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RAMM Software Limited
Auckland
New Zealand

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Document Release

To check that you are reading the most recent release of this document, please go to the RAMM Software Limited web site (http://www.ramm.co.nz).

Author	Version	Release Date
Guy Halpe	First release	August 2002
Guy Halpe	Second Release	March 2003
Guy Halpe	Third release incorporating updates to **RAMM Network Manager**, Pavement Structure and Bridges, and new sections on Surfaces, Bylaws, Pavement Strength and **RAMM 3D**.	October 2004
Grant Mackenzie	Fourth release incorporating updates for **RAMM** 2008 being **RAMM** Security and User Defined Tables.	1st July 2008
Grant Mackenzie	Fifth release incorporating Dynamic Segmentation and **RAMM Graphs**.	28th March 2011
Grant Mackenzie	Reprint for web site	2nd February 2012
Grant Mackenzie	V5.3 Includes **RAMM Network Manager** centreline import feature	10th April 2012

Contents

Introduction to Working with RAMM

Welcome to the *Working with RAMM* guide.

If you have mastered the **RAMM** basics and wish to use its more advanced features you have arrived at the right place. You will become a more proficient **RAMM** user once you have read this guide.

Some of the **RAMM** features detailed in this guide are quite complex. You may find that, even after reading this guide, your situation requires further guidance. If so Contact RAMM Software Limited (on page 26).

If you are new to **RAMM** you should read the *Using RAMM* guide before you read this one.

In This Chapter

Overview

This *Working with RAMM* guide has been produced to help you master some of the advanced **RAMM** functions and concepts. It includes the following sections.

Introduction to RAMM

This is a quick introduction to **RAMM** and a reference for common actions performed within it. It covers logging in to **RAMM** and using the **RAMM** Hosting Service. It explains common terms used. You will also find out about the extensive options you have when you need help with the software. It has the contact information should you need to talk to RAMM Software Limited.

Security

This section covers the security features built into **RAMM**. The information in your **RAMM** Database is valuable. So you will want to use **RAMM** security to control who has access to your database information and exactly what they are permitted to do with it. You manage user access and permissions by a combination of global security parameters and individual Security Profiles, Roles and Zones.

RAMM Network Manager

This is an application for performing complex tasks like adjusting, deleting, reversing or realigning Roads and Carriageways. It should be used with caution and some changes are irreversible.

RAMM SQL

This utility enables you to access, filter and manage database information with the help of standard SQL statements. It also records the Query progress so that you have a history of the SQL statements that have been run.

RAMM 3D

This provides three-dimensional, detailed and customisable views of Surfaces as well as Pavement information.

RAMM Graphs

RAMM Graphs is the application for displaying your **RAMM** data in graphical form. You can display Inventory, Condition and other details in a variety of formats.

Surfaces

This section explains Surfaces in **RAMM**. You have a number of tools and reports specifically related to managing Surface data.

Pavement Structure

This section examines the process of managing Pavement Layers and their reconstruction.

Pavement Strength

RAMM is able to calculate pavement strength and generate Adjusted Structural Number (SNP) values. This section looks at the processes and reports available.

Treatment Length Dynamic Segmentation

Treatment Length Dynamic Segmentation is the process by which **RAMM** divides Roads into Treatment Lengths. You can run the process several times using different criteria you have defined. Each time you run the process you can compare the existing Treatment Lengths with those created by the process. You can then accept or discard the new Treatment Length set per Road.

Maintenance Activity

You use **RAMM** Maintenance Activity to manage Network maintenance and keep your database up to date.

Bridges

This section describes working with Bridges in detail, including maintenance of Assets and inserting new Bridges with the Bridge Insert Wizard.

Bylaws

You use Bylaws to record and manage Speed Limits for all Roads. You do this to comply with the laws for the setting of Speed Limits. You can also maintain other Bylaws such as Parking and Stopping restrictions.

User Defined Tables (UDTs)

You use UDTs to manage those of your Assets which are not in the default **RAMM** Asset set. This section shows you how to create them.

Introduction to RAMM

Road Assessment and Maintenance Management (**RAMM**) is software developed and supported by RAMM Software Limited. This software is used by Road Controlling Authorities (RCAs) to manage Road Inventory Assets and Condition for their Network.

RAMM is the complete package for Asset maintenance, valuation, assessment, Forward Work Planning as well as inventory-based Asset management. It also includes a range of report and analysis applications which complement the management functions.

In This Chapter

What is RAMM?

The **RAMM** (Road Assessment and Maintenance Management) software from RAMM Software Limited is a comprehensive suite of applications to maintain and manage Road Inventory and Condition data.

> The name **RAMM** is used not only for a suite of Road Assessment and Maintenance Management applications but also for the central software application itself.

The RAMM Suite

The full **RAMM** suite includes **RAMM** (sometimes referred to as **RAMM** for Windows), **RAMM Contractor**, **Pocket RAMM**, **RAMM Manager**, **RAMM Network Manager**, **RAMM SQL**, **Hosting Administration**, **CAR Manager** and **RAMM GIS**.

When **RAMM** was introduced to the industry in the 1980s, it was a green screen application. Later a GUI (graphical user interface) was introduced. This is when it was sometimes called **RAMM** for Windows. As users came to expect more from **RAMM** other applications were added. **RAMM Manager**, **RAMM Network Manager** and **RAMM SQL** were added to facilitate Lookup, Staff Permissions, process, report and Network maintenance, database manipulation and data extraction. When Network Owners and Contractors needed a better system for contract management, **RAMM Contractor** and **Pocket RAMM** were introduced.

Recently the **CAR Manager** has been added to enable NZ Corridor Managers to manage access to their Network. **Hosting Administration** has been designed to give clients greater control over the users who access their Network data. It will be rolled out to our New Zealand clients in the near future. **RAMM GIS** enables easy viewing of **RAMM** data on a map without having to log in to **RAMM**.

Your RAMM Applications

The full **RAMM** suite includes the following applications. You can access each individual application only if you have the correct Staff Permissions.

RAMM (for Windows)

RAMM (for Windows) is the central application of the **RAMM** suite. You access your Inventory, Asset and Condition data for your Network from **RAMM**.

