classification schemes. A range of user-editable External Schemes can be selected from later.

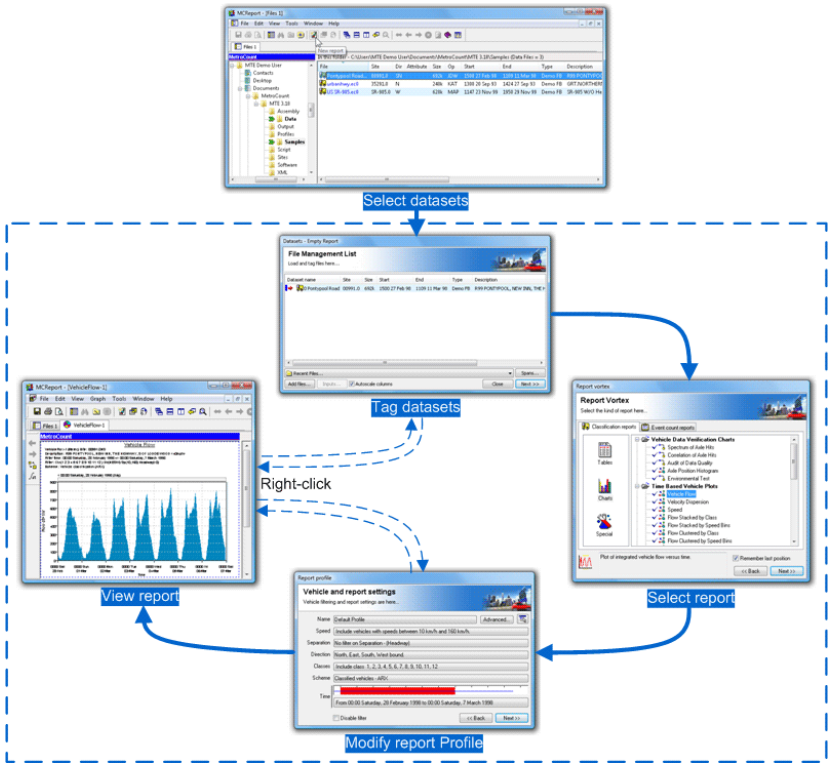
5. The final option is the Header Page text, which appears at the top of every report. A company, council or county name may be appropriate.

6. The **Show all the options** check box at the bottom will display the Default Profile after the **OK** button is clicked. Again, this can be easily accessed later.

# Generating a Report

## The Report Wizard

Generating a report with the **Report Wizard** is an incredibly simple process, illustrated by the following diagram.




**Generating a Report with the Report Wizard**

The **File Management List** is a temporary list of datasets that have been loaded, ready for analysis. Datasets can be loaded into the File Management List via MCReport's **File Tree** window, or from a list of recently used datasets. Datasets can then be selectively **tagged** for inclusion in the report being generated.

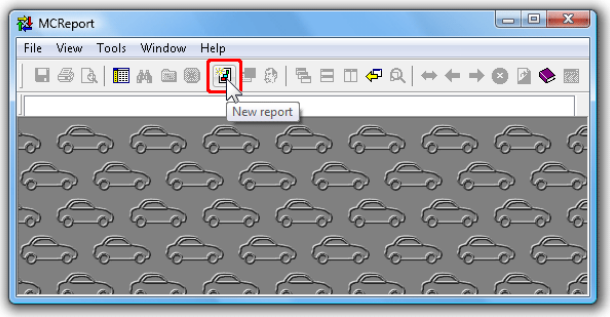
The **Report Vortex** contains the list of available reports, firstly grouped by their mode of analysis (Classification or Event Count) and then by the format of the report (Tables, Charts or Special).

A **Profile** in MCReport encompasses the set of vehicle filter, classification, statistical and formatting options for each report. When a new report is generated, a copy of MCReport's **Default Profile** is attached to the report and is referred to as the report's **Local Profile.** This is displayed as part of the Report Wizard, with the most frequently used vehicle filter settings easily accessible.

The end result is an automatically formatted report, that can be printed or saved. Note that the Local Profile, or list of tagged datasets can be easily accessed via the report's right-click menu, without repeating the entire Report Wizard. Many reports also have interactive tools for examining detail.

### To generate a report

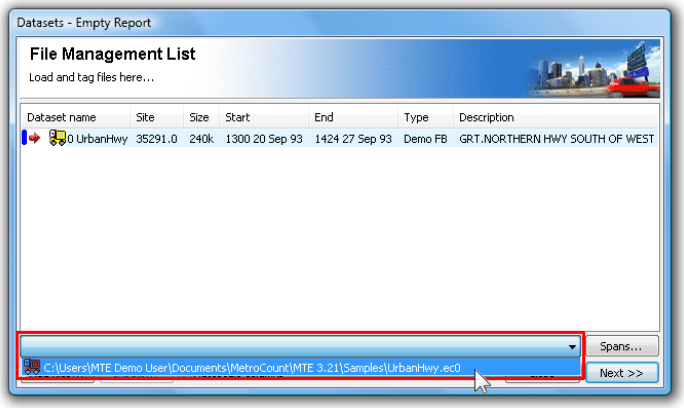
1. Start MCReport, and if necessary set the New User options as described in the previous section.
2. Click the **New Report** button on MCReport's main toolbar.




**Starting the Report Wizard**

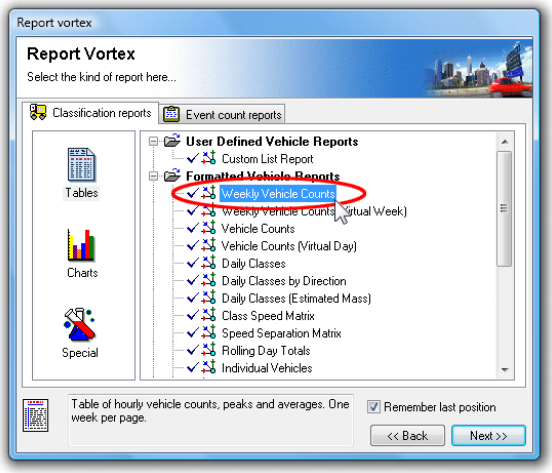
3. For this simple example, load the **urbanhwy.ec0** sample dataset that is always available in the **Recent Files** drop-down list at the bottom. Loading files using the **File Tree** is covered in the next section.

   Once the file is loaded, note the red arrow next to the dataset, indicating it is **tagged** for this report. Click the **Next** button to continue.




**Load a dataset**

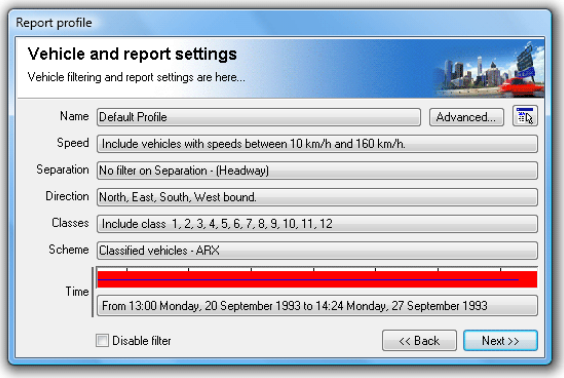
4. Select a report, such as **Weekly Vehicle Counts**, and click the **Next** button.




**Select a report**

5. The report's **Local Profile** is now displayed. Notice that each setting is a button, which will open another dialog box for editing that setting. Also note the **Advanced** button at the top, which leads to numerous, but infrequently accessed options.

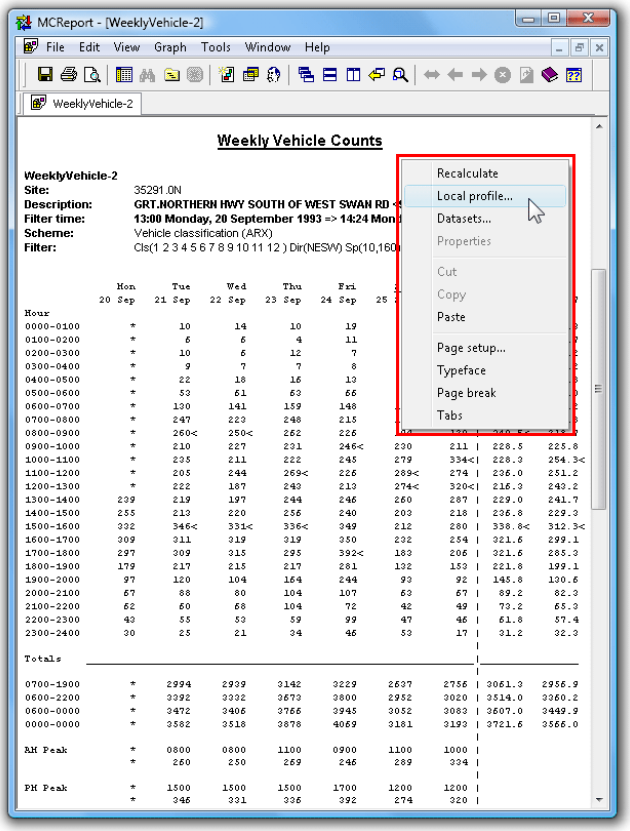
   For this example, simply accept the defaults by clicking the **Next** button.




**View Local Profile**

6. The selected report is now generated and displayed, ready to be printed or saved.

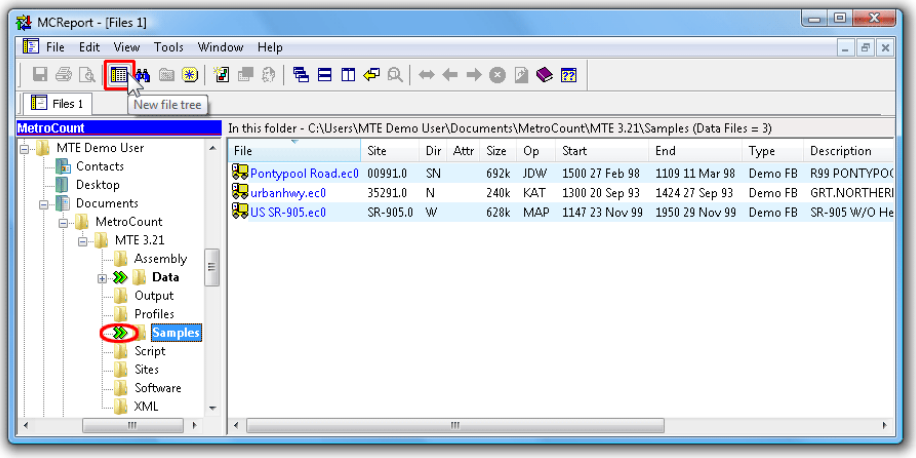
   Try right-clicking anywhere within the report, and note the options in the pop-up menu. **Local Profile** will display the report's current Profile, then recalculate. **Datasets** will display the **File Management List**, where the tagged datasets can be changed and the report regenerated.




**The generated report, showing right-click menu**

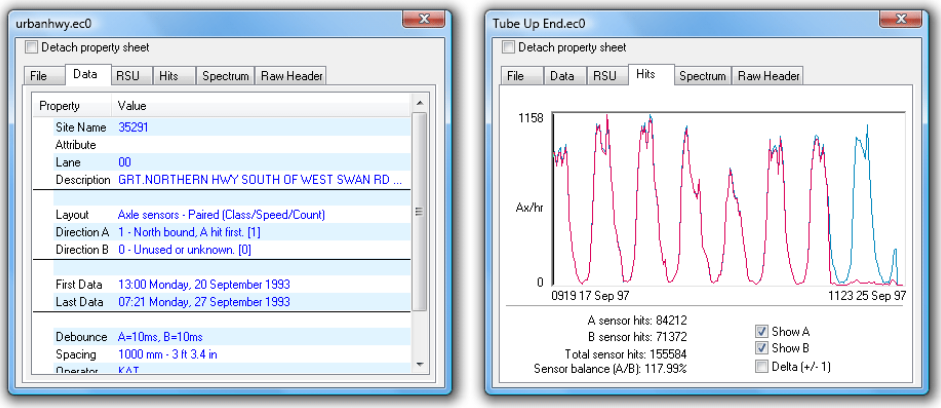
# File Tree Basics

MCReport's File Tree window is the primary tool for browsing, searching and auditing MetroCount datasets. Files are listed, and sortable, by their key header details, rather than their physical file attributes. Folders containing MetroCount datasets are marked with a special green icon in the folder tree for easy identification. The File Tree is also the best method for loading datasets into the File Management List.




**File Tree Window**

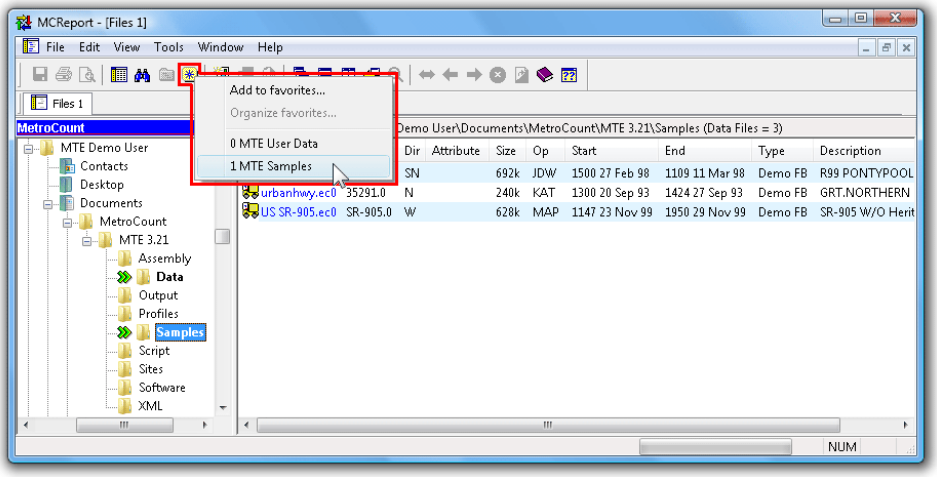
Double-clicking a dataset in the File Tree displays the dataset's header details and properties, grouped into several pages. The **Hits** page is extremely useful for rapidly assessing basic data quality.




**Dataset Properties**

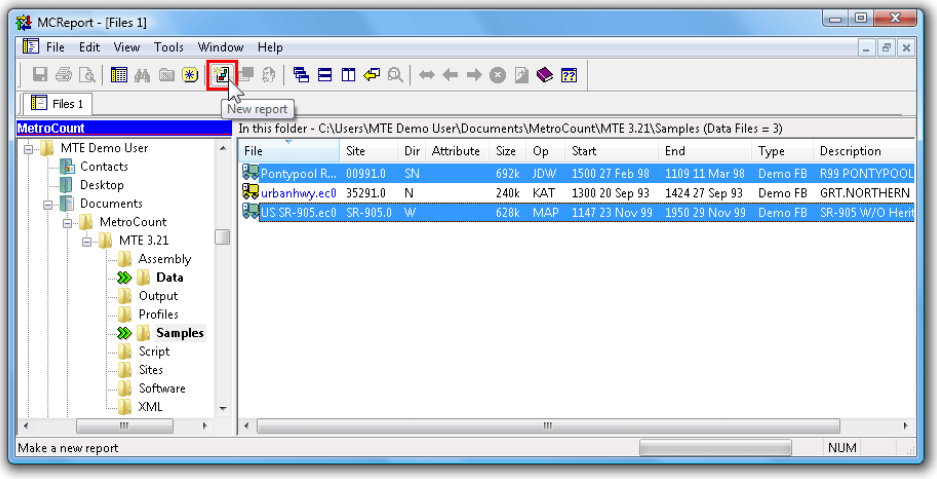
## To load files into the File Management List

1. Open a File Tree window by clicking the **New File Tree** button on MCReport's main toolbar.
2. To locate some sample datasets, click the **Favourites** button, and select **MTE Samples**. This automatically selects the **Samples** folder in MTE's working folder location.



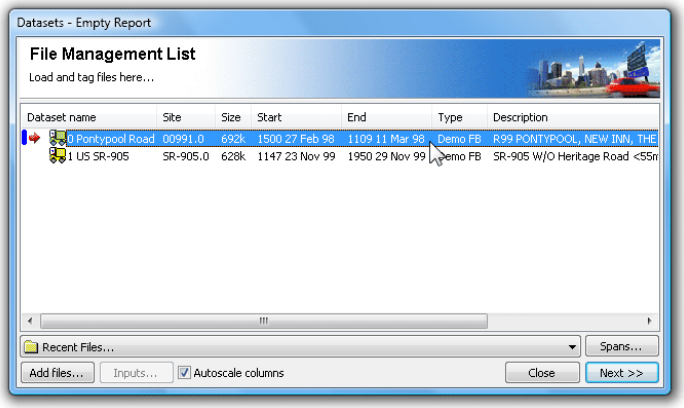

**Locating the Samples folder**

3. Select a couple of the sample files (hold down the **Ctrl** or **Shift** key to select multiple files), and click the **New report** button.




**Loading the selected files**

4. Click the **Yes** button to load the files.
5. The Report Wizard is now started, with the selected datasets loaded. Notice files are not tagged by default. Simply double-click them to tag for the next report.




**Tag files and continue the Report Wizard**

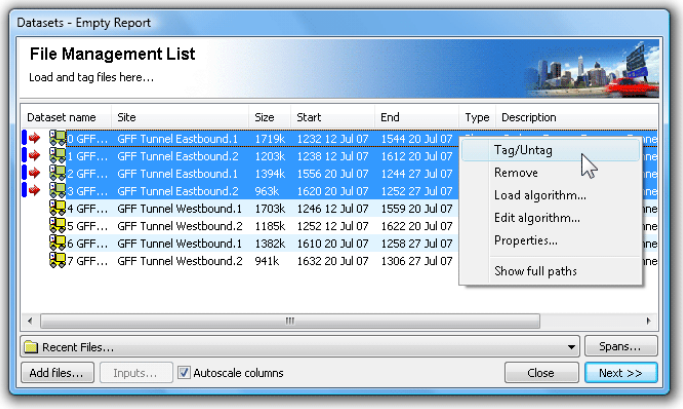
# File Management List

## Overview

The File Management List contains a list of datasets that have been loaded into memory, ready for analysis. Datasets are *tagged* for inclusion in a report, as indicated by the red arrow icon. The File Management List is displayed as part of the Report Wizard when generating a new report, or when swapping datasets on an existing report.

The File Management List is a temporary list. Loaded datasets remain in the list for the current session of MCReport, or until they are explicitly removed. The list may contain up to 16 datasets.

Most reports support tagging of multiple datasets. This may be required for combined, multi-lane analysis where a single RSU was used per lane, and for time-contiguous datasets for a single site.




**File Management List, with right-click menu**

## Adding Datasets

There are several methods for loading datasets into the File Management List:

- via the File Tree,
- using the **Recent Files** list, or
- drag-and-drop.

The File Tree is the recommended method. Selecting files in a File Tree window, then clicking the **New Report** button will load them into the File Management List, up to a maximum of 16 datasets.

The **Recent Files** list, located at the bottom of the File Management List, contains the 10 most-recently loaded datasets.

Dragging files from another application is also supported. Files must be dropped on the title bar of MCReport's main window.

# Tagging Datasets

Tagged datasets are indicated by the red arrow icon next to their file name. At least one dataset must be tagged to generate a report.

To toggle the tagged status of a dataset, simply double-click it. To toggle a group of datasets, select them, and then select **Tag/Untag** from the right-click menu.

Note that some reports do not support multiple datasets. Selecting one of these reports in the Report Vortex will display a warning, and return to the File Management List.

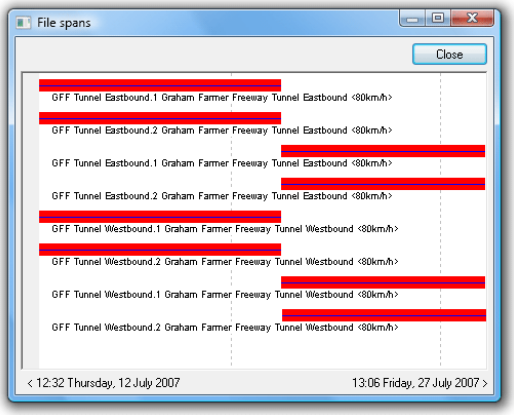
# Removing Datasets

Manually removing datasets from the File Management List is only required if the list is full. Simply select at least one dataset, right-click and select **Remove.**

A dataset can not be removed if it is tagged, or it is in use by an open report (indicated by the blue bar icon). To remove, firstly close any reports using that dataset.

# Dataset Spans

The **Spans** button in the File Management List displays a chart of the relative time-spans for the loaded datasets. The chart is scaled from the earliest start time to the last finish time, with each dataset represented by a red bar. Each dataset's blue line represents the time between the first and last sensor hits.



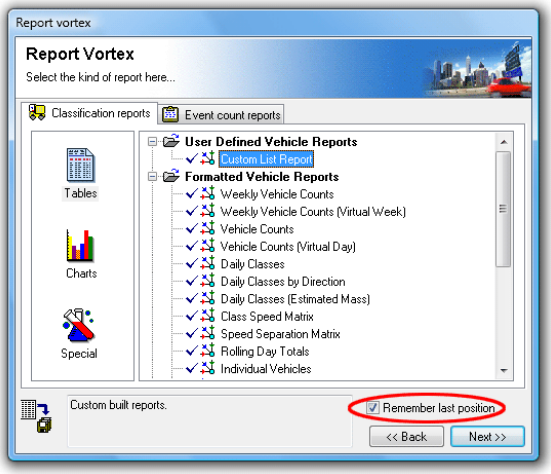

**Time-spans of datasets in the File Management List**

# Report Types

## Overview

The **Report Vortex** is the report selection stage of the Report Wizard. Reports are primarily grouped by their mode of analysis, **Classification** or **Event Count**, represented by the two pages at the top. Reports are then sub-grouped by output format:

- **Tables** - pre-formatted, paginated text reports, and continuous text reports with user-definable columns and export options.
- **Charts** - graphical reports, such as pie charts, time-based plots, dispersion plots and data-audit charts.
- **Special** - generic and "standard" report formats.




**Selecting a report**

*Note: The **Remember last position** option automatically selects the last report that was generated - useful when generating several of the same report.*

# Classification versus Event Count Reports

## Classification Analysis

Classification analysis requires datasets collected using a Classifier Layout, where the A and B axle sensors are placed in parallel and a known distance apart. From this, MCReport derives **vehicles.**

Firstly, MCReport performs the complex task of examining the raw data and partitioning groups of sensor hits into likely vehicles. This is based on a number of time and distance parameters determined by MCReport.

The next step is to determine the axle configuration of each vehicle. The first A and B hit pair in the group determines the direction of the vehicle, and the speed of the vehicle, based on the sensor spacing. From the speed, the time between the remaining hit pairs determines the spacing between axles.

The final step is to apply a classification scheme, based on the axle spacings in the vehicle. MCReport offers a choice of standard and special-purpose classification schemes, called **OEM Schemes.** Other classification schemes can be added to MCReport using user-definable **External Schemes.**

From here, the set of vehicles can be filtered, and formatted into a vast array of reports.

## Event Count Analysis

Event Count analysis treats the raw A and B sensor hits as user-selectable events - usually counts. MCReport refers to the definition of an event as the **Count Method**, which may be one of the following:

- raw counts,
- counts divided by 2,
- counts divided by a custom factor,
- gaps above a certain length (in seconds), or
- following gaps, defined as a starting gap and a following gap.

Datasets collected using a Count Layout should only be analysed using Event Count reports. Attempting to analyse this type of data as vehicles will produce meaningless results.

Classifier Layout datasets can be optionally analysed with Event Count reports. These may be useful for obtaining approximate counts for periods where one sensor has failed, or for gap analysis.

# Multi-file Reports

Most reports support inclusion of multiple datasets in a single report. This may be necessary for combining results from multi-lane sites with one RSU per lane, and for time periods spanning multiple datasets.

There is an icon next to each report in the Report Vortex, indicating multi-file support as shown in the following table.

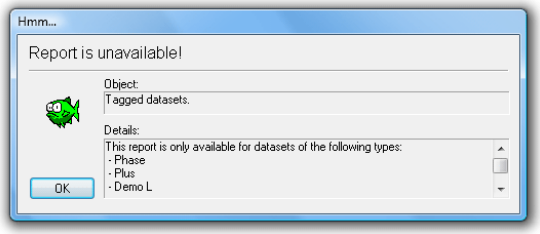
| Icon | Description |
|---|---|
| | Report supports single dataset only |
| | Report supports multiple datasets |

# Dataset Signatures

MetroCount datasets contain a digital Signature, which controls access to reports in the Report Vortex. A dataset's Signature *type* is inherited from the RSU that created it, such as **Plus**and **Regular.** The Signature type is one of the columns in both the File Tree and the File Management List.

| Icon | Description |
|---|---|
| ✓ | Report available |
| | Report unavailable due to incompatible dataset Signature type |

Reports that are unavailable due to an incompatible Signature type are indicated by a lock icon next to the report name. Selecting one of these reports and clicking the **Next** button will display a message indicating the required Signature type to use that report.



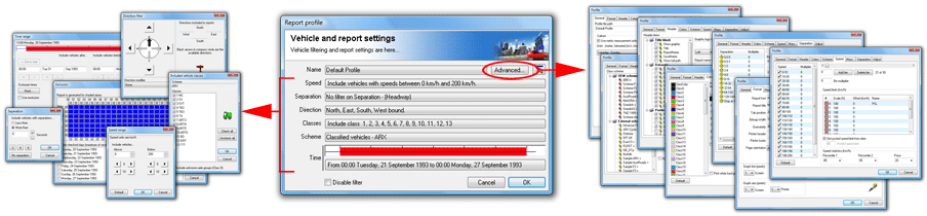

**Signature type incompatible**

When tagging multiple datasets, report availability will be determined by the lowest Signature type.

# Profiles

## Overview

A Profile in MCReport is the set of vehicle filter, classification, statistical and formatting options common to all reports. Each report has its own **Local Profile**, which is copied from the **Default Profile** when the report is generated. A report's Local Profile is presented as part of the Report Wizard, and can be accessed at any time via the report's right-click menu.



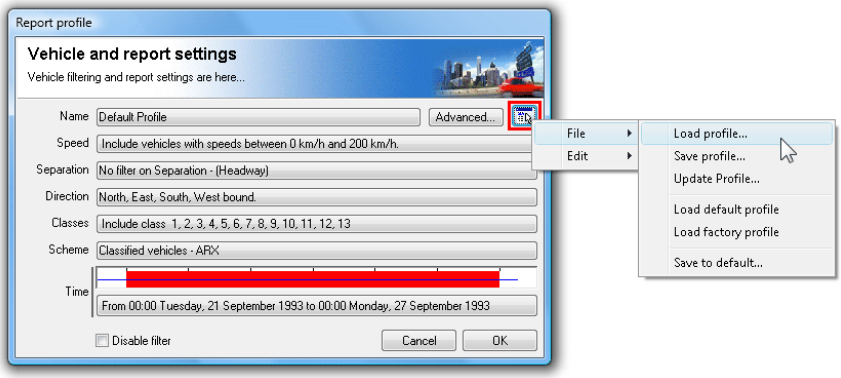
Report Profile

Profiles are designed to be only as complex as they need to be. There is an enormous amount of information that can be derived from time-stamped raw data, which means a lot of options. MCReport logically groups these options into the more frequently accessed **vehicle filter** settings on the primary page, with other options categorised under the **Advanced** options. The Advanced options tend to be those that will be set once in the Default Profile, then rarely modified.

MCReport uses a reasonable set of values for the Default Profile after a new installation. These settings are based on the classification scheme and units of measurement selected in the **New user options** when MCReport is run for the first time.

## Working with Profiles

Profiles can be saved to create a library of commonly used filters and options. Profiles can also be easily copied amongst open reports to ensure a consistent set of vehicles are included. These features are accessed via a Profile's menu button in the top right-hand corner.

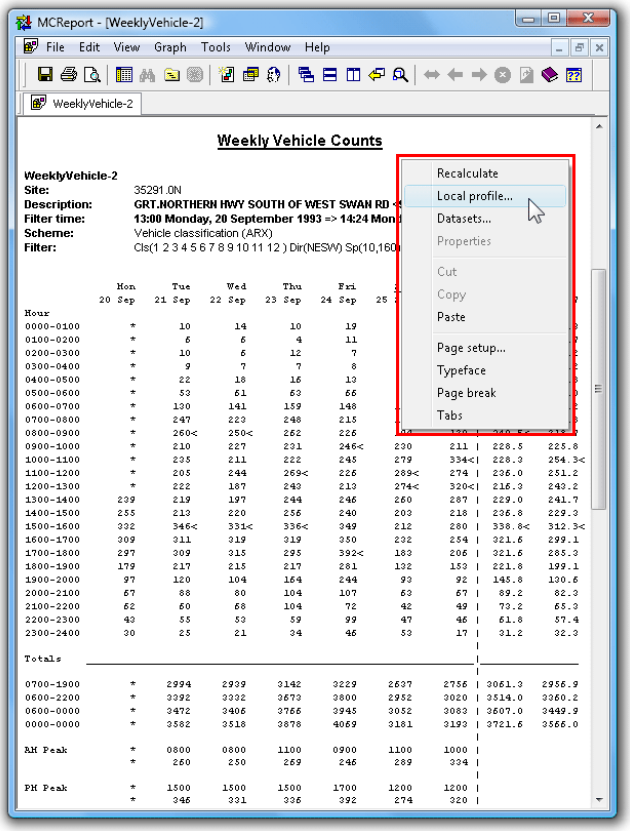



Profile menu

Saved Profiles are stored in files with a **.ini** extension, and located in the **Profiles** folder under MTE's working folder location. When a Profile is saved, all of the options are written to the file. When loading a Profile, different groups of option can be selectively loaded.

## To modify a report's Local Profile

1. Right-click on a report and select **Local Profile** from the pop-up menu.



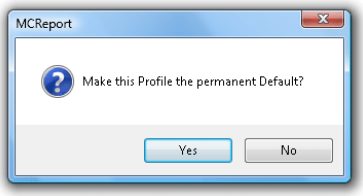

**The generated report, showing right-click menu**

2. Modify the Profile as required, and click the **OK** button. The report will be automatically regenerated.

   *Note: Regenerating a report, such as by editing the Local Profile, will lose any manual text editing.*

## To set a Profile as the Default Profile

1. Edit a report's Profile, and select **File » Save to default** from the Profile's menu button.
2. To make the current Profile the permanent default, click the **Yes** button. Clicking **No** will change the Default Profile only for the current session of MCReport.




**Permanently save changes**

### To save a Profile

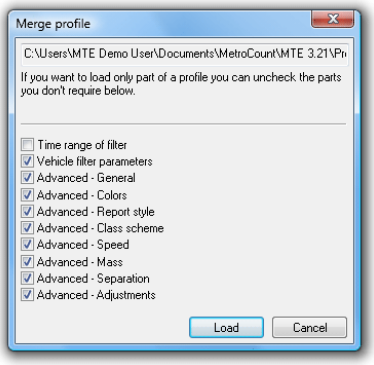
1. Edit a report's Profile.
2. Select **File » Save Profile** from the Profile's menu button.
3. Enter a descriptive file name for the Profile (the name of a Profile can optionally be displayed in the header of a report), and click the **Save** button.

### To load a Profile

1. Edit a report's Profile, and select **File » Load Profile** from the Profile's menu button.
2. Select a Profile, and click the **Load** button.
3. The **Merge Profile** dialog box lists the groups of options that can be selectively loaded.

   The default is to include all options, except the time range. This is because the start and finish times in the saved Profile are from the datasets that were tagged when the Profile was originally saved, and usually need to be ignored.

   Click the **Load** button to apply the selected options.




**Selectively loading parts of a Profile**

### To copy a Profile

1. Edit the source report's Profile, and select **Edit » Copy** from the Profile's menu button.
2. Exit the Profile by clicking the **Cancel** button.
3. Edit the target report's Profile, and select **Edit » Paste** from the Profile's menu button.

# General Features

## Report Layouts

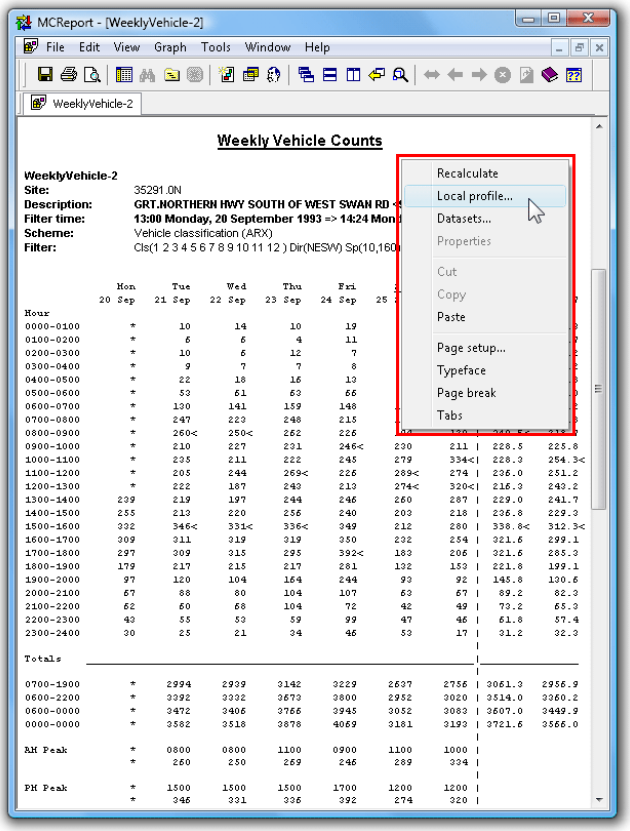
MCReport has two report layouts:

- Text reports, with completely editable contents and manual formatting options.
- Graphical reports, combining a chart and text report in a split window.

This section introduces concepts common to all reports. Concepts unique to text reports and graphical reports can be found in following sections.

## The Right-Click Menu

A report's right-click menu is one of the keys to MCReport's flexibility. Both the report's Local Profile and tagged datasets can be changed on-the-fly, without the need to regenerate the report. Reports may also have customisable options accessible via this menu.



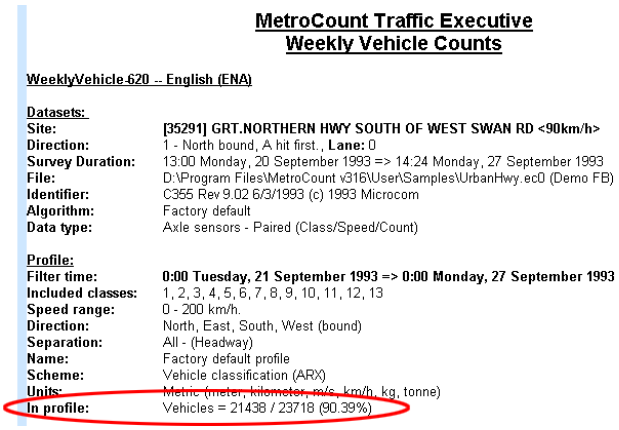

The right-click menu

Note that any changes to a report's Profile or datasets will result in the report being automatically recalculated. Any manual editing of the report will be lost.

When changing tagged datasets, remember that the report's signature and multi-file restrictions will still apply.

# Header Sheets

MCReport includes a detailed header sheet with most reports, giving essential details about the datasets and Profile used to generate the report. Reports may also include an abbreviated header at the start of the data, or the top of each page. When the details are too large to be compressed (such as when multiple datasets are included) the abbreviated header will refer to the main header sheet.



**MetroCount Traffic Executive**
**Weekly Vehicle Counts**

WeeklyVehicle-620 -- English (ENA)

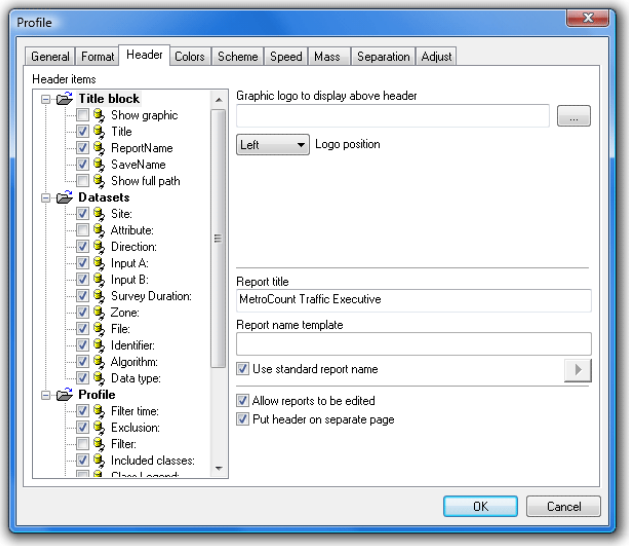
Datasets:
**Site:** [35291] GRT.NORTHERN HWY SOUTH OF WEST SWAN RD <90km/h>
**Direction:** 1 - North bound, A hit first., **Lane:** 0
**Survey Duration:** 13:00 Monday, 20 September 1993 => 14:24 Monday, 27 September 1993
**File:** D:\Program Files\MetroCount v316\User\Samples\UrbanHwy.ec0 (Demo FB)
**Identifier:** C355 Rev 9.02 6/3/1993 (c) 1993 Microcom
**Algorithm:** Factory default
**Data type:** Axle sensors - Paired (Class/Speed/Count)

Profile:
**Filter time:** 0:00 Tuesday, 21 September 1993 => 0:00 Monday, 27 September 1993
**Included classes:** 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
**Speed range:** 0 - 200 km/h.
**Direction:** North, East, South, West (bound)
**Separation:** All - (Headway)
**Name:** Factory default profile
**Scheme:** Vehicle classification (ARX)
**Units:** Metric (meter, kilometer, m/s, km/h, kg, tonne)
**In profile:** Vehicles = 21438 / 23718 (90.39%)

**Sample header sheet**

The **In Profile** line is the number of vehicles or events included in the calculations of a report, versus the total number of vehicles or events available in the tagged datasets. This is extremely useful for highlighting the effect of vehicle filter settings, especially when a large percentage of excluded vehicles is unexpected. Note that for sequentially generated reports such as the Individual Vehicle or Custom List reports, the **In Profile** line appears at the end of the report.

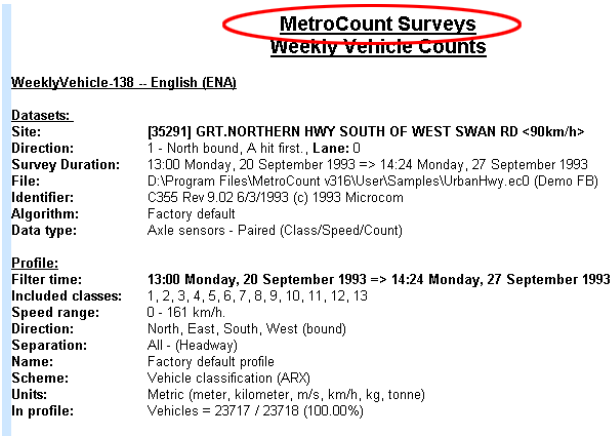
The fields included in a report's header sheet can be selected in the **Header items** tree in the **Header** page of the Advanced Profile options.




**Changing the Header Sheet format**

The header sheet includes an invisible page break to ensure the report data starts on a new page. To turn this off, toggle the **Put header on separate page** option.

The first line of the header sheet title can be changed via the **Report title** option. This is commonly set to the name of a company, council or county.



MetroCount Surveys
Weekly Vehicle Counts

WeeklyVehicle-138 -- English (ENA)

Datasets:

| | |
|---|---|
| **Site:** | **[35291] GRT.NORTHERN HWY SOUTH OF WEST SWAN RD <90km/h>** |
| **Direction:** | 1 - North bound, A hit first., **Lane:** 0 |
| **Survey Duration:** | 13:00 Monday, 20 September 1993 => 14:24 Monday, 27 September 1993 |
| **File:** | D:\Program Files\MetroCount v316\User\Samples\UrbanHwy.ec0 (Demo FB) |
| **Identifier:** | C355 Rev 9.02 6/3/1993 (c) 1993 Microcom |
| **Algorithm:** | Factory default |
| **Data type:** | Axle sensors - Paired (Class/Speed/Count) |

Profile:

| | |
|---|---|
| **Filter time:** | **13:00 Monday, 20 September 1993 => 14:24 Monday, 27 September 1993** |
| **Included classes:** | 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 |
| **Speed range:** | 0 - 161 km/h. |
| **Direction:** | North, East, South, West (bound) |
| **Separation:** | All - (Headway) |
| **Name:** | Factory default profile |
| **Scheme:** | Vehicle classification (ARX) |
| **Units:** | Metric (meter, kilometer, m/s, km/h, kg, tonne) |
| **In profile:** | Vehicles = 23717 / 23718 (100.00%) |

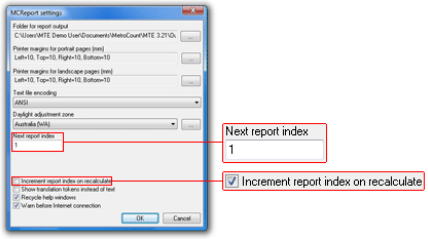
**Changing the Header Sheet title**

A company logo can also be added to the top of the Header Sheet in the form of a bitmap image. This is specified in the **Graphic logo to display above header** option, and enabled with the **Show graphic** option in the **Header items** tree.

The tab position between header sheet labels and data is adjustable, to cater for changes in font size. Simply right-click in a report and select **Tabs**, then click the mouse at the desired location. This can also be set using the **Tab Position** option in the **Format** page of a report's Advanced Profile options.

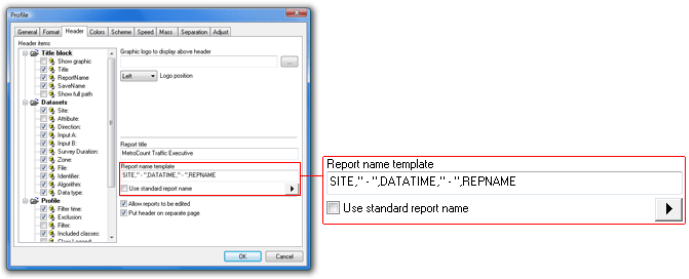
# Report Name

Each report generated by MCReport has a unique Report Name, which appears in the report's title bar and header details, and is the suggested filename when saving reports. By default this is a combination of an abbreviation of the report type, and an incrementing serial number, such as **WeeklyVehicle-1.** The report serial number can be reset at any point by selecting **Tools » Settings** from MCReport's main menu, and changing the **Next report index** option. The **Increment report index on recalculate** option causes the serial number to increment whenever a report is recalculated, such as editing a report's Profile or tagged datasets.




**Changing report serial number options**

The format of the Report Name can be changed in the **Header** page of the Advanced Profile options. Unchecking the **Use standard report name** option enables the **Report name template.** This is a comma separated list of fields, which can be selected from the menu button next to the template. Fixed strings can be added inside double-quotes. The incrementing report serial number will be automatically appended to the end of the generated name.