RAMM Manager

RAMM Manager is the module in the **RAMM** suite of products which you use to set up Lookups, to maintain Staff Permissions, to run processes such as Status Check, and to run reports.

RAMM Contractor

RAMM Contractor is the module of the **RAMM** suite of products which enables Contractors, Network Owners and Consultants to manage Road Asset Maintenance Contracts. In particular, it has been optimised to facilitate the Programming of Network maintenance and the Estimation and Claims process which is integral to Programmed Maintenance Contracts. It also includes the special features for the managing of Contracts for Signs, Street Lights and Traffic Signals maintenance.

Pocket RAMM

Pocket RAMM is the module of the **RAMM** suite of products which enables a user to run **RAMM** on a netbook, laptop, tablet or PDA, and to perform Contract, Inventory and Claim management while mobile, in the field. Virtually all of the everyday maintenance ability of **RAMM Contractor** is present in **Pocket RAMM**. Please note that the **Pocket RAMM** application has become so comprehensive that the use of PDAs with **Pocket RAMM** is no longer recommended. PDAs are no longer powerful enough to deliver a positive user experience.

RAMM SQL

RAMM SQL is the module of the **RAMM** suite of products which enables a power user to manipulate **RAMM** data using SQL (Structured Query Language). It is a very powerful tool and should be used only by advanced users who have a detailed knowledge of the **RAMM** database.

RAMM Network Manager

RAMM Network Manager is the module in the **RAMM** suite of products which you use to manage the details of your Network and in particular, the Road centre lines. **RAMM Network Manager** is a powerful, flexible and comprehensive Road Network maintenance tool that helps you automate tasks and perform complex Network management actions. For example, you can reverse a Road with a single press of your mouse. When you apply this change **RAMM Network Manager** will update all relevant tables within the database. It also has a graphical display which displays current and historical views of the changes you are making.

Hosting Administration

Hosting Administration is the portal through which you access the **RAMM** suite of software products. You log in to **Hosting Administration** through the RAMM Software Limited web site. At the time of writing, Hosting Administration is available only to Western Australian LGAs who are clients of <arrb>.

CAR Manager

CAR Manager is the online application used by corridor managers to manage requests by utility operators, or their contractors, to access the Road corridor. Access to the corridor is required to make changes to electricity, gas, telecommunications, water, wastewater and postal infrastructure. At the time of writing, **CAR Manager** is available only to New Zealand RCAs who are clients of RAMM Software Limited.

RAMM GIS

RAMM GIS is the **RAMM** Geospatial Information Service. Using it is a bit like flying over your network and viewing your **RAMM** data, but without ever leaving the office.

> Your ability to view and access the complete suite of **RAMM** products will depend on your Staff Permissions. Best practice is to grant you permission to view and access only those applications which you need for your normal duties.

Your RAMM Database

All your Road Inventory and Condition information in **RAMM** is stored in a central database. Everything you do in **RAMM** is linked to it. All the actions you perform affect it.

How the Database Is Arranged

The information in the **RAMM** database is stored in tables. There are many of these, one for each aspect of the Road Network. Examples of **RAMM** tables are Surface Structure and Roughness. **RAMM** often combines information from different tables when you are working with it.

Each table holds its data in a combination of rows and columns. Each row in a table can also be called a record. It contains all the details for the particular aspect of the Road section - for example, the Start Displacement, Material, Construction Date and so on of a particular Road section. Each individual item of data is held in its own column.

These columns are related to the fields on **RAMM** screens. Information in a field on a **RAMM** screen resides in a table column. The column contains information about all the Roads, but pertaining only to one aspect of the Road - for example, just the Displacements for the various Roads and Road sections you are looking at.

Road Asset:		Column (Field):		
Surface Structure Table	Road Name	Start Displacement	Pavement Type	Construction Date
Row (Record):	Smith Street	000m	Thin Surfaced Flexible	17/03/2003
	Jones Road	100m	Concrete	12/02/2000

You will see messages and warnings from time to time, some accompanied by detailed, database related information. It is always useful to either print or record this information somewhere and have it at hand when you call RAMM Software Limited for assistance. See Contact RAMM Software Limited (on page 26).

Your Other Software and RAMM

When you are working with **RAMM**, you will use other software. The following list is not exhaustive. Also, you might not use some of the software listed.

Internet Browser

Your web or internet browser is the software application you use for accessing, presenting, and navigating information on the World Wide Web. You use it to access **RAMM** through the **RAMM** Hosting Service. Common browsers are Internet Explorer, Firefox, Safari and Chrome. Best results for accessing **RAMM** through the **RAMM** Hosting Service have been achieved using Internet Explorer.

Citrix Client

The Citrix client is a third party, remote access application. It allows users to access **RAMM** remotely. It enables secure passing of data between a remote server and your local, or client pc or other device. Once the Citrix connection is established, you work with **RAMM** as if it were running on your local device.

Microsoft Excel and Others

You can export **RAMM** data in a format usable in Microsoft Excel, Access and other data manipulation and reporting software.

Windows Explorer

You use Windows Explorer (sometimes referred to as My Computer) to access files on your computer which you attach to records in **RAMM** on the Multimedia tab of the **RAMM** Detail screens. Similarly you can use the software to download and save **RAMM** multimedia files to your own hard drive.

dTIMS

Deighton Total Infrastructure Management System (dTIMS) is a software tool used to model Pavement Deterioration. **RAMM** provides a method of extracting Treatment Length, Maintenance Cost and related data from the Road Network in a format that can be imported into dTIMS.   You export information from **RAMM** for use in dTIMS, and then import the results of your analysis back into **RAMM**.

RAMM Web Service

A web service is software application supporting one software product to talk to another. You use the **RAMM** Web service to enable your CSRs (Customer Service Representatives) to use their customer service software to add a Job into **RAMM Contractor** for, say, a Street Light out, and to monitor the Job progress. Configuring access to the **RAMM Contractor** Web Service is the responsibility of the Network Owner.

The RAMM Main Screen

The **RAMM** main screen is your portal to your **RAMM** database. You should familiarise yourself with its main items.

No	Item	Comments
1	Menu Bar	This contains the standard drop-down lists with which all Windows users will be familiar.
2	Tool bar	This is a repository for shortcuts to the screens you use most often.
3	**Show toolbar menu** (screen selection drop-down list)	You press this button for the drop-down list to access all the **RAMM** Inventory, Condition and other data screens.
4	**Roads** list panel	This panel lists all the Roads in your Network. You can Filter this list to include only the group of Roads you require.
5	Expanded tree	You press ⊞ to expand the tree and reveal the Carriageway Sections for a Road.
6	Detail screen	Detail screens display the details for one **RAMM** Inventory, Condition or other data record. You edit the item details at the Detail screen.
7	Grid screen	Grid screens display the details for one or more **RAMM** Inventory, Condition or other data records. You use Grid screens for reporting and other purposes.
8	**Map**	The **Map** in **RAMM** is a wonderful tool for visualising your Network and updating it.
9	Status bar	This is where you look to see useful information about what you are doing.

RAMM Terminology

In **RAMM**, as with any software application, there are terms which have a meaning specific to the software. When you are working in **RAMM** you will encounter these terms. You should have an understanding of them before you do. Some of these terms are also used in the wider Road industry. The definitions below are specific to **RAMM**.

The following list is a minimum of the terms you need to understand before you start to work with **RAMM**. You can also look at the Glossary at the end of this guide for a more comprehensive list.

RCA

A Road Controlling Authority (RCA) is the organisation responsible for a particular Road Network. An example of an RCA could be the New Zealand Transport Agency (NZTA) or a TLA (Territorial Local Authority).

Network

A Network is a collection of Roads managed by a particular Road Controlling Authority (RCA). Each **RAMM** database usually contains all the information for one Network.

Road

For Local Authorities, a Road denotes a single named Road that is part of their Network. For State Highways, a Road is a segment of the State Highway. Roads may include associated Assets such as Pavement, Top Surface, and Shoulders. Assets such as Signs and Surface Water Channels are associated with a Road.

Carriageway

Roads in **RAMM** are divided into logical sections named Carriageways. These start and end at easily identifiable Locations such as Intersections and Bridges. You can define your Carriageway Sections to suit your own purposes. For instance you may define them to start and end when the number of Lanes in the Road changes or if the Road changes between Sealed and Unsealed sections. A Carriageway Section starts at one Displacement along the Road and ends at another Displacement. Carriageways define the lengths of Road against which other Assets can be referenced.

Displacement

Displacement is the distance along a Road measured from the start of the first Carriageway Section of the Road. It is stated in metres.

Location

Location refers to the collection of details used to position an Asset or Inventory item within a database. The most basic Location information is a combination of Road and Displacement. Location information can also include helpful notes such as nearby landmarks. Point Assets such as Signs have a Location field whose value is the Displacement of the Sign from the start of the Road.

Asset

An Asset is an item in a Network which has a value. It could be a physical component of a Road, such as its Surface. It could be something real such as a Bridge, a Footpath or a Street Light. Where no table exists in **RAMM** for one of your Asset Types, you set up a User Defined Table (UDT) to manage the Assets.

Nonasset

Nonassets are items for which screens exist in **RAMM** but which have no monetary value. They are generally something not physically present on the Road Network such as Roughness, Maintenance Cost and Crash. You can set up User Defined Tables (UDTs) to manage Nonassets which do not have their own screens in **RAMM**. Examples could be slips, hazards and certain Condition data.

Stock Asset

In **RAMM** the three Asset Types, Signs, Street Lights and Traffic Signals are referred to as Stock Asset Types. This is because, unlike the other Asset Types, when Signs, Street Lights and Traffic Signals Assets or components are replaced, a detailed record is kept of the replacements including the Replacement Reason. So you have an itemised list of the current and past Assets. You create Stock UDTs to manage those of your Assets (if any) which do not already exist in **RAMM** and for which you need to keep replacement records.

Network Inventory

Your Network Inventory is your **RAMM** database records including real items such as a Bridges and Footpaths as well as your Survey and other data such as Crashes and Bylaws. Your Condition data such as Roughness and your report data such as **RAMM** 3D do not form part of your Network Inventory.

Condition

The term Condition has two related meanings in **RAMM**. In **RAMM** Assessment the Condition of an Asset describes its fitness or readiness for use. Typical **RAMM** and NAMS Conditions are Excellent, Good, Average, Poor and Very Poor. Assessment Condition Weighting is used to determine Risk of Failure and the Consequences of Failure.

There are also Road Conditions which have their own **RAMM** screens. Roughness, High Speed Rutting and Skid Resistance are examples of **RAMM** items used to describe the Condition of your Roads.

You will be able to tell from the context in which it is used, which meaning of the term Condition is intended.

Assessment

An Assessment is the record of an inspection of an Asset. You use Assessments for a number of reasons including to record the Condition of an Asset or its associated Likelihood and Consequences of Failure (Risks). Rating and HSD are used to Assess Roads.

Rating

Rating is the process of recording the state of a Road by measuring the extent of the deterioration which has occurred. This includes factors such as the length of Cracking and Potholes. This is sometimes referred to as Condition Rating.

HSD

High Speed Data (HSD) is the collective name for particular properties and state of a Road as measured by specialised equipment mounted on a vehicle. The properties of the Road include its slope and curvature values. The state of the Road includes its Roughness and Skid Resistance values.

Treatment Length

A Treatment Length is a section of a Road with consistent performance and purpose. For example, it could have the same Top Surface material and Annual Average Daily Traffic (AADT) count along its length. A Treatment Length may have had similar Treatments applied along its length and is often different from its adjoining sections.

Treatment Lengths may coincide with Carriageway sections, but the same Carriageway section may have more than one Treatment Length. A Treatment Length may span more than one Carriageway section. Treatment Lengths will usually change over time, as conditions change.

Treatment Selection

A Treatment Selection is a recommended treatment for a Treatment Length to be carried out in the next twelve months. This recommendation can of course be No Treatment. Treatment Selections are generated in **RAMM** using the Treatment Selection Algorithm (TSA).