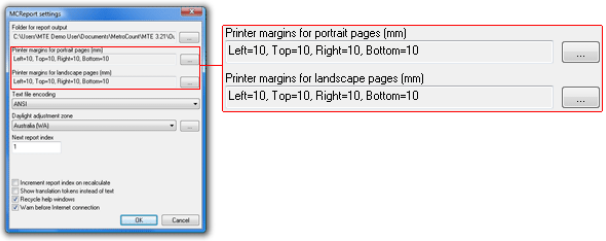

**Changing the report name format**

# Page Setup

MCReport uses the page size of the currently selected printer to generate reports. The page orientation (portrait or landscape) is automatically selected based on the type of report being generated.

The automatic page orientation can be overridden at any time by using the **Page orientation** option in **Format** page of a report's Advanced Profile options.

The default page margins are set in MCReport's Global Settings, accessed by selecting **Tools » Settings** from MCReport's main menu. Margins may be set independently for portrait and landscape pages. Existing reports will need to be recalculated for the global page margins to take effect.




**Setting default page margins**

Page margins may also be set locally in a report, by right-clicking a report and selecting **Page setup**.

# Report Header / Footer

The default page header of reports includes the Report Name and page number, right-aligned.

The **Format** page of a report's Advanced Profile options includes a **Printer header** and **Printer footer** option for adding a single line of left-aligned text to the top and bottom of each page.

The tokens **<DATE>** and **<TIME>** may be used to insert the current date and time. The operating system's current long date and time format will be used.

# Text Reports

## Editing

All text reports have fundamental word-processing properties:

- Text is completely editable.
- Fonts and colours may be changed.
- Objects, such as images can be inserted.
- Text can be copied into other programs.

The font used in a report can be set via the **Report font** option in the **Format** page of the report's Advanced Profile options. MCReport uses a non-proportional font (such as Courier) to construct columns in tables, so they will be unaffected by this option.

Font and colour can be changed locally in a report by selecting a block of text, right-clicking and selecting **Typeface** from the pop-up menu. This is useful for manually highlighting certain figures in a report.

The normal view of a report is a continuous stream of text. MCReport automatically inserts hidden page break characters at appropriate places, such as the end of the Header Sheet. Manual page breaks may be inserted into a report at the cursor, by right-clicking and selecting **Page break** from the pop-up menu. Use the Print Preview to view how a report will be paginated when printed.

*Note: Remember that any manual editing of a report will be lost when a report is recalculated. A report is automatically recalculated when any changes are made to the report's Local Profile or tagged datasets.*

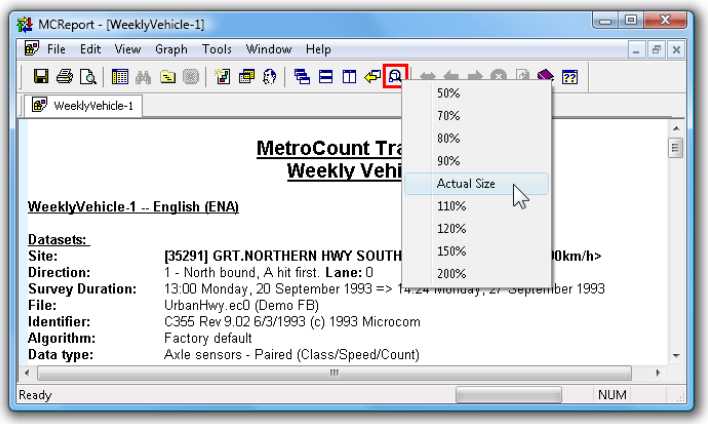
## Saving

Text reports can be saved by selecting **File » Save report as** from MCReport's main menu. Reports can be saved in Rich Text Format (RTF), which includes all the font and formatting information, or plain text (TXT).

The **Save file** dialog always defaults to the **Folder for report output** option in MCReport's Global Settings, accessible by selecting **Tools » Settings** from MCReport's main menu.

# Zooming

Text reports can be zoomed on-screen, without affecting the actual font size or printed output. Simply click the **Zoom** button on MCReport's main toolbar, and select the desired zoom level. Note that only a zoom level of **Actual Size** will display a page outline. For a true indication of printed output, use the Print Preview.

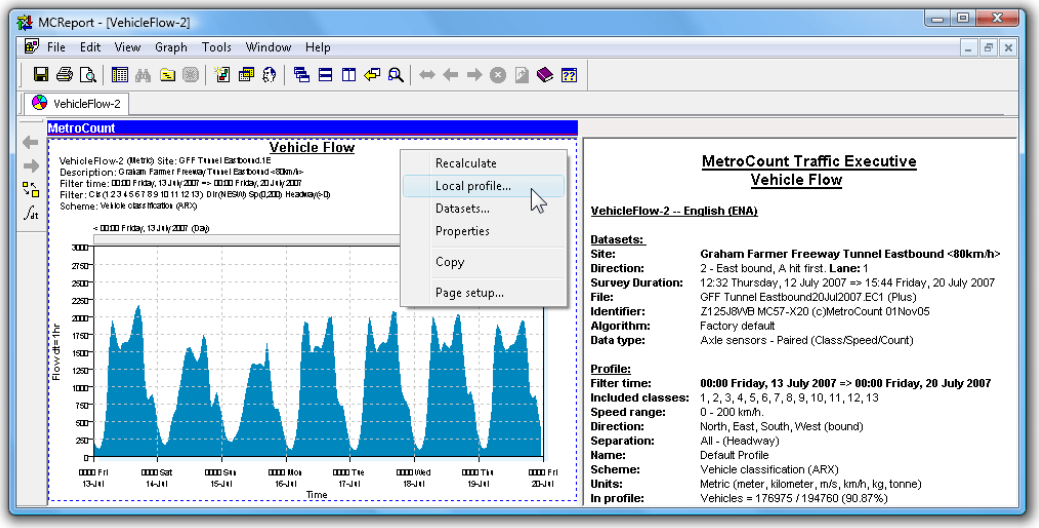



Zooming a text report

# Graphical Reports

## Split Window

MCReport displays charts and graphs in a unique dual-pane window, with a chart in one pane, and a text report in the other. For reports grouped into the **Charts** category in the Report Vortex, the chart is presented on the left, with the report's Header Sheet on the right. The Custom List report presents a chart on the right.




**Split-window graphical report**

The left pane is always the primary pane. Its right-click menu contains access to the Local Profile, included datasets, and report properties. The secondary pane's right-click menu contains the other usual functions.

The blue MetroCount bar at the top indicates the currently active pane. Certain functions, such as zooming, can relate to either pane, so only the active pane will be affected. A pane is made active by clicking anywhere within its region.

## Zooming

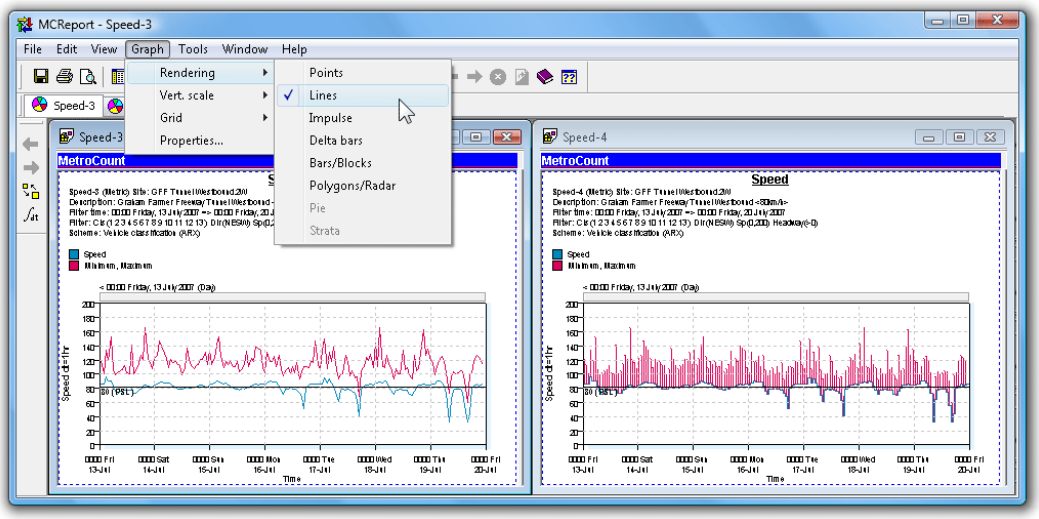
The default zoom level for a graphical report is fit-to-window, which will maximise the size of the graph for its pane. Moving the splitter bar to one side will dedicate the entire window to the graph.

The zoom level may also be set to a fixed percentage. For values larger than 100%, the scroll bars can be used to move around the report.

For finer resolution in the data itself without changing the size of the report, consider changing the Display Span or Integration Time.

# Rendering

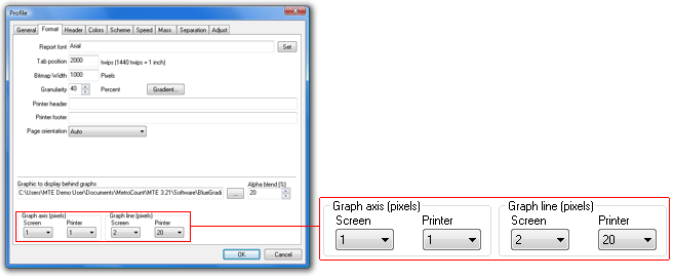
Many of the graphical reports have multiple rendering options. Reports generally default to the most appropriate rendering option, however experimenting with the available options may give better results for a given application.




**Same report showing different renderings**

To change the rendering of a graphical report, activate its pane, and select **Graph » Rendering** from MCReport's main menu. The available rendering options will vary depending on the type of report.

The line-thickness used to draw a graph can also be changed in the **Format** page of the Advanced Profile options. Thickness can be set independently for on-screen viewing and printing. In general, one-pixel thickness is fine for on-screen viewing, however thicker lines may be required for the higher resolution of printers.



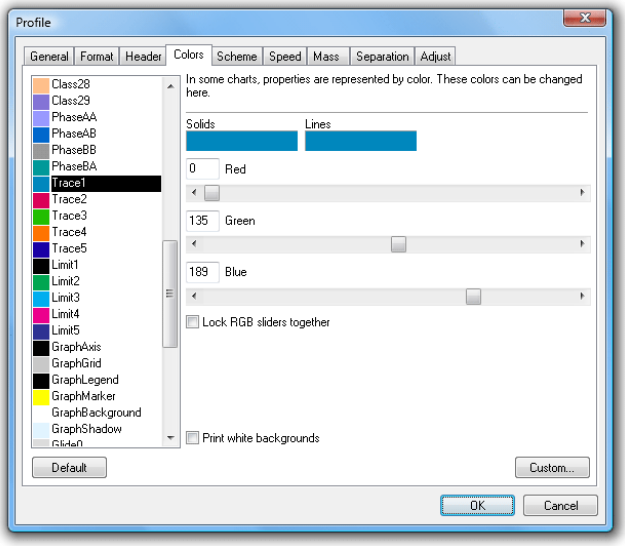

**Changing graph line thickness**

# Colours

Almost every colour used in a graphical report can be customised via the **Colours** page of the Advanced Profile options. To change a colour, select it from the list on the left, and use the red, green and blue sliders. The **Custom** button will display the standard Windows colour-picker.

The general groups of colours are:

- Class - used for class and speed bins.
- Trace - primary colours used by most reports.
- Limit - used for horizontal markers such as speed limits, and vertical markers such as percentiles.
- Glide - used by density plots.
- Phase - used by Phase reports.




**Customising report colours**

# Vertical Scale

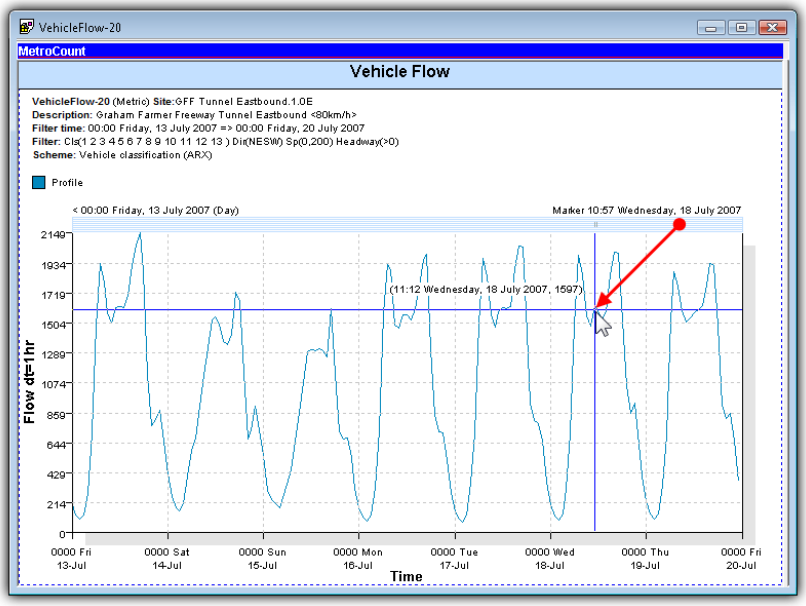
There are several options for calculating the vertical scale of a graph. Graphical reports default to the most appropriate method for the type of report. An appropriate number of tick-marks will be automatically selected.

To change the vertical scale of a graphical report, activate its pane, and select **Graph » Vert. Scale** from MCReport's main menu. The available options will vary depending on the type of report.

| Option | Description |
|---|---|
| Auto | Maximum value of the y-axis will be set to the peak data value. |
| Integer power | Maximum value of the y-axis will be set to the next integer power above the peak data value. For example, for a peak of 390, the maximum y-axis value will be 400. For 8421, the maximum y-axis value will be 9000, and so on. |
| 125 power | Maximum value of the y-axis will be set to the next 1, 2 or 5 integer power above the peak data value. That is, 1, 2, 5, 10, 20, 50, 100, 200, 500, and so on. |
| Custom | A dialog box will be displayed, where the y-axis minimum and maximum values can be entered. |

# Crosshairs and Markers

Time-based plots can be inspected with a pair of crosshairs to examine points of interest. The crosshairs are activated by clicking on the grey bar at the top of the report grid, and dragging across the report. As the crosshairs are moved, the current coordinates are displayed next to the pointer.



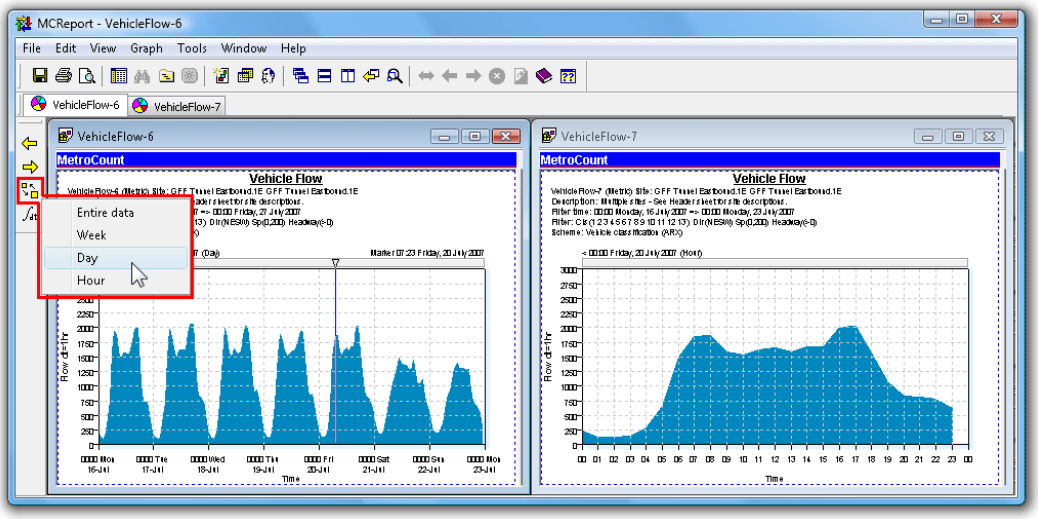

**Using the crosshairs on a graphical report**

The crosshairs are also used to place a marker on the graph. When the mouse button is released, a vertical marker will be placed at that point. The location of the marker is specified on the top right of the graph. The marker is primarily used for changing the Display Span of a graph.

To clear the marker, simply double-click the grey bar at the top.

# Display Span

The Display Span is the subset of the available data currently shown by a time-based plot. By default, time-based plots are scaled to display the entire data time span. The Display Span may also be changed to a week, day, or hour.




**Example of Display Span set to a week, and a day, for the same report**

Changing the Display Span requires a marker to be placed at the point on a graph where the new Display Span will start. The new Display Span will actually start on the boundary to the left of the marker. So, for either a week or a day, the marker can be placed anywhere in the day where the new Display Span is required to start. For an hour, the marker may be placed anywhere within the desired hour.

Once the marker has been placed, the desired Display Span can be selected by clicking the **Span** button on MCReport's graph toolbar, and selecting from the pop-up menu. The new Display Span will automatically appear. To step backwards and forwards through the data at intervals of the Display Span, use the **Back** and **Forward** buttons also on the graph toolbar.

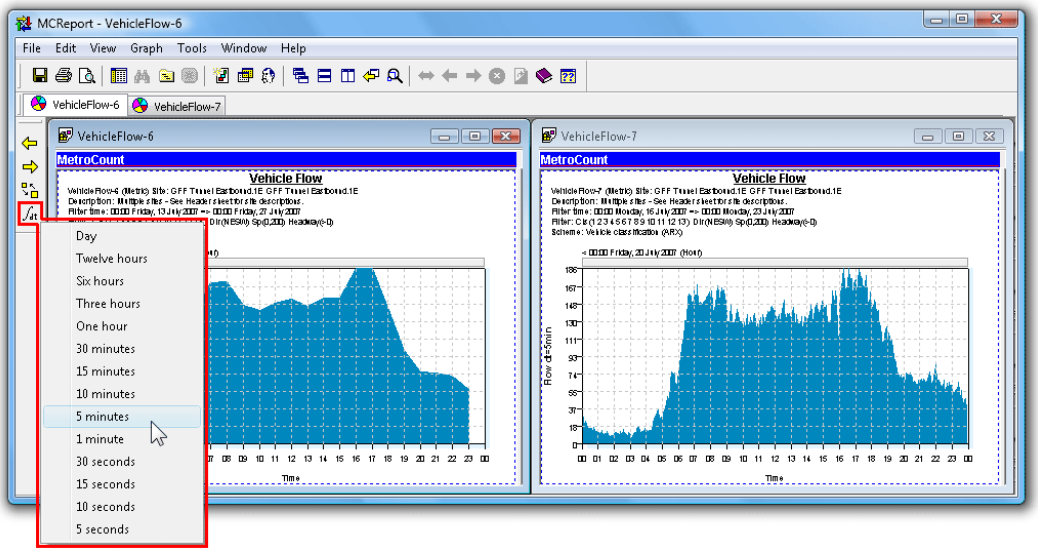
The Display Span can be set to start precisely at the marker location by holding down the **Ctrl** key when selecting the Display Span from the graph toolbar. Note that this may result in odd times for the tick marks on the x-axis. To set the marker with greater precision, hold down the **Ctrl** key when dragging the crosshairs.

# Integration Time

The Integration Time of a time-based plot determines the period of data used to calculate a point on the graph. For

example, a Vehicle Flow graph with an Integration Time of one hour will place one point per hour of total vehicles.

The Integration Time is closely related to the Display Span. For instance, with a Display Span of a day, an Integration Time of an hour will give 24 points on the graph. An Integration Time of 10 minutes on the same Display Span will give 144 points, showing much more detail.



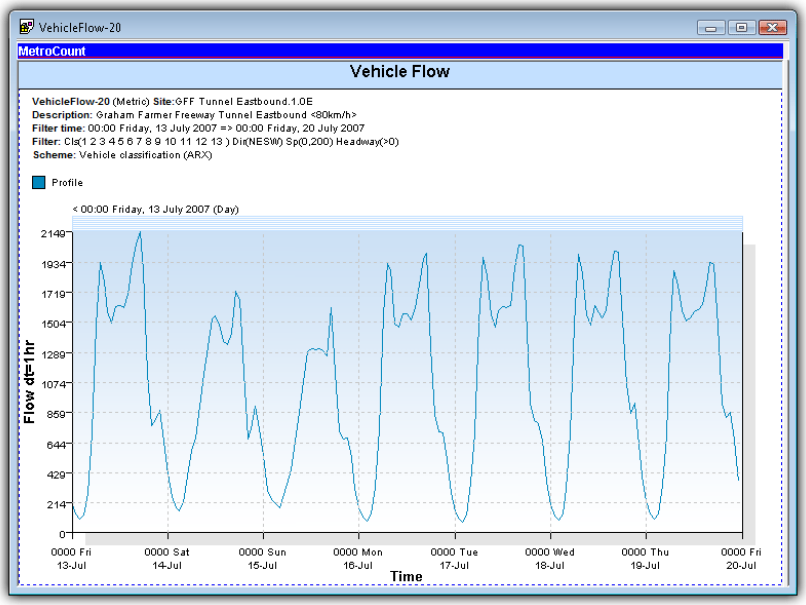

**Example of smaller integration time providing more resolution**

The Integration Time for a time-based plot can be changed by clicking on the **Integration Time** button on MCReport's graph toolbar, and selecting from the pop-up menu. The graph will automatically redraw with the new Integration Time.

Note that when using a smaller Integration Time the vertical size of the graph will change since fewer vehicles are integrated into each point. Also, selecting a small Integration Time relative to the Display Span may result in an unreasonable number of points to be plotted. In this case a message will be displayed, suggesting a larger Integration Time.

# Background

Graphical reports can optionally display an image in the background, such as a colour gradient or watermark.




**Displaying a background image**

The background image can be set in the **Format** page of the report's Advanced Profile options. The intensity of the background image can be adjusted using the **Alpha blend** percentage. The selected image is automatically scaled to fill the graph area.

# Printing

Printing split-window reports requires two print operations. Selecting **File » Print** from MCReport's main menu will only print the currently active pane, indicated by the blue MetroCount bar at the top. To activate the other pane, click anywhere within its window.

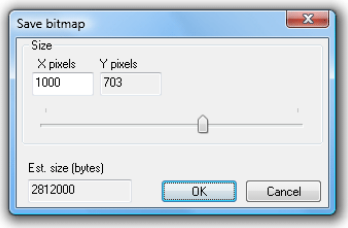
# Saving

Graphical reports can be saved as vector-based Enhanced Metafiles (EMF) or as an image file (PNG, GIF, JPG or BMP). To save a graphical report, select **File » Save report as** from MCReport's main menu. Remember that the graph must be the active pane, indicated by the blue MetroCount bar at the top.

The output format is determined by the **Save as type** drop-down list in the Save dialog box. Note that the Save dialog always defaults to the **Folder for report output** option in MCReport's Global Settings, accessible by selecting **Tools » Settings** from MCReport's main menu.

Enhanced Metafiles are a vector-based format, making them ideal for inserting graphs into other documents. When an Enhanced Metafile is scaled, everything is redrawn at the new size, producing a high-quality image. The file itself is normally very small.

Image files are more widely supported by other software, however they have an inherent size, and rescaling them can often produce unsatisfactory quality. When saving as an image, MCReport displays a dialog box where the dimensions of the image can be set. The required size will depend on the intended use of the image. Only the width needs to be set, so that the correct aspect ratio is maintained.

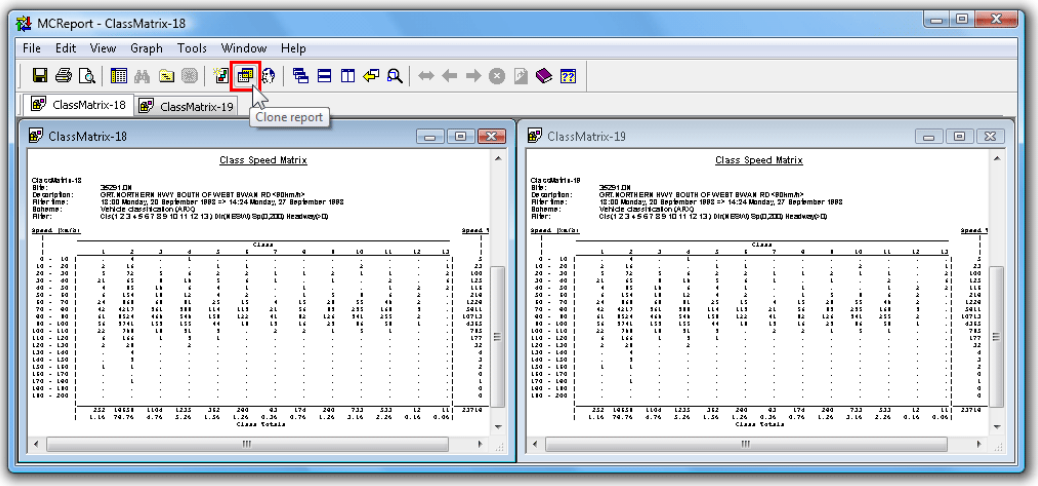



**Setting the output size of a bitmap**

A graphical report can also be transferred to another application using copy-and-paste. Simply right-click on a graph, and select **Copy** from the pop-up menu. The graph will be pasted as an Enhanced Metafile if the target application supports it. Otherwise the graph will be pasted as a bitmap at the size shown on screen.

# Report Cloning

Report Cloning is an extremely efficient way to rapidly generate a group of reports. Cloning an active report automatically generates a new report of the same type, with the same datasets and an identical Profile. The new report's Profile or datasets can then be easily changed via the right-click menu. To clone the currently active report, simply click the **Clone report** button on MCReport's main toolbar.




**Cloning a report**

Changing a report's datasets via the right-click menu is the fastest way to process a group of datasets. Load as many datasets as possible into the File Management List, then step through them via the **Datasets** option in a report's right-click menu, printing or saving for each iteration.

Report cloning makes common tasks, such as extracting each direction from bidirectional data, even more efficient. For example, generate a report filtered for the primary direction, clone it, then right-click and change the Local Profile to the secondary direction. Tile the reports on-screen, then apply the dataset swapping method described above for each report.

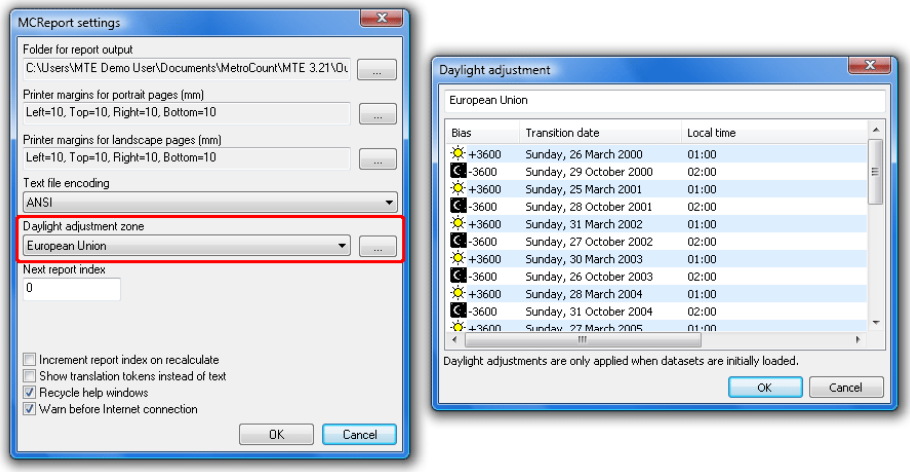
Another common task is comparing datasets, and it is important to start with an identical Profile, especially the vehicle filter settings. The simplest way to achieve this is to clone an existing report, right-click the new report and change the Datasets. This is much faster and more reliable than generating two reports via the Report Wizard.

*Note: Remember when toggling datasets on an existing report, using one of the Profile's time filter auto-wrap options (such as **aligned hours** or **aligned days**) is highly recommended. This ensures the start and end times will be automatically recalculated for the new datasets.*

# Daylight Saving Adjustment

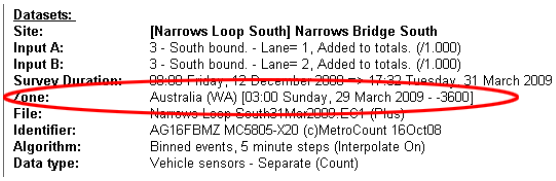
MCReport provides optional support for Daylight Saving transitions, by adding or removing raw data. Data files containing a Daylight Saving transition will have an empty period of data added at the beginning transition, and a period of overlapped data removed at the ending transition. Files without a Daylight Saving transition are unaffected.

The Daylight Saving zone is set in MCReport's Global Settings, by selecting **Tools » Settings** from MCReport's main menu. The selected zone will be applied to all datasets. Each zone has an entry per year, to allow for years with exceptional changes.




**Adjusting for Daylight Saving**

The selected Daylight Saving zone is displayed in each report's header. Transitions that occur within the duration of the report will be listed next to the zone.




**Daylight Saving transitions are indicated in the report header**

# Report Assemblies

Report Assemblies are a feature in MCReport for automatically regenerating an active report. Saving a report as an assembly creates a file with references to everything required to regenerate the report, including:

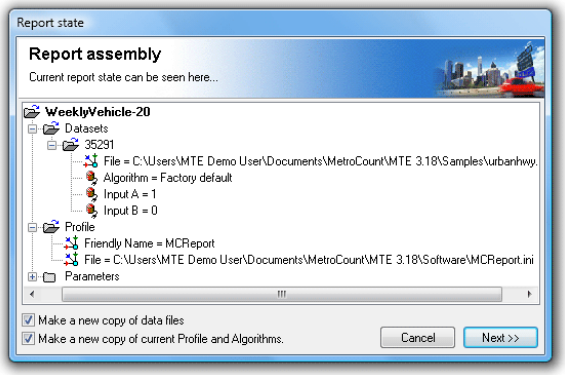
- The tagged datasets.
- The Local Profile.
- Algorithm settings.
- Custom List properties.

When an Assembly is loaded, the referenced datasets are loaded into the File Management List, and a new copy of the original report is generated - all without interacting with the Report Wizard.

Report Assemblies have a number of important uses:

- Saving the source files to recreate an exact report for future reference, rather than just the report output.
- Grouping source files together for copying to another user, so that they may generate the same report.
- As a starting point for regularly generated reports, whereby a group of datasets can be rapidly processed by swapping datasets via the right-click menu.

Assembly Load and Save functions can be found in MCReport's **File** menu. Selecting **File » Save assembly** will save the currently active report. MCReport initially defaults to the **Assembly** folder under MTE's working folder location.




**Saving a report Assembly**

Saving a report Assembly creates a text file with a **.stx** extension. By default, references to datasets, Profiles and other resources will have absolute paths. This means when loading an Assembly, it expects to find all files in their original location.

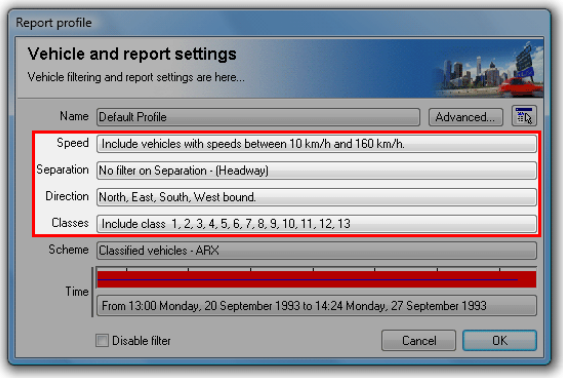
There are two options when saving an Assembly - to copy datasets, and other support files, to the same folder as the Assembly file. With these options checked, file references will have a relative path, and can therefore be copied around as a group, even to another PC.

# Vehicle Filter Settings

## Overview

Profile vehicle filtering is used to exclude certain vehicles from a report and specifically target others, based on the key vehicle filtering criteria of class, speed, separation and direction. For example, the direction filter is used for bidirectional sites to give separate reports for each direction.

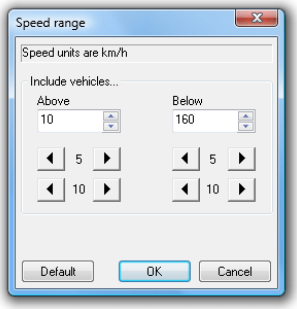
These settings are grouped into the main Profile dialog box, where each is a clickable button that leads to the available settings for that criteria. Note that these settings are only relevant for Classification reports, and are disabled for Event Count reports. Time filtering is covered in detail in its own section.




**Profile vehicle filter settings**

## Speed Filter

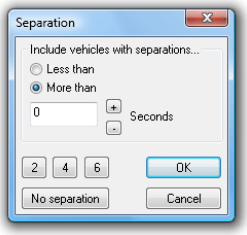
The Speed filter excludes vehicles outside the specified range. The default range is 10 to 160 km/hr, or 10 to 100 mph. This may need to be changed for sites with an expectation of significant numbers outside of this range. The upper limit is 200 km/h or 140 mph.




**Speed filter range**

# Separation Filter

Separation for a vehicle is the time since the last vehicle travelling in the same direction. Separation can be defined as Headway (first axle to first axle) or Gap (last axle to first axle) in the Advanced Profile options. For example, a separation of "more than four seconds" will only include vehicles with more than four seconds in front of them.

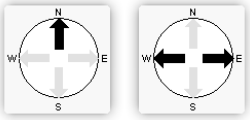



**Separation filter**

# Direction Filter

## Manual Setting

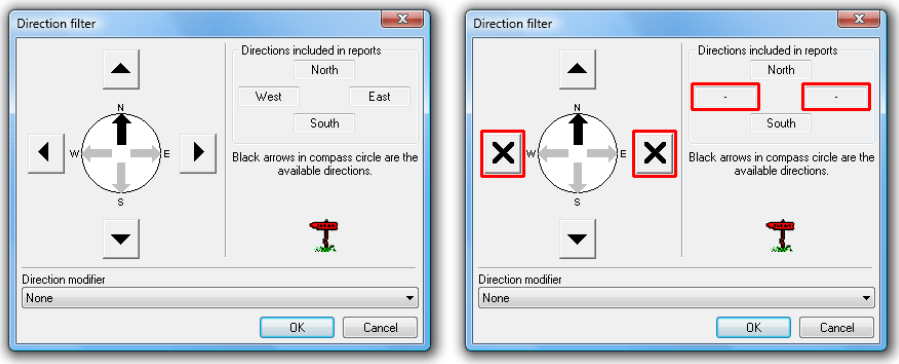
The Direction filter includes and excludes vehicles based on their direction of travel, derived from the direction specified in a dataset's header. The default setting is all directions included.




**Direction filter compass examples**

The black arrows in the compass indicate the combined direction codes of the tagged datasets. The first example above indicates at least one tagged dataset with a unidirectional code of North-bound. The second example indicates data is available for both East and West-bound traffic. This may be from a bidirectional dataset, or separate east and west datasets.

Remember, the direction code specified when a RSU was setup is simply a descriptive field. Data may still be available for directions other than those indicated by the compass.

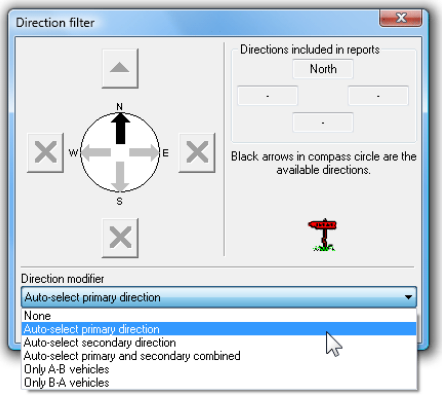



**Toggling included directions**

Directions are included and excluded by toggling the four buttons around the compass, the effect of which can be seen in the **Directions included in reports** box at the top. A black cross in a button indicates that direction will be excluded from the report.

## Automatic Setting

The **Direction modifier** drop-down list at the bottom provides a number of automatic direction filtering options. The **Auto-select** options automatically set the four direction buttons per the compass directions. The **Primary** direction is the **A>B** direction, and **Secondary** is **B>A.** Where multiple datasets are tagged, the **A>B** direction of the first tagged dataset is used. Note that the four buttons are disabled when using these options.




**Auto-selecting the primary direction**

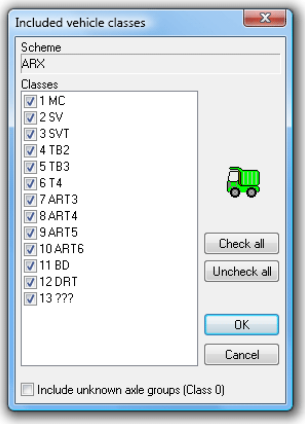
The last two options in the list filter vehicles based on their **A>B** or **B>A** direction of travel, before the normal compass direction filtering is applied. This can be used for entering and exiting filtering where several RSUs are used to cover a site, and a consistent **A>B** layout is used for each RSU.

# Class Filter

The Class filter lists the vehicle classes for the classification scheme selected in the Advanced Profile options, with a check box to include or exclude each class.

Each classification scheme specifies the classes that are included by default. For example, schemes normally exclude the *unclassifiable* vehicle class by default. This is usually the last class in a scheme (designated **???**).

Class zero is a special class, which consists of groups of hits that can not form a vehicle (usually fewer than four hits), such as hits detected while the sensors are being setup. This class is for diagnostics only.

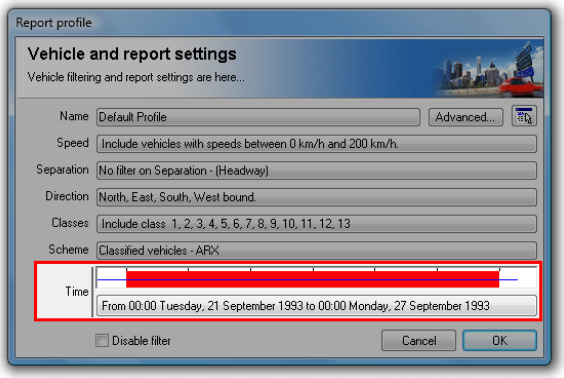



**Class filter**

# Time Filtering

## Overview

Profile time filtering controls the start and finish time of a report, with a range of options to automatically set common time filtering requirements. Selected periods can also be excluded based on time of day, and day of the week. All adjustments can be made to any 15-minute boundary.




**Profile time filter settings**

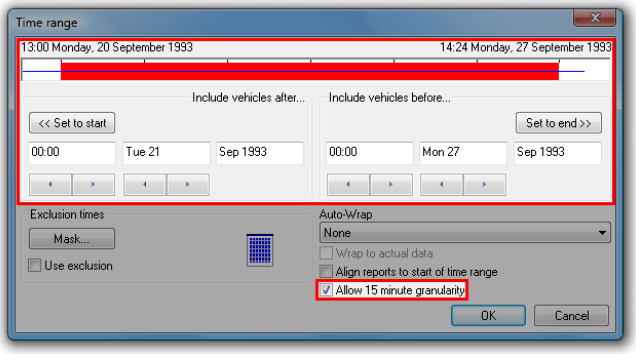
The time filter options are accessed by clicking the button showing the currently selected time range. The chart above the button represents the available time range for the tagged datasets. The blue line in the centre represents the range of actual data, from the start time to the last detected sensor hit. The red bar represents the selected time range.

The default behaviour of a Local Profile is to select the entire time range. Time filtering is primarily used to avoid partial time bins at the start and finish of reports, and for including integral numbers of complete hours or days for statistical analysis.

# Time Range

## Manual Setting

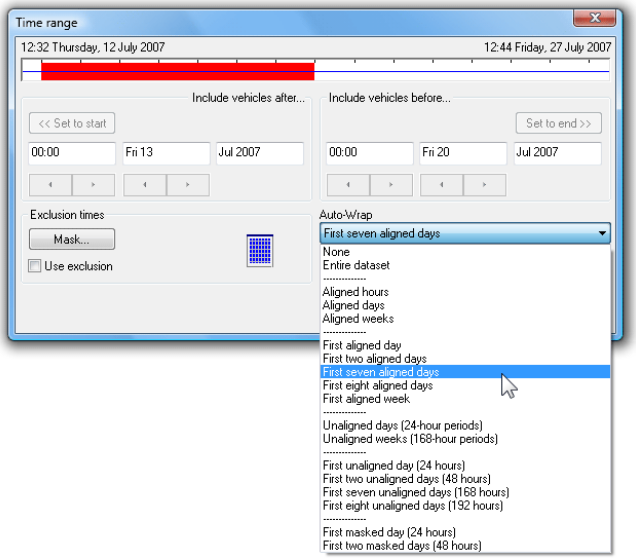
The time range of a report can be manually set using the controls in the **Include vehicles after (start)** and **Include vehicles before (finish)** blocks. The buttons, or spin control under the time adjust the time in hourly steps, or 15 minute steps if the **Allow 15 minute granularity** option is checked. The date spin control steps in days.




**Manually setting the Profile time range**

## Auto-Wrap

The Auto-wrap options automatically adjust the time range to a selection of common filtering requirements. If the selected wrap type cannot be applied to the available data, the time range chart will flash.



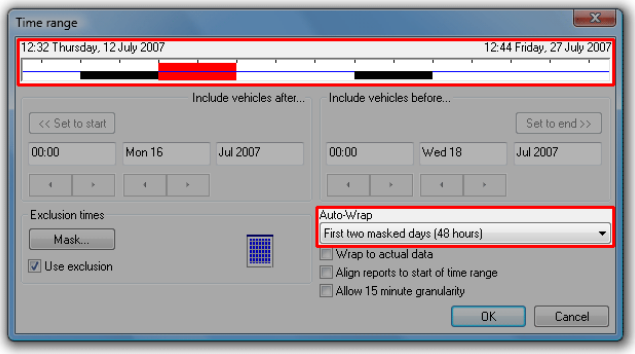

**Time Filter Auto-Wrap options**

**Aligned** Auto-wrap options adjust the time filter to the maximum number of the selected time increment (hour, day or week), aligned to the selected time increment. Put simply:

- Aligned Hours wraps to complete hours.
- Aligned Days wraps to complete days, starting at midnight.
- Aligned Weeks wraps to complete weeks, starting midnight Monday (or Saturday for alternate weekends).

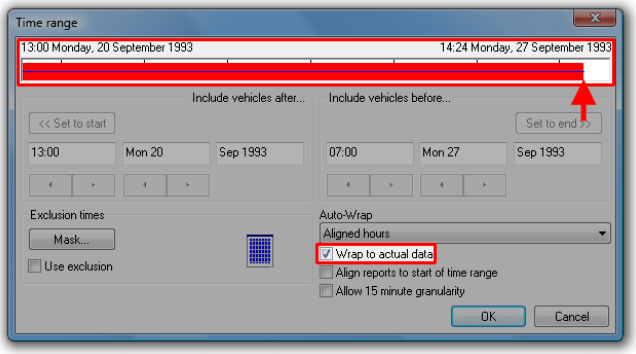
**Unaligned** Auto-wrap options adjust the time filter to the maximum number of the selected time increment (hour, day or week), but only aligned to hours. For example, **First two unaligned days (48 hours)** will select the first two days of data, aligned to the first complete hour.