Log in to RAMM

You must log in to **RAMM** before you can use it.

You cannot log in to any of the **RAMM** applications unless you have a login name and a password. Once you have logged in you need appropriate Staff Permissions to carry out tasks related to your role.

Contact the Systems Administrator for the correct Staff Permissions to perform your normal tasks. See the Security chapter of the *Working with RAMM* guide.

You log in to **RAMM** using the **RAMM** Hosting Service.

RAMM Hosting Service

The **RAMM** Hosting Service is a service run by RAMM Software Limited. It enables you to run **RAMM** across the Internet. It hosts your database and the software on a server at a centralised location. You use your standard internet browser to access the software and work with your data, so you do not need any specialised software. It is very secure.

You use the **RAMM** Hosting Service from anywhere with an internet connection.

The graphic below shows the the options to access **RAMM** using the **RAMM** Hosting Service.

Logging in to the RAMM Hosting Service

Introduction

You log in to the **RAMM** Hosting Service to access the **RAMM** applications.

Before you do this you need to have:

- been granted access with a username and password by RAMM Software Limited. To contact RAMM Software Limited for assistance, see Contact RAMM Software Limited (on page 26).
- Downloaded the MetaFrame Presentation Server Client for 32-bit Windows. You do this by clicking the link on the RAMM Software Limited website **Log in** page and following the instructions.
- opened your web browser such as Internet Explorer or Mozilla Firefox.

Menu Path

Follow the menu path ramm.co.nz https://login.ramm.co.nz/ to open the **Log in** page.

▶ **To Log in to the RAMM Hosting Service**

To do this you follow these steps:

1 Type your username and password in the **User name:** and **Password:** fields.
2 Press **Log In**.
   The **Applications** panel will open. What you see in the **Applications** panel will depend on your Security Permissions.

The icons you see in the **Applications** panel will depend on your **Staff Permissions**

3 Do you want to use **Pocket RAMM**?

Yes	go to step 4.
No	go to step 6.

4 Press the Pocket Applications icon.
The **Pocket RAMM** applications will become available.

5 Go to step 7.

6 Press RAMM 2011.
The Applications panel will open. The software icons will be available.

Again, the icons you see in the **Applications** panel will depend on your **Staff Permissions**

7 Press the icon for the **RAMM** software you want to use.
The **RAMM** software application will open. If you have access to more than one database, a dialog will open so that you can choose the database which you require.

> **NOTE**
> If you use an older version of Mozilla Firefox as your internet browser, a Warning telling you that you do not have the MetaFrame Presentation Server Client for 32-bit Windows will display as in the Log in page screen shot above. Once you have downloaded the software you can ignore this warning.

RAMM Help Options

The time will come when you will want to know more about **RAMM** so that you can be both more proficient and efficient. Use the following options to upskill:

- use the Help from within the software. See Context-sensitive Help (on page 20).
- use internet-based Help. See **RAMM** Help on the Internet (on page 22).
- read the **RAMM** documentation. See **RAMM** Guides and Manuals (on page 23).
- discover the **RAMM** tables and columns. See **RAMM** Database Details (on page 25).
- talk to other **RAMM** users. See Help from Other Users (on page 24).
- seek professional help. See Contact RAMM Software Limited (on page 26).

Context-sensitive Help

User assistance has been integrated into the **RAMM** applications.

Most screens in **RAMM** have a Help menu option. You press F1 on your keyboard or press Help at the top of the screen to open the context-sensitive Help.

As you can see in the graphic below, when you press Help at the top of the screen, one page in a .chm file will open. In this example information to enable you to view Scheduled Traffic Counts on the **Map** on **RAMM** is being offered.

If the information on the page does not solve your issues, you can navigate through the .chm file. Use the Search and Index to speedily locate the information you require.

If you still need further information you can follow the menu path Help > Website > Read Latest Manuals. This will take you to a list of the latest RAMM manuals and guides where you can search for answers.

RAMM Help on the Internet

The **RAMM** user guides and manuals are available from the RAMM Software Limited web site (http://www.ramm.co.nz). They are generally available in both downloadable .pdf versions and in online Web Help versions.

Web Help

The Web Help versions of the user guides and manuals are the primary versions you will want to use. They are available from the web site and so are available to you, so long as you have access to the internet.

The Web Help versions open in your internet browser and are very attractive. They are fully searchable. They have both a table of contents and an index for quick access to the information you want.

Their only disadvantages are that you can print only one page at a time and they are not available to you when the internet is not available.

PDFs

The .pdf versions of the user guides and manuals are useful mainly if you want to print complete documents or large portions of them.

Also, the .pdfs may be useful if you want to keep your own copy of the manual on your desktop or mobile device.

Google Search

If you type a question into the Google search, this will sometimes return the information you are after. This can be hit or miss.

RAMM Guides and Manuals

RAMM Software Limited offers useful guides and manuals to enable you to maximise the benefits to you of using **RAMM**.

Release Notes

Users who want to know what is in the latest version of **RAMM** should read:

- **What's New in RAMM 2011 (Web Help)**
  This is a detailed description of the changes and improvements to the **RAMM** software suite in the 2011 release. In particular, it is the changes to Assets, Data, Finance, Patrols, Reports, Roads and Traffic Count Estimation, which are featured. The Web Help version of this document is fully detailed and fully searchable.

Basic Help

Users who are new to **RAMM** need to understand the **RAMM** basics to maximise their experience with the software. They should read the following **RAMM** primer as it includes very helpful introductory information:

- **Using RAMM**
  This is a basic help guide introduction to **RAMM**. It covers the essentials, common tasks, procedures as well as Mapping and Decision Cube functions. There is a comprehensive explanation of the **RAMM** tool bar controls.