Masked Auto-wrap options select the maximum number of contiguous time increments not masked by the Time Mask. For example, the first 48 hours of *weekday* data can be selected by masking weekends with the Time Mask, then selecting **First two masked days (48 hours).**




**Auto-wrap with weekends masked**

The **Wrap to actual data** option aligns the Auto-wrap options to the last hour, day or week containing sensor hits, as represented by the blue line. The time of the last sensor hit may differ from the dataset finish time if the RSU was removed from the field before unloading.



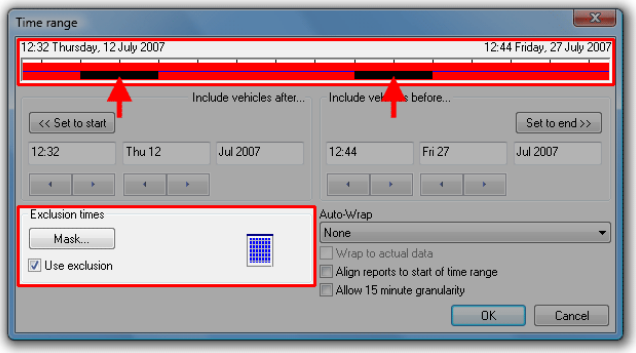

**Wrap to actual data option aligns to last sensor hit**

# Time Exclusions

The **Time Mask** is used to exclude particular times of the week (with 15 minute resolution), or selected dates from the time range of the tagged datasets. Some common uses for the Time Mask:

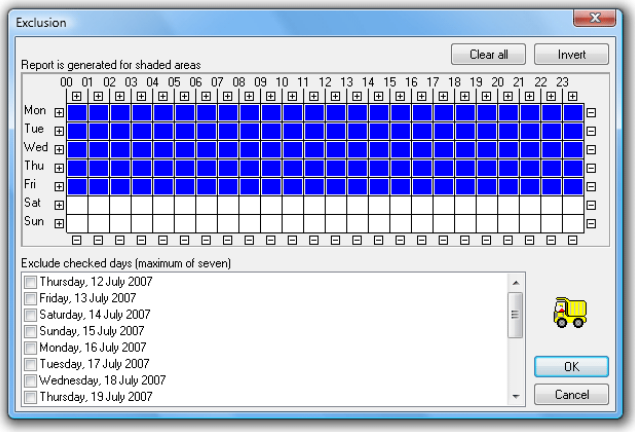
- Excluding weekends.
- Targeting "school hours" for variable speed limits.
- Excluding holidays.

The Time Mask settings are accessed by clicking the **Mask** button. Note that the **Use exclusion** option *must* be checked for the Time Mask to take effect. The masked times will be represented by black regions in the time range chart.




**Excluding time using the Time Mask**

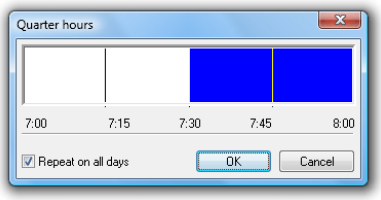
The Time Mask uses a grid representing a week divided into hours. Shaded hours will be included in the report, and white hours excluded. Each hour can be toggled by clicking on it, or rapidly toggled by clicking and dragging. Entire rows and columns can be toggled using the **+** and **-** buttons.




**Time Mask with weekends excluded**

Right-clicking on any hour displays a dialog box with 15 minute resolution. The **Repeat on all days** option will copy the selected hour across the entire week.

*Note: For reports where data is binned into hours, excluding part of an hour in the Time Mask will exclude the entire hour.*

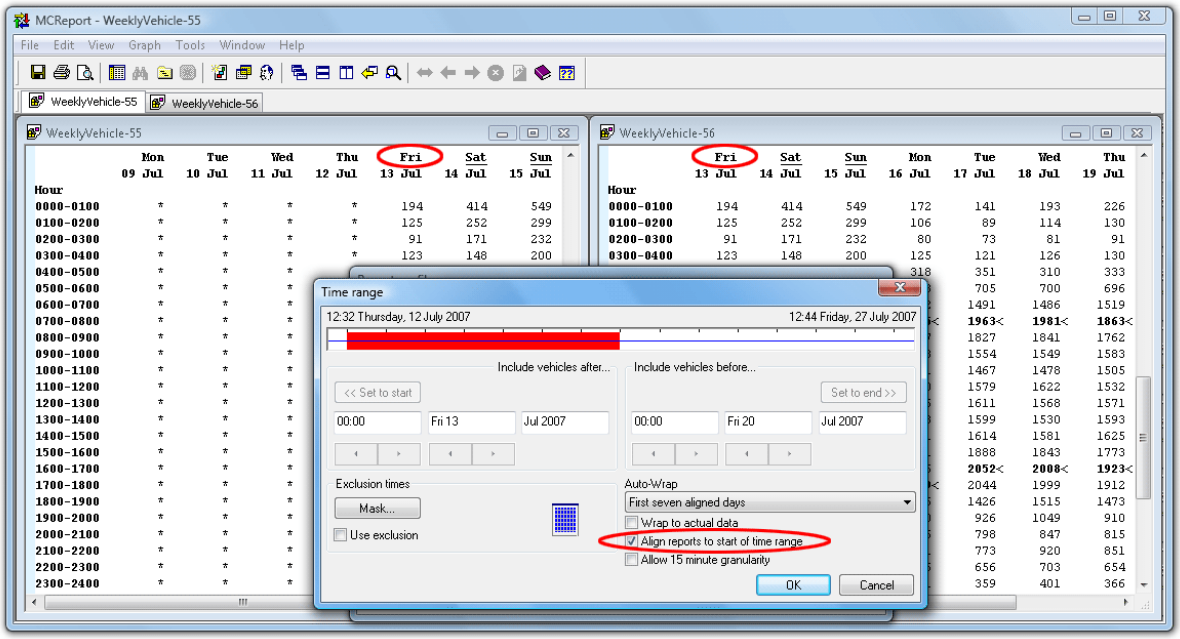



**Setting partial hours**

Specific dates can be excluded from a report by checking them in the **Exclude checked days** list at the bottom, up to a maximum of five. Use this feature for excluding dates that may adversely affect statistics, such as holidays.

# Time Alignment

The **Align reports to start of time range** option changes the beginning of reports to the first time step (option checked), or the *natural* division (default unchecked). Take for example the Weekly Vehicle or Daily Classes reports. The natural division of these reports is weeks, starting at Monday (or Saturday for alternate weekends). Checking this option will start the report at the first day in the selected time range. This is extremely useful for printing a complete week of data on a single page.

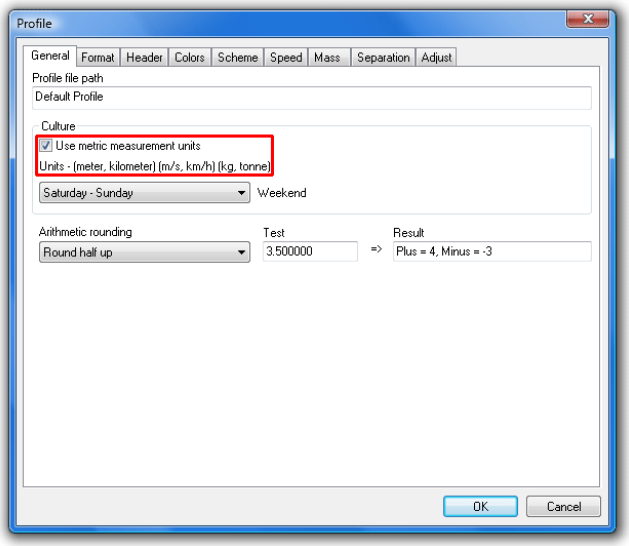



**A Weekly Vehicle Report, aligned to the first day (weekends underlined)**

# Units of Measurement

MCReport can display reports in either metric or non-metric units. MetroCount RSUs simply time-stamp sensor hits, so the raw data has no concept of units of speed or length. MCReport performs all internal calculations using SI units, and a report's Profile determines the units to be displayed.

The option to use metric or non-metric units can be found in a Profile's Advanced options, under the **General** page. The various units of measurement that will be used are displayed immediately below.




**Selecting units of measurement**

The units of measurement option also affects other options in a Profile, such as the speed range filter and speed bins. When the units of measurement are set via MCReport's **New user options** these other settings will be set to standard values in the Default Profile.

When toggling the units of measurement in a Profile as described above, other settings will be directly converted between metric and non-metric, which may result in non-standard values. Most options have a **Default** button available to quickly return to standard values.

# Classification Schemes

## Overview

MetroCount's time-stamped raw data collected using two parallel axle sensors enables MCReport to apply any axle-based classification scheme. Multiple schemes can be applied to the same data for different applications. As new standards and schemes are developed, they can be applied to existing data.

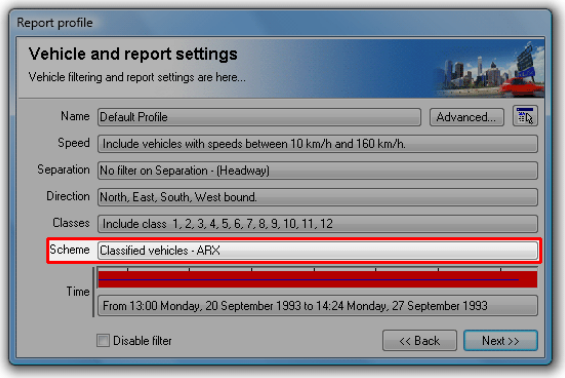
MCReport provides several built-in, highly optimised classification schemes called **OEM Schemes**, which are commonly used around the world. A range of user-defineable **External Schemes** are also provided.

Every scheme has two special classes: an unclassifiable vehicle class, and an unknown axle-group class. The unclassifiable vehicle class, usually designated as the last class, is a group of partitioned sensor hits considered to be a vehicle, but not matching any of the scheme's classes. The unknown axle-group class, designated as class zero, is a group of sensor hits that isn't considered a vehicle - usually fewer than two matching AB sensor hit pairs.

Every scheme has a set of classes that are enabled by default in a Profile's class filter, which usually includes all classes, except the two special classes. The unclassifiable vehicle class may be of interest for checking data quality, or suitability of a particular class scheme. A high percentage in this class may indicate a problem. Class zero can be generally considered as noise, and is only ever used for diagnostic purposes.

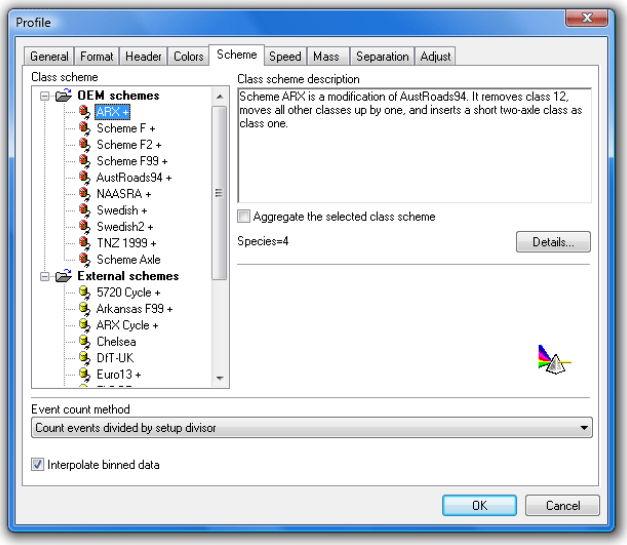
# Selecting a Scheme

A classification scheme is selected in the **Scheme** page of a Profile's Advanced options. A shortcut to this page is by clicking on the **Scheme** button in a Profile's main dialog box, where the name of the currently selected scheme is displayed.




**Shortcut to the Advanced option's Scheme page**

The available schemes are presented in a tree, divided into OEM and External schemes. Selecting a scheme will provide a short description. Note that changing between schemes will reset the Profile's class filter to the selected scheme's default.

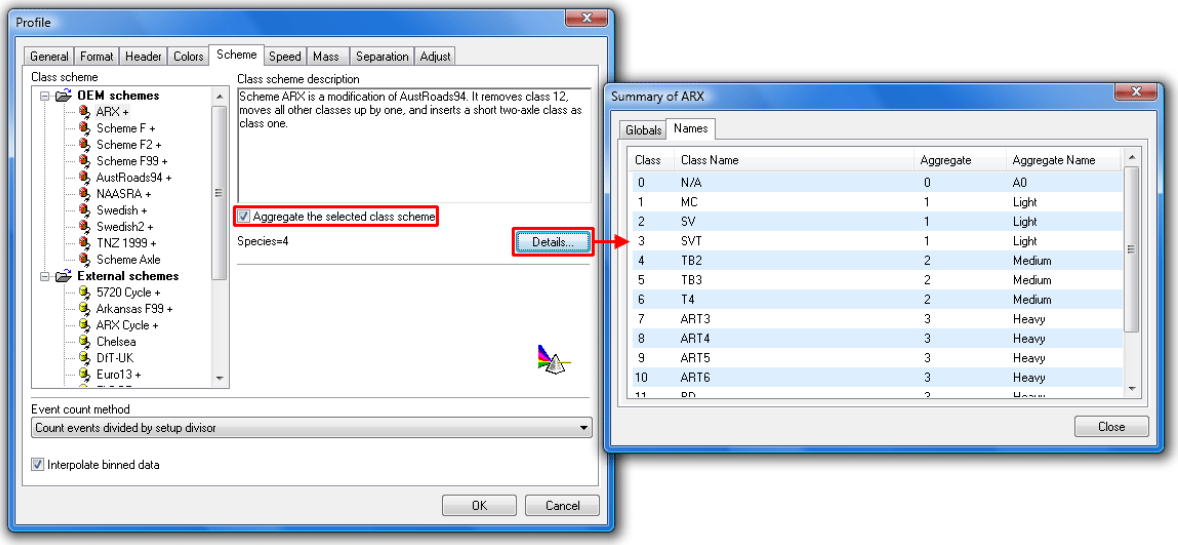



**Selecting a Classification Scheme**

# Aggregating a Scheme

Most classification schemes define a grouping of classes into similar types of vehicles. For example, schemes commonly group passenger vehicles into *light*, rigid trucks and buses into *medium*, and articulated vehicles into *heavy*.

Schemes that define a set of Aggregate classes have a **+** character after their name in the scheme tree. Selecting the **Aggregate the selected scheme** option will produce reports with the Aggregate classes instead of the base classes. The Profile's class filter will be automatically set to the defined aggregate classes.




**Combining classes using Aggregates**

The mapping of base classes into Aggregate classes can be viewed by clicking the **Details** button. The **Names** page lists all of the base classes for the selected scheme, and the Aggregate classes they map to. For the following example, base classes 1-3 map to Aggregate class 1, base classes 4-6 to Aggregate class 2, and 7-12 to Aggregate class 3. As a general rule, the unclassifiable vehicle class will map to the same Aggregate class number, in this case 13.

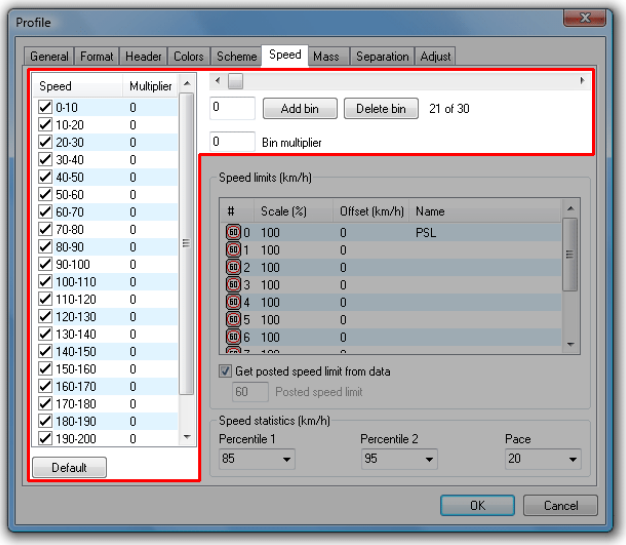
A report's header also displays the Aggregate class map in condensed form. For example, **(ARX Aggregate (0 1 1 1 2 2 2 3 3 3 3 3 3 13 ))** represents the previous example. Count along for the base class (starting at zero), and the number is the Aggregate class.

*Note: The Aggregate mapping for OEM Schemes is not editable. Most classification scheme specifications define the Aggregates, just as they do the individual class rules. External Schemes are user-editable, and contain a section that sets the Aggregate mappings.*

# Speed Bins

## Editing Speed Bins

Speed bins in MCReport are completely flexible. Given the raw data in MetroCount datasets, vehicles are binned during analysis, per the speed bins set in a report's Profile. A maximum of 30 speed bins can be set, and each can be enabled and disabled as required.




**Modifying speed bins**

Speed bin settings are located in the **Speed** page of the Advanced Profile options. The speed units (km/h or mph) are per the option in the **General** page. Speed bins are defined in the list on the left, with the check-boxes used to determine which bins will appear in reports. Vehicles falling in hidden bins are still included in statistical calculations.

The list of speed bins is contiguous. Each speed bin includes its lower bound, but not its upper bound. For example, the bin **50-60** includes all vehicles travelling 50 and above, but less than 60.

Speed bins are added by using the slider bar at the top. Moving the slider to the desired value and clicking the **Add bin** button will split the bin that contains that value, creating two new bins. For example, given the bin **10-20**, adding a bin at **15** will result in the bins **10-15** and **15-20**.

Selecting a bin and clicking the **Delete bin** button will remove the bin, and join the upper bound of the preceding bin to the lower bound of the following bin. For example, given the bins **10-20**, **20-30** and **30-40**, deleting **20-30** will leave **10-30** and **30-40**.

The **Default** button at the bottom will return the speed bins to a typical set of values.

## Speed Bin Multipliers

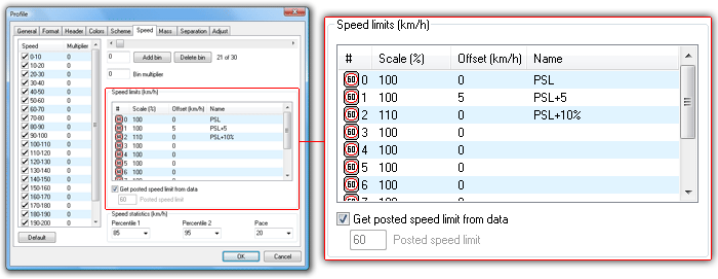
Each speed bin has a user-defined weighting value called a **Multiplier**. Multiplying the total vehicles in each speed bin by the bin's multiplier, and summing the results gives a value called the **Speed Rating**. This value can be used for comparing sites, such as by the severity of speeding.

Changing a bin's multiplier is simply a matter of selecting the bin, and entering a number in the **Bin multiplier** box. The bin's multiplier will automatically update.

# Speed Limits and Statistics

## Posted Speed Limit

The Posted Speed Limit (PSL) is the speed limit at the site where data was collected, and is used as the basis for speed statistics such as the number of speeding vehicles. The PSL can be settings are located on the **Speed** page of the Advanced Profile options.




**Speed limits**

The PSL can be automatically derived from the tagged datasets. With the **Get posted speed limit from data** option checked, MCReport will scan the **Description** field of the tagged datasets' headers, looking for a PSL in the following form:

- Must be enclosed in angle brackets **< >**
- Default is km/h. Append an 'm' or 'M' for mph.
- The PSL can appear anywhere in the description, but other angle brackets cannot be inserted when using this feature.

| Example Site Descriptions | |
|---|---|
| **km/h** | **mph** |
| Hay St <60> | <40 mph> Speed test, Euston Road |
| <60km/h> Hay Street | ACPO test, Harrow Road <40m> |
| Hay St, <50 km/h> study | Harrow Road, PSL=<40 MPH> |

With this option checked, if MCReport does not find a valid speed limit, or there are multiple tagged datasets with conflicting PSLs, the PSL will be set to zero.

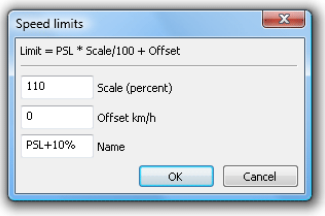
The best time to insert the PSL into the Description field is when a RSU is setup, and when creating Site Lists. For existing datasets the PSL can be inserted into the description using the **Transform data file** feature in MCReport's File Tree.

When the automatic PSL option is unchecked, the PSL can be manually entered in the **Posted speed limit** box provided.

## Speed Limits

The **Speed limits** list allows up to 10 additional speed thresholds to be set based on the PSL, using the formula **(PSL * Scale/100) + Offset**. The **Scale** column is a percentage, and **Offset** can be a positive or negative amount, in the same units as the PSL. Each additional limit can also be uniquely named.

To edit a speed threshold, simply double-click. Note that the first limit in the list is always the PSL, and cannot be changed.




**Editing speed limit thresholds**

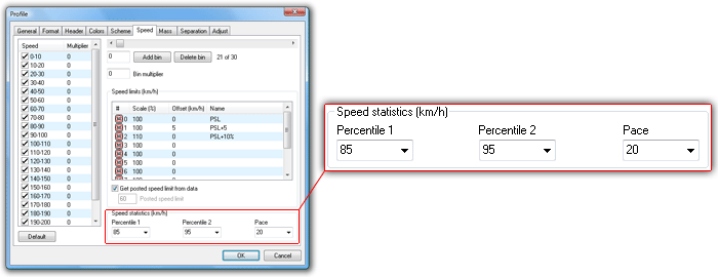
For example, given a PSL of 80, a scaling percentage of 110 will result in a speed threshold of 88. For a simple offset, leave the scaling percentage at 100 and use the Offset field.

Thresholds which are left as the same as the PSL (100% + 0) will not be displayed in reports.

# Speed Percentiles and Pace

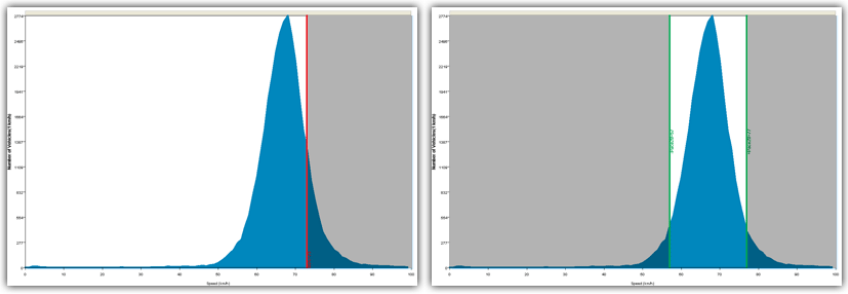
The **nth speed percentile** is the speed below which **n%** of vehicles were travelling. For example, the commonly used 85th percentile is the speed below which 85% of vehicles were travelling. MCReport supports two speed percentiles, which can be set in 5% steps.

The **speed pace** is a continuous band of speeds **n km/h** or **mph** wide that contains the largest number of vehicles. The speed pace is a measure of the dispersion of speeds at a site, based on the number and percentage of vehicles within the pace. The speed pace can be set in 5 km/h or mph increments.




**Speed statistics**

For example, given a speed histogram, the 85th speed percentile will be a vertical line, with 85% of vehicles to the left. A 20km/h pace is a band 20km/h wide that contains the most vehicles.



**Conceptual speed histogram examples showing 85th percentile, and 20km/h pace**

# Speed Statistics Block

Many speed-related reports combine the above speed limits and statistics into a compact block. An example of the form of this is provided below.

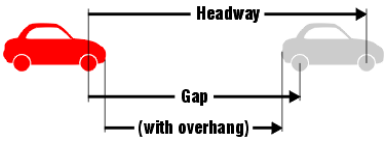
**Vehicles = 125765**
**Posted speed limit**= 80 km/h, Exceeding = 84352 (67.07%), Mean Exceeding = 86.88 km/h
**Limit 1 (PSL+10%)** (80 * 110%) + 0 = 88 km/h, Exceeding = 27223 (21.65%)
**Maximum** = 174.7 km/h, **Minimum** = 0.0 km/h, **Mean** = 83.2 km/h
**85% Speed** = 90.0 km/h, **95% Speed** = 95.8 km/h, **Median** = 82.4 km/h
**20 km/h Pace** = 73 - 93, **Number in Pace** = 107015 (85.09%)
**Variance** = 60.72, **Standard Deviation** = 7.79 km/h

# Separation

## Headway vs Gap

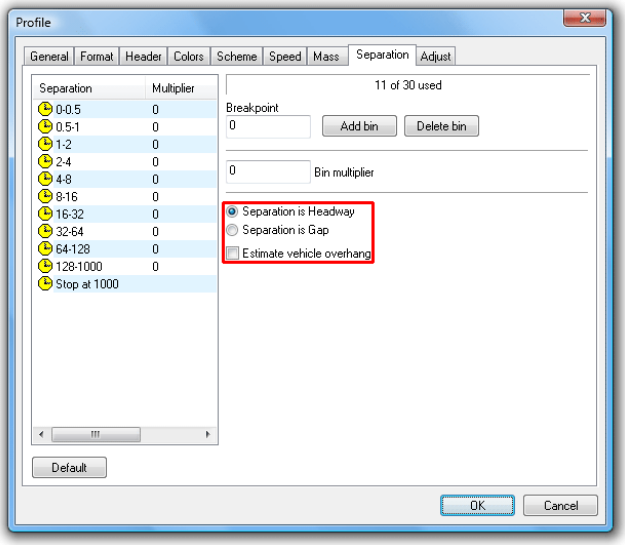
Separation is the *time* in front of a vehicle to the last vehicle travelling in the same direction. The **Separation** page in the Advanced Profile options provides the option to define separation as:

- **Headway** - time between the first axles of two vehicles.
- **Gap** - time between the last axle and first axle of two vehicles.




Separation definitions

When using gap, the **Estimate vehicle overhang** option makes a reasonable adjustment to the actual value to account for the distance between the detected axle and the physical end of the vehicle.




Separation definition

# Separation Bins

## Editing Separation Bins

Separation bins, like speed bins, are user-definable up to a maximum of 30 bins. The separation unit is seconds, and uses the separation definition option described above.

The list of separation bins is contiguous. Each separation bin includes its lower bound, but not its upper bound. For example, the bin **1-2** includes all vehicles with a separation of one second and above, but less than two.

Separation bins are added by entering a value in the **Breakpoint** box, and clicking the **Add bin** button. This will split the bin that contains the entered value, creating two new bins. For example, given the bin **0-0.5** adding a bin at **0.25** will result in the bins **0-0.25** and **0.25-0.5**.

Selecting a bin and clicking the **Delete bin** button will remove the bin, and join the upper bound of the preceding bin to the lower bound of the following bin. For example, given the bins **1-2**, **2-4** and **4-8**, deleting **2-4** will leave **1-4** and **4-8**.

The **Default** button at the bottom will return the separation bins to a typical set of values.

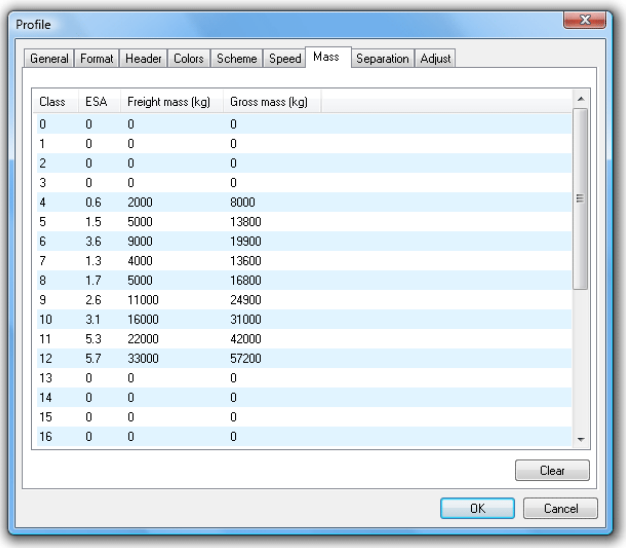
## Separation Bin Multipliers

Each separation bin has a user-defined weighting value called a **Multiplier**. Multiplying the total vehicles in each separation bin by the bin's multiplier, and summing the results gives a value called the **Separation Rating**.

Changing a bin's multiplier is simply a matter of selecting the bin, and entering a number in the **Bin multiplier** box. The bin's multiplier will automatically update.

# Estimated Mass

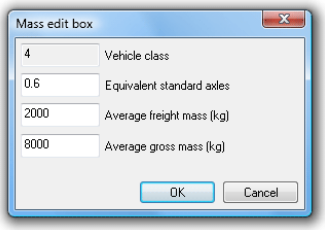
MCReport provides basic support for estimated pavement loading calculations, based on the volume and class distribution of traffic. The **Mass** page of the Advanced Profile options provides a table to enter estimated standard axles, freight mass and gross mass, per class of vehicle.




| Class | ESA | Freight mass (kg) | Gross mass (kg) |
|---|---|---|---|
| 0 | 0 | 0 | 0 |
| 1 | 0 | 0 | 0 |
| 2 | 0 | 0 | 0 |
| 3 | 0 | 0 | 0 |
| 4 | 0.6 | 2000 | 8000 |
| 5 | 1.5 | 5000 | 13800 |
| 6 | 3.6 | 9000 | 19900 |
| 7 | 1.3 | 4000 | 13600 |
| 8 | 1.7 | 5000 | 16800 |
| 9 | 2.6 | 11000 | 24900 |
| 10 | 3.1 | 16000 | 31000 |
| 11 | 5.3 | 22000 | 42000 |
| 12 | 5.7 | 33000 | 57200 |
| 13 | 0 | 0 | 0 |
| 14 | 0 | 0 | 0 |
| 15 | 0 | 0 | 0 |
| 16 | 0 | 0 | 0 |

**Estimated Mass table**

To edit a row in the table, simply double-click. Units will be kilograms (kg) or pounds (lb) per the units option in the Advanced Profile's **General** page.




**Editing mass table rows**

Note that this table is closely linked to the selected classification scheme, and may differ between regions and counties that use the same classification scheme. Values are normally derived from weigh-station data of regional vehicle types, and their freight and gross mass.

Reports that use the Estimated Mass table include the **Custom List** report, and **Daily Classes (Estimated Mass)**.

# Weekly Vehicle Counts

## Continuous

The Weekly Vehicle Counts report lists traffic volumes by hour in a weekly format, with one week per page. Each row represents a single hour time step, and the columns represent days of the week, with the actual dates shown.

| | Mon 16 Jul | Tue 17 Jul | Wed 18 Jul | Thu 19 Jul | Fri 20 Jul | Sat 21 Jul | Sun 22 Jul | Averages 1 - 5 | 1 - 7 |
|---|---|---|---|---|---|---|---|---|---|
| Hour | | | | | | | | | |
| 0000-0100 | 172 | 141 | 193 | 226 | 218 | 413 | 522 | 190.0 | 269.3 |
| 0100-0200 | 106 | 89 | 114 | 130 | 113 | 252 | 282 | 110.4 | 155.1 |
| 0200-0300 | 80 | 73 | 81 | 91 | 119 | 177 | 216 | 88.8 | 119.6 |
| 0300-0400 | 125 | 121 | 126 | 130 | 139 | 148 | 190 | 128.2 | 139.9 |
| 0400-0500 | 318 | 351 | 310 | 333 | 264 | 215 | 178 | 315.2 | 281.3 |
| 0500-0600 | 728 | 705 | 700 | 696 | 632 | 396 | 276 | 692.2 | 590.4 |
| 0600-0700 | 1562 | 1491 | 1486 | 1519 | 1483 | 574 | 345 | 1508.2 | 1208.6 |
| 0700-0800 | **1915**< | **1963**< | **1981**< | **1863**< | 1836 | 785 | 591 | **1911.6**< | 1562.0 |
| 0800-0900 | 1877 | 1827 | 1841 | 1762 | **1844**< | 1039 | 851 | 1830.2 | **1577.3**< |
| 0900-1000 | 1483 | 1554 | 1549 | 1583 | 1578 | 1152 | 911 | 1549.4 | 1401.4 |
| 1000-1100 | 1461 | 1467 | 1478 | 1505 | 1521 | 1289 | 1099 | 1486.4 | 1402.9 |
| 1100-1200 | 1560 | 1579 | 1622 | 1532 | 1602 | **1466**< | **1287**< | 1579.0 | 1521.1 |
| 1200-1300 | 1555 | 1611 | 1568 | 1571 | 1641 | 1362 | **1369**< | 1589.2 | 1525.3 |
| 1300-1400 | 1518 | 1599 | 1530 | 1593 | 1563 | 1350 | 1280 | 1560.6 | 1490.4 |
| 1400-1500 | 1601 | 1614 | 1581 | 1625 | 1657 | 1343 | 1288 | 1615.6 | 1529.9 |
| 1500-1600 | 1761 | 1888 | 1843 | 1773 | 1658 | 1286 | 1281 | 1784.6 | 1641.4 |
| 1600-1700 | 1955 | **2052**< | **2008**< | **1923**< | 1999 | 1252 | 1256 | 1987.4 | 1777.9 |
| 1700-1800 | **1989**< | 2044 | 1999 | 1912 | **2001**< | **1422**< | 1273 | **1989.0**< | **1805.7**< |
| 1800-1900 | 1316 | 1426 | 1515 | 1473 | 1552 | 1198 | 924 | 1456.4 | 1343.4 |
| 1900-2000 | 840 | 926 | 1049 | 910 | 1063 | 1014 | 735 | 957.6 | 933.9 |
| 2000-2100 | 716 | 798 | 847 | 815 | 814 | 1036 | 660 | 798.0 | 812.3 |
| 2100-2200 | 711 | 773 | 920 | 851 | 806 | 1099 | 613 | 812.2 | 824.7 |
| 2200-2300 | 515 | 656 | 703 | 654 | 762 | 794 | 519 | 658.0 | 657.6 |
| 2300-2400 | 281 | 359 | 401 | 366 | 611 | 677 | 303 | 403.6 | 428.3 |
| Totals | | | | | | | | | |
| 0700-1900 | 19991 | 20624 | 20515 | 20115 | 20452 | 14944 | 13410 | 20339.4 | 18578.7 |
| 0600-2200 | 23820 | 24612 | 24817 | 24210 | 24618 | 18667 | 15763 | 24415.4 | 22358.1 |
| 0600-0000 | 24616 | 25627 | 25921 | 25230 | 25991 | 20138 | 16585 | 25477.0 | 23444.0 |
| 0000-0000 | 26145 | 27107 | 27445 | 26836 | 27476 | 21739 | 18249 | 27001.8 | 24999.6 |
| AM Peak | 0700 | 0700 | 0700 | 0700 | 0800 | 1100 | 1100 | | |
| | 1915 | 1963 | 1981 | 1863 | 1844 | 1466 | 1287 | | |
| PM Peak | 1700 | 1600 | 1600 | 1600 | 1700 | 1700 | 1200 | | |
| | 1989 | 2052 | 2008 | 1923 | 2001 | 1422 | 1369 | | |

**Weekly Vehicle Counts report**

Five-day and seven-day averages are provided on the right side of the report. The five-day average is the average vehicle flow across week-days. The seven-day average is the average vehicle flow across the entire week. Note that weekends are underlined.

12 hour (0700-1900), 16 hour (0600-2200), 18 hour (0600-0000) and 24 hour (0000-0000) totals are included at the bottom of the Weekly Vehicle Counts report. Also included are the AM and PM peak hours for each day, and their respective hourly totals. Note that the AM and PM peaks are also indicated in the hourly totals by a bold typeface and a **<** character.

An asterisk ***** in the report matrix represents an hour where data is not available for the entire hour, or has been excluded in the report Profile. Note that this is different to a zero vehicle count for an hourly period, which will be correctly displayed with a 0.

The Weekly Vehicle Counts report does not include totals where there is missing data for any period covered by that total. This prevents results from being displayed that are misleading due to missing data. If totals for partial days of data are required, consider using another report, such as the Vehicle Counts report.

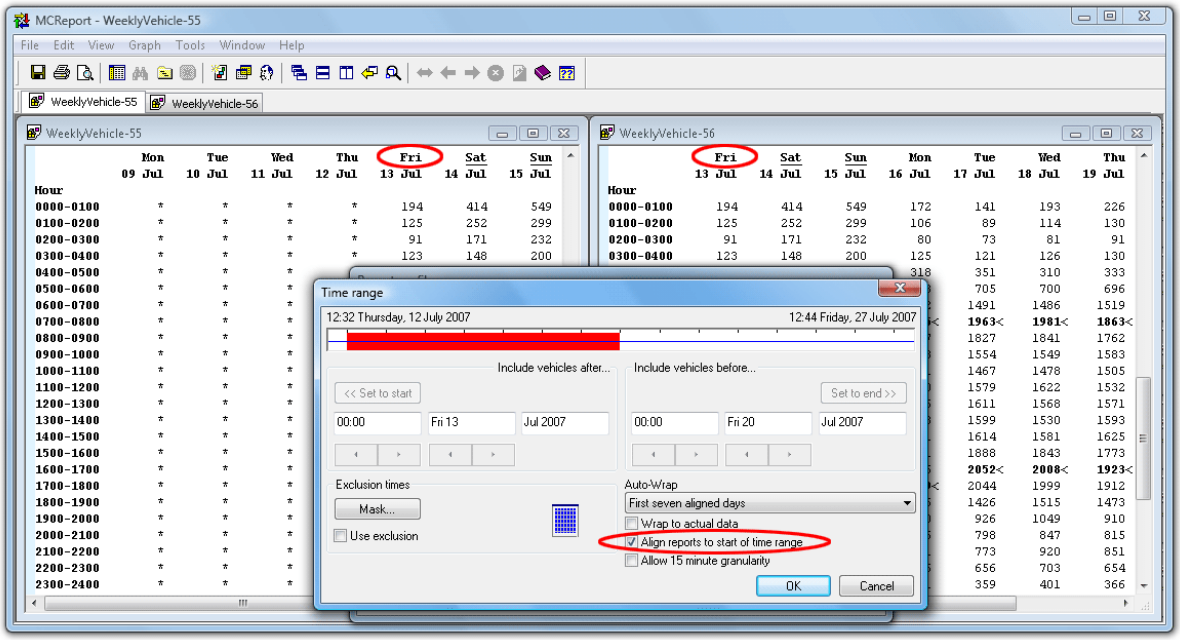
All averages in the Weekly Vehicle Counts report are correctly calculated when there is missing data. For example, a five-day average where two of the days contain no data (asterisks) will be correctly averaged over the three days of actual data.

Note also that the five-day and seven-day averages next to the totals at the bottom of the report are calculated from the all available data. This may not be the average of the daily totals if partial days are included.

## Time Filtering

The default behaviour of the Weekly Vehicle Counts report is to align to the first weekday. For a dataset that starts mid-week, a single week of data will span two pages.

To align the report to the start of the dataset, select the **Align reports to start of time range** option in the report's Profile. To restrict the report to a single week, consider using the **First seven aligned days** Auto-Wrap option.




**A Weekly Vehicle Report, aligned to the first day (weekends underlined)**

# Virtual Week

The Virtual Week version of the Weekly Vehicle Counts report merges multiple weeks of data into a single, averaged week.

Each hourly total in this report is the sum of the same hour from each week, divided by the number of weeks that data is available for that period. As this report is a mathematical representation of average vehicle flow, totals are displayed as floating point numbers.

The layout of the Virtual Week version is identical to the continuous Weekly Vehicle Counts report, with the exception that dates are not included at the top of each day column.

# Vehicle Counts

## Continuous

The Vehicle Counts report is based on a 24-hour format. Each day of data is represented by 24 hourly totals, with a user defined hourly breakdown, called time drops. For example, a time drop of 15 minutes will produce an additional four totals below the hourly totals, for each 15 minute period.

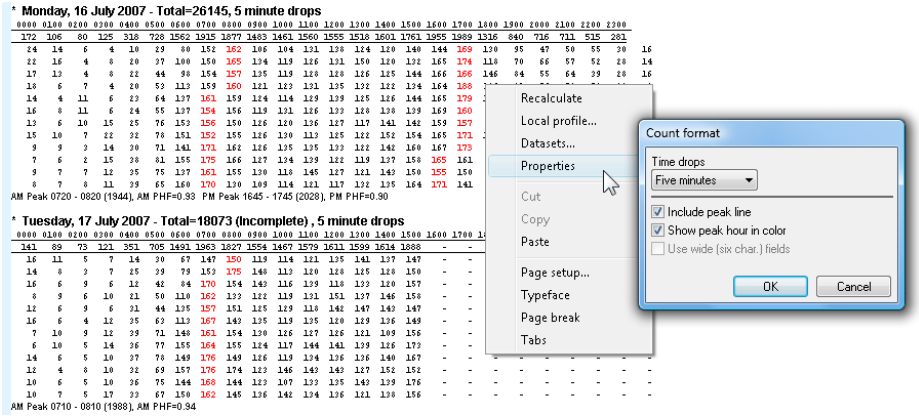
Time drops that do not contain complete data are represented by a hyphen (-). These include time drops excluded by the time filter, and partial drops where the dataset starts or ends mid-drop. Hourly totals will not be displayed if there are any missing drops.

Each day in the report includes a day heading, with the date and the total vehicles in the report Profile for that day. Days containing complete data also include a day summary, with the AM and PM peak hours to the resolution of the time drop, and the total vehicles in that hour.

The AM and PM Peak Hour Factor is a measure of flow variation within the peak hour. It is calculated as the total of the peak hour, divided by the peak bin total multiplied by the drops per hour. Therefore, if the peak hour total is spread equally across the time drops for that hour, the Peak Hour Factor will be equal to 1. The Peak Hour Factor normally ranges between 0.7 and 1.0.

The last column on a Vehicle Counts report is simply the first column from the next day. This is for highlighting a peak hour that spans across a day boundary. Note that these figures are not included in the daily total.

The Vehicle Counts report has a number of formatting options, including the size of the time drops. These are accessed via **Properties** in the report's right-click menu.




**Vehicle Counts report, with format options**

| Option | Description |
|---|---|
| Time drops | Specifies the interval for each time drop. |
| Include peak line | Includes the day summary row with AM and PM peaks. This line will not appear if a day does not contain complete data. |
| Show peak hour in colour | Drop totals that are part of the AM and PM peak hours will be displayed in red. Note that the peak hour is calculated to the resolution of the time drop, and may span two columns. |

# Virtual Day

The Virtual Day version of the Vehicle Counts report merges multiple days of data into a single, averaged day.

Each drop total in this report is the sum of the same time drop from each day, divided by the number of days that data is available for that period. Note that all totals are rounded to the nearest integer.

# Daily Classes

## Standard

The Daily Classes report provides a class breakdown of daily traffic volume, with one week per page.

Each day is displayed with the total daily volume, and the volume and percentage for each vehicle class included in the report Profile.

The end of each page includes the five-day and seven-day averages. Note that days with incomplete data are not included in the average calculations.