Advanced RAMM Functions

Users familiar with **RAMM** and ready for its more advanced functions should read:

- **Best Practice for Assessment in Pocket RAMM**
  This guide shows how you can set up Assessments for **Pocket RAMM** and record your Assessments in the field. This guide is available online only.
- **Managing RAMM**
  This advanced guide includes sections on Skid Resistance, Treatment Selection and Auditing Survey data. It has not been updated recently. This guide is available online only.
- **RAMM Assessment**
  This guide is for those who manage and record Assessment Inspections of Network Assets, enter the results into **RAMM** and generate analyses of Condition and Risk.
- **RAMM Asset Valuation**
  This advanced guide to the Asset Valuation process covers valuing a Road Network and calculating Replacement Costs.
- **RAMM Forward Work Programme**
  This guide is for those who use **RAMM** Forward Work Programme (FWP) - also known as NOMAD. It is an advanced tool for forecasting and analysis.

- **Traffic Count Estimation**
  This guide explains the set up and use of the **RAMM** Traffic Count Estimation System.
- **Working with RAMM**
  This is an advanced help guide for power users of **RAMM**. Use this guide only if you have a good working knowledge of **RAMM**, its Assets, the database structure and key components such as Treatment Lengths. This guide covers: User Defined Assets, Surfaces, **RAMM SQL**, Bridges, Maintenance Activity, Pavement Structure, Pavement Strength and **RAMM** Security.

RAMM Contractor Guides

Those users who need to know how to use **RAMM Contractor** should read the following manuals:

- **RAMM Best Practice**
  This guide gives step-by-step instructions on how to run a Programmed Maintenance Contract in **RAMM Contractor**. It is available as a .pdf or .xhtml file but not as a printed manual.
- **RAMM Contractor**
  This guide is for those Road Maintenance Contractors and Network Owners who use **RAMM Contractor** software. It covers setting up Contracts, managing Dispatches, generating Claims for work done and reporting on Contract activities.

Printed Manuals

RAMM Software Limited is happy to provide you with printed manuals to which you can refer at your convenience.

There is a small charge for additional copies of the manuals. Printed manuals do not require access to a computer or the Internet and are ideal for browsing, reference or learning about something in depth.

There are a number of guides which are available to **RAMM** users. The following list includes those most used and gives a brief overview of what they cover. For a full list of available guides, see the RAMM Software Limited web site Documentation page (http://www.cjntech.co.nz/index.php?section=55).

Help from Other Users

Other users can be a mine of information.

If there are other users in your organisation, you should approach them if they perform the same tasks as you do or if they have been using **RAMM** for longer than you.

They probably know shortcuts, tips and tricks which they can teach you. Don't reinvent the wheel. Talk to someone who knows more than you.

RAMM Database Details

When you begin to carry out more complex tasks, you will need to know where specific details are stored in the **RAMM** database. These details are available in the Database Structure report.

The Database Structure report is a listing of all tables and columns in the **RAMM** database. It is available from the **RAMM Manager** main menu. You follow the menu path Reports > Database Structure.

You then choose the tables you wish to view and then press Preview or Print to view or print the report.

Contact RAMM Software Limited

Internet

This is the link to open the RAMM Software Limited web site (http://www.ramm.co.nz).

Email

This is the link to send an email to **RAMM** Support (mailto:support@ramm.co.nz).

This is the link to send an email to **RAMM** Documentation (mailto:documentation@ramm.co.nz).

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Comments and Suggestions

If you have any feedback about this document or about the software itself, please contact RAMM Software Limited at whichever address above is convenient to you. Your observations and suggestions are welcome. Your feedback is an important element in improving and updating the **RAMM** experience.

RAMM Security

The information in your **RAMM** Database is valuable.

You will want to control who may access your database information and exactly what they are permitted to do with it.

RAMM enables you manage user access and permissions by a combination of global security parameters, individual Security Profiles, Security Roles and Security Zones.

In This Chapter

Understanding RAMM Security

You will find it easier to work with **RAMM** Security if you first understand its underlying concepts and assumptions. You should read this section before starting to work with **RAMM** Security.

History of Security in RAMM

RAMM has always offered user Security. At a basic level, Security has been implemented on a per user basis using a range of switches covering different aspects of the data and **RAMM** functions. Each of these switches, such as the one used to control access to the Drainage Inventory, has a hierarchical series of preset levels defined. For instance, this allows you to give a user view-only access so they can see but not touch, or to give them view and update access. The latter case would allow a user to make changes to the Drainage Inventory.

In fact, **RAMM** is much more sophisticated than this example suggests. There are also controls in place for managing Lookups associated with the Asset, for example Drainage Type. In addition, you can prevent someone from importing data using File > Import or control what they can do using **RAMM SQL**.

Global Security Switch

The Global Security switch is an efficient method of granting preset levels of database access.

RAMM Security uses a Global Switch. This sits on top of the individual switches and allows you to set a specific range of values across all the individual switches in one go. This switch has five settings:

- No Access
- View Only
- Contractor
- Full Control
- Custom Settings.

If you use this Global Setting to set a user to View Only it means that all the individual permission switches for that user are set to View Only. Setting No Access has the effect of denying a user any access at all to the **RAMM** Database. Contractor enables the use of preset **RAMM Contractor** Roles. Full Control gives the user just that - permission to access anything and to run any process. Using Custom Settings gives you access to the individual permission switches so you can personally tailor the Permissions for a user.

Default User Security Profile

Default Permissions make it simple for you to deal quickly with most users. You can create a default set of Permissions, usually for View Only, which will be used by anyone connecting to your **RAMM** Database if their Permissions are not explicitly defined.

Security Roles

Although having a Default Permissions set can make it easy to deal with a large group of casual users, it does not give you a way of handling the situation when you have a large number of users but they are divided into a relatively small number of Roles within the **RAMM** Database. In this case it would be useful to be able to set up a limited number of Permissions and assign users to one or other as appropriate.

Therefore, the concept of Security Roles was introduced. You can treat a Security Role as if it were a user and set permissions, either Global or Custom, as you would for a person. When you add a user to the database you can choose a Security Role for that person to use rather than set up individual Permissions.

There are two advantages to doing this. Firstly, it is quicker to add a person to the database and to give them the appropriate Permissions. Secondly, you can change the Permissions for a whole group of people in one go by changing the Permissions associated with the Role.

Security Zones

Security Zones are used to manage access to parts of the Road Network in the **RAMM** Database.

When the NOMAD Forward Work Programme was designed and implemented in **RAMM** it was necessary to find a way to divide the Road Network into Network Management Areas. The method chosen to do this was to use the Carriageway Area. In a State Highway Database, this works well as there can be few Carriageway Areas defined covering relatively large geographical areas. However, in Local Authority Databases, the Carriageway Area was most often used to define Wards. Whilst the State Highway could easily be managed by breaking it down this way, the Local Authority would not typically want to divide the Network up this way for Maintenance Management.

However, within **RAMM Contractor**, it would be possible to have two Maintenance Contractors working within a Local Authority Network each with responsibility for part of the Network. Once again these Network portions are unlikely to match the Ward boundaries.

Therefore, something more flexible was required that allowed a Network to be divided into portions by any criteria you require.

This tool is the Security Zone.

A Collection of Roads

At its basic level, a Security Zone is a portion of the Network defined as a collection of Roads. You can choose to select all the Roads in a geographical area and call them a Security Zone. Alternatively, you could pick a group of Roads with a common characteristic such as Unsealed, wherever they may occur within the Network and call it another Security Zone.

When Security Zones were introduced, some standard definitions were automatically put in to the **RAMM** Database. In the case of a Local Authority Database, one Security Zone called Entire Network, was automatically placed into the database. In the case of a State Highway Database, in addition to the Entire Network, Security Zones were created for each **RAMM** Region, Network Management Area and for each Contract Area within the NMA.

Grant and Revoke Permissions

When you make changes to user Permissions, **RAMM** tells the Informix database to align its internal permissions (Connect, Resource, DBA) accordingly. This happens automatically when you close the **Staff Permissions** screen after making changes. If you want to manually grant or revoke permissions, you go to the menu at the top of the **Staff Permissions** screen and choose File > Grant/Revoke.

This special control commits the changes you make to a Permissions record to a database, allowing you to continue working with the **Staff Permissions** screen.

Managing RAMM Security

Managing **RAMM** user security involves adding and changing Security Zones followed by adding or modifying Security Roles and user permissions to reflect the changing needs of the people who use your **RAMM** Database.

Managing **RAMM** security involves:

- adding and configuring Security Zones
- adding and configuring Security Roles
- adding users to the system.
- setting up Security Permissions for those users by selecting a Role for them, or manually configuring user tasks.

You can view your own Security Permissions. However, you must have specific permissions to be able to:

- view the security details of other users
- modify the security details of yourself and other users
- create new users
- view, modify or create Security Zones
- view, modify or create Security Roles.

Viewing Security Zone Details

All your users will need to be associated with one or more Security Zones. You will need to spend some time setting this up initially.

All **RAMM** Databases will have at least one Security Zone called the Entire Network. This Security Zone has some special characteristics within **RAMM**. Firstly, it will always contain every Road within the Database. This occurs automatically. So you do not have to worry about losing access to new Roads. There are also some actions which are available to you only of you are logged in to the Entire Network.

> **NOTE** You will need to have the correct Security Permissions before you can perform this procedure. See your Systems Administrator for assistance if required.

▶ **To View Security Zone Details**

1   Launch **RAMM Manager**.
2   Follow the menu path Maintenance > Security Zones to open the **Security Zones** screen.

3 Go to the list of Security Zones on the left hand side of the screen and select the one whose details you want to view.

4 You will see the details of the selected Security Zone on the right hand side of the screen. This includes a listing of all the Roads which have been selected.

Adding a Security Zone

When you need to restrict the access of one or more users to a portion of your Network, you will need to create a Security Zone for them to use.
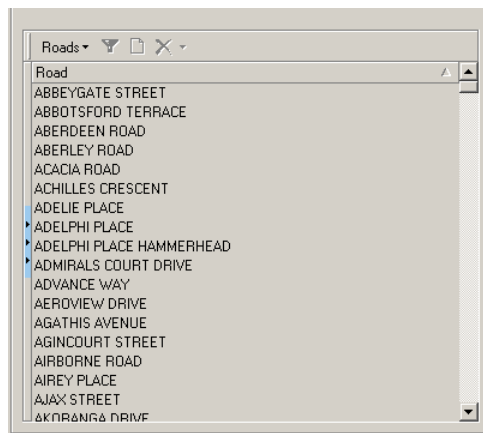
> You will need to have the correct Security Permissions before you can perform this procedure. See your Systems Administrator for assistance if required.

▶ **To Add a Security Zone**

1 Launch **RAMM Manager**.

2 Follow the menu path Maintenance > Security Zones to open the **Security Zones** screen.

3 Press Add Security Zone or CTRL+N.

4   Add the details for the Security Zone:

- **Description**
  The name of the Security Zone
- **Parent Security Zone**
  This is the name of the Security Zone which will contain the new one. Each
  Security Zone, except for the Entire Network, requires a parent. You will be
  restricted to choosing Roads from the Parent for your Security Zone. The default
  Parent Security Zone will be the one into which you are logged in.
- **Starting Cost Set**
  You have the option to restrict the Cost Sets associated with your Security Zone to
  a defined range of numbers. The **Starting Cost Set** is the lowest number your
  Cost Sets will be able to take. This number must fall within the range available to
  the Parent Security Zone.
- **Ending Cost Set**
  You have the option to restrict the Cost Sets associated with your Security Zone to
  a defined range of numbers. The **Ending Cost Set** is the highest number your
  Cost Sets will be able to take. This number must fall within the range available to
  the Parent Security Zone.

- **Explanation**

  You have the option of associating free-format notes with this Security Zone. Notes which are added at the time of creation or editing can be very useful at a later date. Notes can help if you have forgotten why you did something or if another user needs to understand your reasoning and purpose.

5   Choose the Roads which are to be associated with the Security Zone. You can add and remove individual Roads from the list by using the Insert and Delete buttons. When you press the Insert button a new record will be added to the list of Roads. You select the Road you want to add from the drop-down list.

6   Although you may want to add Roads individually, it is very likely that you will want to select multiple Roads based on one or more selected characteristics. You can do this by pressing on the Filter button 🔽. A standard **Filter Dialog** will open and you can choose to filter by anything from the Road Names, Carriageway Sections or Treatment Lengths.