**Sunday, 28 April 2002**

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sun | 62 | 15628 | 224 | 144 | 30 | 2 | 11 | 5 | 3 | 9 | 1 | 1 | 0 | 16120 |
| (%) | 0.4 | 96.9 | 1.4 | 0.9 | 0.2 | 0.0 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | |
| Mon | 80 | 22442 | 282 | 812 | 138 | 27 | 50 | 36 | 37 | 107 | 7 | 0 | 6 | 24024 |
| (%) | 0.3 | 93.4 | 1.2 | 3.4 | 0.6 | 0.1 | 0.2 | 0.1 | 0.2 | 0.4 | 0.0 | 0.0 | 0.0 | |
| Tue | 78 | 22826 | 258 | 800 | 144 | 40 | 52 | 41 | 47 | 99 | 6 | 0 | 4 | 24395 |
| (%) | 0.3 | 93.6 | 1.1 | 3.3 | 0.6 | 0.2 | 0.2 | 0.2 | 0.2 | 0.4 | 0.0 | 0.0 | 0.0 | |
| Wed | 71 | 23340 | 243 | 785 | 140 | 26 | 32 | 49 | 52 | 96 | 9 | 2 | 3 | 24848 |
| (%) | 0.3 | 93.9 | 1.0 | 3.2 | 0.6 | 0.1 | 0.1 | 0.2 | 0.2 | 0.4 | 0.0 | 0.0 | 0.0 | |
| Thu | 61 | 23225 | 243 | 801 | 141 | 31 | 37 | 53 | 49 | 98 | 10 | 0 | 3 | 24752 |
| (%) | 0.2 | 93.8 | 1.0 | 3.2 | 0.6 | 0.1 | 0.1 | 0.2 | 0.2 | 0.4 | 0.0 | 0.0 | 0.0 | |
| Fri | 50 | 23474 | 270 | 807 | 147 | 34 | 44 | 47 | 31 | 107 | 6 | 0 | 7 | 25024 |
| (%) | 0.2 | 93.8 | 1.1 | 3.2 | 0.6 | 0.1 | 0.2 | 0.2 | 0.1 | 0.4 | 0.0 | 0.0 | 0.0 | |
| Sat | 70 | 18496 | 279 | 302 | 92 | 20 | 13 | 17 | 26 | 38 | 4 | 0 | 1 | 19358 |
| (%) | 0.4 | 95.5 | 1.4 | 1.6 | 0.5 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.0 | 0.0 | 0.0 | |
| **Average daily volume** | | | | | | | | | | | | | | |
| **Entire week** | | | | | | | | | | | | | | |
| | 67 | 21346 | 257 | 635 | 118 | 25 | 34 | 35 | 35 | 79 | 6 | 0 | 3 | 22645 |
| (%) | 0.3 | 94.3 | 1.1 | 2.8 | 0.5 | 0.1 | 0.2 | 0.2 | 0.2 | 0.3 | 0.0 | 0.0 | 0.0 | |
| **Weekdays** | | | | | | | | | | | | | | |
| | 68 | 23061 | 259 | 801 | 142 | 31 | 43 | 45 | 43 | 101 | 7 | 0 | 4 | 24608 |
| (%) | 0.3 | 93.7 | 1.1 | 3.3 | 0.6 | 0.1 | 0.2 | 0.2 | 0.2 | 0.4 | 0.0 | 0.0 | 0.0 | |
| **Weekend** | | | | | | | | | | | | | | |
| | 66 | 17061 | 251 | 223 | 61 | 11 | 12 | 11 | 14 | 23 | 2 | 0 | 0 | 17738 |
| (%) | 0.4 | 96.2 | 1.4 | 1.3 | 0.3 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | |

**Daily Classes example**

## Split Direction

The Daily Classes by Direction report includes additional rows where the daily class totals are split into vehicles travelling in the **A>B** and **B>A** directions. The **AB%** and **BA%** rows are the directional split percentages, not percentage of total.

**Monday, 29 April 2002**

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mon | 143 | 43648 | 544 | 1654 | 304 | 48 | 99 | 94 | 73 | 210 | 12 | 1 | 8 | 46838 |
| (%) | 0.3 | 93.2 | 1.2 | 3.5 | 0.6 | 0.1 | 0.2 | 0.2 | 0.2 | 0.4 | 0.0 | 0.0 | 0.0 | |
| AB | 80 | 22433 | 282 | 812 | 138 | 27 | 50 | 36 | 37 | 107 | 7 | 0 | 6 | 24015 |
| AB% | 55.9 | 51.4 | 51.8 | 49.1 | 45.4 | 56.3 | 50.5 | 38.3 | 50.7 | 51.0 | 58.3 | 0.0 | 75.0 | 51.3 |
| BA | 63 | 21215 | 262 | 842 | 166 | 21 | 49 | 58 | 36 | 103 | 5 | 1 | 2 | 22823 |
| BA% | 44.1 | 48.6 | 48.2 | 50.9 | 54.6 | 43.8 | 49.5 | 61.7 | 49.3 | 49.0 | 41.7 | 100.0 | 25.0 | 48.7 |

**Daily Classes by Direction sample**

# Estimated Mass

The Estimated Mass version of the Daily classes report includes an additional line for each day that lists estimated standard axles, freight mass and gross mass totals. These values are calculated from the mass table defined in the report Profile.

**Monday, 29 April 2002**

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mon | 80 | 22433 | 282 | 812 | 138 | 27 | 50 | 36 | 37 | 107 | 7 | 0 | 24009 |
| (%) | 0.3 | 93.4 | 1.2 | 3.4 | 0.6 | 0.1 | 0.2 | 0.1 | 0.2 | 0.4 | 0.0 | 0.0 | |

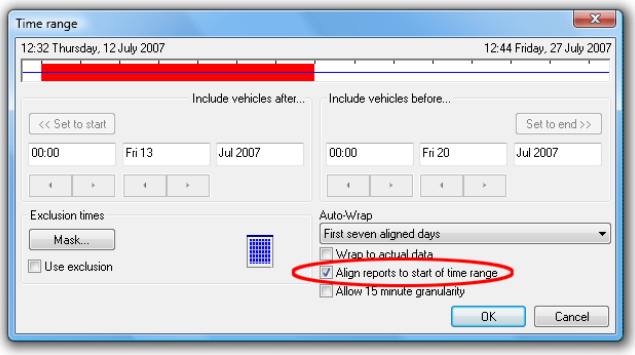
ESA=1382.6, Freight=5210000.0, Gross mass=14754800.0kg

**Daily Classes (Estimated Mass) sample**

# Time Filtering

The default behaviour of the Daily Classes report is to align to the first weekday. For a dataset that starts mid-week, a single week of data will span two pages.

To align the report to the start of the dataset, select the **Align reports to start of time range** option in the report's Profile. To restrict the report to a single week, consider using the **First seven aligned days** Auto-Wrap option.




**Aligning the start of reports**

# Class Speed Matrix

The Class Speed Matrix report provides a speed-by-class matrix of traffic data over the entire period of data, in a one page format. This report provides an excellent summary of traffic behaviour.

Vehicles are grouped by class, and by speed as defined in the speed bins in the report Profile. Speed bin totals and percentages are given down the right of the report. Class totals and percentages are given along the bottom of the report.

| Speed (km/h) | Class | | | | | | | | | | | | | Speed Totals | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | | |
| 10 - 20 | . | 70 | . | . | 2 | . | . | . | . | . | 1 | . | 1 | 74 | 0.0% |
| 20 - 30 | 1 | 836 | 5 | 14 | 1 | . | . | 1 | . | . | . | . | . | 858 | 0.1% |
| 30 - 40 | 2 | 1657 | 20 | 39 | 4 | 1 | 1 | 1 | 1 | 1 | . | . | 2 | 1729 | 0.2% |
| 40 - 50 | 5 | 7243 | 81 | 233 | 34 | 8 | 7 | 18 | 20 | 32 | 4 | 3 | 2 | 7690 | 0.7% |
| 50 - 60 | 46 | 34740 | 457 | 1156 | 182 | 47 | 30 | 67 | 45 | 127 | 10 | 5 | 17 | 36929 | 3.3% |
| 60 - 70 | 274 | 150091 | 1976 | 5080 | 842 | 157 | 240 | 300 | 246 | 555 | 34 | 6 | 50 | 159851 | 14.2% |
| 70 - 80 | 1207 | 455374 | 5260 | 13479 | 2469 | 538 | 664 | 844 | 612 | 1567 | 126 | 27 | 82 | 482249 | 42.7% |
| 80 - 90 | 1903 | 349450 | 3027 | 7217 | 1346 | 283 | 363 | 419 | 430 | 887 | 66 | 13 | 37 | 365441 | 32.4% |
| 90 - 100 | 984 | 59081 | 411 | 669 | 84 | 35 | 31 | 27 | 33 | 60 | 3 | 1 | 3 | 61422 | 5.4% |
| 100 - 110 | 383 | 8337 | 31 | 62 | 6 | 3 | . | 1 | 1 | 6 | 2 | . | . | 8832 | 0.8% |
| 110 - 120 | 150 | 1568 | 2 | 21 | . | 1 | . | . | . | . | . | . | . | 1742 | 0.2% |
| 120 - 130 | 76 | 429 | . | 4 | . | . | . | . | . | . | . | . | . | 509 | 0.0% |
| 130 - 140 | 32 | 152 | . | 1 | . | 1 | . | . | . | . | . | . | . | 186 | 0.0% |
| 140 - 150 | 16 | 58 | . | . | . | . | . | . | . | . | . | . | . | 74 | 0.0% |
| 150 - 160 | 4 | 21 | . | . | . | . | . | . | . | . | . | . | . | 25 | 0.0% |
| | 5083 | 1069107 | 11270 | 27975 | 4970 | 1074 | 1336 | 1678 | 1388 | 3235 | 246 | 55 | 194 | 1127611 | |
| | 0.5% | 94.8% | 1.0% | 2.5% | 0.4% | 0.1% | 0.1% | 0.1% | 0.1% | 0.3% | 0.0% | 0.0% | 0.0% | | |

Class Totals

The Profile is wider than the displayed bins. 516 vehicles are hidden.

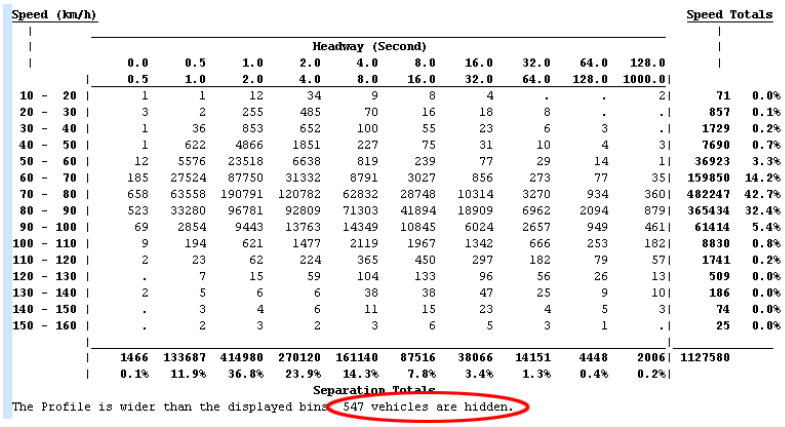
**Class Speed Matrix sample**

Note that some vehicles may be in speed bins that are disabled in the report Profile. If this is the case, a message will be displayed at the bottom of the report, indicating the number of vehicles that are hidden. To view these vehicles, enable all speed bins.

# Speed Separation Matrix

The Speed Separation Matrix report provides a speed-by-separation matrix of traffic data over the entire period of data, in a one page format.

Vehicles are grouped per the speed bins and separation bins defined in the report's Advanced Profile options. Speed bin totals and percentages are summarised down the right of the report, and separation bin totals and percentages along the bottom.



Speed (km/h) | Speed Totals

Headway (Second)

| | 0.0 - 0.5 | 0.5 - 1.0 | 1.0 - 2.0 | 2.0 - 4.0 | 4.0 - 8.0 | 8.0 - 16.0 | 16.0 - 32.0 | 32.0 - 64.0 | 64.0 - 128.0 | 128.0 - 1000.0 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 - 20 | 1 | 1 | 12 | 34 | 9 | 8 | 4 | . | . | 2 | 71 | 0.0% |
| 20 - 30 | 3 | 2 | 255 | 485 | 70 | 16 | 18 | 8 | . | . | 857 | 0.1% |
| 30 - 40 | 1 | 36 | 853 | 652 | 100 | 55 | 23 | 6 | 3 | . | 1729 | 0.2% |
| 40 - 50 | 1 | 622 | 4866 | 1851 | 227 | 75 | 31 | 10 | 4 | 3 | 7690 | 0.7% |
| 50 - 60 | 12 | 5576 | 23518 | 6638 | 819 | 239 | 77 | 29 | 14 | 1 | 36923 | 3.3% |
| 60 - 70 | 185 | 27524 | 87750 | 31332 | 8791 | 3027 | 856 | 273 | 77 | 35 | 159850 | 14.2% |
| 70 - 80 | 658 | 63558 | 190791 | 120782 | 62832 | 28748 | 10314 | 3270 | 934 | 360 | 482247 | 42.7% |
| 80 - 90 | 523 | 33280 | 96781 | 92809 | 71303 | 41894 | 18909 | 6962 | 2094 | 879 | 365434 | 32.4% |
| 90 - 100 | 69 | 2854 | 9443 | 13763 | 14349 | 10845 | 6024 | 2657 | 949 | 461 | 61414 | 5.4% |
| 100 - 110 | 9 | 194 | 621 | 1477 | 2119 | 1967 | 1342 | 666 | 253 | 182 | 8830 | 0.8% |
| 110 - 120 | 2 | 23 | 62 | 224 | 365 | 450 | 297 | 182 | 79 | 57 | 1741 | 0.2% |
| 120 - 130 | . | 7 | 15 | 59 | 104 | 133 | 96 | 56 | 26 | 13 | 509 | 0.0% |
| 130 - 140 | 2 | 5 | 6 | 6 | 38 | 38 | 47 | 25 | 9 | 10 | 186 | 0.0% |
| 140 - 150 | . | 3 | 4 | 6 | 11 | 15 | 23 | 4 | 5 | 3 | 74 | 0.0% |
| 150 - 160 | . | 2 | 3 | 2 | 3 | 6 | 5 | 3 | 1 | . | 25 | 0.0% |
| | 1466 | 133687 | 414980 | 270120 | 161140 | 87516 | 38066 | 14151 | 4448 | 2006 | 1127580 | |
| | 0.1% | 11.9% | 36.8% | 23.9% | 14.3% | 7.8% | 3.4% | 1.3% | 0.4% | 0.2% | | |

Separation Totals

The Profile is wider than the displayed bins 547 vehicles are hidden.

**Speed Separation Matrix sample**

Note that some vehicles may be hidden by speed bins that are disabled in the report Profile, or by separation that is beyond the last defined separation bin. If this is the case, a message will be displayed at the bottom of the report, indicating the number of vehicles that are hidden. To view these vehicles, enable all speed bins, or expand the last separation bin.

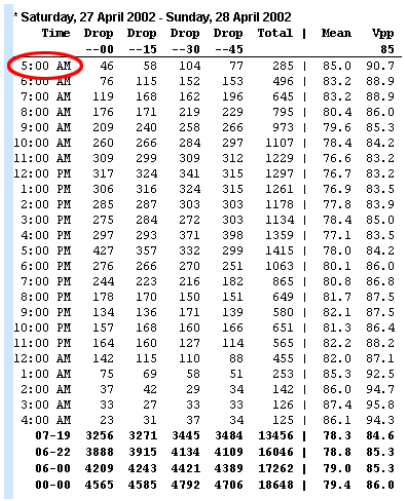
Remember that the definition of separation, as either headway or gap, can be modified in the report's Advanced Profile options.

# Rolling Day Totals

The Rolling Day Totals report provides hourly vehicle volume and speed statistics, with 15-minute totals.

This report uses a unique, 24-hour rolling format. Each 24-hour group aligns to the start of the time filter in the report Profile, not necessarily the start of a day.

The last four rows in each group are 12 (0700-1900), 16 (0600-2200), 18 (0600-0000) and 24-hour totals for the preceding 24 hourly steps.



Saturday, 27 April 2002 - Sunday, 28 April 2002

| Time | Drop --00 | Drop --15 | Drop --30 | Drop --45 | Total | Mean | Vpp 85 |
|---|---|---|---|---|---|---|---|
| 5:00 AM | 46 | 58 | 104 | 77 | 285 | 85.0 | 90.7 |
| 6:00 AM | 76 | 115 | 152 | 153 | 496 | 83.2 | 88.9 |
| 7:00 AM | 119 | 168 | 162 | 196 | 645 | 83.2 | 88.9 |
| 8:00 AM | 176 | 171 | 219 | 229 | 795 | 80.4 | 86.0 |
| 9:00 AM | 209 | 240 | 258 | 266 | 973 | 79.6 | 85.3 |
| 10:00 AM | 260 | 266 | 284 | 297 | 1107 | 78.4 | 84.2 |
| 11:00 AM | 309 | 299 | 309 | 312 | 1229 | 76.6 | 83.2 |
| 12:00 PM | 317 | 324 | 341 | 315 | 1297 | 76.7 | 83.2 |
| 1:00 PM | 306 | 316 | 324 | 315 | 1261 | 76.9 | 83.5 |
| 2:00 PM | 285 | 287 | 303 | 303 | 1178 | 77.8 | 83.9 |
| 3:00 PM | 275 | 284 | 272 | 303 | 1134 | 78.4 | 85.0 |
| 4:00 PM | 297 | 293 | 371 | 398 | 1359 | 77.1 | 83.5 |
| 5:00 PM | 427 | 357 | 332 | 299 | 1415 | 78.0 | 84.2 |
| 6:00 PM | 276 | 266 | 270 | 251 | 1063 | 80.1 | 86.0 |
| 7:00 PM | 244 | 223 | 216 | 182 | 865 | 80.8 | 86.8 |
| 8:00 PM | 178 | 170 | 150 | 151 | 649 | 81.7 | 87.5 |
| 9:00 PM | 134 | 136 | 171 | 139 | 580 | 82.1 | 87.5 |
| 10:00 PM | 157 | 168 | 160 | 166 | 651 | 81.3 | 86.4 |
| 11:00 PM | 164 | 160 | 127 | 114 | 565 | 82.2 | 88.2 |
| 12:00 AM | 142 | 115 | 110 | 88 | 455 | 82.0 | 87.1 |
| 1:00 AM | 75 | 69 | 58 | 51 | 253 | 85.3 | 92.5 |
| 2:00 AM | 37 | 42 | 29 | 34 | 142 | 86.0 | 94.7 |
| 3:00 AM | 33 | 27 | 33 | 33 | 126 | 87.4 | 95.8 |
| 4:00 AM | 23 | 31 | 37 | 34 | 125 | 86.1 | 94.3 |
| **07-19** | **3256** | **3271** | **3445** | **3484** | **13456** | **78.3** | **84.6** |
| **06-22** | **3888** | **3915** | **4134** | **4109** | **16046** | **78.8** | **85.3** |
| **06-00** | **4209** | **4243** | **4421** | **4389** | **17262** | **79.0** | **85.3** |
| **00-00** | **4565** | **4585** | **4792** | **4706** | **18648** | **79.4** | **86.0** |

**Rolling Day Totals sample**

The Rolling Day Totals report is actually a shortcut to a Custom List Report. Selecting the Properties of this report will display the standard Custom List options.

# Individual Vehicles

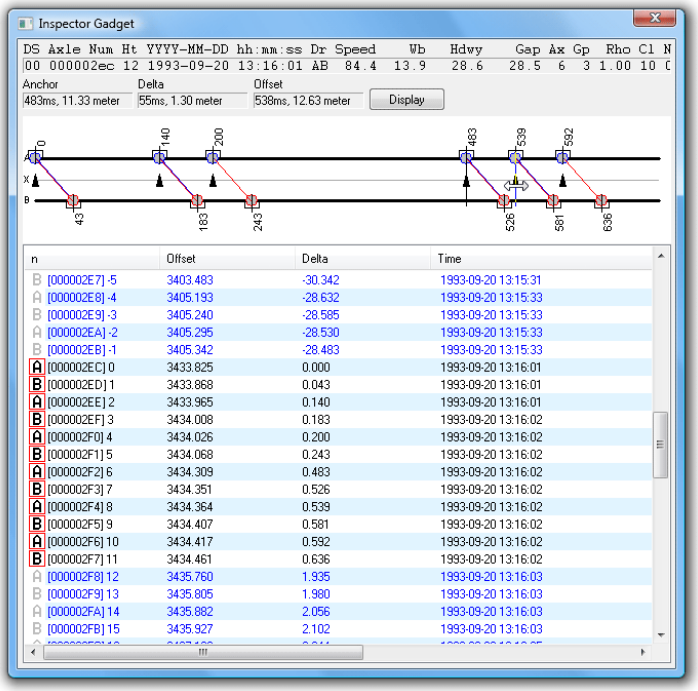
The Individual Vehicles report displays speed, wheelbase, headway, class and a scaled wheel picture for every vehicle. Each line of the report represents a single vehicle, with the time and date the vehicle was logged by the Roadside Unit.

| DS | Axle Num | Ht | YYYY-MM-DD | hh:mm:ss | Dr | Speed | Wb | Hdwy | Gap | Ax | Gp | Rho | Cl | Nm | Vehicle |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 00002b45 | 04 | 2002-04-27 | 07:07:17 | AB | 75.8 | 2.8 | 1.0 | 0.9 | 2 | 2 | 1.00 | 2 | 00000020 | SV o o |
| 01 | 00002b49 | 04 | 2002-04-27 | 07:07:18 | AB | 76.8 | 3.0 | 1.3 | 1.1 | 2 | 2 | 1.00 | 2 | 00000020 | SV o o |
| 01 | 00002b4d | 10 | 2002-04-27 | 07:07:19 | AB | 73.4 | 9.3 | 1.3 | 1.2 | 5 | 3 | 1.00 | 9 | 00000010 | ART5 o oo oo |
| 01 | 00002b57 | 12 | 2002-04-27 | 07:07:35 | AB | 79.6 | 14.1 | 15.3 | 14.9 | 6 | 3 | 1.00 | 10 | 00000010 | ART6 o oo ooo |
| 01 | 00002b63 | 04 | 2002-04-27 | 07:08:05 | AB | 92.5 | 2.8 | 29.9 | 29.3 | 2 | 2 | 1.00 | 2 | 00000010 | SV o o |
| 01 | 00002b67 | 04 | 2002-04-27 | 07:08:10 | AB | 75.7 | 4.9 | 5.2 | 5.1 | 2 | 2 | 1.00 | 4 | 00000020 | TB2 o o |
| 01 | 00002b6b | 04 | 2002-04-27 | 07:08:13 | AB | 79.7 | 2.4 | 3.4 | 3.2 | 2 | 2 | 1.00 | 2 | 00000020 | SV o o |
| 01 | 00002b6f | 04 | 2002-04-27 | 07:08:17 | AB | 78.8 | 2.2 | 3.7 | 3.6 | 2 | 2 | 1.00 | 2 | 00000010 | SV o o |
| 01 | 00002b73 | 06 | 2002-04-27 | 07:08:27 | AB | 72.2 | 6.5 | 10.2 | 10.1 | 3 | 3 | 1.00 | 3 | 00000020 | SVT o o o |
| | ... | | ... | ... | | ... | ... | ... | ... | | | ... | | ... | ... |

**Individual Vehicle report sample**

| Column | Description |
|---|---|
| DS | Tagged dataset index. |
| Axle Num | Dataset axle index. |
| Ht | Number of axle hits in the vehicle. |
| Date and Time | Date and time of the first axle in the vehicle. |
| Dr | Direction of travel of the vehicle. |
| Speed | Speed of the vehicle. Units of measurement are determined by the report Profile. |
| Wb | Wheelbase of the vehicle. Units of measurement are determined by the report Profile. |
| Hdwy | Headway - time since the *first* axle of the last vehicle travelling in the same direction. |
| Gap | Gap - time since the *last* axle of the last vehicle travelling in the same direction. |
| Ax | Number of axles in the vehicle. |
| Gp | Number of axle groups in the vehicle. |
| Rho | Sensor correlation factor. |
| Cl | Class of the vehicle. |
| Nm | Not defined - technical purposes only. |
| Vehicle | Class name and scaled wheel picture of the vehicle. |

A graphical representation of the axle events for each individual vehicle may be obtained using the Axle Inspector. This is a timeline of sensor hits that MCReport has partitioned into a vehicle, based on the selected classification scheme. To display, simply double-click any row in the report.




**Examining individual vehicles using the Axle Inspector**

The two sensor hit streams in a dataset are represented by the black lines, marked A and B. A circle indicates axle hits on each sensor and are labelled with the time in milliseconds since the first hit. A line is drawn from each hit at an angle determined by the speed of the vehicle. Since the speed of each vehicle is determined by the first A and B hits, then the first A and B hit lines will always overlap.

Subsequent hit lines are drawn at the same angle, and under perfect operating conditions the corresponding A and B pairs will overlap. Any gap between these pairs of hits indicates a lateral movement in the sensors, or a change in vehicle velocity.

The black triangles on the **X** line represent "axles" used by MCReport, after processing and filtering, to classify the vehicle

The time and distance between sensor hits can be measured using the inspector's time markers. Moving the mouse over the timeline moves the **Offset** marker. Clicking will move the **Anchor** marker to the current location. The **Delta** field at the top is the difference between the anchor and offset markers.

# Queued Vehicles

The Queued Vehicles report is a variation of the Individual Vehicles report. Vehicles are grouped based on the Separation vehicle filter setting in the report Profile. For example, with a Separation filter set to less than four seconds, all vehicles travelling less than four seconds apart will be listed, followed by a blank line. This is useful for examining queues of vehicles.

| DS | Axle Num | Ht | YYYY-MM-DD | hh:mm:ss | Dr | Speed | Wb | Hdwy | Gap | Ax | Gp | Rho | Cl | Nm | Vehicle |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **00** | **000004ce** | **04** | **2005-03-29** | **10:59:19** | **AB** | **69.2** | **2.4** | **10.5** | **10.4** | **2** | **2** | **1.00** | **2** | **00000020** | **SV o o** |
| 00 | 000004d2 | 04 | 2005-03-29 | 10:59:22 | AB | 63.8 | 4.2 | 3.1 | 3.0 | 2 | 2 | 1.00 | 4 | 00000020 | TB2 o o |
| 00 | 000004d6 | 04 | 2005-03-29 | 10:59:24 | AB | 61.8 | 2.6 | 1.6 | 1.4 | 2 | 2 | 1.00 | 2 | 00000010 | SV o o |
| | | | | | | | | | | | | | | | |
| **00** | **000004ec** | **12** | **2005-03-29** | **10:59:52** | **AB** | **56.1** | **14.8** | **9.0** | **7.9** | **6** | **3** | **1.00** | **10** | **00020042** | **ART6 o oo ooo** |
| 00 | 000004f8 | 04 | 2005-03-29 | 10:59:53 | AB | 55.2 | 2.2 | 1.6 | 0.6 | 2 | 2 | 1.00 | 2 | 00000020 | SV o o |
| 00 | 000004fc | 04 | 2005-03-29 | 10:59:55 | AB | 61.7 | 3.0 | 1.6 | 1.4 | 2 | 2 | 1.00 | 2 | 00000020 | SV o o |
| 00 | 00000500 | 04 | 2005-03-29 | 10:59:56 | AB | 60.0 | 2.8 | 1.4 | 1.2 | 2 | 2 | 1.00 | 2 | 00000020 | SV o o |
| 00 | 00000504 | 04 | 2005-03-29 | 10:59:59 | AB | 59.2 | 4.9 | 2.4 | 2.3 | 2 | 2 | 1.00 | 4 | 00000020 | TB2 o o |
| 00 | 00000508 | 04 | 2005-03-29 | 11:00:00 | AB | 61.0 | 2.8 | 1.5 | 1.2 | 2 | 2 | 1.00 | 2 | 00000020 | SV o o |
| 00 | 0000050c | 04 | 2005-03-29 | 11:00:04 | AB | 63.5 | 4.8 | 3.5 | 3.3 | 2 | 2 | 1.00 | 4 | 00000010 | TB2 o o |
| | | | | | | | | | | | | | | | |
| **00** | **0000051a** | **06** | **2005-03-29** | **11:00:53** | **AB** | **65.3** | **11.9** | **23.5** | **23.4** | **3** | **3** | **1.00** | **7** | **00000020** | **ART3 o o o** |
| 00 | 00000520 | 04 | 2005-03-29 | 11:00:56 | AB | 62.5 | 2.5 | 2.9 | 2.3 | 2 | 2 | 1.00 | 2 | 00000010 | SV o o |
| | ... | | ... | ... | | ... | ... | ... | ... | | | ... | | ... | ... |

**Queued Vehicles Sample**

# Speed Statistics

## Overview

The Speed Statistics report provides a table of speed bin distribution with multipliers, in a single page format for the entire tagged data.

The first block is MCReport's standard speed statistics block, which shows all speed limits and percentiles per the **Speed** page of the report's Advanced Profile options.

**Vehicles** = 1127611
**Posted speed limit** = 80 km/h, Exceeding = 438231 (38.86%), Mean Exceeding = 85.82 km/h
**Limit 1 (PSL + 5)** (80 * 100%) + 5 = 85 km/h, Exceeding = 191266 (16.96%)
**Limit 2 (PSL + 10%)** (80 * 110%) + 0 = 88 km/h, Exceeding = 107025 (9.49%)
**Maximum** = 159.6 km/h, **Minimum** = 10.2 km/h, **Mean** = 77.3 km/h
**85% Speed** = 85.3 km/h, **95% Speed** = 91.1 km/h, **Median** = 77.8 km/h
**20 km/h Pace** = 68 - 88, **Number in Pace** = 868975 (77.06%)
**Variance** = 90.07, **Standard Deviation** = 9.49 km/h

**Speed Statistics Block Sample**

The Speed Bins table provides bin totals, plus cumulative totals above and below the upper limit of each bin (highlighted in bold).

**Speed Bins**

| Speed | Bin | | Below | | Above | | Energy | vMult | n * vMult |
|---|---|---|---|---|---|---|---|---|---|
| 0 - **10** | 0 | 0.0% | 0 | 0.0% | 1127611 | 100.0% | 0.00 | 0.00 | 0.00 |
| 10 - **20** | 74 | 0.0% | 74 | 0.0% | 1127537 | 100.0% | 0.89 | 0.00 | 0.00 |
| 20 - **30** | 858 | 0.1% | 932 | 0.1% | 1126679 | 99.9% | 3.62 | 0.00 | 0.00 |
| 30 - **40** | 1729 | 0.2% | 2661 | 0.2% | 1124950 | 99.8% | 25.14 | 0.00 | 0.00 |
| 40 - **50** | 7690 | 0.7% | 10351 | 0.9% | 1117260 | 99.1% | 394.09 | 0.00 | 0.00 |
| 50 - **60** | 36929 | 3.3% | 47280 | 4.2% | 1080331 | 95.8% | 2446.95 | 0.00 | 0.00 |
| 60 - **70** | 159851 | 14.2% | 207131 | 18.4% | 920480 | 81.6% | 15012.14 | 0.00 | 0.00 |
| 70 - **80** | 482249 | 42.8% | 689380 | 61.1% | 438231 | 38.9% | 54137.10 | 0.00 | 0.00 |
| 80 - **90** | 365441 | 32.4% | 1054821 | 93.5% | 72790 | 6.5% | 36517.89 | 1.00 | 365441.00 |
| 90 - **100** | 61422 | 5.4% | 1116243 | 99.0% | 11368 | 1.0% | 3657.55 | 2.00 | 122844.00 |
| 100 - **110** | 8832 | 0.8% | 1125075 | 99.8% | 2536 | 0.2% | 387.99 | 4.00 | 35328.00 |
| 110 - **120** | 1742 | 0.2% | 1126817 | 99.9% | 794 | 0.1% | 94.03 | 8.00 | 13936.00 |
| 120 - **130** | 509 | 0.0% | 1127326 | 100.0% | 285 | 0.0% | 19.10 | 16.00 | 8144.00 |
| 130 - **140** | 186 | 0.0% | 1127512 | 100.0% | 99 | 0.0% | 20.24 | 32.00 | 5952.00 |
| 140 - **150** | 74 | 0.0% | 1127586 | 100.0% | 25 | 0.0% | 0.00 | 64.00 | 4736.00 |
| 150 - **160** | 25 | 0.0% | 1127611 | 100.0% | 0 | 0.0% | 0.00 | 128.00 | 3200.00 |
| 160 - **170** | 0 | 0.0% | 1127611 | 100.0% | 0 | 0.0% | 0.00 | 0.00 | 0.00 |
| 170 - **180** | 0 | 0.0% | 1127611 | 100.0% | 0 | 0.0% | 0.00 | 0.00 | 0.00 |
| 180 - **190** | 0 | 0.0% | 1127611 | 100.0% | 0 | 0.0% | 0.00 | 0.00 | 0.00 |
| 190 - **200** | 0 | 0.0% | 1127611 | 100.0% | 0 | 0.0% | 0.00 | 0.00 | 0.00 |

**Total Speed Rating** = 559581.00
**Total Moving Energy (Estimated)** = 112716.73

**Speed Statistics Speed Bins Sample**

The Energy calculations use the standard formula: $e=\frac{1}{2}mv^2$ where **m** is the estimated vehicle gross mass from the Advanced Profile mass table. The value is always reported in MegaJoules.

The **vMult** column is each speed bin's multiplier, with **n * vMult** the product of each speed bin's total volume and multiplier. The total gives the Speed Rating for the entire data.

The final block in this report summarises the cumulative totals for each of the speed limits specified in the Advanced Profile options.

**Speed limit fields**

| | Limit | Below | | Above | |
|---|---|---|---|---|---|
| 0 | 80 (PSL) | 689380 | 61.1% | 438231 | 38.9% |
| 1 | 85 (PSL + 5) | 936345 | 83.0% | 191266 | 17.0% |
| 2 | 88 (PSL + 10) | 1020586 | 90.5% | 107025 | 9.5% |

**Speed Statistics Limits block sample**

# By Hour

The hourly variant of the Speed Statistics report provides all speed statistics grouped by hour of day, in a single page format for the entire tagged data. Additional columns are appended for total vehicles exceeding each of the speed limits defined in the Advanced Profile options.

**Hour Bins** (Partial days)

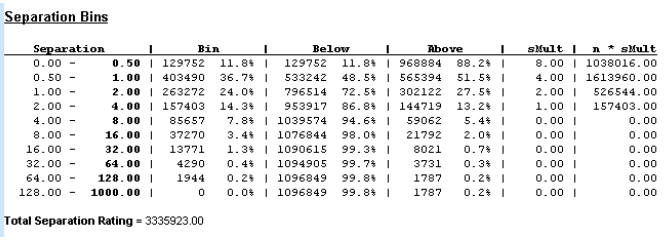
| Time | Bin | | Min | Max | Mean | Median | 85% | 95% | >PSL 80 km/h | | Limit 1 85 km/h PSL + 5 | | Limit 2 88 km/h PSL + 10% | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 11601 | 1.0% | 1.3 | 158.3 | 81.7 | 81.0 | 89.6 | 97.6 | 6670 | 57.5% | 3542 | 30.5% | 2266 | 19.5% |
| 0100 | 7286 | 0.6% | 50.5 | 169.5 | 84.0 | 82.4 | 91.4 | 101.2 | 4739 | 65.0% | 2679 | 36.8% | 1814 | 24.9% |
| 0200 | 4827 | 0.4% | 14.2 | 169.2 | 83.7 | 82.8 | 92.5 | 101.5 | 3168 | 65.6% | 1897 | 39.3% | 1299 | 26.9% |
| 0300 | 4731 | 0.4% | 0.0 | 159.6 | 84.6 | 83.2 | 93.6 | 102.2 | 3223 | 68.1% | 1971 | 41.7% | 1383 | 29.2% |
| 0400 | 6614 | 0.6% | 5.5 | 159.5 | 85.0 | 83.5 | 93.2 | 100.8 | 4676 | 70.7% | 2884 | 43.6% | 1992 | 30.1% |
| 0500 | 17587 | 1.6% | 2.9 | 143.7 | 84.9 | 83.9 | 92.5 | 99.0 | 12818 | 72.9% | 7755 | 44.1% | 5205 | 29.6% |
| 0600 | 46035 | 4.1% | 2.8 | 144.2 | 81.9 | 81.4 | 88.6 | 94.3 | 27224 | 59.1% | 13804 | 30.0% | 8116 | 17.6% |
| 0700 | 78749 | 7.0% | 0.0 | 133.9 | 75.7 | 76.3 | 83.9 | 88.6 | 25545 | 32.4% | 9743 | 12.4% | 4826 | 6.1% |
| 0800 | 86287 | 7.6% | 3.1 | 153.9 | 72.7 | 74.2 | 82.4 | 87.5 | 20943 | 24.3% | 7793 | 9.0% | 3948 | 4.6% |
| 0900 | 66800 | 5.9% | 2.4 | 145.6 | 77.1 | 77.4 | 84.6 | 90.0 | 24130 | 36.1% | 9903 | 14.8% | 5265 | 7.9% |
| 1000 | 64155 | 5.7% | 3.7 | 142.7 | 77.2 | 77.4 | 85.0 | 90.0 | 23286 | 36.3% | 9599 | 15.0% | 5174 | 8.1% |
| 1100 | 66378 | 5.9% | 2.3 | 138.2 | 77.0 | 77.0 | 84.6 | 89.6 | 23561 | 35.5% | 9399 | 14.2% | 4918 | 7.4% |
| 1200 | 70013 | 6.2% | 2.4 | 150.5 | 76.6 | 76.7 | 84.2 | 89.6 | 23682 | 33.8% | 9594 | 13.7% | 5086 | 7.3% |
| 1300 | 67360 | 6.0% | 0.0 | 149.3 | 77.0 | 77.0 | 84.6 | 90.0 | 23972 | 35.6% | 9660 | 14.3% | 5147 | 7.6% |
| 1400 | 69167 | 6.1% | 0.0 | 144.9 | 77.2 | 77.4 | 84.6 | 90.0 | 24924 | 36.0% | 10049 | 14.5% | 5421 | 7.8% |
| 1500 | 79571 | 7.1% | 0.0 | 153.0 | 75.9 | 76.3 | 84.2 | 89.3 | 25570 | 32.1% | 10298 | 12.9% | 5473 | 6.9% |
| 1600 | 92027 | 8.2% | 0.0 | 172.5 | 75.0 | 75.6 | 83.5 | 88.6 | 27790 | 30.2% | 10669 | 11.6% | 5358 | 5.8% |
| 1700 | 92431 | 8.2% | 0.0 | 140.7 | 73.8 | 75.6 | 83.5 | 88.2 | 27793 | 30.1% | 10540 | 11.4% | 5261 | 5.7% |
| 1800 | 62081 | 5.5% | 0.0 | 161.4 | 79.1 | 79.2 | 86.4 | 91.4 | 28462 | 45.8% | 12196 | 19.6% | 6605 | 10.6% |
| 1900 | 38631 | 3.4% | 3.7 | 150.0 | 81.1 | 80.6 | 87.8 | 94.0 | 20947 | 54.2% | 9973 | 25.8% | 5788 | 15.0% |
| 2000 | 28888 | 2.6% | 2.7 | 174.8 | 82.1 | 81.4 | 88.9 | 95.8 | 16908 | 58.5% | 8355 | 28.9% | 5085 | 17.6% |
| 2100 | 26615 | 2.4% | 3.6 | 153.9 | 81.8 | 81.0 | 88.6 | 94.7 | 15311 | 57.5% | 7447 | 28.0% | 4421 | 16.6% |
| 2200 | 22823 | 2.0% | 4.1 | 171.4 | 81.7 | 81.0 | 88.6 | 95.0 | 12841 | 56.3% | 6215 | 27.2% | 3808 | 16.7% |
| 2300 | 17470 | 1.5% | 0.0 | 185.0 | 80.8 | 81.0 | 89.6 | 96.8 | 10061 | 57.6% | 5314 | 30.4% | 3379 | 19.3% |
| ---- | **1128127** | **100.0%** | **0.0** | **185.0** | **77.3** | **77.8** | **85.3** | **91.1** | **438244** | **38.8%** | **191279** | **17.0%** | **107038** | **9.5%** |

**Speed Statistics by Hour sample**

# Separation Statistics

## Overview

The Separation Statistics report provides a table of separation bin distribution with multipliers, in a single page format for the entire tagged data. Remember that separation can be defined as headway or gap in the Advanced Profile options.



Separation Bins

| Separation | Bin | | Below | | Above | | sMult | n * sMult |
|---|---|---|---|---|---|---|---|---|
| 0.00 - **0.50** | 129752 | 11.8% | 129752 | 11.8% | 968884 | 88.2% | 8.00 | 1038016.00 |
| 0.50 - **1.00** | 403490 | 36.7% | 533242 | 48.5% | 565394 | 51.5% | 4.00 | 1613960.00 |
| 1.00 - **2.00** | 263272 | 24.0% | 796514 | 72.5% | 302122 | 27.5% | 2.00 | 526544.00 |
| 2.00 - **4.00** | 157403 | 14.3% | 953917 | 86.8% | 144719 | 13.2% | 1.00 | 157403.00 |
| 4.00 - **8.00** | 85657 | 7.8% | 1039574 | 94.6% | 59062 | 5.4% | 0.00 | 0.00 |
| 8.00 - **16.00** | 37270 | 3.4% | 1076844 | 98.0% | 21792 | 2.0% | 0.00 | 0.00 |
| 16.00 - **32.00** | 13771 | 1.3% | 1090615 | 99.3% | 8021 | 0.7% | 0.00 | 0.00 |
| 32.00 - **64.00** | 4290 | 0.4% | 1094905 | 99.7% | 3731 | 0.3% | 0.00 | 0.00 |
| 64.00 - **128.00** | 1944 | 0.2% | 1096849 | 99.8% | 1787 | 0.2% | 0.00 | 0.00 |
| 128.00 - **1000.00** | 0 | 0.0% | 1096849 | 99.8% | 1787 | 0.2% | 0.00 | 0.00 |

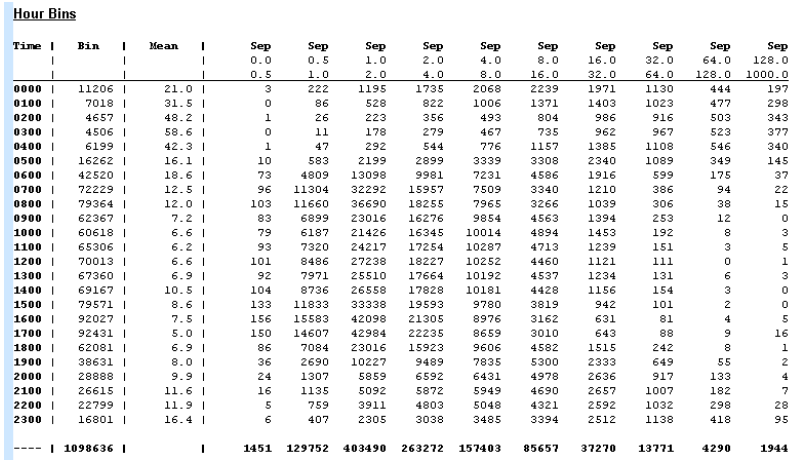
**Total Separation Rating** = 3335923.00

**Separation Statistics Sample**

The Separation Bins table provides bin totals, plus cumulative totals above and below the upper limit of each bin (highlighted in bold). The **sMult** column is each separation bin's multiplier, with **n * sMult** the product of each separation bin's total volume and multiplier. The total gives the Separation Rating for the entire data.