The Roads selected by the Filter will be added to the list of Roads for the Security Zone.

You should consider the Filter characteristics which you select very carefully before you apply them. You may not achieve the results which you expect. The Security Zone is a collection of Roads. So if, for example, you set up a Filter for Urban Carriageway Sections and accept all the Roads returned, you may see Rural Carriageway Sections when you log in to **RAMM**. This occurs when you have both Urban and Rural Carriageway Sections on the same Road.

Deleting a Security Zone

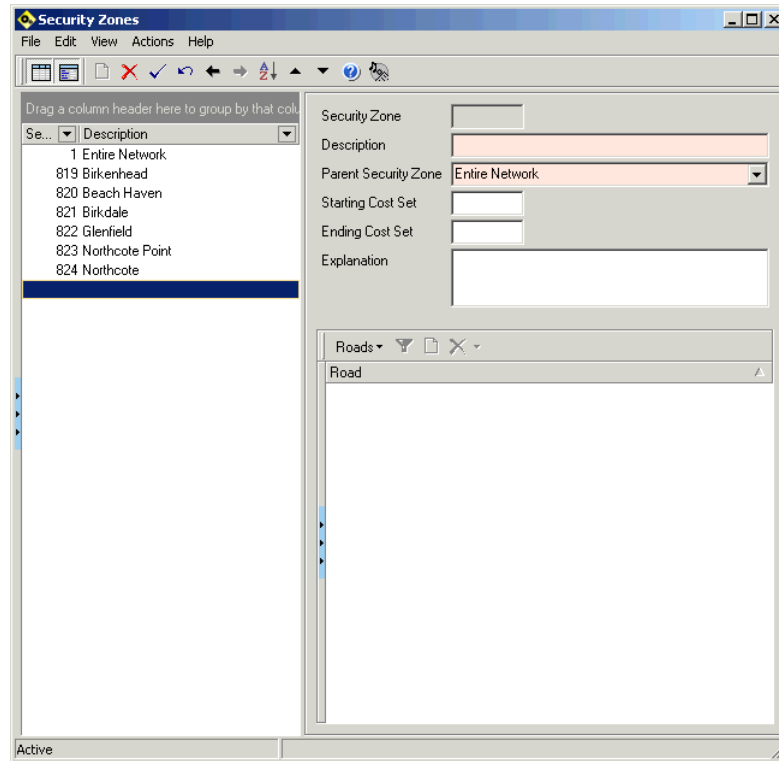You can delete a Security Zone only if it has not been used in the Permissions of any user.

> You will need to have the correct Security Permissions before you can perform this procedure. See your Systems Administrator for assistance if required.

▶ **To Delete a Security Zone**

1 Launch **RAMM Manager**.
2 Follow the menu path Maintenance > Security Zones to open the **Security Zones** screen.
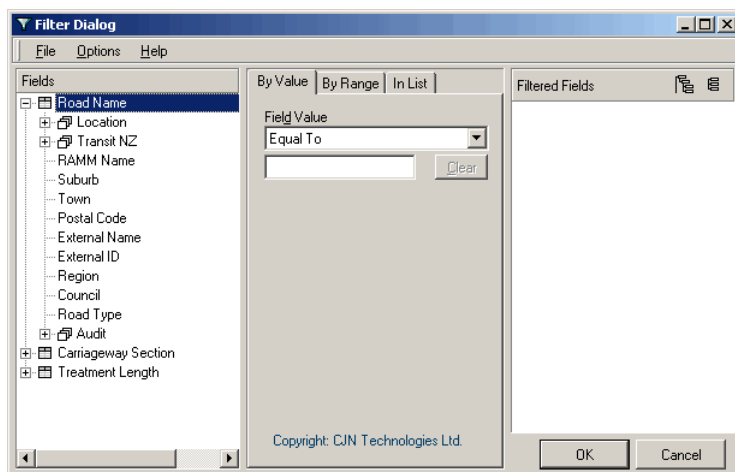3 Select the Security Zone which you want to delete.
4 Press Delete Record ✕.
The Security Zone is deleted.

Adding a Security Role

Adding a Security Role is similar to adding a new user. You name the Security Role and define a Permissions Profile to go with it. The only difference is that the Security Role itself is independent of Security Zones.

> You will need to have the correct Security Permissions before you can perform this procedure. See your Systems Administrator for assistance if required.

▶ **To Add a Security Role**

1 Launch **RAMM Manager** and follow the menu path Maintenance > Staff to open the **Staff Permissions** screen.
2 Press Add New Record and select Add New Security Role from the drop-down list which appears.
3 Type the name for the Security Role in the Security Role field and any notes in the Explanation field, if necessary.

4   Beneath the new Security Role you will see the RAMM Permissions Profile. If you can not see them then press the adjacent Plus button ⊞ and the tree will open revealing the dated Profile Records. The default Profile is the Global View Only.

5   Define the Permissions Profile for the Security Role by selecting a Global setting:

- • No Access
- • View Only
- • Contractor
- • Full Control
- • Custom. See Setting Custom Security Permissions (on page 50).

6   Save your changes by pressing Save Record ✓ or CTRL+S. A new Profile record with the data entry date is created beneath the name of the Security Role.

> Your changes are effective immediately in **RAMM** but corresponding Informix Permissions are automatically granted or revoked when you close the **Staff Permissions** screen. See Grant and Revoke Permissions (on page 32).

Changing Security Role Settings

When there is a change in the way that users of a Security Role access **RAMM**, you need to update the Security Role Profile.

> ⚠ **NOTE**
> You will need to have the correct Security Permissions before you can perform this procedure. See your Systems Administrator for assistance if required.

▶ **To Change Security Role Settings**

1   Launch **RAMM Manager**.

2   Follow the menu path Maintenance > Staff to open the **Staff Permissions** screen.

3   Select the Security Role which you want to change from the list on the left hand side of the screen.

4   Beneath the Security Role you will see the RAMM Permissions Profile. If you can not see them then press the adjacent Plus button ⊞ and the tree will open revealing the dated Profile Records.

> **NOTE**
>
> You can not change historical Profile records. The Security Role Details are on the right hand side of the screen.