## By Hour

The hourly variant of the Separation Statistics report provides separation bin distribution grouped by hour of day.



Hour Bins

| Time | Bin | Mean | Sep 0.0 - 0.5 | Sep 0.5 - 1.0 | Sep 1.0 - 2.0 | Sep 2.0 - 4.0 | Sep 4.0 - 8.0 | Sep 8.0 - 16.0 | Sep 16.0 - 32.0 | Sep 32.0 - 64.0 | Sep 64.0 - 128.0 | Sep 128.0 - 1000.0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **0000** | 11206 | 21.0 | 3 | 222 | 1195 | 1735 | 2068 | 2239 | 1971 | 1130 | 444 | 197 |
| **0100** | 7018 | 31.5 | 0 | 86 | 528 | 822 | 1006 | 1371 | 1403 | 1023 | 477 | 298 |
| **0200** | 4657 | 48.2 | 1 | 26 | 223 | 356 | 493 | 804 | 986 | 916 | 503 | 343 |
| **0300** | 4506 | 58.6 | 0 | 11 | 178 | 279 | 467 | 735 | 962 | 967 | 523 | 377 |
| **0400** | 6199 | 42.3 | 1 | 47 | 292 | 544 | 776 | 1157 | 1385 | 1108 | 546 | 340 |
| **0500** | 16262 | 16.1 | 10 | 583 | 2199 | 2899 | 3339 | 3308 | 2340 | 1089 | 349 | 145 |
| **0600** | 42520 | 18.6 | 73 | 4809 | 13098 | 9981 | 7231 | 4586 | 1916 | 599 | 175 | 37 |
| **0700** | 72229 | 12.5 | 96 | 11304 | 32292 | 15957 | 7509 | 3340 | 1210 | 386 | 94 | 22 |
| **0800** | 79364 | 12.0 | 103 | 11660 | 36690 | 18255 | 7965 | 3266 | 1039 | 306 | 38 | 15 |
| **0900** | 62367 | 7.2 | 83 | 6899 | 23016 | 16276 | 9854 | 4563 | 1394 | 253 | 12 | 0 |
| **1000** | 60618 | 6.6 | 79 | 6187 | 21426 | 16345 | 10014 | 4894 | 1453 | 192 | 8 | 3 |
| **1100** | 65306 | 6.2 | 93 | 7320 | 24217 | 17254 | 10287 | 4713 | 1239 | 151 | 3 | 5 |
| **1200** | 70013 | 6.6 | 101 | 8486 | 27238 | 18227 | 10252 | 4460 | 1121 | 111 | 0 | 1 |
| **1300** | 67360 | 6.9 | 92 | 7971 | 25510 | 17664 | 10192 | 4537 | 1234 | 131 | 6 | 3 |
| **1400** | 69167 | 10.5 | 104 | 8736 | 26558 | 17828 | 10181 | 4428 | 1156 | 154 | 3 | 0 |
| **1500** | 79571 | 8.6 | 133 | 11833 | 33338 | 19593 | 9780 | 3819 | 942 | 101 | 2 | 0 |
| **1600** | 92027 | 7.5 | 156 | 15583 | 42098 | 21305 | 8976 | 3162 | 631 | 81 | 4 | 5 |
| **1700** | 92431 | 5.0 | 150 | 14607 | 42984 | 22235 | 8659 | 3010 | 643 | 88 | 9 | 16 |
| **1800** | 62081 | 6.9 | 86 | 7084 | 23016 | 15923 | 9606 | 4582 | 1515 | 242 | 8 | 1 |
| **1900** | 38631 | 8.0 | 36 | 2690 | 10227 | 9489 | 7835 | 5300 | 2333 | 649 | 55 | 2 |
| **2000** | 28888 | 9.9 | 24 | 1307 | 5859 | 6592 | 6431 | 4978 | 2636 | 917 | 133 | 4 |
| **2100** | 26615 | 11.6 | 16 | 1135 | 5092 | 5872 | 5949 | 4690 | 2657 | 1007 | 182 | 7 |
| **2200** | 22799 | 11.9 | 5 | 759 | 3911 | 4803 | 5048 | 4321 | 2592 | 1032 | 298 | 28 |
| **2300** | 16801 | 16.4 | 6 | 407 | 2305 | 3038 | 3485 | 3394 | 2512 | 1138 | 418 | 95 |
| **----** | **1098636** | | **1451** | **129752** | **403490** | **263272** | **157403** | **85657** | **37270** | **13771** | **4290** | **1944** |

**Separation Statistics by Hour Sample**

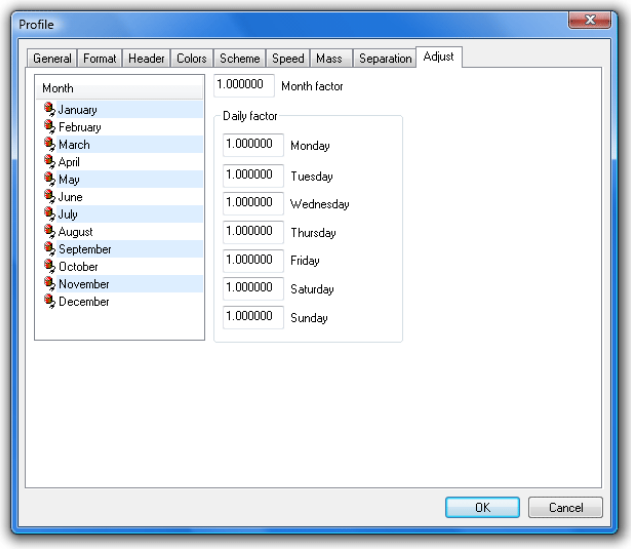
# Adjusted Vehicle Flow

The **Adjusted Vehicle Flow** report analyses ADT and AADT for a site.

The first part of the report lists daily total volume, along with an adjusted volume, using adjustment factors entered into the report's Profile.

| Day | Hits | RawVol | DayFac | MonFac | AdjVol | - Date |
|---|---|---|---|---|---|---|
| 0 | 4 | 55553 | 1.000 | 1.000 | 55553.000 | - Monday, 1 January 2007 |
| 1 | 4 | 76052 | 1.000 | 1.000 | 76052.000 | - Tuesday, 2 January 2007 |
| 2 | 4 | 80462 | 1.000 | 1.000 | 80462.000 | - Wednesday, 3 January 2007 |
| 3 | 4 | 84360 | 1.000 | 1.000 | 84360.000 | - Thursday, 4 January 2007 |
| 4 | 4 | 85198 | 1.000 | 1.000 | 85198.000 | - Friday, 5 January 2007 |
| **5** | **4** | **61475** | **1.000** | **1.000** | **61475.000** | **- Saturday, 6 January 2007** |
| **6** | **4** | **53277** | **1.000** | **1.000** | **53277.000** | **- Sunday, 7 January 2007** |
| ... | . | ..... | ..... | ..... | ..... | - ..... |
| 359 | 4 | 45084 | 1.000 | 1.000 | 45084.000 | - Wednesday, 26 December 2007 |
| 360 | 4 | 65799 | 1.000 | 1.000 | 65799.000 | - Thursday, 27 December 2007 |
| 361 | 4 | 69659 | 1.000 | 1.000 | 69659.000 | - Friday, 28 December 2007 |
| **362** | **4** | **57594** | **1.000** | **1.000** | **57594.000** | **- Saturday, 29 December 2007** |
| **363** | **4** | **51905** | **1.000** | **1.000** | **51905.000** | **- Sunday, 30 December 2007** |
| 364 | 4 | 68801 | 1.000 | 1.000 | 68801.000 | - Monday, 31 December 2007 |

Daily volume and adjusted volume




Entering adjustment factors

The second part of the report lists the calculated ADT/AADT, split into weekdays and weekends, and a list of adjustment factors calculated from the available data.

**Total days = 364, Coverage = 99.73%**
ADT = 84717.712, SD = 16507.040
AADT = 84717.712, SD = 16507.040

**Weekdays = 260, Coverage = 71.23%**
AWDT = 93298.912, SD = 9766.783
AAWDT = 93298.912, SD = 9766.783

**Weekend days = 104, Coverage = 28.49%**
AWET = 63264.712, SD = 8358.135
AAWET = 63264.712, SD = 8358.135

**ADT and adjustment factor by month**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Jan** | - Vol = | 2510431, | Days = | 31, | ADT = | 80981.645, | Adjust = | 1.04613, | 1/Adjust = | 0.95590 |
| **Feb** | - Vol = | 2497098, | Days = | 28, | ADT = | 89182.071, | Adjust = | 0.94994, | 1/Adjust = | 1.05270 |
| **Mar** | - Vol = | 2725072, | Days = | 31, | ADT = | 87905.548, | Adjust = | 0.96374, | 1/Adjust = | 1.03763 |
| **Apr** | - Vol = | 2431368, | Days = | 30, | ADT = | 81045.600, | Adjust = | 1.04531, | 1/Adjust = | 0.95665 |
| **May** | - Vol = | 2606075, | Days = | 31, | ADT = | 84066.935, | Adjust = | 1.00774, | 1/Adjust = | 0.99232 |
| **Jun** | - Vol = | 2512904, | Days = | 30, | ADT = | 83763.467, | Adjust = | 1.01139, | 1/Adjust = | 0.98874 |
| **Jul** | - Vol = | 2493906, | Days = | 30, | ADT = | 83130.200, | Adjust = | 1.01910, | 1/Adjust = | 0.98126 |
| **Aug** | - Vol = | 2675253, | Days = | 31, | ADT = | 86298.484, | Adjust = | 0.98168, | 1/Adjust = | 1.01866 |
| **Sep** | - Vol = | 2533981, | Days = | 30, | ADT = | 84466.033, | Adjust = | 1.00298, | 1/Adjust = | 0.99703 |
| **Oct** | - Vol = | 2665100, | Days = | 31, | ADT = | 85970.968, | Adjust = | 0.98542, | 1/Adjust = | 1.01479 |
| **Nov** | - Vol = | 2681718, | Days = | 30, | ADT = | 89390.600, | Adjust = | 0.94773, | 1/Adjust = | 1.05516 |
| **Dec** | - Vol = | 2504341, | Days = | 31, | ADT = | 80785.194, | Adjust = | 1.04868, | 1/Adjust = | 0.95358 |

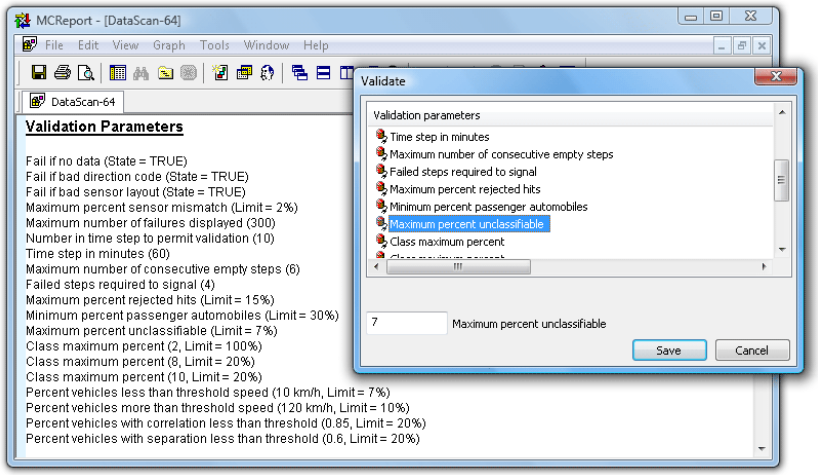
**ADT and adjustment factor by day of week**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Mon** | - Vol = | 4620210, | Days = | 53, | ADT = | 87173.774, | Adjust = | 0.97183, | 1/Adjust = | 1.02899 |
| **Tue** | - Vol = | 4845416, | Days = | 52, | ADT = | 93181.077, | Adjust = | 0.90917, | 1/Adjust = | 1.09990 |
| **Wed** | - Vol = | 4913070, | Days = | 52, | ADT = | 94482.115, | Adjust = | 0.89665, | 1/Adjust = | 1.11526 |
| **Thu** | - Vol = | 4990648, | Days = | 52, | ADT = | 95974.000, | Adjust = | 0.88272, | 1/Adjust = | 1.13287 |
| **Fri** | - Vol = | 4888373, | Days = | 51, | ADT = | 95850.451, | Adjust = | 0.88385, | 1/Adjust = | 1.13141 |
| **Sat** | - Vol = | 3635712, | Days = | 52, | ADT = | 69917.538, | Adjust = | 1.21168, | 1/Adjust = | 0.82530 |
| **Sun** | - Vol = | 2943818, | Days = | 52, | ADT = | 56611.885, | Adjust = | 1.49647, | 1/Adjust = | 0.66824 |

Adjusted Vehicle Flow totals and adjustment factors

# Data Scan

The Data Scan report validates a single data file, based on a set of adjustable rules and boundaries. This report is primarily intended as an automated data check for Scripting.




**Data Scan validation parameters**

# Spectrum of Axle Hits

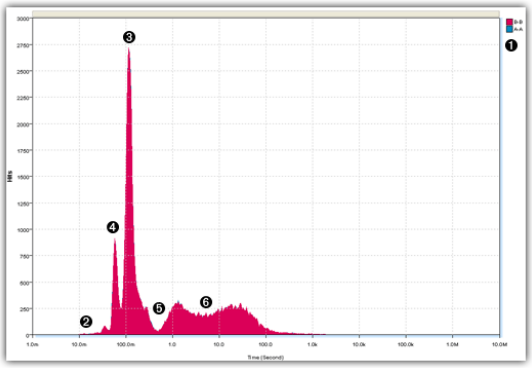
The Spectrum of Axle Hits report, or Hit Spectrum, is a histogram of the time difference between successive sensor hits. This chart is one of the most useful tools for instantly verifying data quality.

MCReport scans a dataset, and keeps a tally of the time between successive sensor hits, grouping them by the order of hits: **A to A**, **B to B**, **A to B** or **B to A**. The Hit Spectrum shows the **A to A** and **B to B** plots by default - the time between hits on the same sensor provides the most useful information.

The time between sensor hits can vary over a huge range, so the horizontal axis is logarithmic. This allows a range from one millisecond to ten million seconds.

A typical Hit Spectrum is characterised by the following:

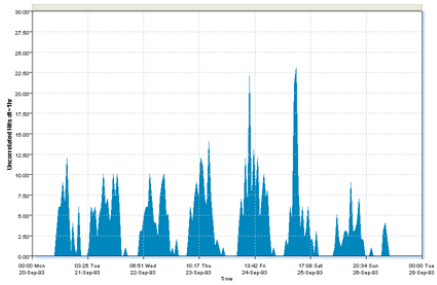
1. With good quality classification data, the A to A and B to B plots should perfectly overlay each other. Only the top-most plot may be visible.
2. Peaks in the left-most region, from around 10 to 30 milliseconds, depict spurious hits caused by sensor noise.
3. A sharp peak somewhere around 100ms represents the product of speed and wheelbase of the most frequently recorded vehicles (usually cars).
4. Additional smaller peaks in this region are due to bi-axle and tri-axle groups, or trailers.
5. A trough approaching the x-axis indicates low congestion.
6. The remainder of the Hit Spectrum, usually above 400ms, is characterised by a broad hump that represents the distribution of inter-vehicle times.




**Typical Hit Spectrum**

# Correlation of Axle Hits

The Correlation of Axle Hits report is a time-based plot of uncorrelated axle hits per integration period. A correlated axle is one where there is a matching A and B sensor hit for any given axle, within a small margin of error. Perfect data quality would have no uncorrelated axles, however a small number is common due to sensor noise, simultaneous vehicle crossings on bidirectional sites, and vehicles changing lanes.

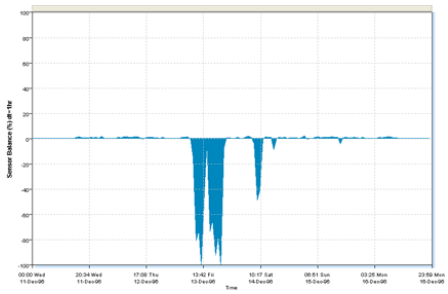


Correlation of Axle Hits Sample

# Audit of Data Quality

The Audit of Data Quality report is a time-based plot comparing the number of axles recorded on both the A and B sensors, and displays a graph of the difference between them. Note that this is a comparison of hit counts after MCReport has processed the raw data, so is a measure of the quality of data used to classify vehicles. This may differ from the Hits plot in the File Tree, which is raw data.

This report immediately highlights single sensor failures where the trace deviates significantly from the zero horizontal axis. The Header Sheet also contains additional axle and vehicle statistics.



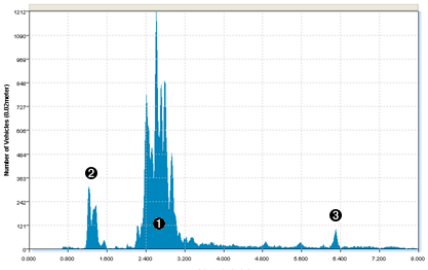
**Audit of Data Quality sample - one sensor fails mid-survey**

# Axle Position Histogram

The Axle Position Histogram is a histogram of inter-axle spacings within vehicles. This report will usually have a characteristic shape corresponding to common axle spacings, making it an extremely useful tool for verifying data quality.

The Axle Position Histogram can be characterised by:

1. A group of spikes representing the most common passenger vehicles, and light trucks.
2. Spikes corresponding to the double and triple axle groups of heavy vehicles (for datasets containing a noticeable percentage of these vehicles).
3. Smaller spikes corresponding to the longer inter-axle spans in heavy vehicles, such as buses.



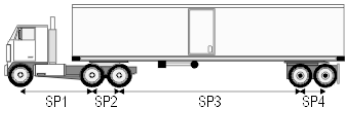
Axle Position Histogram Sample

The Axle Position Histogram can be used to check for:

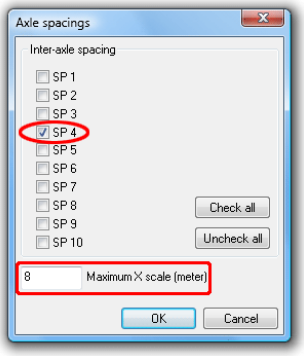
- matching sensor length, and
- correct sensor spacing.

Characteristic spikes in the histogram can be checked against known good data from the same area. If these spikes deviate in position by a significant amount, one of these problems may exist, and speed and classification should be considered suspect for this dataset.

For example, it is possible to target the double axle group on the back of an articulated truck, which is usually one of a few standard distances apart. Selecting **Properties** from the report's right-click menu will display the axle spacings filter.

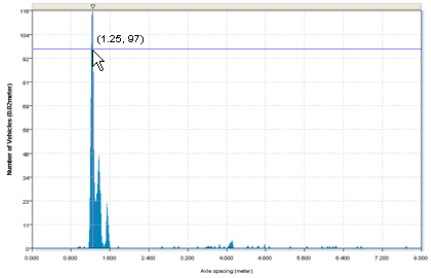



Inter-axle spacings




Selecting **SP4** in this case will display only the spacings between axles four and five. Note also the X-axis scale can be modified to increase resolution.

Filtering should create a few clearly defined spikes that can be verified using the cross-hairs. Again, deviation from known values may indicate a sensor installation problem.



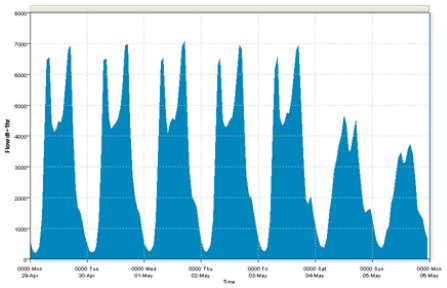

**Filtered Axle Position Histogram**

For bidirectional data *with a suspected problem*, it is possible to distinguish between different sensor length and incorrect spacing. Different sensor length will result in spacings that are too short in one direction, and too long in the other. If filtering for one direction using the report Profile's direction filter moves the Axle Position Histogram left or right, this indicates different sensor length. If the report is unmoved, then incorrect spacing is the likely cause.

# Vehicle Flow

The Vehicle Flow report is a time-based plot of total vehicle volume.

Note that the Vehicle Flow report is a measure of vehicles per time period. The time period, or integration time is displayed next to the vertical axis. For example, with an integration time of one hour, each point on the graph represents total vehicles per hour.

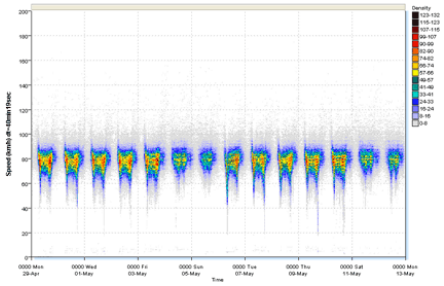


**Vehicle Flow Sample**

The Vehicle Flow report has a variable display span and integration time using the report's Graph Toolbar.

# Velocity Dispersion

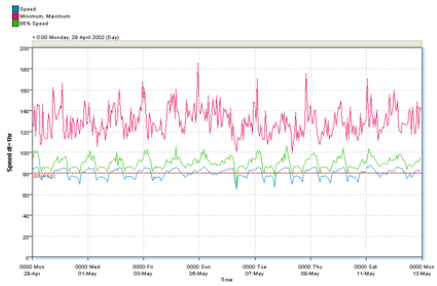
The Velocity Dispersion report is a time-based plot showing relative speed densities. This report highlights the relationship between speed and traffic density at a site. Periods of congestion are especially obvious.



Velocity Dispersion Sample

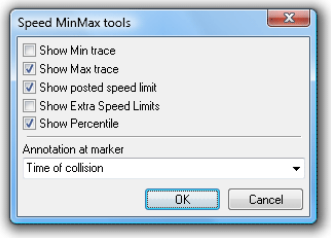
# Speed

The Speed report is a time-based plot of average vehicle speed per selected integration period. By default, the report also shows a plot of maximum vehicle speed, and a horizontal marker for the posted speed limit (PSL).



**Speed Report sample, with mean, 85th percentile and maximum speed.**

Right-clicking on the report and selecting **Properties** displays the report's options.




**Speed report options**

**Show Min trace** displays a plot of minimum speed per integration period. **Show Percentile** displays a plot for the first percentile, and **Show Extra Speed Limits** displays horizontal markers for each of the speed limits, per the settings in the **Speed** page of the report's Advanced Profile options.

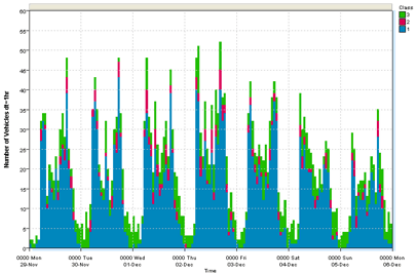
The **Annotation at marker** is a piece of text that appears next to the time of the marker, which can be placed with the cross-hairs. The drop-down list is also user-editable.

The Speed report also has two special **Display Span** options for a **Virtual Day** or **Virtual Week.**

# Stacked Flow

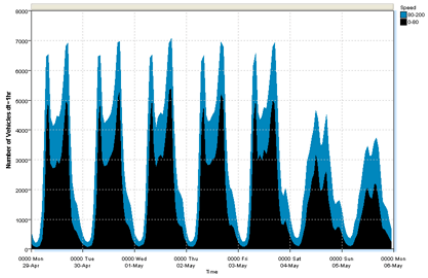
The Stacked Flow reports are similar to the Flow report, but with either vehicle class or speed bin differentiation.

Total flow per integration period is represented by a stack of bars for each included class or speed bin. Fewer classes or speed bins may be required to give sufficient detail. Aggregating a class scheme (usually light, medium and heavy vehicles) often gives extremely useful results.



**Flow Stacked by Class sample, using an aggregated class scheme**

Another example is two speed bins, one either side of the PSL, highlighting total vehicles exceeding the PSL.

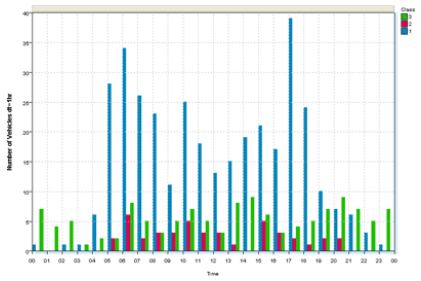


**Flow Stacked by Speed sample showing vehicles above and below the PSL**

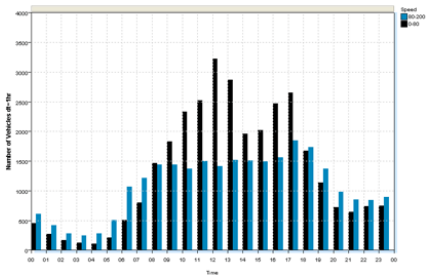
# Clustered Flow

The Clustered Flow reports are a variation of the Stacked Flow reports. Rather than stacking the classes or speed bins, each is plotted side-by-side.

These reports require a large integration time or a small display span to give sufficient resolution.



Flow Clustered by Class sample, with aggregated class scheme

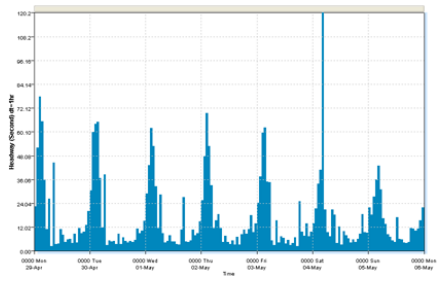


Flow Clustered by Speed Bins sample, showing vehicles exceeding the PSL

# Separation

The Separation report is a time-based plot of average vehicle separation per integration period.

Remember that separation can be optionally defined as headway or gap in the report's Advanced Profile options.



Separation report sample

# Dispersion Plots

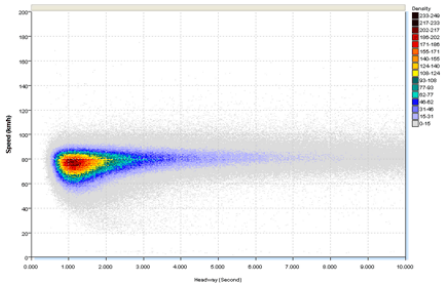
MCReport has four dispersion or scatter plots:

- Speed vs Separation
- Volume vs Speed
- Density vs Volume
- Volume vs Density

Every vehicle is represented by a single point on the graph. Point density is indicated by the density colour glide specified in the report Profile.

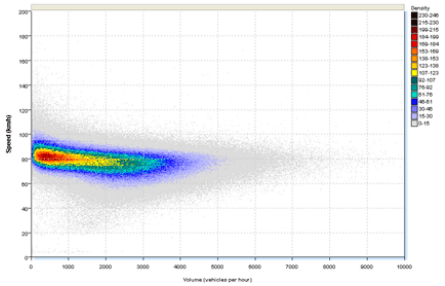
These plots portray differing characteristics of traffic flow, which are normally based on theoretical values in traffic engineering text books. They can be very useful when analysing data on roads that are at or near capacity, or for before and after studies of road works such as traffic calming.

The **Granularity** option in the **Format** page of the Advanced Profile options adjusts the resolution of these reports. A higher granularity gives finer resolution, but require more vehicles to build any significant density.



**Speed vs Separation Dispersion Plot sample**

The horizontal axis of the Speed vs Separation can be modified to give more resolution. Simply right-click, and select **Properties**.



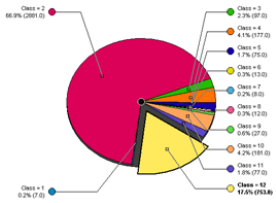
**Speed vs Volume Dispersion Plot sample**

# Bin charts

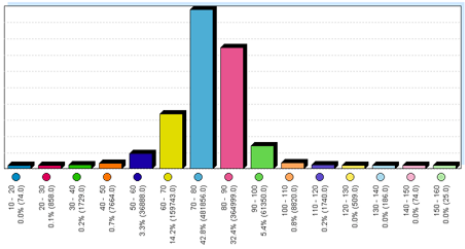
MCReport has two bin charts - the Class bin report, and the Speed bin report. These reports provide a graphical representation of the proportions of class and speed bins respectively. The Header Sheet also contains a table of class/speed bin totals and percentages.

Bin charts have four renderings, each providing a unique data representation. The most common renderings are bar or column charts, and pie charts.

The pie chart rendering is a three-dimensional, dynamic chart. The chart can be rotated to the angle that best represents the data by clicking and dragging the black circle in the centre. Individual pie slices can be highlighted by clicking the coloured circle next to the class or speed bin label.



**Class Bin report sample, with pie rendering**

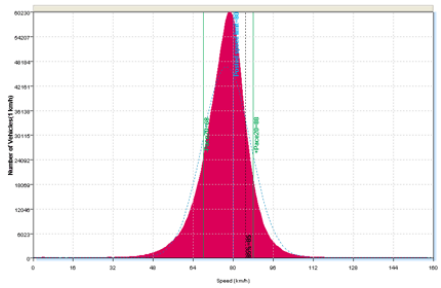


**Speed Bin report sample, with bar rendering**

# Speed Histogram

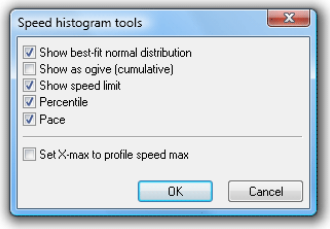
The Speed Histogram report provides the speed profile at a site. A normal curve, with the same mean and standard deviation, is plotted to help gauge the skew of the speed distribution.

Optional vertical markers also show the speed percentile, speed pace and posted speed limit - all as specified in the report's Profile.



**Speed Histogram sample**

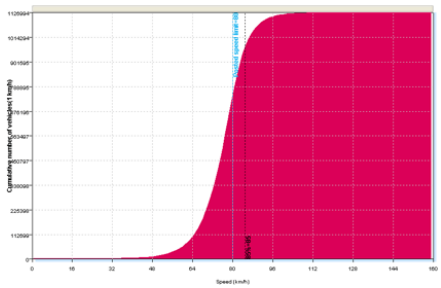
Right-clicking on the report and selecting **Properties** displays the report's options, most of which are self-explanatory.




**Speed Histogram Options**

The **Set X-max to profile speed max** option changes the maximum value of the speed axis to be the upper limit of the Profile's speed filter.

The **Show as ogive** option displays a cumulative total of vehicles.

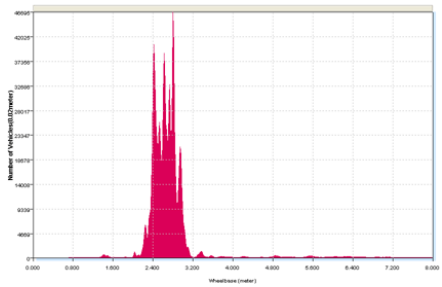


**Speed Histogram sample in cumulative mode**

# Wheelbase Histogram

The Wheelbase Histogram report presents a graphical distribution of vehicle wheelbases, highlighting common vehicle lengths.

The Axle Position Histogram report also shows intra-vehicle axle spacings.

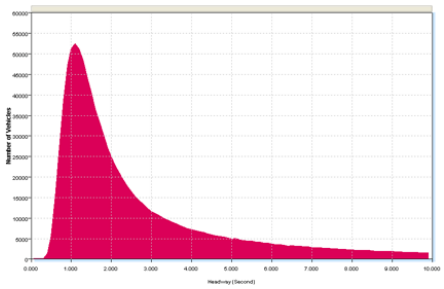


**Wheelbase Histogram Sample**

The X-axis scale can be changed, by right-clicking the report and selecting **Properties.**

# Separation Histogram

The Separation Histogram report provides a graphical distribution of the separation (in time) between vehicles.



Separation Histogram Sample

The X-axis scale can be changed, by right-clicking the report and selecting **Properties.** This allows for examination of the behaviour of close-following vehicles.

The Speed vs Separation dispersion plot also examines this behaviour, but takes into account vehicle speed.

The definition of separation as either headway or gap can be set in the report's Advanced Profile options.

# Special Reports

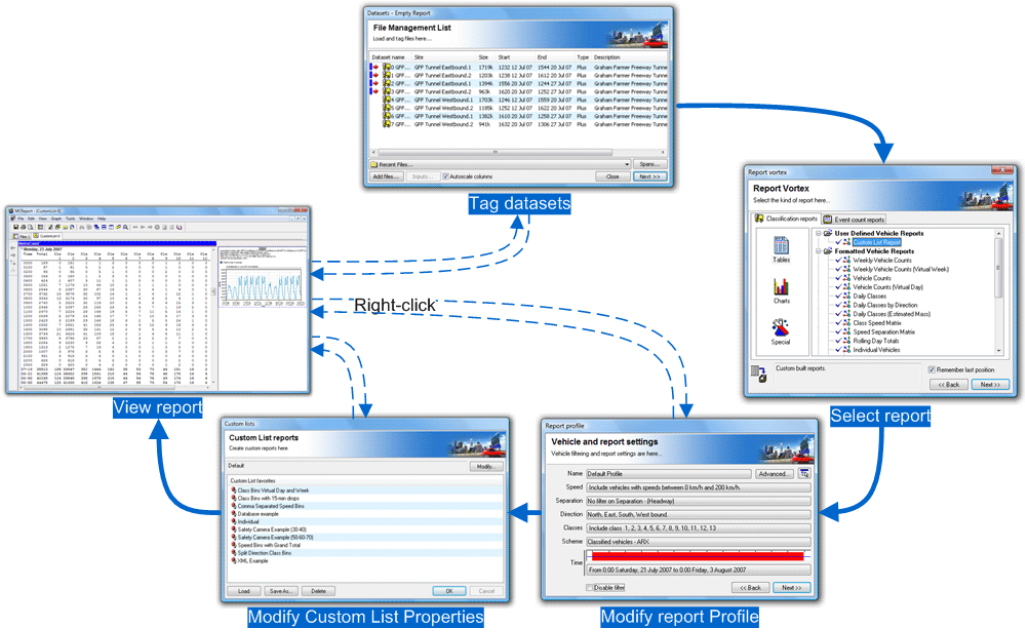
Most of the reports in the **Special** group of reports are highly application-specific, emulating other "standard" report formats.

# Generating a Custom List Report

## Report Wizard

The Custom List report is a **Classification** report, under **Tables** in the Report Vortex. The Custom List report's properties are displayed as an additional step to the Report Wizard, just before the report is generated.

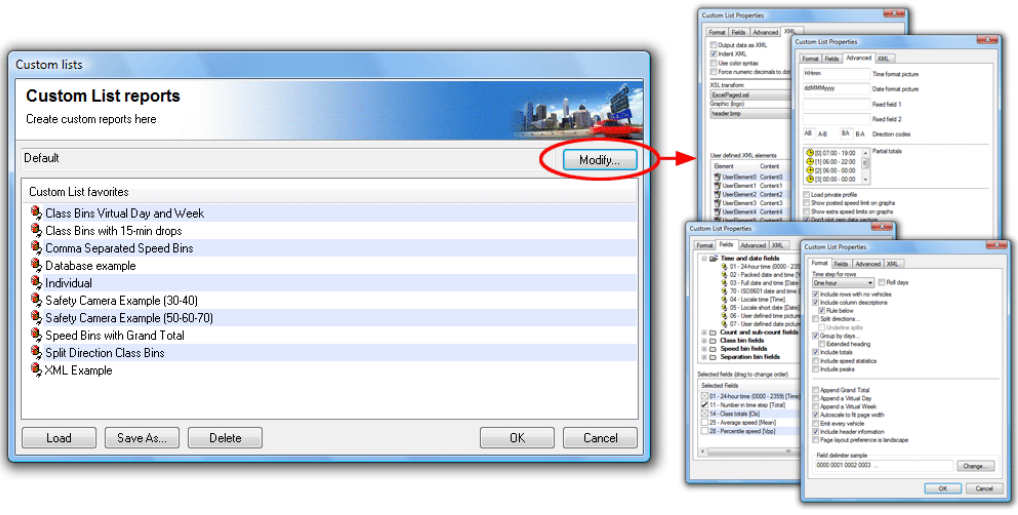
A Custom List report's properties can be accessed at any time via the report's right-click menu, just like the report's Local Profile. Custom Lists can also be easily saved for future use.




**Report Wizard for the Custom List report**

## Custom List Properties

The main Custom List dialog box is used for loading and saving Custom List formats, and for changing the current format.




**Custom List report properties**

To load an existing Custom List format, select an item from the **Favorites** list and click the **Load** button, or simply double-click. The Custom List name will change to indicate the format has been loaded. Several examples are provided.

The **Save As** button writes the current Custom List format to a file, whose name will then appear in the **Favorites** list. Custom List format files have a **.xpt** extension, and should be stored in the **Profiles** folder in MTE's Documents folder.

The **Modify** button at the top leads to another dialog box, with the Custom List properties broken into four areas:

- **Format** - defines the layout of the report, specifically the rows and totals.
- **Fields** - defines the included columns, and their order.

- **Advanced** - miscellaneous options, including user-defined fields and totals.
- **XML** - options for exporting data via XML.

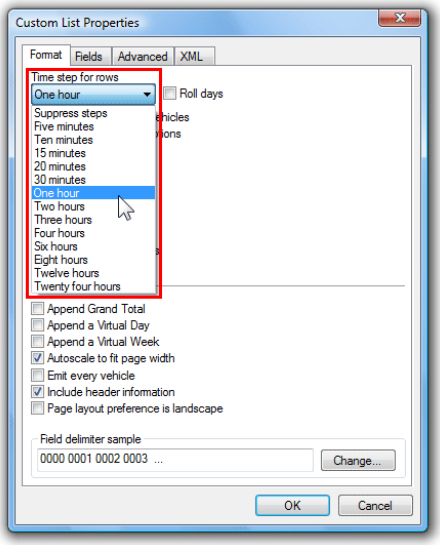
Most of these options are covered in subsequent sections. Exporting data via XML is covered in its own chapter.

*Note:*
*The word **modified** will be appended to the Custom List format name when any properties are changed. To remove this, simply save the format.*

# Custom List Format

## Time Step Interval

The **Time Step** option is the interval over which vehicles are accumulated for each row in a Custom List report. The **Suppress steps** selection removes all data rows from the Custom List report, leaving only summary totals and statistics such as the Virtual Day or Week.

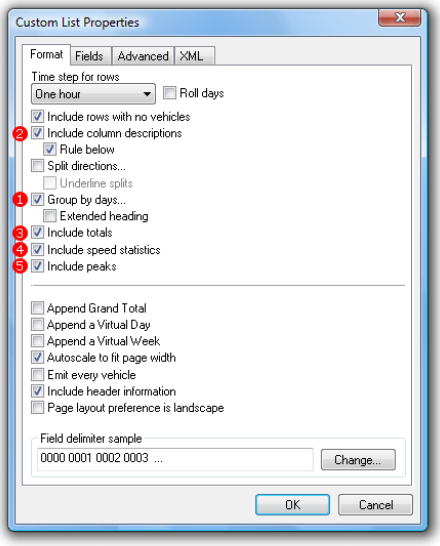



| Time | Total | Cls 1 | Cls 2 | Cls 3 | Cls 4 | Cls 5 | Cls 6 | Cls 7 | Cls 8 | Cls 9 | Cls 10 | Cls 11 | Cls 12 | Cls 13 | Mean | Vpp 85 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 256 | 1 | 247 | 3 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 78.6 | 84.2 |
| 0100 | 226 | 0 | 223 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 79.3 | 85.0 |
| 0200 | 132 | 0 | 125 | 0 | 2 | 3 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 81.2 | 88.2 |
| 0300 | 111 | 1 | 101 | 0 | 6 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 81.6 | 88.9 |
| 0400 | 185 | 1 | 163 | 1 | 8 | 6 | 1 | 1 | 1 | 2 | 0 | 1 | 0 | 0 | 79.8 | 84.6 |
| 0500 | 450 | 6 | 410 | 5 | 14 | 7 | 0 | 0 | 1 | 1 | 5 | 1 | 0 | 0 | 80.1 | 85.7 |
| 0600 | 1343 | 5 | 1204 | 24 | 57 | 16 | 4 | 1 | 3 | 7 | 21 | 0 | 1 | 0 | 73.1 | 79.2 |
| 0700 | 2111 | 8 | 1965 | 33 | 69 | 9 | 4 | 2 | 7 | 5 | 6 | 1 | 1 | 1 | 60.1 | 72.0 |
| 0800 | 2161 | 7 | 2019 | 25 | 72 | 15 | 5 | 3 | 5 | 4 | 6 | 0 | 0 | 0 | 56.1 | 64.1 |
| 0900 | 1790 | 8 | 1637 | 16 | 90 | 15 | 4 | 3 | 3 | 5 | 8 | 1 | 0 | 0 | 66.5 | 73.8 |
| 1000 | 1619 | 4 | 1470 | 22 | 81 | 11 | 4 | 7 | 1 | 6 | 12 | 1 | 0 | 0 | 65.0 | 73.1 |
| 1100 | 1661 | 4 | 1516 | 18 | 83 | 14 | 4 | 8 | 1 | 6 | 7 | 0 | 0 | 0 | 66.1 | 73.1 |
| 1200 | 1669 | 6 | 1541 | 16 | 75 | 14 | 1 | 3 | 0 | 3 | 9 | 1 | 0 | 0 | 65.9 | 74.2 |
| 1300 | 1595 | 9 | 1452 | 14 | 85 | 15 | 3 | 4 | 2 | 8 | 3 | 0 | 0 | 0 | 67.4 | 74.9 |
| 1400 | 1701 | 4 | 1578 | 18 | 77 | 10 | 3 | 1 | 3 | 1 | 6 | 0 | 0 | 0 | 67.2 | 74.2 |
| 1500 | 1915 | 8 | 1789 | 25 | 69 | 5 | 2 | 3 | 5 | 4 | 5 | 0 | 0 | 0 | 64.3 | 70.9 |
| 1600 | 1436 | 3 | 1375 | 20 | 28 | 3 | 2 | 1 | 1 | 0 | 2 | 0 | 1 | 0 | 34.6 | 52.9 |
| 1700 | 1346 | 4 | 1318 | 8 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 29.6 | 38.2 |
| 1800 | 1654 | 8 | 1625 | 2 | 12 | 2 | 1 | 1 | 0 | 2 | 1 | 0 | 0 | 0 | 54.5 | 73.4 |
| 1900 | 1049 | 4 | 1027 | 3 | 12 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 73.6 | 79.6 |
| 2000 | 806 | 3 | 787 | 1 | 11 | 1 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 75.0 | 79.9 |
| 2100 | 742 | 3 | 727 | 2 | 7 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 76.2 | 81.0 |
| 2200 | 672 | 5 | 655 | 1 | 3 | 3 | 2 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 77.0 | 81.7 |
| 2300 | 466 | 3 | 453 | 1 | 6 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 77.3 | 82.4 |
| **07-19** | **20658** | **73** | **19285** | **217** | **757** | **113** | **33** | **36** | **28** | **44** | **65** | **4** | **2** | **1** | **58.9** | **72.0** |
| **06-22** | **24598** | **88** | **23030** | **247** | **844** | **131** | **37** | **38** | **32** | **52** | **90** | **5** | **3** | **1** | **61.4** | **74.5** |
| **06-00** | **25736** | **96** | **24138** | **249** | **853** | **136** | **39** | **38** | **32** | **54** | **92** | **5** | **3** | **1** | **62.1** | **75.6** |
| **00-00** | **27096** | **105** | **25407** | **259** | **889** | **155** | **42** | **39** | **34** | **57** | **98** | **7** | **3** | **1** | **63.0** | **76.3** |

**Example Custom List report with a time step of one hour**

## Time Step Grouping

The **Group by days** option breaks the time steps into 24-hour groups, placing the date at the start of the group. The option also includes the **column descriptions** option before the group, and the **totals**, **speed statistics** and **peaks** options after the group. If the **Group by days** option is not selected, these options appear at the beginning and end of the entire range of time steps.




1 Thursday, 2 August 2007

| 2 Time | Total | Cls 1 | Cls 2 | Cls 3 | Cls 4 | Cls 5 | Cls 6 | Cls 7 | Cls 8 | Cls 9 | Cls 10 | Cls 11 | Cls 12 | Cls 13 | Mean | Vpp 85 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 262 | 1 | 251 | 2 | 4 | 2 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 84.6 | 91.8 |
| 0100 | 118 | 1 | 108 | 1 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 84.0 | 93.6 |
| 0200 | 100 | 0 | 92 | 1 | 4 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 83.8 | 92.5 |
| 0300 | 167 | 1 | 157 | 0 | 7 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 85.3 | 93.2 |
| 0400 | 420 | 0 | 401 | 2 | 13 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 84.5 | 92.2 |
| 0500 | 1194 | 11 | 1118 | 5 | 46 | 11 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 83.8 | 90.4 |
| 0600 | 2775 | 13 | 2581 | 51 | 97 | 11 | 8 | 1 | 3 | 3 | 6 | 0 | 0 | 1 | 80.0 | 86.0 |
| 0700 | 3760 | 15 | 3581 | 36 | 91 | 13 | 4 | 3 | 4 | 5 | 7 | 1 | 0 | 0 | 72.7 | 80.3 |
| 0800 | 3376 | 19 | 3194 | 20 | 110 | 10 | 2 | 2 | 5 | 4 | 8 | 2 | 0 | 0 | 72.7 | 80.6 |
| 0900 | 2992 | 13 | 2752 | 36 | 127 | 15 | 6 | 7 | 8 | 7 | 21 | 0 | 0 | 0 | 73.9 | 81.7 |
| 1000 | 2440 | 10 | 2167 | 24 | 157 | 21 | 8 | 13 | 8 | 7 | 23 | 1 | 1 | 0 | 77.0 | 84.6 |
| 1100 | 2542 | 10 | 2279 | 26 | 156 | 20 | 8 | 7 | 5 | 6 | 20 | 3 | 2 | 0 | 76.0 | 83.2 |
| 1200 | 2756 | 8 | 2481 | 27 | 166 | 22 | 8 | 8 | 9 | 7 | 19 | 0 | 1 | 0 | 75.2 | 82.8 |
| 1300 | 2891 | 16 | 2601 | 33 | 148 | 26 | 13 | 6 | 8 | 10 | 25 | 2 | 2 | 1 | 75.6 | 83.2 |
| 1400 | 3016 | 11 | 2754 | 42 | 145 | 18 | 4 | 9 | 8 | 8 | 17 | 0 | 0 | 0 | 76.0 | 83.2 |
| 1500 | 3413 | 18 | 3147 | 43 | 140 | 15 | 3 | 4 | 9 | 6 | 24 | 3 | 0 | 1 | 74.7 | 81.7 |
| 1600 | 3918 | 20 | 3703 | 46 | 113 | 6 | 1 | 8 | 8 | 5 | 7 | 0 | 0 | 1 | 71.6 | 80.6 |
| 1700 | 4062 | 18 | 3911 | 22 | 90 | 4 | 2 | 1 | 2 | 4 | 6 | 0 | 0 | 2 | 72.7 | 80.6 |
| 1800 | 2709 | 11 | 2643 | 14 | 30 | 3 | 0 | 1 | 0 | 1 | 4 | 0 | 1 | 1 | 77.6 | 84.6 |
| 1900 | 1638 | 5 | 1602 | 6 | 20 | 1 | 0 | 1 | 0 | 1 | 2 | 0 | 0 | 0 | 80.8 | 86.8 |
| 2000 | 1212 | 11 | 1181 | 4 | 11 | 3 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 81.8 | 88.2 |
| 2100 | 1328 | 10 | 1298 | 2 | 9 | 3 | 1 | 0 | 0 | 0 | 4 | 0 | 0 | 1 | 81.0 | 86.8 |
| 2200 | 994 | 0 | 976 | 2 | 10 | 3 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 81.9 | 88.2 |
| 2300 | 676 | 3 | 653 | 3 | 14 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 81.3 | 87.5 |
| **07-19** | **37875** | **169** | **35213** | **369** | **1473** | **173** | **59** | **69** | **74** | **70** | **181** | **12** | **7** | **6** | **74.4** | **82.1** |
| **06-22** | **44828** | **208** | **41875** | **432** | **1610** | **191** | **68** | **71** | **77** | **74** | **195** | **12** | **7** | **8** | **75.4** | **83.2** |
| 3 **06-00** | **46498** | **211** | **43504** | **437** | **1634** | **196** | **68** | **71** | **78** | **75** | **197** | **12** | **7** | **8** | **75.6** | **83.5** |
| **00-00** | **48759** | **225** | **45631** | **448** | **1714** | **217** | **71** | **72** | **78** | **77** | **199** | **12** | **7** | **8** | **76.0** | **83.9** |

5 **Peak step** 17:00 (4062) **AM Peak step** 07:00 (3760) **PM Peak step** 17:00 (4062)

**Vehicles** = 48759
**Posted speed limit** = 80 km/h, Exceeding = 15246 (31.27%), Mean Exceeding = 85.15 km/h
4 **Maximum** = 167.1 km/h, **Minimum** = 4.7 km/h, **Mean** = 76.0 km/h
**85% Speed** = 83.9 km/h, **95% Speed** = 88.9 km/h, **Median** = 76.3 km/h
**20 km/h Pace** = 66 - 86, **Number in Pace** = 38143 (78.23%)
**Variance** = 72.71, **Standard Deviation** = 8.53 km/h

**Custom List Grouping and Totals**

When data is grouped by days, the first time step starts at midnight. The **Roll days** option groups data in 24-hour periods aligned to the start of the report's Time Filter. This is useful for short 24 or 48-hour counts where daily totals are required, but the data may not start at midnight.

* Tuesday, 1 May 2007 - Wednesday, 2 May 2007

| Time | Total | Cls 1 | Cls 2 | Cls 3 | Cls 4 | Cls 5 | Cls 6 | Cls 7 | Cls 8 | Cls 9 | Cls 10 | Cls 11 | Cls 12 | Cls 13 | Mean | Vpp 85 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0900 | 1741 | 7 | 1603 | 17 | 76 | 11 | 5 | 5 | 6 | 2 | 5 | 1 | 0 | 3 | 70.7 | 77.0 |
| 1000 | 1471 | 3 | 1313 | 24 | 97 | 12 | 5 | 5 | 3 | 4 | 5 | 0 | 0 | 0 | 73.7 | 80.3 |
| 1100 | 1544 | 1 | 1396 | 16 | 91 | 11 | 7 | 7 | 4 | 4 | 6 | 1 | 0 | 0 | 73.0 | 79.6 |
| 1200 | 1560 | 2 | 1422 | 15 | 84 | 12 | 5 | 4 | 3 | 1 | 10 | 1 | 1 | 0 | 73.2 | 80.3 |
| 1300 | 1575 | 0 | 1425 | 11 | 99 | 13 | 7 | 9 | 5 | 1 | 5 | 0 | 0 | 0 | 72.9 | 79.6 |
| 1400 | 1709 | 0 | 1552 | 27 | 83 | 20 | 4 | 6 | 2 | 3 | 12 | 0 | 0 | 0 | 72.4 | 79.2 |
| 1500 | 1822 | 1 | 1680 | 29 | 82 | 12 | 3 | 2 | 4 | 3 | 5 | 0 | 0 | 1 | 70.3 | 78.5 |
| 1600 | 2018 | 6 | 1921 | 22 | 56 | 6 | 0 | 2 | 2 | 1 | 2 | 0 | 0 | 0 | 67.0 | 75.6 |
| 1700 | 1964 | 2 | 1892 | 22 | 32 | 5 | 3 | 2 | 4 | 2 | 0 | 0 | 0 | 0 | 63.2 | 73.8 |
| 1800 | 1560 | 3 | 1525 | 7 | 15 | 5 | 0 | 0 | 2 | 1 | 1 | 1 | 0 | 0 | 75.3 | 81.4 |
| 1900 | 1032 | 3 | 1008 | 7 | 9 | 2 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 79.2 | 84.6 |
| 2000 | 787 | 7 | 760 | 3 | 10 | 4 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 79.6 | 85.0 |
| 2100 | 804 | 3 | 789 | 1 | 6 | 2 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 79.6 | 85.0 |
| 2200 | 633 | 3 | 612 | 2 | 10 | 2 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 79.5 | 85.3 |
| 2300 | 349 | 1 | 337 | 0 | 7 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 82.0 | 88.9 |
| 0000 | 196 | 3 | 187 | 0 | 1 | 3 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 83.3 | 88.6 |
| 0100 | 96 | 0 | 90 | 0 | 2 | 3 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 82.1 | 87.1 |
| 0200 | 78 | 1 | 73 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 83.4 | 88.9 |
| 0300 | 133 | 0 | 121 | 0 | 6 | 3 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 82.8 | 87.8 |
| 0400 | 335 | 1 | 315 | 3 | 11 | 3 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 82.6 | 88.2 |
| 0500 | 738 | 6 | 680 | 3 | 35 | 9 | 1 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 81.5 | 86.4 |
| 0600 | 1559 | 5 | 1461 | 18 | 54 | 12 | 2 | 1 | 4 | 0 | 1 | 1 | 0 | 0 | 76.1 | 81.7 |
| 0700 | 1897 | 10 | 1811 | 20 | 38 | 5 | 2 | 0 | 0 | 3 | 7 | 1 | 0 | 0 | 69.1 | 76.7 |
| 0800 | 1836 | 8 | 1750 | 10 | 47 | 8 | 2 | 2 | 2 | 1 | 6 | 0 | 0 | 0 | 68.1 | 76.3 |
| **07-19** | **20697** | **43** | **19290** | **220** | **800** | **120** | **43** | **44** | **37** | **26** | **64** | **5** | **1** | **4** | **70.4** | **78.5** |
| **06-22** | **24879** | **61** | **23308** | **249** | **879** | **140** | **45** | **48** | **42** | **27** | **69** | **6** | **1** | **4** | **71.7** | **79.9** |
| **06-00** | **25861** | **65** | **24257** | **251** | **896** | **144** | **46** | **49** | **43** | **27** | **72** | **6** | **1** | **4** | **72.1** | **80.3** |
| **00-00** | **27437** | **76** | **25723** | **257** | **955** | **165** | **49** | **49** | **45** | **30** | **77** | **6** | **1** | **4** | **72.7** | **81.0** |

**Example Custom List report with roll days option enabled**

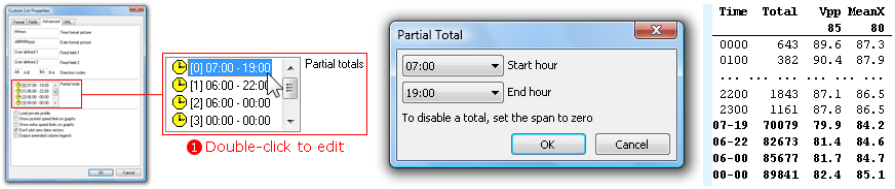
The **Split directions** options inserts two rows for each time step, one for each direction. Note that the direction is based on **A>B** and **B>A**, not the compass direction. When combining multiple files with this option, ensure the compass directions match.

| Date | Time | Dir | Total | Cls 1 | Cls 2 | Cls 3 | Cls 4 | Cls 5 | Cls 6 | Cls 7 | Cls 8 | Cls 9 | Cls 10 | Cls 11 | Cls 12 | Cls 13 | Mean | Vpp 85 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2/03/1998 | 0000 | AB | 3962 | 25 | 3646 | 31 | 239 | 6 | 4 | 1 | 0 | 6 | 3 | 0 | 0 | 1 | 56.6 | 64.1 |
| 2/03/1998 | 0000 | BA | 4467 | 24 | 4143 | 14 | 263 | 8 | 8 | 1 | 2 | 1 | 2 | 0 | 0 | 1 | 51.2 | 63.7 |
| 3/03/1998 | 0000 | AB | 3841 | 16 | 3547 | 26 | 237 | 9 | 1 | 1 | 0 | 3 | 0 | 0 | 0 | 1 | 57.1 | 65.2 |
| 3/03/1998 | 0000 | BA | 4238 | 11 | 3934 | 21 | 258 | 5 | 4 | 2 | 1 | 1 | 1 | 0 | 0 | 0 | 57.1 | 64.4 |
| 4/03/1998 | 0000 | AB | 4075 | 24 | 3755 | 42 | 234 | 6 | 4 | 3 | 1 | 1 | 3 | 0 | 0 | 2 | 57.1 | 64.8 |
| 4/03/1998 | 0000 | BA | 4488 | 19 | 4175 | 26 | 257 | 5 | 3 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 57.3 | 64.4 |
| 5/03/1998 | 0000 | AB | 4143 | 22 | 3805 | 41 | 255 | 7 | 6 | 2 | 3 | 0 | 0 | 0 | 0 | 2 | 57.2 | 65.2 |
| 5/03/1998 | 0000 | BA | 4512 | 24 | 4189 | 23 | 258 | 3 | 8 | 4 | 1 | 1 | 1 | 0 | 0 | 0 | 53.9 | 64.1 |
| 6/03/1998 | 0000 | AB | 4361 | 18 | 4031 | 47 | 247 | 8 | 2 | 1 | 4 | 1 | 1 | 0 | 0 | 1 | 56.6 | 64.4 |
| 6/03/1998 | 0000 | BA | 4541 | 13 | 4235 | 16 | 256 | 9 | 7 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 51.9 | 63.4 |
| 7/03/1998 | 0000 | AB | 2991 | 12 | 2819 | 23 | 128 | 3 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 2 | 58.3 | 66.6 |
| 7/03/1998 | 0000 | BA | 3246 | 6 | 3087 | 13 | 136 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 58.3 | 66.2 |
| 8/03/1998 | 0000 | AB | 2659 | 21 | 2591 | 14 | 31 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 58.0 | 65.9 |
| 8/03/1998 | 0000 | BA | 2741 | 12 | 2669 | 16 | 40 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 58.4 | 66.2 |
| **-** | **07-19** | **AB** | **20675** | **103** | **18999** | **200** | **1274** | **39** | **17** | **9** | **10** | **9** | **7** | **0** | **0** | **8** | **56.9** | **64.8** |
| **-** | **07-19** | **BA** | **23056** | **94** | **21409** | **121** | **1341** | **34** | **29** | **10** | **6** | **4** | **6** | **0** | **1** | **1** | **54.2** | **64.1** |
| **-** | **06-22** | **AB** | **24107** | **117** | **22333** | **215** | **1339** | **40** | **18** | **9** | **10** | **10** | **7** | **0** | **0** | **9** | **57.0** | **64.8** |
| **-** | **06-22** | **BA** | **26723** | **108** | **24983** | **128** | **1409** | **36** | **30** | **10** | **6** | **5** | **6** | **0** | **1** | **1** | **54.9** | **64.4** |
| **-** | **06-00** | **AB** | **25110** | **117** | **23318** | **218** | **1354** | **40** | **18** | **9** | **10** | **10** | **7** | **0** | **0** | **9** | **57.1** | **64.8** |
| **-** | **06-00** | **BA** | **27665** | **109** | **25901** | **129** | **1431** | **36** | **30** | **10** | **6** | **5** | **6** | **0** | **1** | **1** | **55.0** | **64.4** |
| **-** | **00-00** | **AB** | **26032** | **138** | **24194** | **224** | **1371** | **40** | **19** | **9** | **10** | **11** | **7** | **0** | **0** | **9** | **57.2** | **65.2** |
| **-** | **00-00** | **BA** | **28233** | **109** | **26432** | **129** | **1468** | **36** | **30** | **10** | **6** | **5** | **6** | **0** | **1** | **1** | **55.1** | **64.4** |

**Custom List with 24-hour time step and Split Directions option**

# Partial Totals

The **Include totals** formatting option by default includes a 24-hour total (00:00-00:00), as well as the common 12-hour (07:00-19:00), 16-hour (06:00-22:00) and 18-hour (06:00-00:00) partial totals. These can be changed or removed on the **Advanced** page of the Custom List Properties.




| Time | Total | Vpp 85 | MeanX 80 |
|---|---|---|---|
| 0000 | 643 | 89.6 | 87.3 |
| 0100 | 382 | 90.4 | 87.9 |
| ... | ... | ... | ... |
| 2200 | 1843 | 87.1 | 86.5 |
| 2300 | 1161 | 87.8 | 86.5 |
| **07-19** | **70079** | **79.9** | **84.2** |
| **06-22** | **82673** | **81.4** | **84.6** |
| **06-00** | **85677** | **81.7** | **84.7** |
| **00-00** | **89841** | **82.4** | **85.1** |

**Editing Custom List Partial Totals**

Double-click any of the Partial Totals to edit the time range. To disable a Partial Total set the start and end hours to the same value, except for 00:00-00:00 which is the 24-hour total. A disabled Partial Total will display **Off** and will not be displayed in the totals block.

# Virtual Day/Week

The **Append a Virtual Day** or **Week** options include a virtualised summary of the data at the end of the Custom List report.

A virtual day represents a "typical" 24 hour period, using one hour per row. A virtual week represents a "typical" week, with a row per day. Data is accumulated for all the matching times, and then recalculated. The summaries are not just an average of previously calculated rows, totals or statistics.

Virtual Day (21)

| Time | -/n | Total | Cls 1 | Cls 2 | Cls 3 | Cls 4 | Cls 5 | Cls 6 | Cls 7 | Cls 8 | Cls 9 | Cls 10 | Cls 11 | Cls 12 | Cls 13 | Vpp 85 | MeanX 80 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 21 | 349 | 1 | 337 | 1 | 5 | 2 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 91.1 | 87.8 |
| 0100 | 21 | 189 | 0 | 181 | 1 | 4 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 92.2 | 88.4 |
| 0200 | 21 | 143 | 0 | 135 | 1 | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 94.0 | 89.5 |
| 0300 | 21 | 179 | 0 | 170 | 1 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 93.2 | 89.0 |
| 0400 | 21 | 375 | 1 | 359 | 2 | 10 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 92.5 | 88.0 |
| 0500 | 21 | 979 | 7 | 928 | 5 | 27 | 7 | 2 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 91.4 | 87.4 |
| 0600 | 21 | 2132 | 10 | 1992 | 30 | 77 | 10 | 3 | 1 | 3 | 1 | 4 | 0 | 0 | 0 | 86.8 | 85.5 |
| 0700 | 21 | 2909 | 12 | 2762 | 28 | 78 | 10 | 4 | 2 | 3 | 2 | 6 | 1 | 0 | 0 | 82.8 | 84.5 |
| 0800 | 21 | 2798 | 14 | 2650 | 23 | 77 | 12 | 4 | 2 | 5 | 2 | 8 | 1 | 0 | 0 | 82.4 | 84.8 |
| 0900 | 21 | 2422 | 9 | 2247 | 26 | 99 | 13 | 4 | 4 | 5 | 4 | 11 | 1 | 0 | 0 | 83.5 | 84.9 |
| 1000 | 21 | 2312 | 6 | 2110 | 29 | 119 | 17 | 5 | 5 | 5 | 3 | 12 | 1 | 0 | 0 | 84.2 | 85.0 |
| 1100 | 21 | 2550 | 8 | 2338 | 30 | 122 | 19 | 5 | 5 | 7 | 4 | 13 | 1 | 0 | 0 | 83.5 | 84.8 |
| 1200 | 21 | 2571 | 8 | 2362 | 30 | 121 | 17 | 4 | 4 | 5 | 4 | 13 | 1 | 0 | 0 | 83.9 | 84.9 |
| 1300 | 21 | 2514 | 10 | 2313 | 33 | 108 | 17 | 5 | 4 | 6 | 4 | 12 | 1 | 0 | 1 | 84.2 | 84.9 |
| 1400 | 21 | 2677 | 9 | 2470 | 36 | 114 | 15 | 4 | 5 | 6 | 4 | 11 | 1 | 0 | 1 | 83.5 | 84.9 |
| 1500 | 21 | 2936 | 12 | 2748 | 35 | 102 | 13 | 2 | 3 | 5 | 4 | 10 | 1 | 0 | 1 | 82.8 | 84.8 |
| 1600 | 21 | 3348 | 16 | 3180 | 32 | 91 | 8 | 2 | 4 | 5 | 3 | 7 | 0 | 0 | 1 | 81.4 | 84.7 |
| 1700 | 21 | 3517 | 14 | 3397 | 25 | 65 | 4 | 1 | 2 | 2 | 1 | 4 | 0 | 0 | 0 | 81.4 | 84.5 |
| 1800 | 21 | 2392 | 9 | 2334 | 12 | 28 | 4 | 0 | 1 | 1 | 1 | 2 | 0 | 0 | 0 | 85.3 | 85.2 |
| 1900 | 21 | 1478 | 4 | 1446 | 7 | 15 | 2 | 0 | 1 | 0 | 0 | 3 | 0 | 0 | 0 | 87.5 | 85.9 |
| 2000 | 21 | 1114 | 4 | 1088 | 4 | 12 | 3 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 88.2 | 86.3 |
| 2100 | 21 | 1130 | 4 | 1108 | 3 | 10 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 87.8 | 86.2 |
| 2200 | 21 | 941 | 3 | 920 | 2 | 12 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 88.2 | 86.4 |
| 2300 | 21 | 590 | 1 | 575 | 1 | 9 | 2 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 89.3 | 87.0 |
| **07-19** | **21** | **32945** | **127** | **30910** | **339** | **1122** | **149** | **39** | **42** | **55** | **37** | **108** | **9** | **2** | **5** | **83.2** | **84.8** |
| **06-22** | **21** | **38799** | **149** | **36544** | **383** | **1235** | **167** | **43** | **44** | **59** | **39** | **119** | **9** | **2** | **6** | **84.2** | **85.1** |
| **06-00** | **21** | **40330** | **154** | **38038** | **387** | **1255** | **171** | **43** | **45** | **59** | **40** | **122** | **9** | **2** | **6** | **84.2** | **85.2** |
| **00-00** | **21** | **42544** | **164** | **40148** | **397** | **1311** | **185** | **47** | **46** | **61** | **43** | **125** | **9** | **2** | **6** | **84.6** | **85.5** |

Virtual Week (3)

| Time | -/n | Total | Cls 1 | Cls 2 | Cls 3 | Cls 4 | Cls 5 | Cls 6 | Cls 7 | Cls 8 | Cls 9 | Cls 10 | Cls 11 | Cls 12 | Cls 13 | Vpp 85 | MeanX 80 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mon | 3 | 44450 | 156 | 41584 | 412 | 1639 | 244 | 56 | 56 | 73 | 56 | 158 | 11 | 2 | 2 | 84.2 | 85.2 |
| Tue | 3 | 46757 | 177 | 43768 | 415 | 1699 | 250 | 60 | 55 | 80 | 53 | 179 | 12 | 3 | 7 | 84.2 | 85.2 |
| Wed | 3 | 47722 | 175 | 44807 | 432 | 1610 | 243 | 68 | 59 | 80 | 56 | 170 | 13 | 1 | 6 | 83.9 | 85.3 |
| Thu | 3 | 47779 | 181 | 44830 | 423 | 1676 | 232 | 59 | 59 | 77 | 60 | 161 | 11 | 4 | 7 | 83.9 | 85.2 |
| Fri | 3 | 48460 | 204 | 45368 | 488 | 1728 | 238 | 65 | 58 | 83 | 59 | 145 | 13 | 4 | 8 | 84.2 | 85.3 |
| \|Sat | 3 | 34674 | 138 | 33462 | 346 | 532 | 65 | 14 | 25 | 26 | 13 | 42 | 5 | 1 | 5 | 86.8 | 86.0 |
| \|Sun | 3 | 27964 | 118 | 27215 | 260 | 292 | 23 | 5 | 11 | 9 | 4 | 22 | 1 | 0 | 4 | 87.1 | 86.1 |
| -- | **3** | **297806** | **1148** | **281035** | **2776** | **9176** | **1296** | **328** | **322** | **427** | **301** | **877** | **66** | **15** | **39** | **84.6** | **85.5** |

**Custom List Virtual Day and Virtual Week**

Careful attention should be paid to the start and finish time alignment in the Profile when including virtual summaries. When using the virtual day, the Profile duration should be a whole number of days. When using the virtual week, the Profile duration should be a whole number of weeks. This ensures that averages are not skewed by including part of an hour or day that was only partially recorded. The whole number of days and weeks can be unaligned (not aligned to midnight). The Profile's time **Auto-Wrap** options assist in selecting an appropriate time range.

If the Profile is not appropriately set, the title will indicate partial data, such as **** Virtual Day (Partial days = 7.06)** or **** Virtual Week (Partial weeks = 1.01)**. In these cases, total rows (if selected) will not be shown.

# Grand Total

The **Append Grand Total** option includes an aggregate row for the entire range of data. Like the Virtual Day and Week, these values are calculated from all the underlying data, not from previously calculated rows, totals or statistics.

Grand Total

| Time | Total | Cls 1 | Cls 2 | Cls 3 | Cls 4 | Cls 5 | Cls 6 | Cls 7 | Cls 8 | Cls 9 | Cls 10 | Cls 11 | Cls 12 | Cls 13 | Vpp 85 | MeanX 80 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -- | 893418 | 3445 | 843104 | 8328 | 27527 | 3888 | 983 | 967 | 1282 | 904 | 2631 | 197 | 45 | 117 | 84.6 | 85.5 |

**Custom List Grand Total**

# Individual Vehicle Steps

The **Emit every vehicle** option creates a row for every vehicle. The special **Vehicle parameter** group of fields contain fields similar to those found in the **Individual Vehicles** report.

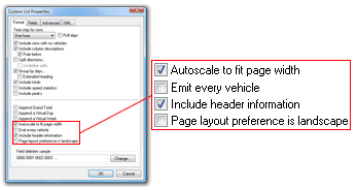
| Date-Time | Speed | Dir | Wbase | Hdwy | Gap | Ax | Gp | Vehicle Pic |
|---|---|---|---|---|---|---|---|---|
| 1993-09-20 13:01:25 | 76.5 | AB | 3.1 | 2.4 | 2.3 | 2 | 2 | o o |
| 1993-09-20 13:01:27 | 82.3 | AB | 2.9 | 2.2 | 2.1 | 2 | 2 | o o |
| 1993-09-20 13:01:47 | 83.8 | AB | 9.1 | 20.5 | 20.4 | 3 | 3 | o o o |
| 1993-09-20 13:01:59 | 83.8 | AB | 14.3 | 11.6 | 11.2 | 6 | 3 | o oo ooo |
| 1993-09-20 13:02:33 | 80.2 | AB | 3.0 | 34.2 | 33.6 | 2 | 2 | o o |
| 1993-09-20 13:02:58 | 85.2 | AB | 2.5 | 24.8 | 24.6 | 2 | 2 | o o |
| 1993-09-20 13:03:26 | 77.7 | AB | 7.4 | 28.2 | 28.1 | 3 | 2 | o oo |
| 1993-09-20 13:03:33 | 76.3 | AB | 5.8 | 7.1 | 6.7 | 2 | 2 | o o |
| 1993-09-20 13:03:37 | 76.3 | AB | 19.7 | 4.0 | 3.8 | 8 | 4 | o oo ooo oo |
| 1993-09-20 13:03:51 | 79.9 | AB | 1.9 | 14.1 | 13.2 | 2 | 1 | oo |

**Custom List report with Individual Vehicles**

Using the **Suppress steps** Time Step option, all other Custom List fields will be ignored, producing a report with just individual vehicles. If a Time Step is selected, they will be interspersed with the individual vehicles.

# Page Layout

If the width of the selected fields in a Custom List report exceed the width of the page, the **Autoscale to fit page width** will automatically reduce the size of the report's font. If the font becomes too small to read, a landscape page layout may be preferable.

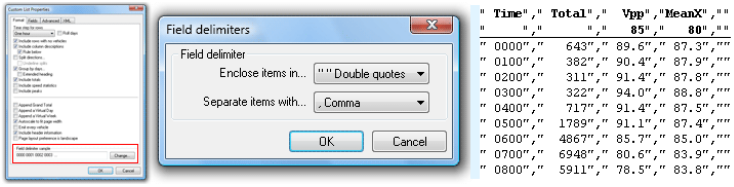



Custom List page layout options

The **Include header information** option includes the standard MetroCount report header at the start of the Custom List report, as well as a column legend for the selected fields.

# Field Delimiters

Fields or columns in a Custom List report are separated by a space character by default. To change this to another character, such as a comma for exporting to a spreadsheet, click the **Change** button at the bottom of the **Format** page. Each field can optionally be enclosed in another character, such as a double quote.

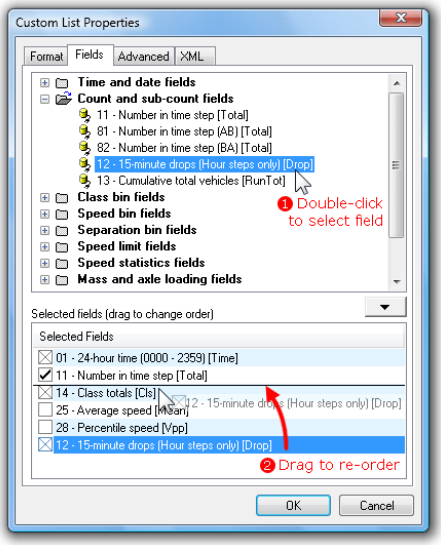



Custom List Field Delimiters

# Custom List Fields

## Selecting Fields

Fields in a Custom List report form the columns of the report. The **Fields** page of the Custom List Properties contains the **Fields Tree** at the top with the list of available fields, and the **Selected Fields** list at the bottom.



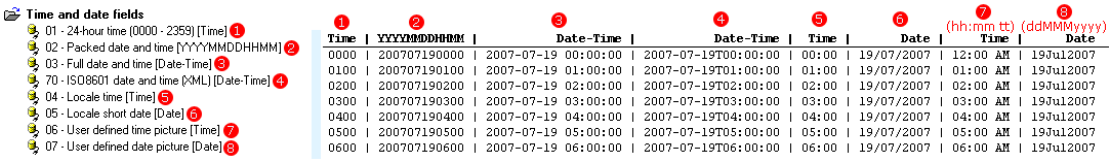

**Selecting Custom List Fields**

Fields can be added to the Selected Fields list by double-clicking them, or dragging them from the Fields Tree. The order of fields can be changed by dragging them around in the Selected Fields list. To remove a selected field, simply double-click it.

Note that the text in square brackets at the end of each field name is the column heading used for that field.

## Time and Date Fields

The Time and Date Fields display the *beginning* of each time step. There are a variety of standard date formats, most of which are self-explanatory.



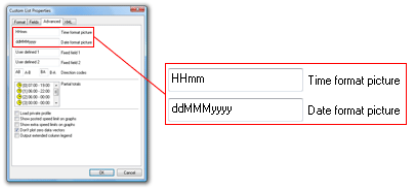

| 1 Time | 2 YYYYMMDDHHMM | 3 Date-Time | 4 Date-Time | 5 Time | 6 Date | 7 (hh:mm tt) Time | 8 (ddMMMyyyy) Date |
|---|---|---|---|---|---|---|---|
| 0000 | 200707190000 | 2007-07-19 00:00:00 | 2007-07-19T00:00:00 | 00:00 | 19/07/2007 | 12:00 AM | 19Jul2007 |
| 0100 | 200707190100 | 2007-07-19 01:00:00 | 2007-07-19T01:00:00 | 01:00 | 19/07/2007 | 01:00 AM | 19Jul2007 |
| 0200 | 200707190200 | 2007-07-19 02:00:00 | 2007-07-19T02:00:00 | 02:00 | 19/07/2007 | 02:00 AM | 19Jul2007 |
| 0300 | 200707190300 | 2007-07-19 03:00:00 | 2007-07-19T03:00:00 | 03:00 | 19/07/2007 | 03:00 AM | 19Jul2007 |
| 0400 | 200707190400 | 2007-07-19 04:00:00 | 2007-07-19T04:00:00 | 04:00 | 19/07/2007 | 04:00 AM | 19Jul2007 |
| 0500 | 200707190500 | 2007-07-19 05:00:00 | 2007-07-19T05:00:00 | 05:00 | 19/07/2007 | 05:00 AM | 19Jul2007 |
| 0600 | 200707190600 | 2007-07-19 06:00:00 | 2007-07-19T06:00:00 | 06:00 | 19/07/2007 | 06:00 AM | 19Jul2007 |

**Custom List Time and Date Fields**

The **Locale** options use the format provided by the operating system's regional settings.

The **ISO8601** format is recommended when exporting data, to provide compatibility with programs such as Excel.

The **User defined** date and time pictures can be edited on the **Advanced** page of the Custom List Properties, using the standard Windows time and date notation.




Custom List user defined date and time pictures

# Count and Sub-count Fields

The Count and Sub-count fields provide the total number of vehicles in the current time step.

Count and sub-count fields
- 11 - Number in time step [Total]
- 81 - Number in time step [AB] [Total]
- 82 - Number in time step [BA] [Total]
- 12 - 15-minute drops (Hour steps only) [Drop]
- 13 - Cumulative total vehicles [RunTot]

| Time | Total | Total AB | Total BA | Drop --00 | Drop --15 | Drop --30 | Drop --45 | RunTot |
|---|---|---|---|---|---|---|---|---|
| 0000 | 643 | 302 | 341 | 211 | 171 | 146 | 115 | 643 |
| 0100 | 382 | 162 | 220 | 90 | 97 | 89 | 106 | 1025 |
| 0200 | 311 | 116 | 195 | 95 | 84 | 77 | 55 | 1336 |
| 0300 | 322 | 158 | 164 | 60 | 72 | 84 | 106 | 1658 |

Custom List Count Fields

If the directional totals **AB** and **BA** are used with multiple datasets tagged, each dataset should have the same direction code.

When using an hourly time step, the **15-minute drops** field inserts a column for the total vehicles in each 15-minute period.

The **Cumulative total vehicles** field displays the cumulative number of vehicles since the beginning of the report.

# Class Bin Fields

The **Class totals** and **percentages** fields include a column of total vehicles (or percentage) for each class included in the report's Local Profile.

Class bin fields
- 14 - Class totals [Cls]
- 15 - Class percentages [Cl%]

| Time | Total | Cls 1 | Cls 2 | Cls 3 | Cl% 1 | Cl% 2 | Cl% 3 |
|---|---|---|---|---|---|---|---|
| 0000 | 643 | 623 | 12 | 8 | 96.9 | 1.9 | 1.2 |
| 0100 | 382 | 368 | 10 | 4 | 96.3 | 2.6 | 1.0 |
| 0200 | 311 | 302 | 7 | 2 | 97.1 | 2.3 | 0.6 |
| 0300 | 322 | 305 | 15 | 2 | 94.7 | 4.7 | 0.6 |

Custom List Class Bin Fields

# Speed Bin Fields

The **Speed bin totals** and **percentages**fields include a column of total vehicles (or percentage) for each *enabled* speed bin in the report's Local Profile. The lower and upper limits of each column are displayed in the column's heading.

Note that some vehicles may be hidden if some speed bins are disabled.

Speed bin fields
- 16 - Speed bin totals [Vbin]
- 17 - Speed bin percentages [Vb%]
- 37 - Speed rating [vRate]

| Time | Total | Vbin 0 60 | Vbin 60 80 | Vbin 80 100 | Vbin 100 200 | Vb% 0 60 | Vb% 60 80 | Vb% 80 100 | Vb% 100 200 | vRate |
|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 643 | 1 | 263 | 355 | 24 | 0.2 | 40.9 | 55.2 | 3.7 | 403.0 |
| 0100 | 382 | 2 | 157 | 204 | 19 | 0.5 | 41.1 | 53.4 | 5.0 | 242.0 |
| 0200 | 311 | 1 | 113 | 185 | 12 | 0.3 | 36.3 | 59.5 | 3.9 | 209.0 |
| 0300 | 322 | 0 | 102 | 205 | 15 | 0.0 | 31.7 | 63.7 | 4.7 | 235.0 |

Custom List Speed Bin Fields

The **Speed rating** field is the sum of products of each speed bin total multiplied by the bin's multiplier. These are defined in the report's Local Profile.

# Separation Bin Fields

The **Separation bin totals** and **percentages** fields include a column of total vehicles (or percentage) for each separation bin defined in the report's Local Profile. The lower and upper limits of each column are displayed in the column's heading.

Separation bin fields
- 41 - Separation bin totals [Sep]
- 60 - Separation bin percentages [Sep%]
- 42 - Separation rating [sRate]

| Time | Total | Sep 0.00 0.50 | Sep 0.50 1.00 | Sep 1.00 2.00 | Sep 2.00 4.00 | Sep 4.00 1000.00 | Sep% 0.00 0.50 | Sep% 0.50 1.00 | Sep% 1.00 2.00 | Sep% 2.00 4.00 | Sep% 4.00 1000.00 | sRate |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0700 | 6945 | 8 | 954 | 3757 | 1647 | 579 | 0.1 | 13.7 | 54.1 | 23.7 | 8.3 | 12055.0 |
| 0800 | 5909 | 3 | 385 | 2600 | 2405 | 514 | 0.1 | 6.5 | 44.0 | 40.7 | 8.7 | 8772.0 |
| 0900 | 6072 | 4 | 586 | 3080 | 1673 | 729 | 0.1 | 9.7 | 50.7 | 27.6 | 12.0 | 9607.0 |
| 1000 | 5134 | 5 | 579 | 2246 | 1391 | 913 | 0.1 | 11.3 | 43.7 | 27.1 | 17.8 | 7640.0 |

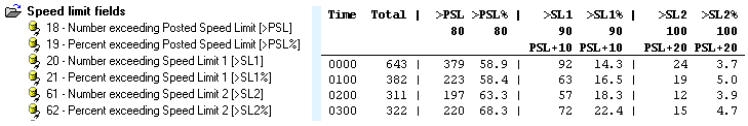
Custom List Separation Bin Fields

The **Separation rating** field is the sum of products of each separation bin total multiplied by the bin's multiplier. These are defined in the report's Local Profile.

# Speed Limit Fields

The Speed Limit fields display the total number of vehicles (or percentage) exceeding the selected speed limit. The Posted Speed Limit, and up to 10 other limits are defined in the report's Local Profile.

The actual limit, and the limit's name if one was defined, are displayed in the column heading.

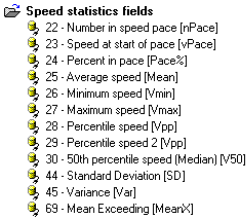



| Time | Total | >PSL 80 | >PSL% 80 | >SL1 90 PSL+10 | >SL1% 90 PSL+10 | >SL2 100 PSL+20 | >SL2% 100 PSL+20 |
|---|---|---|---|---|---|---|---|
| 0000 | 643 | 379 | 58.9 | 92 | 14.3 | 24 | 3.7 |
| 0100 | 382 | 223 | 58.4 | 63 | 16.5 | 19 | 5.0 |
| 0200 | 311 | 197 | 63.3 | 57 | 18.3 | 12 | 3.9 |
| 0300 | 322 | 220 | 68.3 | 72 | 22.4 | 15 | 4.7 |

**Custom List Speed Limit Fields**

# Speed Statistics Fields

The Speed Statistics fields provide a variety of standard statistical measures for the speed of vehicles in the current time step.




| Time | Total | nPace 20 | vPace 20 | Pace% 20 | Mean | Vmin | Vmax | Vpp 85 | Vpp 95 | V50 | SD | Var | MeanX 80 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 643 | 542 | 72.7 | 84.3 | 82.6 | 59.3 | 145.6 | 89.6 | 96.5 | 81.0 | 8.9 | 79.7 | 87.3 |
| 0100 | 382 | 313 | 70.9 | 81.9 | 82.7 | 52.8 | 123.1 | 90.4 | 99.0 | 81.0 | 9.0 | 81.1 | 87.9 |
| 0200 | 311 | 252 | 73.4 | 81.0 | 83.3 | 56.6 | 134.6 | 91.4 | 98.3 | 81.7 | 9.0 | 80.1 | 87.8 |
| 0300 | 322 | 256 | 73.1 | 79.5 | 84.9 | 65.1 | 115.0 | 94.0 | 99.7 | 83.5 | 8.4 | 70.3 | 88.8 |
| 0400 | 717 | 603 | 72.7 | 84.1 | 84.2 | 56.9 | 121.1 | 91.4 | 98.6 | 82.8 | 8.0 | 64.2 | 87.5 |
| 0500 | 1789 | 1520 | 72.7 | 85.0 | 83.8 | 59.7 | 132.4 | 91.1 | 97.2 | 82.8 | 7.5 | 56.5 | 87.4 |
| 0600 | 4867 | 4177 | 69.5 | 85.8 | 79.2 | 4.2 | 116.8 | 85.7 | 90.0 | 79.2 | 7.0 | 49.3 | 85.0 |
| 0700 | 6945 | 4998 | 62.3 | 72.0 | 70.8 | 21.1 | 109.9 | 80.6 | 85.0 | 72.0 | 10.5 | 109.5 | 83.9 |
| 0800 | 5909 | 2634 | 63.0 | 44.6 | 52.8 | 0.0 | 105.2 | 78.5 | 82.8 | 62.3 | 24.5 | 597.8 | 83.8 |
| 0900 | 6072 | 3382 | 63.0 | 55.7 | 66.4 | 2.4 | 115.8 | 79.9 | 84.6 | 68.0 | 13.4 | 179.3 | 84.1 |
| 1000 | 5134 | 4064 | 63.4 | 79.2 | 74.0 | 49.4 | 112.5 | 81.7 | 86.8 | 74.2 | 8.0 | 64.4 | 84.4 |

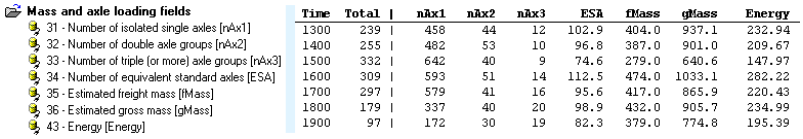
**Custom List Speed Statistics Fields**

The width of the speed pace, the percentile speeds and the posted speed limit for **Mean Exceeding** are all set in the report's Local Profile. The actual values are displayed in the column headings.

# Mass and Axle Loading Fields

The number of single, double and triple axle groups are based on the definition of a group (two or more axles less than a certain distance apart) in the selected Classification Scheme.

The ESA and estimated mass fields use the Estimated Mass table in the report's Local Profile.



Mass and axle loading fields
- 31 - Number of isolated single axles [nAx1]
- 32 - Number of double axle groups [nAx2]
- 33 - Number of triple (or more) axle groups [nAx3]
- 34 - Number of equivalent standard axles [ESA]
- 35 - Estimated freight mass [fMass]
- 36 - Estimated gross mass [gMass]
- 43 - Energy [Energy]

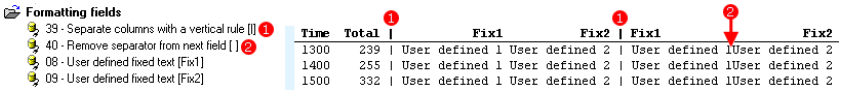
| Time | Total | nAx1 | nAx2 | nAx3 | ESA | fMass | gMass | Energy |
|---|---|---|---|---|---|---|---|---|
| 1300 | 239 | 458 | 44 | 12 | 102.9 | 404.0 | 937.1 | 232.94 |
| 1400 | 255 | 482 | 53 | 10 | 96.8 | 387.0 | 901.0 | 209.67 |
| 1500 | 332 | 642 | 40 | 9 | 74.6 | 279.0 | 640.6 | 147.97 |
| 1600 | 309 | 593 | 51 | 14 | 112.5 | 474.0 | 1033.1 | 282.22 |
| 1700 | 297 | 579 | 41 | 16 | 95.6 | 417.0 | 865.9 | 220.43 |
| 1800 | 179 | 337 | 40 | 20 | 98.9 | 432.0 | 905.7 | 234.99 |
| 1900 | 97 | 172 | 30 | 19 | 82.3 | 379.0 | 774.8 | 195.39 |

Custom List Mass Fields

# Formatting Fields

Fields or columns in the Custom List are normally separated by a space character on the right-hand side of the field. This character can be changed in the Custom List's Formatting options.

The **Separate columns with a vertical rule** field can be used to further delineate fields. Placing **Remove separator from next field** before a field will join the next two fields together.

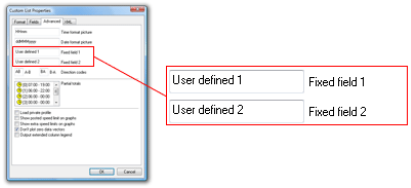


Formatting fields
- 39 - Separate columns with a vertical rule [|] (1)
- 40 - Remove separator from next field [ ] (2)
- 08 - User defined fixed text [Fix1]
- 09 - User defined fixed text [Fix2]

| Time | Total \| | Fix1 | Fix2 \| | Fix1 | Fix2 |
|---|---|---|---|---|---|
| 1300 | 239 \| | User defined 1 | User defined 2 \| | User defined 1 | User defined 2 |
| 1400 | 255 \| | User defined 1 | User defined 2 \| | User defined 1 | User defined 2 |
| 1500 | 332 \| | User defined 1 | User defined 2 \| | User defined 1 | User defined 2 |

Custom List Formatting Fields

The user defined text fields can be set in the **Advanced** page of the Custom List Properties.

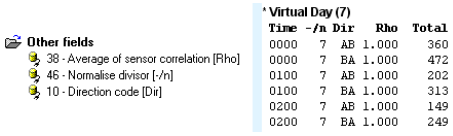



Custom List user defined fields

# Other Fields

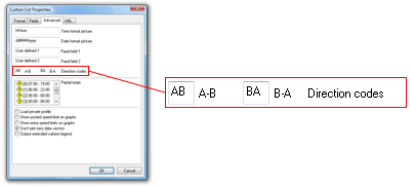
The **Average of sensor correlation** field is the average ratio of "matching" A and B hits for vehicles in the current time step. Perfect data will have a value of one.

The **Normalise divisor** field can be used in the Virtual Day and Week to show the number of times a particular hour of the day (or day of the week) contributed to the virtualised totals and statistics.




Custom List Other fields

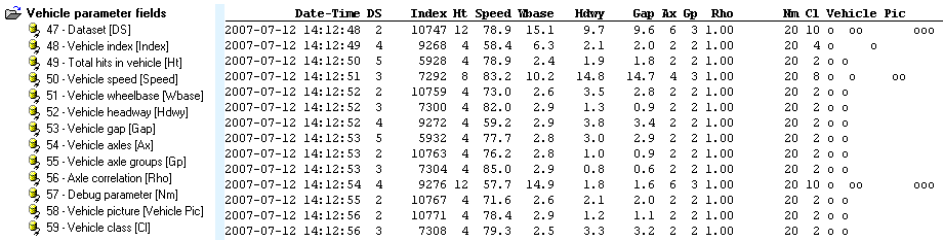
The **Direction code** field can be used with the **Split directions** formatting option where each time step is split into two rows (A>B and B>A). The text shown for each direction can be overridden in the Advanced page of the Custom List properties.




Custom List direction codes

# Vehicle Parameter Fields

The **Vehicle Parameter** fields are used with the **Emit every vehicle** formatting option. Refer to the Individual Vehicle report for a definition of each field.



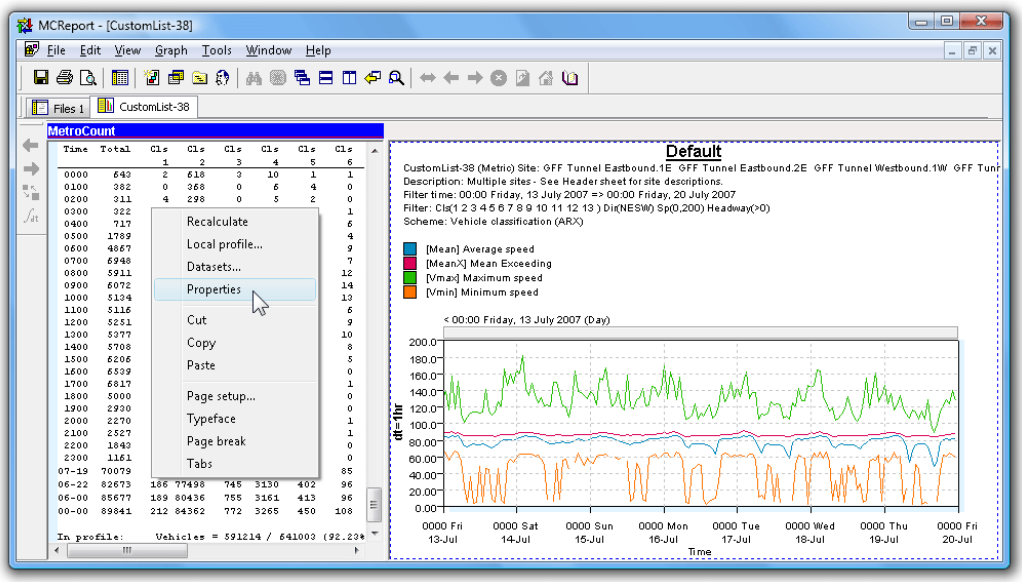

Custom List Vehicle Parameter Fields

# Custom List Chart

## Split Window

The Custom List report is a dual-pane split report, with a time-based chart on the right where fields included in the report can be optionally plotted. The entire time range of data is included in the chart, with the time step as the integration time.

Like dual-pane graphical reports, the left pane is the primary pane, with access to the report's Local Profile, datasets and Custom List Properties via the right-click menu.

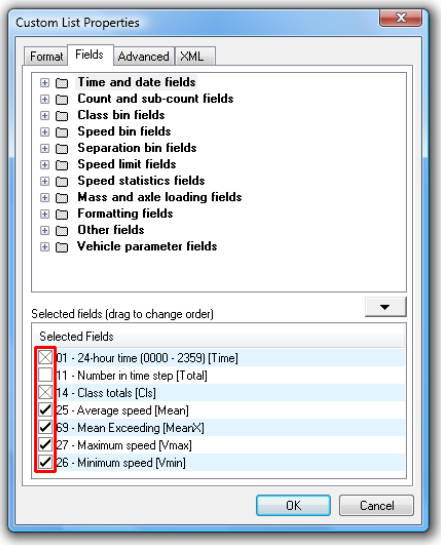



**Custom List Chart**

To print or save the Custom List chart it must first be activated by clicking anywhere within its pane. The blue MetroCount bar indicates the active pane, which print and save operations relate to. The usual graph rendering and scaling properties can be changed via the **Graph** menu in MCReport's main menu.

# Selecting Fields

The check box next to each selected field in the Custom List report's Properties is used to include the field in the Custom List chart. Fields with a cross in the check box cannot be plotted.



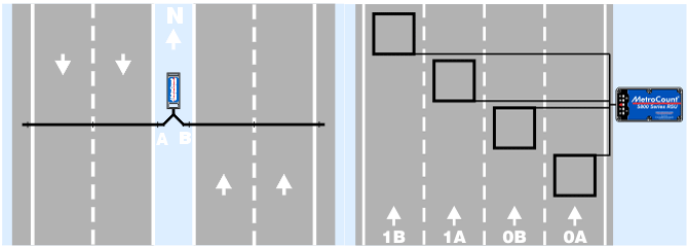

**Selecting fields to plot**

All selected fields are plotted on one vertical axis, so for best results, only select fields with a similar range in values.

# Overview

## Events

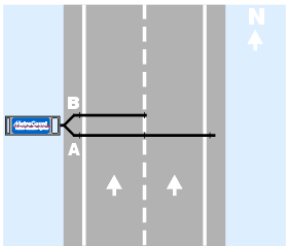
Event Count reports are used to analyse simple "count" data, typically collected using single axle sensors or vehicle sensors, such as loops. Event Count reports support time-stamped datasets, and binned datasets from RSUs that have a binned-count mode.




**Example sensor layouts for typical "count" data**

The definition of an *event* is known as the **Count Method**, which is set via an Event Count report's Local Profile. The Count Method can be a combination of raw counts, counts with a division factor, or gaps for time-stamped data.

The two inputs (A and B) from each dataset included in an Event Count report can independently contribute to the totals by adding, subtracting or excluding them. This is known as the **Input Contribution**. For example, given the **Split** sensor layout shown below using tubes, counts for the two lanes can be derived from the **B** input for the left lane, and **A - B** for the right line.




**Example Split mode Sensor Layout**

Note that since events can be subtracted via the Input Contribution, this can result in negative totals. The meaning of a negative number is entirely application dependent. For example, the net flow at a point could be reported by adding inward inputs, and subtracting outward inputs.

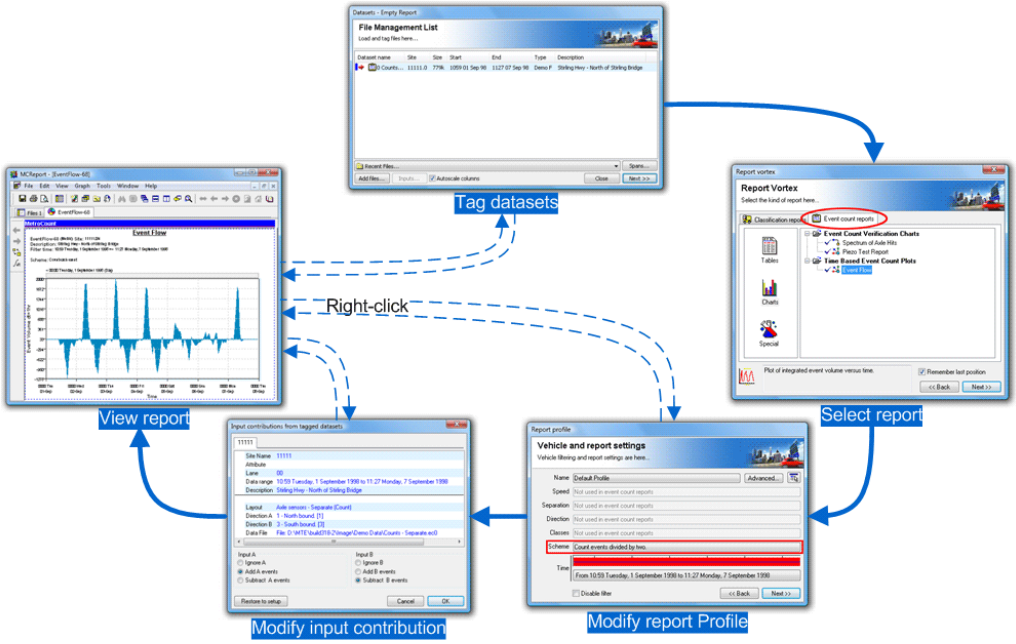
# Generating an Event Count Report

## Report Wizard

Event Count reports are grouped into a separate page at the top of the Report Vortex. Reports are then divided into the usual sub-groups of tables, charts and special formats.

The Local Profile for an Event Count report uses the **Scheme** button to set the desired Count Method, with all the vehicle filter settings disabled. The **Advanced** Profile options contain all the usual report formatting options, with the vehicle-related options removed.

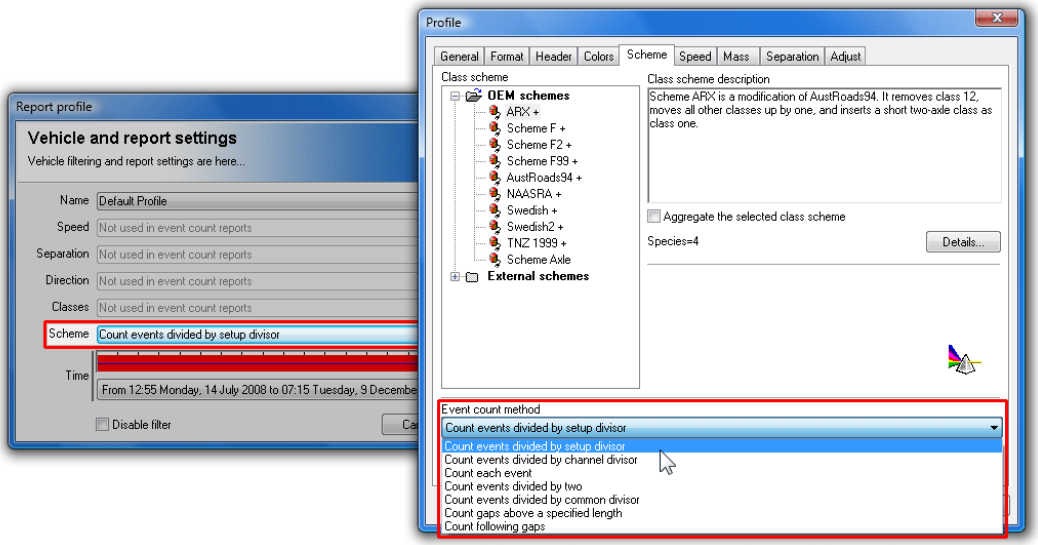
The Input Contribution for each of the tagged datasets is displayed as an extra step in the Report Wizard after the Local Profile. A separate page appears at the top for each of the tagged datasets.




Report Wizard for Event Count reports

# Count Method

To set the Count Method for an Event Count report, click the **Scheme** button in the report's Local Profile, and select one of the options in the **Event Count Method** drop-down list at the bottom.




**Setting the Count Scheme for an Event Count report**

The default Count Method is **Count events divided by setup divisor**, which automatically sets a division factor based on the Sensor Layout used for each dataset - divide-by-one for vehicle sensors (loops), and divide-by-two for axle sensors (tubes and piezos). This allows data from different sources to be combined in a single report.

**Count events divided by channel divisor** uses a custom divisor for each dataset included in an Event Count report. The divisors are specified in the **Input Contribution** dialog box.

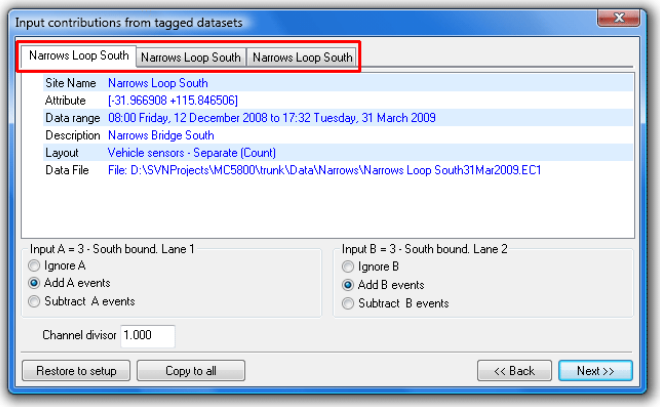
**Count each event**, **Count events divided by two** and **Count events divided by common divisor** apply the same division factor to all datasets. The common divisor is specified immediately below the Event Count Method.

Counting gaps can be used with time-stamped data. Gaps above the specified length are divided by the specified gap and the total added to the event count at the start of the gap. This can be further qualified by specifying a start gap, usually longer than the specified following gap, for examining entering capacity.

The **Interpolate binned data** option relates to Event Count reports with a bin size smaller than the bin size of a binned dataset. Take for example a binned dataset with hourly bins, and an Event Count report with five-minute bins. With this option on, the hourly bins will be evenly distributed across the five-minute bins. With this option disabled, the hourly counts will appear in the first five-minute bin.

# Input Contribution

The **Input Contribution** dialog box is used to set how each of the inputs (A and B) for each of the tagged datasets are combined in an Event Count report. Each tagged dataset is presented in a separate page at the top.



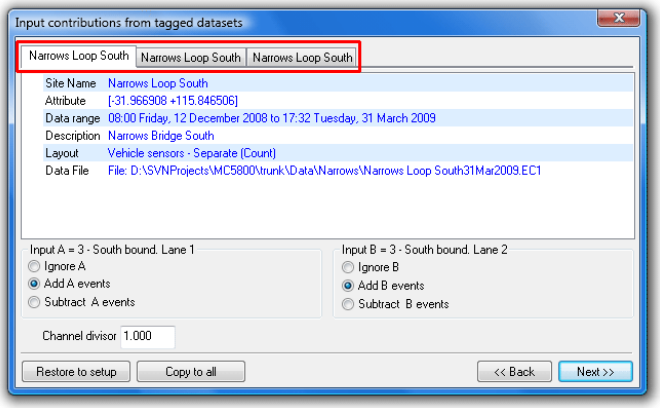

**Setting Input Contribution for an Event Count report**

Each input can be added, subtracted or ignored from an Event Count report. A separate tally is kept for each **Lane** number specified in each dataset.

The default Input Contribution for a dataset depends on the Sensor Layout used. For vehicle sensors, the default contribution is to add all inputs. For axle sensors, the default contribution is the **A** input only, which is given by **Add A** and **Ignore B**. For a split layout, the contribution will default to "Add A" and "Subtract B", which gives the secondary lane.

The **Channel divisor** is used with the **Count events divided by channel divisor** Count Method, to set a unique divisor for each dataset.

The Input Contribution for an existing Event Count report can be changed by right-clicking on the report, and selecting **Datasets** to display the File Management List. Click the **Inputs** button at the bottom to change the Input Contribution.



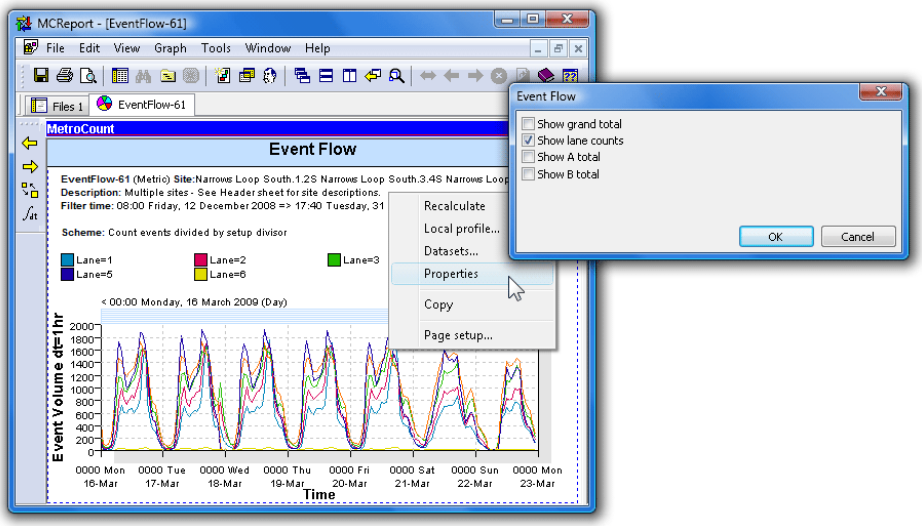

**Setting Input Contribution for an Event Count report**

# Event Count Reports

## Tables and Charts

MCReport's Event Count reports are divided into Tables, Charts and Special formats. The **Weekly Event Counts**, **Event Counts** and **Event Flow** reports are similar to their corresponding classification reports. The Special reports emulate several "standard" report formats.

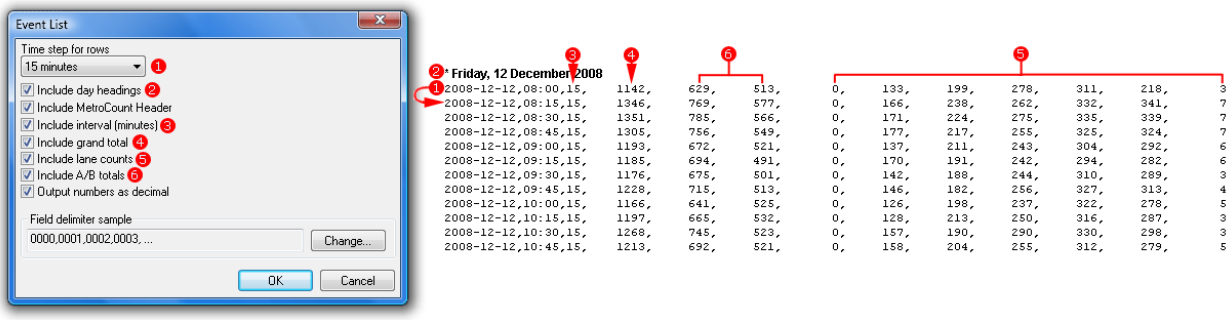
Note that the **Event Flow** report can show multiple traces the grand total of events, as well as individual lanes counts and the A and B totals. To change the included totals, right-click the report, select **Properties.**




**Event Flow report showing all lanes**

# Event List Report

The Event List report is a tabular format that bins events, and is useful for exporting event data. The report includes a row for each bin or time step, which can range from five minutes to 24 hours.




**Event List report format**

The **Include day headings** option breaks the time steps into 24-hour blocks by inserting the date. The **Include column for interval** option displays the time step length in minutes.

Columns for the event count grand total, individual lane counts, and A and B totals can be optionally included.

The Event List report also has optional field delimiters, which can be set by clicking the **Change** button. The default is to separate columns with a comma.

The Event List formatting options are displayed at the end of the Report Wizard. These options can be accessed at any time by right-clicking on the Event List report, and selecting **Properties**.

# ARX

ARX is a modification of AustRoads94. It removes class 12, moves all other classes up by one, and inserts a cycle class as class 1.

- **Units:** Metric (m)
- **Car class:** 2
- **Unclassifiable vehicle class:** 13

| Axles | Groups | Description | Class | | Parameters | Dominant Vehicle | Aggregate |
|---|---|---|---|---|---|---|---|
| 2 | 1 or 2 | Very Short - Bicycle or Motorcycle | MC | 1 | d(1)<1.7m & axles=2 |  | 1 (Light) |
| 2 | 1 or 2 | Short - Sedan, Wagon, 4WD, Utility, Light Van | SV | 2 | d(1)>=1.7m, d(1)<=3.2m & axles=2 |  | |
| 3, 4 or 5 | 3 | Short Towing - Trailer, Caravan, Boat, etc. | SVT | 3 | groups=3, d(1)>=2.1m, d(1)<=3.2m, d(2)>=2.1m & axles=3,4,5 |  | |
| 2 | 2 | Two axle truck or Bus | TB2 | 4 | d(1)>3.2m & axles=2 |  | 2 (Medium) |
| 3 | 2 | Three axle truck or Bus | TB3 | 5 | axles=3 & groups=2 |  | |
| >3 | 2 | Four axle truck | T4 | 6 | axles>3 & groups=2 |  | |
| 3 | 3 | Three axle articulated vehicle or Rigid vehicle and trailer | ART3 | 7 | d(1)>3.2m, axles=3 & groups=3 |  | 3 (Heavy) |
| 4 | >2 | Four axle articulated vehicle or Rigid vehicle and trailer | ART4 | 8 | d(2)<2.1m or d(1)<2.1m or d(1)>3.2m axles = 4 & groups>2 |  | |
| 5 | >2 | Five axle articulated vehicle or Rigid vehicle and trailer | ART5 | 9 | d(2)<2.1m or d(1)<2.1m or d(1)>3.2m axles=5 & groups>2 |  | |
| >=6 | >2 | Six (or more) axle articulated vehicle or Rigid vehicle and trailer | ART6 | 10 | axles=6 & groups>2 or axles>6 & groups=3 |  | |
| >6 | 4 | B-Double or Heavy truck and trailer | BD | 11 | groups=4 & axles>6 |  | |
| >6 | >=5 | Double or triple road train or Heavy truck and two (or more) trailers | DRT | 12 | groups>=5 & axles>6 |  | |

# Scheme F

Scheme F is an implementation of the FHWA's visual classification scheme as an axle-based classification scheme. This is one of several interpretations.

- **Units:** Non-metric (ft)
- **Car class:** 2
- **Unclassifiable vehicle class:** 14

| Axles | Class | Description | SP1 | SP2 | SP3 | SP4 | SP5 | Aggregate |
|---|---|---|---|---|---|---|---|---|
| 2 | F1 | motorcycle | < 6.0 | | | | | 1 (Light) |
| | F2 | passenger car or light pickup | 6.0 - 10.0 | | | | | 1 |
| | F3 | heavy pickup | 10.0 - 15.0 | | | | | 1 |
| | F5 | two-axle truck | 15.0 - 20.0 | | | | | 2 (Medium) |
| | F4 | bus | > 20.0 | | | | | 2 |
| 3 | F2 | car with trailer | < 10.0 | 10.0 - 18.0 | | | | 1 |
| | F3 | pickup with trailer | 10.0 - 15.0 | 10.0 - 18.0 | | | | 1 |
| | F4 | bus | > 19.0 | | | | | 2 |
| | F8 | 2S1 | | > 18.0 | | | | 3 (Heavy) |
| | F6 | three-axle truck | | | | | | 2 |
| 4 | F2 | car with trailer | < 10.0 | | < 3.5 | | | 1 |
| | F3 | pickup with trailer | 10.0 - 15.0 | | < 3.5 | | | 1 |
| | F8 | 2S2 | | > 5.0 | > 3.5 | | | 3 |
| | F8 | 3S1 | | < 5.0 | > 10.0 | | | 3 |
| | F7 | four-axle truck | | | | | | 2 |
| 5 | F11 | 2S1-2 | | > 6.0 | | | | 3 |
| | F9 | 3S2 | | < 6.1 | | 3.5 - 8.0 | | 3 |
| | F3 | pickup with trailer | 9.9 - 15.0 | | | < 3.5 | | 1 |
| | F5 | two-axle truck with trailer | 14.9 - 20.0 | | | < 3.5 | | 2 |
| | F9 | five-axle combination | | | | | | 3 |
| 6 | F10 | six-axle combination | | | 3.5 - 5.0 | | | 3 |
| | F12 | 3S1-2 | | | | | > 10.0 | 3 |
| | F10 | 3S3 | | | | | | 3 |
| >=7 | F13 | seven (or more) axle combination | | | | | | 3 |

# Scheme F2

Scheme F2 is an implementation of the FHWA's visual classification scheme as an axle-based classification scheme. This is one of several interpretations.

- **Units:** Non-metric (ft)
- **Car class:** 2
- **Unclassifiable vehicle class:** 14

| Class | Type | Axles | SP1 | SP2 | SP3 | SP4 | SP5 | SP6 | SP7 | SP8 | Aggregate |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | F1 | 2 | 1.0-6.0 | | | | | | | | 1 (Light) |
| 2 | F2 | 2 | 6.0-10.2 | | | | | | | | |
| | | 3 | 6.0-10.2 | 6.0-18.0 | | | | | | | |
| | | 4 | 6.0-10.2 | 6.0-18.0 | 0.0-6.0 | | | | | | |
| 3 | F3 | 2 | 10.2-13.0 | | | | | | | | |
| | | 3 | 10.2-13.0 | 6.0-18.0 | | | | | | | |
| | | 4 | 10.2-13.0 | 6.0-18.0 | 0.0-6.0 | | | | | | |
| 4 | F4 | 2 | 20.0-40.0 | | | | | | | | 2 (Medium) |
| | | 3 | 20.0-40.0 | 0.0-6.0 | | | | | | | |
| 5 | F5 | 2 | 13.0-20.0 | | | | | | | | |
| 6 | F6 | 3 | 6.0-23.0 | 0.0-6.0 | | | | | | | |
| 7 | F7 | 4 | 6.0-23.0 | 0.0-9.0 | 0.0-9.0 | | | | | | |
| | | 5 | 6.0-17.0 | 0.0-6.0 | 0.0-6.0 | 0.0-6.0 | | | | | |
| | | 6 | 6.0-17.0 | 0.0-6.0 | 0.0-6.0 | 0.0-6.0 | 0.0-6.0 | | | | |
| 8 | F8 | 3 | 6.0-17.0 | 14.0-40.0 | | | | | | | 3 (Heavy) |
| | | 4 | 6.0-20.0 | 0.0-6.0 | 6.0-40.0 | | | | | | |
| | | 4 | 6.1-17.0 | 14.0-40.0 | 0.0-6.1 | | | | | | |
| 9 | F9 | 5 | 6.0-22.0 | 0.0-6.0 | 6.0-40.0 | 0.0-12.5 | | | | | |
| | | 5 | 6.0-22.0 | 0.0-6.0 | 6.0-23.0 | 1.1-23.0 | | | | | |
| 10 | F10 | 6 | 6.0-22.0 | 0.0-6.0 | 0.0-40.0 | 0.0-11.0 | 0.0-11.0 | | | | |
| | | 7 | 6.0-22.0 | 0.0-6.0 | 0.0-40.0 | 0.0-13.0 | 0.0-13.0 | 0.0-13.0 | | | |
| 11 | F11 | 5 | 6.0-17.0 | 11.0-25.0 | 6.0-18.0 | 11.0-25.0 | | | | | |
| 12 | F12 | 6 | 6.0-22.0 | 0.0-6.0 | 1.0-25.0 | 6.0-18.0 | 11.0-25.0 | | | | |
| 13 | F13 | 7-9 | 0.0-40.0 | 0.0-40.0 | 0.0-40.0 | 0.0-40.0 | 0.0-40.0 | 0.0-40.0 | 0.0-40.0 | 0.0-40.0 | |

# Scheme F99

Scheme F99 is the decision trees described in Truck Characteristics Analysis, FHWA July 1999 with all redundancy removed. Note motorcycles have been restored.

- **Units:** Non-metric (ft)
- **Car class:** 2
- **Unclassifiable vehicle class:** 14

| Class | Type | Axles | SP1 | SP2 | SP3 | SP4 | SP5 | Aggregate |
|---|---|---|---|---|---|---|---|---|
| 1 | F1 | 2 | 0.00-6.00 | | | | | 1 (Light) |
| 2 | F2 | 2 | 0.00-9.90 | | | | | |
| 3 | F3 | 2 | | | | | | |
| | | 3 | | | | | | |
| | | 4 | 11.40-50.00 | | | | | |
| | | 4 | | 0.00-22.00 | | | | |
| 4 | F4 | 3 | | 0.00-5.80 | | | | 2 (Medium) |
| 5 | F5 | 2 | 12.10-50.00 | | | | | |
| | | 5 | | 9.90-31.70 | | | | |
| 6 | F6 | 3 | 0.00-18.80 | 0.00-5.80 | | | | |
| | | 5 | | | | 0.00-3.50 | | |
| 8 | F8 | 3 | | 20.90-50.00 | | | | 3 (Heavy) |
| | | 4 | | 24.70-50.00 | | | | |
| | | 4 | | | 12.60-50.00 | | | |
| | | 4 | | | | | | |
| 9 | F9 | 5 | | 9.90-50.00 | | | | |
| | | 5 | | | | | | |
| 10 | F10 | 6 | | | | | 0.00-12.70 | |
| 11 | F11 | 5 | | 9.90-40.00 | | 11.80-50.00 | | |
| 12 | F12 | 6 | | | | | | |
| 13 | F13 | 7-20 | | | | | | |

# AustRoads94

Austroads94 replaced NAASRA in Australia in 1994. It is an improved system using information from the spacings of the first three axles, the total number of axles and the number of axle groups. There are 13 classes.

- **Units:** Metric (m)
- **Car class:** 1
- **Unclassifiable vehicle class:** 13

| Axles | Groups | Description | Class | | Parameters | Dominant Vehicle | Aggregate |
|---|---|---|---|---|---|---|---|
| 2 | 1 or 2 | Short - Sedan, Wagon, 4WD, Utility, Light Van | SV | 1 | d(1)>=1.7m, d(1)<=3.2m & axles=2 |  | 1 (Light) |
| 3, 4 or 5 | 3 | Short Towing - Trailer, Caravan, Boat, etc. | SVT | 2 | groups=3, d(1)>=2.1m, d(1)<=3.2m, d(2)>=2.1m & axles=3,4,5 |  | |
| 2 | 2 | Two axle truck or Bus | TB2 | 3 | d(1)>3.2m & axles=2 |  | 2 (Medium) |
| 3 | 2 | Three axle truck or Bus | TB3 | 4 | axles=3 & groups=2 |  | |
| >3 | 2 | Four axle truck | T4 | 5 | axles>3 & groups=2 |  | |
| 3 | 3 | Three axle articulated vehicle or Rigid vehicle and trailer | ART3 | 6 | d(1)>3.2m, axles=3 & groups=3 |  | 3 (Heavy) |
| 4 | >2 | Four axle articulated vehicle or Rigid vehicle and trailer | ART4 | 7 | d(2)<2.1m or d(1)<2.1m or d(1)>3.2m axles = 4 & groups>2 |  | |
| 5 | >2 | Five axle articulated vehicle or Rigid vehicle and trailer | ART5 | 8 | d(2)<2.1m or d(1)<2.1m or d(1)>3.2m axles=5 & groups>2 |  | |
| >=6 | >2 | Six (or more) axle articulated vehicle or Rigid vehicle and trailer | ART6 | 9 | axles=6 & groups>2 or axles>6 & groups=3 |  | |
| >6 | 4 | B-Double<br>B-Double or Heavy truck and trailer | BD | 10 | groups=4 & axles>6 |  | |
| >6 | 5 or 6 | Double road train or Heavy truck and two trailers | DRT | 11 | groups=5 or 6 & axles>6 |  | |
| >6 | >6 | Triple road train or Heavy truck and three trailers | TRT | 12 | groups>6 & axles>6 |  | |

# NAASRA

NAASRA was used in Australia until 1994. It is a system classifying according to the total number of axles, the number of axle groups and vehicle wheelbase. There are 13 classes.

- **Units:** Metric (m)
- **Car class:** 1
- **Unclassifiable vehicle class:** 13

| Class | | Description | Axles | Wheelbase |
|---|---|---|---|---|
| S2 | 1 | Car | 2 | 0 - 3.0 |
| M345 | 2 | Car + trailer | 3 - 5 | 3.0 - 7.5 |
| M2 | 3 | Medium length 2 axle | 2 | 3.0 - 7.5 |
| M3 | 4 | Medium length 3 axle | 3 | 3.0 - 7.5 |
| M4 | 5 | Medium length 4 axle | 4 | 3.0 - 7.5 |
| L3 | 6 | Long length 3 axle | 3 | 7.5 - 18.5 |
| L4 | 7 | Long length 4 axle | 4 | 7.5 - 18.5 |
| L5 | 8 | Long length 5 axle | 5 | 7.5 - 18.5 |
| L6 | 9 | Long length 6 axle | 6 | 7.5 - 18.5 |
| L78 | 10 | Long length 7 or 8 axle | 7 - 8 | 7.5 - 18.5 |
| Mc | 11 | Medium combination | 5 - 11 | 18.5 - 34.0 |
| Lc | 12 | Long combination | 6 - 19 | > 34.0 |

# TNZ 1999

TNZ 1999 is a scheme developed by Transit New Zealand. It has 14 classes.

- **Units:** Metric (m)
- **Car class:** 1
- **Unclassifiable vehicle class:** 14

| Class | Axles | Vehicle Types | SP1 | SP2 | SP3 | SP4 | Aggregate |
|---|---|---|---|---|---|---|---|
| 1 | 2 | o-o (short) | < 3.2 | | | | 1 (Car & LCV) |
| 2 | 3 | o-o-o (short towing) | < 3.2 | | | | |
| | 4 | o-o-oo (short towing) | 2.2 - 3.2 | | < 1.0 | | |
| 3 | 2 | o--o (long) | > 3.2 | | | | 2 (MCV) |
| 4 | 3 | o-oo | > 3.2 | < 2.2 | | | 3 (HCV1) |
| 5 | 3 | o-o--o | > 3.2 | > 2.2 | | | |
| 6 | 4 | oo--oo | < 2.2 | | | | |
| 7 | 4 | o--o-o--o | > 2.2 | | > 1.0 | | |
| | | o-o--oo | | | | | |
| 8 | 5 | o--oo-o--o | | | | | 4 (HCV2) |
| | | o-oo--oo | | | | | |
| 9 | 6 | o-oo--ooo | > 2.2 | | | < 1.4 | |
| 10 | 6 | o-oo-o--oo | > 2.2 | | | > 1.4 | |
| 11 | 7 | o-oo--oo--oo (B-train) | > 2.2 | | | | |
| | | o--oo-oo--oo (T & T) | | | | | |
| | | o-oo--oo-o--o (A-train) | | | | | |
| 12 | 6 - 8 | oo--oo-o--o | < 2.2 | | | | |
| | | oo--oo-o--oo | | | | | |
| | | oo--oo-oo--oo | | | | | |
| 13 | 8-9 | o-oo--ooo-oo (B-train) | > 2.2 | | | | |
| | | o-oo-ooo-o--o (A-train) | | | | | |
| | | o-oo-oo-o--oo (A-train) | | | | | |
| | | o-oo--ooo--ooo (B-train) | | | | | |

# Scheme Axle

Simply the number of axles in the vehicle.

- **Units:** Metric (m)
- **Car class:** 2
- **Unclassifiable vehicle class:** 12

| Class | Name | Axles | Aggregate |
|---|---|---|---|
| 1 | 1Ax | 1 | 1 |
| 2 | 2Ax | 2 | 2 |
| 3 | 3Ax | 3 | 3 |
| 4 | 4Ax | 4 | 4 |
| 5 | 5Ax | 5 | 5 |
| 6 | 6Ax | 6 | 6 |
| 7 | 7Ax | 7 | 7 |
| 8 | 8Ax | 8 | 8 |
| 9 | 9Ax | 9 | 9 |
| 10 | 10Ax | 10 | 10 |
| 11 | >10Ax | >10 | 11 |

# Vägverket

- **Units:** Metric (m)
- **Car class:** 2
- **Unclassifiable vehicle class:** 15

| Class | Type | Axles | SP1 | SP2 | SP3 | SP4 | SP5 | SP6 | Aggregate |
|---|---|---|---|---|---|---|---|---|---|
| 1 | MC | 2 | 0.8 - 1.8 | | | | | | 1 (MC) |
| 2 | P20 | 2 | 1.8 - 3.3 | | | | | | 2 (P) |
| 3 | P21 | 3 | 1.8 - 3.3 | 1.8 - 6.0 | | | | | |
| 4 | P22 | 4 | 1.8 - 3.3 | 1.8 - 6.0 | 0.0 - 6.0 | | | | |
| 5 | L20 | 2 | 3.3 - 10.5 | | | | | | 3 (L) |
| 6 | L21 | 3 | 3.3 - 10.5 | 1.8 - 10.5 | | | | | |
| 7 | L22 | 4 | 3.3 - 10.5 | 3.3 - 10.5 | 0.8 - 3.3 | | | | |
| | | 4 | 3.3 - 10.5 | 1.8 - 10.5 | 3.3 - 10.5 | | | | |
| 8 | L23 | 5 | 1.8 - 6.0 | 3.3 - 10.5 | 0.8 - 1.8 | 0.8 - 3.3 | | | |
| | | 5 | 3.3 - 10.5 | 1.8 - 10.5 | 1.8 - 10.5 | 0.8 - 3.3 | | | |
| | | 5 | 3.3 - 10.5 | 3.3 - 10.5 | 0.8 - 1.8 | 3.3 - 10.5 | | | |
| 9 | L24 | 6 | 3.3 - 10.5 | 3.3 - 10.5 | 0.8 - 1.8 | 1.8 - 10.5 | 0.8 - 3.3 | | |
| | | 6 | 3.3 - 10.5 | 3.3 - 10.5 | 6.0 - 10.5 | 0.8 - 1.8 | 0.8 - 3.3 | | |
| 10 | L30 | 3 | 1.8 - 10.5 | 0.8 - 1.8 | | | | | |
| 11 | L31 | 4 | 1.8 - 6.0 | 0.8 - 1.8 | 3.3 - 10.5 | | | | |
| 12 | L32 | 5 | 1.8 - 6.0 | 0.8 - 1.8 | 3.3 - 10.5 | 0.8 - 10.5 | | | |
| 13 | L33 | 6 | 1.8 - 6.0 | 0.8 - 1.8 | 3.3 - 10.5 | 0.8 - 1.8 | 0.8 - 3.3 | | |
| | | 6 | 1.8 - 6.0 | 0.8 - 1.8 | 3.3 - 10.5 | 1.8 - 10.5 | 0.8 - 3.3 | | |
| | | 6 | 1.8 - 6.0 | 0.8 - 1.8 | 3.3 - 10.5 | 0.8 - 1.8 | 3.3 - 10.5 | | |
| 14 | L34 | 7 | 1.8 - 6.0 | 0.8 - 1.8 | 3.3 - 10.5 | 0.8 - 1.8 | 1.8 - 10.5 | 0.8 - 3.3 | |
| | | 7 | 1.8 - 6.0 | 0.8 - 1.8 | 3.3 - 10.5 | 1.8 - 10.5 | 0.8 - 1.8 | 0.8 - 3.3 | |

# Arkansas F99

This is very similar to Scheme F99. The boundary between F3 and F5 has been changed.

- **Units:** Non-metric (ft)
- **Car class:** 2
- **Unclassifiable vehicle class:** 14

| Class | Type | Axles | SP1 | SP2 | SP3 | SP4 | SP5 | Aggregate |
|---|---|---|---|---|---|---|---|---|
| 1 | F1 | 2 | 0.00 - 6.00 | | | | | 1 (Light) |
| 2 | F2 | 2 | 0.00 - 9.90 | | | | | |
| 3 | F3 | 2 | | | | | | |
| | | 3 | | | | | | |
| | | 4 | 11.40 - 50.00 | | | | | |
| | | 4 | | 0.00 - 22.00 | | | | |
| 4 | F4 | 3 | | 0.00 - 5.80 | | | | 2 (Medium) |
| 5 | F5 | 2 | 12.60 - 50.00 | | | | | |
| | | 5 | | 9.90 - 31.70 | | | | |
| 6 | F6 | 3 | 0.00 - 18.80 | 0.00 - 5.80 | | | | |
| | | 5 | | | | 0.00 - 3.50 | | |
| 8 | F8 | 3 | | 20.90 - 50.00 | | | | 3 (Heavy) |
| | | 4 | | 24.70 - 50.00 | | | | |
| | | 4 | | | 12.60 - 50.00 | | | |
| | | 4 | | | | | | |
| 9 | F9 | 5 | | 9.90 - 50.00 | | | | |
| | | 5 | | | | | | |
| 10 | F10 | 6 | | | | | 0.00 - 12.70 | |
| 11 | F11 | 5 | | 9.90 - 40.00 | | 11.80 - 50.00 | | |
| 12 | F12 | 6 | | | | | | |
| 13 | F13 | 7-20 | | | | | | |

# ARX Cycle

ARX with cycle class.

- **Units:** Metric (m)
- **Car class:** 3
- **Unclassifiable vehicle class:** 14

| Class | Type | Axles | Grps | SP1 | SP2 | Aggregate |
|---|---|---|---|---|---|---|
| 1 | CYCLE | 2 | 1 - 2 | 0.0 - 1.15 | | 1 (Light) |
| 2 | MC | 2 | 1 - 2 | 1.15 - 1.7 | | |
| 3 | SV | 2 | 1 - 2 | 1.7 - 3.2 | | |
| 4 | SVT | 3 - 5 | 3 | 2.1 - 3.2 | 2.1 - 50.0 | |
| 5 | TB2 | 2 | 2 | 3.2 - 50.0 | | 2 (Medium) |
| 6 | TB3 | 3 | 2 | | | |
| 7 | T4 | 4 - 20 | 2 | | | |
| 8 | ART3 | 3 | 3 | 3.2 - 50.0 | | 3 (Heavy) |
| 9 | ART4 | 4 | 3 - 4 | | 0.0 - 2.1 | |
| | | 4 | 3 - 4 | 0.0 - 2.1 | | |
| | | 4 | 3 - 4 | 3.2 - 50.0 | | |
| 10 | ART5 | 5 | 3 - 5 | | 0.0 - 2.1 | |
| | | 5 | 3 - 5 | 0.0 - 2.1 | | |
| | | 5 | 3 - 5 | 3.2 - 50.0 | | |
| 11 | ART6 | 6 | 2 - 6 | | | |
| | | 6 - 20 | 3 | | | |
| 12 | BD | 7 - 20 | 4 | | | |
| 13 | DRT | 7 - 20 | 5 - 6 | | | |
| | | 7 - 20 | 7 - 20 | | | |

# Chelsea

Custom scheme for Daimler-Chrysler.

- **Units:** Non-metric (ft)
- **Car class:** 1
- **Unclassifiable vehicle class:** 4

| Class | Type | Axles | SP1 |
|---|---|---|---|
| 1 | C | 2 | 0.00 - 9.00 |
| 2 | C | 2 | 9.00 - 10.00 |
| 3 | C | 2 | 10.00 - 40.00 |

# DfT-UK

GB DTp National Core Census.

- **Units:** Metric (m)
- **Car class:** 3
- **Unclassifiable vehicle class:** 12

| Class | Type | Axles | SP1 | SP2 | SP3 | SP4 | SP5 |
|---|---|---|---|---|---|---|---|
| 1 | C | 2 | 0.00 - 1.06 | | | | |
| 2 | O | 2 | 1.06 - 1.70 | | | | |
| 3 | CAR | 2 | 1.70 - 2.64 | | | | |
| | | 3 | 1.89 - 2.95 | 1.90 - 4.00 | | | |
| | | 3 | 1.89 - 2.95 | 3.50 - 6.00 | | | |
| | | 4 | 1.89 - 2.95 | 1.90 - 6.00 | 0.50 - 1.30 | | |
| 4 | LGV | 2 | 2.64 - 3.75 | | | | |
| 5 | R2 | 2 | 3.75 - 6.00 | | | | |
| 6 | R3 | 3 | 2.00 - 6.00 | 1.00 - 1.90 | | | |
| | | 3 | 1.00 - 1.88 | 2.00 - 12.00 | | | |
| 7 | R4 | 4 | 1.00 - 1.90 | 2.00 - 12.00 | 1.00 - 1.90 | | |
| | | 4 | 3.00 - 9.00 | 1.00 - 2.50 | 1.00 - 2.50 | | |
| 8 | A3 | 3 | 2.95 - 9.20 | 1.90 - 4.00 | | | |
| | | 3 | 1.89 - 3.99 | 3.50 - 15.00 | | | |
| | | 4 | 2.95 - 12.00 | 2.00 - 12.00 | 2.50 - 12.00 | | |
| | | 4 | 2.95 - 9.20 | 2.50 - 9.00 | 0.50 - 2.50 | | |
| | | 4 | 1.89 - 3.99 | 3.50 - 15.00 | 1.05 - 2.50 | | |
| 9 | A4 | 4 | 1.89 - 2.95 | 3.50 - 6.00 | 1.05 - 1.30 | | |
| | | 4 | 1.00 - 1.90 | 1.90 - 12.00 | 2.00 - 15.00 | | |
| | | 4 | 1.70 - 5.25 | 1.00 - 1.90 | 2.00 - 15.00 | | |
| 10 | A5+ | 5 | 2.00 - 12.00 | 1.00 - 12.00 | 2.00 - 12.00 | 1.00 - 1.90 | |
| | | 5 | 2.00 - 12.00 | 1.00 - 1.90 | 1.90 - 12.00 | 2.50 - 12.00 | |
| | | 5 | 1.70 - 5.25 | 1.00 - 1.90 | 2.00 - 15.00 | 1.00 - 2.50 | |
| | | 5 | 1.00 - 1.90 | 1.90 - 12.00 | 2.00 - 15.00 | 1.00 - 2.50 | |
| | | 5 | 2.00 - 12.00 | 2.00 - 15.00 | 0.70 - 1.80 | 0.70 - 1.80 | |
| | | 6 | 2.00 - 12.00 | 1.00 - 1.90 | 1.90 - 12.00 | 2.00 - 12.00 | 1.00 - 1.90 |
| | | 6 | 1.90 - 5.25 | 1.00 - 1.90 | 2.00 - 15.00 | 1.00 - 1.90 | 1.00 - 1.90 |
| | | 7 - 20 | | | | | |
| 11 | BUS | 2 | 6.00 - 12.00 | | | | |
| | | 3 | 6.00 - 12.00 | 1.00 - 1.90 | | | |

# Euro13

- **Units:** Metric (m)
- **Car class:** 1
- **Unclassifiable vehicle class:** 13

| Class | Type | Axles | SP1 | SP2 | SP3 | SP4 | SP5 | Aggregate |
|---|---|---|---|---|---|---|---|---|
| 1 | EU13-1 | 2 | 1.71 - 2.99 | | | | | 1 (Light) |
| | | 3 | 1.89 - 2.96 | 1.90 - 4.01 | | | | |
| | | 4 | 1.89 - 2.96 | 3.50 - 6.01 | 1.05 - 1.31 | | | |
| | | 4 | 1.89 - 2.96 | 1.90 - 6.01 | 0.50 - 1.31 | | | |
| 2 | EU13-2 | 2 | 2.99 - 4.51 | | | | | |
| 3 | EU13-3 | 3 | 2.00 - 7.01 | 1.00 - 1.91 | | | | 2 (Medium) |
| 4 | EU13-4 | 4 | 1.00 - 1.91 | 2.00 - 12.01 | 1.00 - 1.91 | | | |
| | | 4 | 3.00 - 9.01 | 1.00 - 2.51 | 1.00 - 2.51 | | | |
| 5 | EU13-5 | 3 | 2.65 - 9.21 | 1.90 - 4.01 | | | | |
| | | 4 | 2.96 - 12.01 | 2.00 - 12.01 | 2.50 - 12.01 | | | |
| | | 4 | 2.96 - 9.21 | 2.50 - 9.01 | 0.50 - 2.51 | | | |
| | | 5 | 2.00 - 12.01 | 1.00 - 12.01 | 2.00 - 12.01 | 1.00 - 1.91 | | |
| 6 | EU13-6 | 5 | 2.00 - 12.01 | 1.00 - 1.91 | 1.90 - 12.01 | 2.50 - 12.01 | | |
| | | 6 | 2.00 - 12.00 | 1.00 - 1.90 | 1.90 - 12.00 | 2.00 - 12.00 | 1.00 - 1.90 | |
| 7 | EU13-7 | 3 | 1.89 - 4.00 | 4.01 - 15.01 | | | | 3 (Heavy) |
| 8 | EU13-8 | 4 | 1.89 - 4.00 | 3.50 - 15.01 | 1.05 - 2.51 | | | |
| 9 | EU13-9 | 5 | 2.00 - 12.01 | 2.00 - 15.01 | 0.70 - 1.81 | 0.70 - 1.81 | | |
| 10 | EU13-10 | 4 | 1.00 - 1.91 | 1.90 - 12.01 | 2.00 - 15.01 | | | |
| | | 4 | 1.70 - 5.26 | 1.00 - 1.91 | 2.00 - 15.01 | | | |
| | | 5 | 1.70 - 5.26 | 1.00 - 1.91 | 2.00 - 15.01 | 1.00 - 2.51 | | |
| | | 5 | 1.00 - 1.91 | 1.90 - 12.01 | 2.00 - 15.01 | 1.00 - 2.51 | | |
| 11 | EU13-11 | 6 | 1.90 - 5.25 | 1.00 - 1.90 | 2.00 - 15.00 | 1.00 - 1.90 | 1.00 - 1.90 | |
| 12 | EU13-12 | 2 | 4.51 - 6.41 | | | | | |
| | | 3 | 1.00 - 1.89 | 2.00 - 12.01 | | | | |

# FLDOT

FLDOT Class Scheme

- **Units:** Non - metric (ft)
- **Car class:** 2
- **Unclassifiable vehicle class:** 15

| Class | Type | Axles | SP1 | SP2 | SP3 | SP4 | SP5 | SP6 | Aggregate |
|---|---|---|---|---|---|---|---|---|---|
| 1 | MC | 2 | 0.0 - 6.0 | | | | | | 1 (Light) |
| 2 | AUTO | 2 | 6.0 - 10.0 | | | | | | |
| | | 3 | 6.0 - 10.0 | 6.0 - 25.0 | | | | | |
| | | 4 | 6.0 - 10.0 | 6.0 - 25.0 | 0.0 - 6.0 | | | | |
| 3 | RV | 2 | 10.0 - 13.3 | | | | | | |
| | | 3 | 10.0 - 13.3 | 6.0 - 25.0 | | | | | |
| | | 4 | 10.0 - 13.3 | 6.0 - 25.0 | 0.0 - 6.0 | | | | |
| | | 5 | 10.0 - 13.3 | 6.0 - 25.0 | 0.0 - 6.0 | 0.0 - 6.0 | | | |
| 4 | BUS | 2 | 23.0 - 40.0 | | | | | | 2 (Medium) |
| | | 3 | 23.0 - 40.0 | 0.0 - 6.0 | | | | | |
| 5 | 2D | 2 | 13.3 - 23.0 | | | | | | |
| | | 3 | 13.3 - 23.0 | 6.0 - 25.0 | | | | | |
| | | 4 | 13.3 - 23.0 | 6.0 - 25.0 | 0.0 - 6.0 | | | | |
| | | 5 | 13.3 - 23.0 | 6.0 - 25.0 | 0.0 - 6.0 | 0.0 - 6.0 | | | |
| 6 | 3AXLE | 3 | 6.0 - 23.0 | 0.0 - 6.0 | | | | | |
| 7 | 4AXLE | 4 | 6.0 - 23.0 | 0.0 - 6.0 | 0.0 - 6.0 | | | | |
| 8 | 2S1,21 | 3 | 10.0 - 23.0 | 11.0 - 40.0 | | | | | 3 (Heavy) |
| | | 4 | 10.0 - 23.0 | 11.0 - 40.0 | 2.0 - 12.0 | | | | |
| | | 4 | 6.0 - 23.0 | 0.0 - 6.0 | 6.0 - 44.0 | | | | |
| 9 | 3S2 | 5 | 6.0 - 26.0 | 0.0 - 6.0 | 6.0 - 46.0 | 0.0 - 11.0 | | | |
| | | 5 | 6.0 - 26.0 | 0.0 - 6.0 | 6.0 - 23.0 | 11.0 - 27.0 | | | |
| 10 | 3S3,33 | 6 | 6.0 - 26.0 | 0.0 - 6.0 | 0.0 - 46.0 | 0.0 - 11.0 | 0.0 - 11.0 | | |
| | | 7 | 6.0 - 16.70 | 0.0 - 6.0 | 13.3 - 40.0 | 0.0 - 13.3 | 0.0 - 13.3 | 0.0 - 13.3 | |
| 11 | 2S12 | 5 | 6.0 - 26.0 | 11.0 - 26.0 | 6.0 - 20.0 | 11.0 - 26.0 | | | |
| 12 | 3S12 | 6 | 6.0 - 26.0 | 0.0 - 6.0 | 11.0 - 26.0 | 6.0 - 24.0 | 11.0 - 26.0 | | |
| 13 | 2S23,3S22 | 7 | | | | | | | |
| | | 8 | | | | | | | |
| | | 9 | | | | | | | |

# GB_DTp

GB DTp National Core Census.

- **Units:** Metric (m)
- **Car class:** 3
- **Unclassifiable vehicle class:** 27

| Class | Type | Axles | SP1 | SP2 | SP3 | SP4 | SP5 |
|---|---|---|---|---|---|---|---|
| 1 | DTp C | 2 | 0.0 - 1.06 | | | | |
| 2 | DTp O | 2 | 1.06 - 1.7 | | | | |
| 3 | DTp 1 | 2 | 1.7 - 2.64 | | | | |
| 4 | DTp 2 | 2 | 2.64 - 3.75 | | | | |
| 5 | DTp 21 | 3 | 1.89 - 2.95 | 3.5 - 6.0 | | | |
| | | 3 | 1.89 - 2.95 | 1.9 - 4.0 | | | |
| | | 4 | 1.89 - 2.95 | 1.9 - 6.0 | 0.5 - 1.3 | | |
| 6 | DTp 31 | 2 | 3.75 - 6.0 | | | | |
| 7 | DTp 32 | 3 | 2.0 - 6.0 | 1.0 - 1.9 | | | |
| | | 3 | 1.0 - 1.88 | 2.0 - 12.0 | | | |
| 8 | DTp 33 | 4 | 1.0 - 1.9 | 2.0 - 12.0 | 1.0 - 1.9 | | |
| | | 4 | 3.0 - 9.0 | 1.0 - 2.5 | 1.0 - 2.5 | | |
| 9 | DTp 41 | 3 | 2.95 - 9.2 | 1.9 - 4.0 | | | |
| | | 4 | 2.95 - 12.0 | 2.0 - 12.0 | 2.5 - 12.0 | | |
| | | 4 | 2.95 - 9.2 | 2.5 - 9.0 | 0.5 - 2.5 | | |
| 10 | DTp 42 | 5 | 2.0 - 12.0 | 1.0 - 12.0 | 2.0 - 12.0 | 1.0 - 1.9 | |
| 11 | DTp 43 | 5 | 2.0 - 12.0 | 1.0 - 1.9 | 1.9 - 12.0 | 2.5 - 12.0 | |
| 12 | DTp 44 | 6 | 2.0 - 12.0 | 1.0 - 1.9 | 1.9 - 12.0 | 2.0 - 12.0 | 1.0 - 1.9 |
| 13 | DTp 51 | 3 | 1.89 - 3.99 | 3.5 - 15.0 | | | |
| 14 | DTp 52 | 4 | 1.89 - 3.99 | 3.5 - 15.0 | 1.05 - 2.5 | | |
| | | 4 | 1.89 - 2.95 | 3.5 - 6.0 | 1.05 - 1.3 | | |
| 15 | DTp 53 | 4 | 1.0 - 1.9 | 1.9 - 12.0 | 2.0 - 15.0 | | |
| | | 4 | 1.7 - 5.25 | 1.0 - 1.9 | 2.0 - 15.0 | | |
| 16 | DTp 54 | 5 | 1.7 - 5.25 | 1.0 - 1.9 | 2.0 - 15.0 | 1.0 - 2.5 | |
| | | 5 | 1.0 - 1.9 | 1.9 - 12.0 | 2.0 - 15.0 | 1.0 - 2.5 | |
| 17 | DTp 55 | 5 | 2.0 - 12.0 | 2.0 - 15.0 | 0.7 - 1.8 | 0.7 - 1.8 | |
| 18 | DTp 56 | 6 | 1.9 - 5.25 | 1.0 - 1.9 | 2.0 - 15.0 | 1.0 - 1.9 | 1.0 - 1.9 |
| 19 | DTp 61 | 2 | 6.0 - 12.0 | | | | |
| | | 3 | 6.0 - 12.0 | 1.0 - 1.9 | | | |
| 20 | DTp 7 | 7 - 20 | | | | | |
| 21 | DTp 1N | 1 | | | | | |
| 22 | DTp 2N | 2 | | | | | |
| 23 | DTp 3N | 3 | | | | | |
| 24 | DTp 4N | 4 | | | | | |
| 25 | DTp 5N | 5 | | | | | |
| 26 | DTp 6N | 6 | | | | | |

# Norfolk

Scheme similar to ARX, modified for UK.

- **Units:** Metric (m)
- **Car class:** 2
- **Unclassifiable vehicle class:** 13

| Class | Type | Axles | Grps | SP1 | SP2 |
|---|---|---|---|---|---|
| 1 | MCB | 2 | | 0.0 - 1.75 | |
| 2 | CAR | 2 | 1 - 2 | 1.75 - 3.0 | |
| 3 | LGV | 2 | 1 - 2 | 3.0 - 3.8 | |
| 4 | STOW | 3 - 5 | 3 | 1.75 - 3.8 | 1.75 - 50.0 |
| 5 | RIGID2 | 2 | 2 | 3.8 - 50.0 | |
| 6 | RIGID3 | 3 | 2 | | |
| 7 | RIGID4 | 4 - 20 | 2 | | |
| 8 | ARTIC3 | 3 | 3 | 3.8 - 50.0 | |
| 9 | ARTIC4 | 4 | 3 - 4 | | 0.0 - 1.75 |
| | | 4 | 3 - 4 | 0.0 - 1.75 | |
| | | 4 | 3 - 4 | 3.8 - 50.0 | |
| 10 | ARTIC5 | 5 | 3 - 5 | | 0.0 - 1.75 |
| | | 5 | 3 - 5 | 0.0 - 1.75 | |
| | | 5 | 3 - 5 | 3.8 - 50.0 | |
| 11 | ARTIC6 | 6 | 2 - 6 | | |
| | | 6 - 20 | 3 | | |
| 12 | BDBL | 7 - 20 | 4 | | |

# Sample ARX

This is an example scheme. It is very similar to ARX.

- **Units:** Metric (m)
- **Car class:** 2
- **Unclassifiable vehicle class:** 13

| Class | Type | Axles | Grps | SP1 | SP2 | Aggregate |
|---|---|---|---|---|---|---|
| 1 | MC | 2 | 1 - 2 | 0.0 - 1.7 | | 1 (Light) |
| 2 | SV | 2 | 1 - 2 | 1.7 - 3.2 | | |
| 3 | SVT | 3 - 5 | 3 | 2.1 - 3.2 | 2.1 - 50.0 | |
| 4 | TB2 | 2 | 2 | 3.2 - 50.0 | | 2 (Medium) |
| 5 | TB3 | 3 | 2 | | | |
| 6 | T4 | 4 - 20 | 2 | | | |
| 7 | ART3 | 3 | 3 | 3.2 - 50.0 | | 3 (Heavy) |
| 8 | ART4 | 4 | 3 - 4 | | 0.0 - 2.1 | |
| | | 4 | 3 - 4 | 0.0 - 2.1 | | |
| | | 4 | 3 - 4 | 3.2 - 50.0 | | |
| 9 | ART5 | 5 | 3 - 5 | | 0.0 - 2.1 | |
| | | 5 | 3 - 5 | 0.0 - 2.1 | | |
| | | 5 | 3 - 5 | 3.2 - 50.0 | | |
| 10 | ART6 | 6 | 2 - 6 | | | |
| | | 6 - 20 | 3 | | | |
| 11 | BD | 7 - 20 | 4 | | | |
| 12 | DRT | 7 - 20 | 5 - 6 | | | |
| | | 7 - 20 | 7 - 20 | | | |

# Sample AustRoads

This is an example scheme. It is very similar to AustRoads94.

- **Units:** Metric (m)
- **Car class:** 1
- **Unclassifiable vehicle class:** 13

| Class | Type | Axles | Grps | SP1 | SP2 | Aggregate |
|---|---|---|---|---|---|---|
| 1 | AR1 | 2 | 1 - 2 | 0.0 - 3.2 | | 1 (Light) |
| 2 | AR2 | 3 - 5 | 3 | 2.1 - 3.2 | 2.1 - 50.0 | |
| 3 | AR3 | 2 | 2 | 3.2 - 50.0 | | |
| 4 | AR4 | 3 | 2 | | | 2 (Medium) |
| 5 | AR5 | 4 - 20 | 2 | | | |
| 6 | AR6 | 3 | 3 | 3.2 - 50.0 | | |
| 7 | AR7 | 4 | 3 - 4 | | 0.0 - 2.1 | 3 (Heavy) |
| | | 4 | 3 - 4 | 0.0 - 2.1 | | |
| | | 4 | 3 - 4 | 3.2 - 50.0 | | |
| 8 | AR8 | 5 | 3 - 5 | | 0.0 - 2.1 | |
| | | 5 | 3 - 5 | 0.0 - 2.1 | | |
| | | 5 | 3 - 5 | 3.2 - 50.0 | | |
| 9 | AR9 | 6 | 2 - 6 | | | |
| | | 6 - 20 | 3 | | | |
| 10 | AR10 | 7 - 20 | 4 | | | |
| 11 | AR11 | 7 - 20 | 5 - 6 | | | |
| 12 | AR12 | 7 - 20 | 7 - 20 | | | |

# Sample F2

This is an example scheme. It is very similar to Scheme F2.

- **Units:** Non - metric (ft)
- **Car class:** 2
- **Unclassifiable vehicle class:** 14

| Class | Type | Axles | SP1 | SP2 | SP3 | SP4 | SP5 | SP6 | Aggregate |
|---|---|---|---|---|---|---|---|---|---|
| 1 | F1 | 2 | 1.0 - 6.0 | | | | | | 1 (Light) |
| 2 | F2 | 2 | 6.0 - 10.2 | | | | | | |
| | | 3 | 6.0 - 10.2 | 6.0 - 18.0 | | | | | |
| | | 4 | 6.0 - 10.2 | 6.0 - 18.0 | 0.0 - 6.0 | | | | |
| 3 | F3 | 2 | 10.2 - 13.0 | | | | | | |
| | | 3 | 10.2 - 13.0 | 6.0 - 18.0 | | | | | |
| | | 4 | 10.2 - 13.0 | 6.0 - 18.0 | 0.0 - 6.0 | | | | |
| 4 | F4 | 2 | 20.0 - 40.0 | | | | | | 2 (Medium) |
| | | 3 | 20.0 - 40.0 | 0.0 - 6.0 | | | | | |
| 5 | F5 | 2 | 13.0 - 20.0 | | | | | | |
| 6 | F6 | 3 | 6.0 - 23.0 | 0.0 - 6.0 | | | | | |
| 7 | F7 | 4 | 6.0 - 23.0 | 0.0 - 9.0 | 0.0 - 9.0 | | | | |
| | | 5 | 6.0 - 17.0 | 0.0 - 6.0 | 0.0 - 6.0 | 0.0 - 6.0 | | | |
| | | 6 | 6.0 - 17.0 | 0.0 - 6.0 | 0.0 - 6.0 | 0.0 - 6.0 | 0.0 - 6.0 | | |
| 8 | F8 | 3 | 6.0 - 17.0 | 14.0 - 40.0 | | | | | 3 (Heavy) |
| | | 4 | 6.0 - 20.0 | 0.0 - 6.0 | 6.0 - 40.0 | | | | |
| | | 4 | 6.1 - 17.0 | 14.0 - 40.0 | 0.0 - 6.1 | | | | |
| 9 | F9 | 5 | 6.0 - 22.0 | 0.0 - 6.0 | 6.0 - 40.0 | 0.0 - 12.50 | | | |
| | | 5 | 6.0 - 22.0 | 0.0 - 6.0 | 6.0 - 23.0 | 1.1 - 23.0 | | | |
| 10 | F10 | 6 | 6.0 - 22.0 | 0.0 - 6.0 | | 0.0 - 11.0 | 0.0 - 11.0 | | |
| | | 7 | 6.0 - 22.0 | 0.0 - 6.0 | | 0.0 - 13.0 | 0.0 - 13.0 | 0.0 - 13.0 | |
| 11 | F11 | 5 | 6.0 - 17.0 | 11.0 - 25.0 | 6.0 - 18.0 | 11.0 - 25.0 | | | |
| 12 | F12 | 6 | 6.0 - 22.0 | 0.0 - 6.0 | 1.0 - 25.0 | 6.0 - 18.0 | 11.0 - 25.0 | | |
| 13 | F13 | 7 - 9 | | | | | | | |

# Sample F3

This very similar to Scheme F2. Class 11 has been changed.

- **Units:** Non - metric (ft)
- **Car class:** 2
- **Unclassifiable vehicle class:** 14

| Class | Type | Axles | SP1 | SP2 | SP3 | SP4 | SP5 | SP6 | Aggregate |
|---|---|---|---|---|---|---|---|---|---|
| 1 | F1 | 2 | 1.0 - 6.0 | | | | | | 1 (Light) |
| 2 | F2 | 2 | 6.0 - 10.2 | | | | | | |
| | | 3 | 6.0 - 10.2 | 6.0 - 18.0 | | | | | |
| | | 4 | 6.0 - 10.2 | 6.0 - 18.0 | 0.0 - 6.0 | | | | |
| 3 | F3 | 2 | 10.2 - 13.0 | | | | | | |
| | | 3 | 10.2 - 13.0 | 6.0 - 18.0 | | | | | |
| | | 4 | 10.2 - 13.0 | 6.0 - 18.0 | 0.0 - 6.0 | | | | |
| 4 | F4 | 2 | 20.0 - 40.0 | | | | | | 2 (Medium) |
| | | 3 | 20.0 - 40.0 | 0.0 - 6.0 | | | | | |
| 5 | F5 | 2 | 13.0 - 20.0 | | | | | | |
| 6 | F6 | 3 | 6.0 - 23.0 | 0.0 - 6.0 | | | | | |
| 7 | F7 | 4 | 6.0 - 23.0 | 0.0 - 9.0 | 0.0 - 9.0 | | | | |
| | | 5 | 6.0 - 17.0 | 0.0 - 6.0 | 0.0 - 6.0 | 0.0 - 6.0 | | | |
| | | 6 | 6.0 - 17.0 | 0.0 - 6.0 | 0.0 - 6.0 | 0.0 - 6.0 | 0.0 - 6.0 | | |
| 8 | F8 | 3 | 6.0 - 17.0 | 14.0 - 40.0 | | | | | 3 (Heavy) |
| | | 4 | 6.0 - 20.0 | 0.0 - 6.0 | 6.0 - 40.0 | | | | |
| | | 4 | 6.0 - 20.0 | 14.0 - 42.0 | 0.0 - 6.1 | | | | |
| 9 | F9 | 5 | 6.0 - 22.0 | 0.0 - 6.0 | 6.0 - 40.0 | 0.0 - 12.5 | | | |
| | | 5 | 6.0 - 22.0 | 0.0 - 6.0 | 6.0 - 23.0 | 1.1 - 23.0 | | | |
| 10 | F10 | 6 | 6.0 - 22.0 | 0.0 - 6.0 | 0.0 - 40.0 | 0.0 - 11.0 | 0.0 - 11.0 | | |
| | | 7 | 6.0 - 22.0 | 0.0 - 6.0 | 0.0 - 40.0 | 0.0 - 13.0 | 0.0 - 13.0 | 0.0 - 13.0 | |
| 11 | F11 | 5 | 6.0 - 22.0 | 11.0 - 25.0 | 6.0 - 18.0 | 11.0 - 25.0 | | | |
| 12 | F12 | 6 | 6.0 - 22.0 | 0.0 - 6.0 | 1.0 - 25.0 | 6.0 - 18.0 | 11.0 - 25.0 | | |
| 13 | F13 | 7 - 9 | | | | | | | |

# Türkçe

Türkiye'ye ait sýnýflandýrma semasý.

- **Units:** Metric (m)
- **Car class:** 2
- **Unclassifiable vehicle class:** 12

| Class | Type | Axles | SP1 | SP2 | SP3 | SP4 | SP5 | Aggregate |
|---|---|---|---|---|---|---|---|---|
| 1 | m/s | 2 | 0.0 - 1.83 | | | | | 1 (hafif) |
| 2 | oto | 2 | 1.83 - 3.0 | | | | | |
| | | 3 | 1.83 - 3.0 | 1.83 - 4.24 | | | | |
| 3 | pikap | 2 | 3.0 - 3.5 | | | | | |
| | | 3 | 3.0 - 3.5 | 1.83 - 4.24 | | | | |
| 4 | Otobüs | 2 | 5.4 - 12.0 | | | | | 2 (orta) |
| | | 3 | 5.4 - 12.0 | 0.0 - 1.83 | | | | |
| 5 | Kamyon2 | 2 | 3.5 - 5.3 | | | | | |
| 6 | Kamyon3 | 3 | 2.8 - 5.3 | 0.0 - 1.83 | | | | |
| | | 3 | 0.0 - 1.83 | 2.8 - 5.3 | | | | |
| 7 | Kamyon | 4 | 0.0 - 1.83 | 2.0 - 7.05 | 0.0 - 1.83 | | | |
| | | 4 | 2.0 - 7.05 | 0.0 - 1.83 | 0.0 - 1.83 | | | |
| | | 4 | 0.0 - 1.83 | 0.0 - 1.83 | 2.0 - 7.05 | | | |
| | | 5 | 0.0 - 1.83 | 2.0 - 7.05 | 0.0 - 1.83 | 0.0 - 1.83 | | |
| 8 | Treyler | 3 | 1.83 - 6.1 | 4.25 - 12.0 | | | | 3 (aðýr) |
| | | 4 | 1.83 - 6.1 | 0.0 - 1.83 | 1.83 - 12.0 | | | |
| | | 4 | 1.83 - 6.1 | 1.83 - 12.0 | 0.0 - 1.83 | | | |
| | | 4 | 1.83 - 6.1 | 1.83 - 7.0 | 1.83 - 12.0 | | | |
| 9 | Kombi5 | 5 | 1.83 - 6.7 | 1.83 - 12.0 | 0.0 - 1.83 | 0.0 - 1.83 | | |
| | | 5 | 1.83 - 6.7 | 0.0 - 1.83 | 1.83 - 12.0 | 0.0 - 1.83 | | |
| | | 5 | 1.83 - 6.7 | 0.0 - 1.83 | 1.83 - 7.65 | 1.83 - 12.0 | | |
| | | 5 | 1.83 - 6.70 | 1.83 - 12.0 | 1.83 - 7.65 | 1.83 - 12.0 | | |
| 10 | Kombi6 | 6 | 1.83 - 6.7 | 0.0 - 1.83 | 1.83 - 12.0 | 0.0 - 1.83 | 0.0 - 1.83 | |
| | | 6 | 1.83 - 6.7 | 0.0 - 1.83 | 1.83 - 12.0 | 1.83 - 7.65 | 1.83 - 7.65 | |
| | | 6 | 1.83 - 6.7 | 0.0 - 1.83 | 1.83 - 7.65 | 1.83 - 12.0 | 0.0 - 1.83 | |
| 11 | >7aks | 7 | | | | | | |

# Signature Type Reference

## Classification

### Tables

| Report Name | Base | Regular | Plus | Phase | Description |
|---|---|---|---|---|---|
| **User Defined Vehicle Reports** | | | | | |
| Custom List Report | | | ✓ | ✓ | Custom built reports. |
| **Formatted Vehicle Reports** | | | | | |
| Weekly Vehicle Counts | ✓ | ✓ | ✓ | ✓ | Table of hourly vehicle counts, peaks and averages. One week per page. |
| Weekly Vehicle Counts (Virtual Week) | | | ✓ | ✓ | Table of hourly vehicle counts, peaks and averages. Compressed into one week. |
| Vehicle Counts | ✓ | ✓ | ✓ | ✓ | Report optimized for vehicle counts. |
| Vehicle Counts (Virtual Day) | | | ✓ | ✓ | Report optimized for vehicle counts. Compressed into one day. |
| Daily Classes | | ✓ | ✓ | ✓ | Class volumes and percentages of daily and weekly flow. |
| Daily Classes by Direction | | ✓ | ✓ | ✓ | Class volumes and percentages by direction. |
| Daily Classes (Estimated Mass) | | | ✓ | ✓ | Class volumes and percentages of daily and weekly flow with estimated masses |
| Class Speed Matrix | | ✓ | ✓ | ✓ | Table showing speed versus class, with totals. |
| Speed Separation Matrix | | | ✓ | ✓ | Table showing speed versus vehicle separation, with totals. |
| Rolling Day Totals | | | ✓ | ✓ | Daily volume and speed summary in rolling format. |
| Individual Vehicles | | | ✓ | ✓ | List of each vehicle showing time, speed, class, wheelbase, headway, axles, groups and wheel picture |
| Queued Vehicles | | | ✓ | ✓ | List queues showing lead and trailing vehicles |
| Speed Statistics | | | ✓ | ✓ | Report showing speed statistics by bin |
| Speed Statistics by Hour | | | ✓ | ✓ | Report showing speed statistics by hour |
| Separation Statistics | | | ✓ | ✓ | Report showing separation statistics by bin |
| Separation Statistics by Hour | | | ✓ | ✓ | Report showing separation statistics by hour |
| Adjusted Vehicle Flow | | | ✓ | ✓ | Report showing AADT and ADT. |
| Data Scan | | | ✓ | ✓ | Data scan with result status |
| **Phase Reports** | | | | | |
| Custom List Report | | | | ✓ | Custom built phase reports. |
| Data Phase Report | | | | ✓ | Individual vehicles ordered by phase, with speed statistics. |
| Phase Statistics | | | | ✓ | Phase timing statistics. |

### Charts

| Report Name | Base | Regular | Plus | Phase | Description |
|---|---|---|---|---|---|
| **Vehicle Data Verification Charts** | | | | | |
| Spectrum of Axle Hits | | | ✓ | ✓ | Chart showing logarithm of sensor hit times. |
| Correlation of Axle Hits | | | ✓ | ✓ | Chart showing vehicle correlation between sensors. |
| Audit of Data Quality | | | ✓ | ✓ | Chart showing sensor balance and axle hit quality. |
| Axle Position Histogram | | | ✓ | ✓ | Axle distribution within vehicles. |
| Environmental Test | | | ✓ | ✓ | Special report |

| Report Name | Base | Regular | Plus | Phase | Description |
|---|---|---|---|---|---|
| **Time Based Vehicle Plots** | | | | | |
| Vehicle Flow | ✓ | ✓ | ✓ | ✓ | Plot of integrated vehicle flow versus time. |
| Velocity Dispersion | | | ✓ | ✓ | Plot of velocity dispersion with time. |
| Speed | | | ✓ | ✓ | Plot of mean speed with min/max limits. |
| Flow Stacked by Class | | | ✓ | ✓ | Plot of flow segregated by class. |
| Flow Stacked by Speed Bins | | | ✓ | ✓ | Plot of flow segregated by speed bins. |
| Flow Clustered by Class | | | ✓ | ✓ | Plot of flow segregated by class. |
| Flow Clustered by Speed Bins | | | ✓ | ✓ | Plot of flow segregated by speed bins. |
| Separation | | | ✓ | ✓ | Plot of vehicle separation. |
| Lane Occupancy | | | ✓ | ✓ | Plot showing lane occupancy and capacity. |
| **Dispersion Plots** | | | | | |
| Speed vs Separation | | | ✓ | ✓ | Plot of speed vs vehicle separation. |
| Volume vs Speed | | | ✓ | ✓ | Plot of traffic volume vs speed |
| Density vs Speed | | | ✓ | ✓ | Plot of traffic density vs speed |
| Density vs Volume | | | ✓ | ✓ | Plot of traffic density vs volume |
| **Binned Charts** | | | | | |
| Class Bin Chart | | | ✓ | ✓ | Interactive chart showing class bins. |
| Speed Bin Chart | | | ✓ | ✓ | Interactive chart showing speed bins. |
| **Vehicle Statistics** | | | | | |
| Speed Histogram | | | ✓ | ✓ | Speed distribution and summary showing closest normal distribution. |
| Notional Speed Limit | | | ✓ | ✓ | Shows changing speed limit. |
| Wheelbase Histogram | | | ✓ | ✓ | Vehicle wheelbase distribution. |
| Separation Histogram | | | ✓ | ✓ | Vehicle separation distribution. |
| **Phase Charts** | | | | | |
| Phase Spectrum | | | | ✓ | Chart showing distribution of phase times. |
| Phase Flow | | | | ✓ | Chart showing phase-flow distribution. |
| Phase Speed | | | | ✓ | Chart showing phase-speed distribution. |
| Phase Future Position | | | | ✓ | Chart showing estimated future position. |
| Phase Queue | | | | ✓ | Chart showing phase queueing. |
| Phase Delay | | | | ✓ | Chart showing phase delay. |
| Phase Cycle | | | | ✓ | Time series showing phase-cycle length. |

## Special

| Report Name | Base | Regular | Plus | Phase | Description |
|---|---|---|---|---|---|
| **Standard Vehicle Formats** | | | | | |
| Florida SPS Class | | ✓ | ✓ | ✓ | Florida DOT Survey Processing Software, class format |
| Florida SPS Vehicle Volume | ✓ | ✓ | ✓ | ✓ | Florida DOT Survey Processing Software, volume format |
| Florida SPS Vehicle Speed | | ✓ | ✓ | ✓ | Florida DOT Survey Processing Software, speed format |
| PRN Class Format | | ✓ | ✓ | ✓ | PRN file class counts. |
| PRN Directional Volume | | ✓ | ✓ | ✓ | PRN file directional vehicle counts. |
| PRN Speed Format | | ✓ | ✓ | ✓ | PRN file speed counts. |
| New England TAS | | | ✓ | ✓ | New England TAS. |
| QDOT 60 Minute Report | | ✓ | ✓ | ✓ | QDOT 60 minute format |
| QDOT 15 Minute Report | | | ✓ | ✓ | QDOT 15 format |
| FHWA VTRIS Class Report | | ✓ | ✓ | ✓ | FHWA VTRIS Class Report |
| FHWA VTRIS Vehicle Volume | | ✓ | ✓ | ✓ | FHWA VTRIS Vehicle Volume Report |

| Report Name | Base | Regular | Plus | Phase | Description |
|---|---|---|---|---|---|
| Report | | | | | |
| TNZ Class Report | | ✓ | ✓ | ✓ | Tranzit New Zealand class report. |
| MRWA Vehicle Report | | | ✓ | ✓ | MRWA Vehicle report. |
| FIME 1 3 | | | ✓ | ✓ | Fime Reports |
| FIME 2 4 | | ✓ | ✓ | ✓ | Fime Reports |
| **Exotics** | | | | | |
| Speed Bin Totals | | ✓ | ✓ | ✓ | Speed bin totals in 15 minute steps. |
| Class Bin Totals | | ✓ | ✓ | ✓ | Class bin totals in 15 minute steps. |
| TAMS Vehicle Count Report | | ✓ | ✓ | ✓ | TAMS Vehicle Count Report |
| **GR Formats** | | | | | |
| GR00 Vehicle Count Report | | ✓ | ✓ | ✓ | GR00 Vehicle count report type |
| GR60 Speed Report | | ✓ | ✓ | ✓ | GR60 speed report type |
| GR66 Class Report | | ✓ | ✓ | ✓ | GR66 class report type |
| GR69 Speed/Class Report | | ✓ | ✓ | ✓ | GR69 Speed and Class report type |
| **NYSDOT Subsystem** | | | | | |
| NYSDOT Reports | | ✓ | ✓ | ✓ | A variety of special format reports for NYSDOT |

# Event Count

## Tables

| Report Name | Base | Regular | Plus | Phase | Description |
|---|---|---|---|---|---|
| **User Defined Event Reports** | | | | | |
| Event List Report | | | ✓ | ✓ | Text list report of events (useful for export to other programs). |
| **Formatted Event Count Reports** | | | | | |
| Weekly Event Counts | ✓ | ✓ | ✓ | ✓ | Table of hourly event counts, peaks and averages. One week per page. |
| Weekly Event Counts (Virtual Week) | | ✓ | ✓ | ✓ | Table of hourly event counts, peaks and averages. Compressed into one week. |
| Event Counts | ✓ | ✓ | ✓ | ✓ | Report optimized for short-term count surveys. |
| Event Counts (Virtual Day) | | ✓ | ✓ | ✓ | Report optimized for short-term count surveys. Compressed into one day. |
| Adjusted Event Flow | | | ✓ | ✓ | Report showing AADT and ADT. |

## Charts

| Report Name | Base | Regular | Plus | Phase | Description |
|---|---|---|---|---|---|
| **Event Count Verification Charts** | | | | | |
| Spectrum of Axle Hits | | | ✓ | ✓ | Chart showing logarithm of hit times. |
| Piezo Test Report | | | ✓ | ✓ | Piezo statistics chart |
| **Time Based Event Count Plots** | | | | | |
| Event Flow | ✓ | ✓ | ✓ | ✓ | Plot of integrated event volume versus time. |

## Special

| Report Name | Base | Regular | Plus | Phase | Description |
|---|---|---|---|---|---|
| **Exotics** | | | | | |
| Punched Tape | ✓ | ✓ | ✓ | ✓ | Fischer Porter tape in 15 min bins |
| **Standard Event Count Formats** | | | | | |
| Florida SPS Event | ✓ | ✓ | ✓ | ✓ | Florida DOT Survey Processing Software, event counts. |
| FHWA VTRIS Event Count Report | ✓ | ✓ | ✓ | ✓ | FHWA VTRIS Event Count Report |
| PRN Event Format | ✓ | ✓ | ✓ | ✓ | PRN File Event counts. |
| GR00 Event Count Report | ✓ | ✓ | ✓ | ✓ | GR00 Event Count Report |
| GR08 Event Count Report | ✓ | ✓ | ✓ | ✓ | GR08 Event Count Report |
| GR18 Event Count Report | | | ✓ | ✓ | GR18 Event Count Report |
| TAMS Event Count Report | ✓ | ✓ | ✓ | ✓ | TAMS Event Count Report |
| New England TAS | | ✓ | ✓ | ✓ | New England DFL file |
| TNZ Event Report | | ✓ | ✓ | ✓ | Transit New Zealand count report |

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