5 Change the name or explanation for the Security Role.

6 The current standard Security Profile will be highlighted in blue. Choose another of the standard Security Profiles from those on the right hand side of the screen or set Custom Permissions. See Setting Custom Security Permissions (on page 50).

7 Save your changes by pressing Save Record ✔ or CTRL+S. A new Profile record with the data entry date is created beneath the name of the Security Role.

> **NOTE**
>
> Your changes are effective immediately in **RAMM** but corresponding Informix Permissions are automatically granted or revoked when you close the **Staff Permissions** screen. See Grant and Revoke Permissions (on page 32).

Viewing User Security Settings

Once you have set up Security Zones it is possible to assign and view Permissions for a user. All users can view their own Security settings but you will need the correct Permissions to view the Permissions of another user.
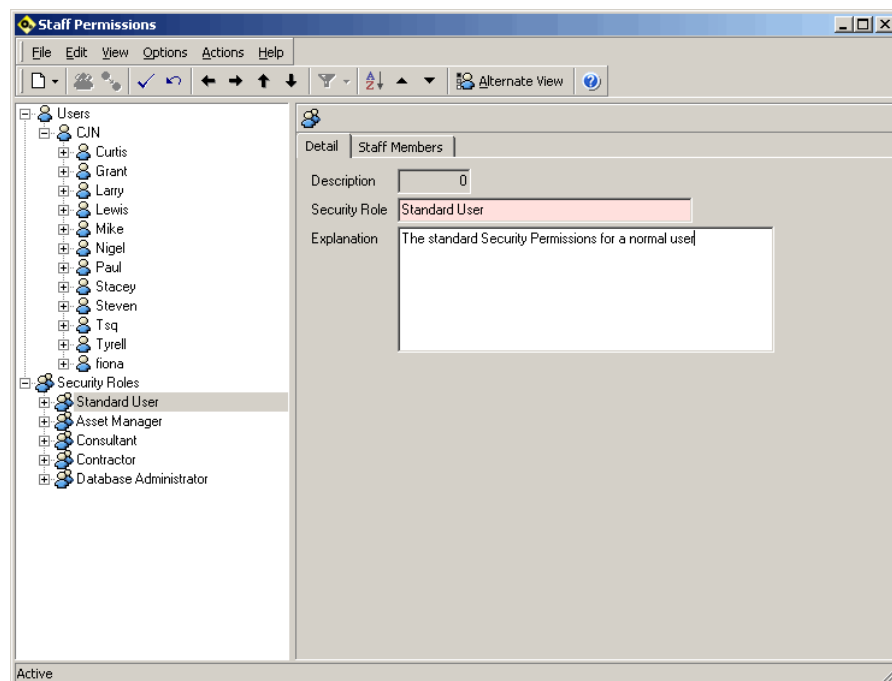
> **NOTE**
>
> You will need to have the correct Security Permissions before you can perform this procedure. See your Systems Administrator for assistance if required.

▶ **To View User Security Settings**

1 Launch **RAMM Manager**.

2 Follow the menu path Maintenance > Staff to open the **Staff Permissions** screen.

3 Select, from the list of users on the left hand side of the screen, the user whose Permission details you wish to view.

4   You will notice one or more Security Zones beneath the name of the user. If you can not see them then press the adjacent Plus button ⊞ and the tree will open revealing the Security Zones.

5   Within each Security Zone you will see one or more dated Profile Records. If you can not see them then press the adjacent Plus button ⊞ and the tree will open revealing the dated Profile Records. The top record contains the current settings for the user. Select the name of the person whose details you wish to see on the right hand side of the screen.

6   If the person has been assigned a Security Role, this will be displayed in the Security Role field at the top of the screen. If this person has customised Permissions, they are displayed in the lower section of the screen. Select them to view the Permission details.

7   To find out more about a Permission, hover the mouse pointer over it and a tool tip will appear with further information.

Adding a User

When someone needs access to your **RAMM** Database, you will need to create a Security record for them.
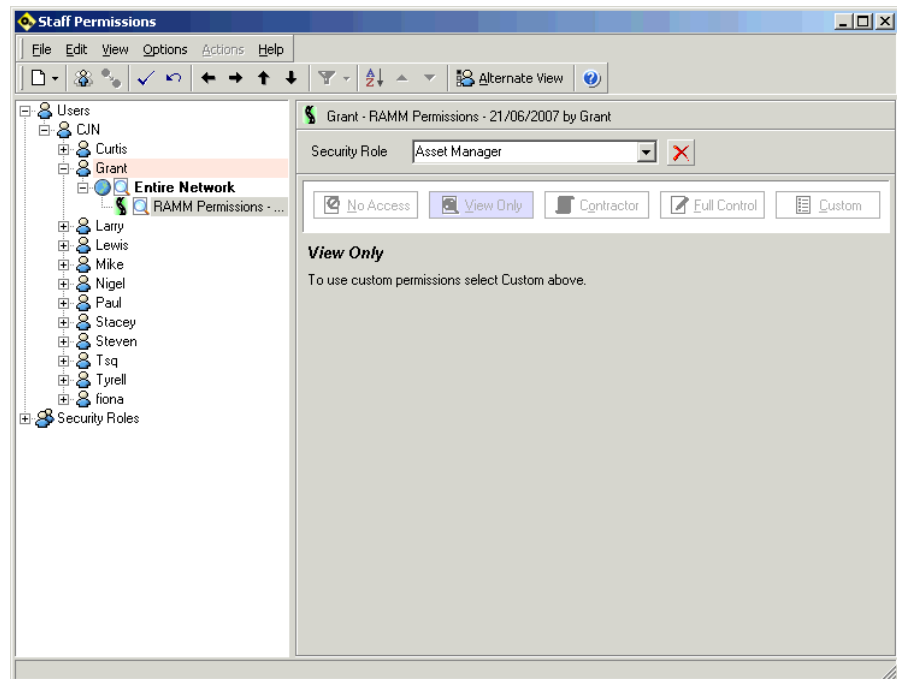
> You will need to have the correct Security Permissions before you can perform this procedure. See your Systems Administrator for assistance if required.
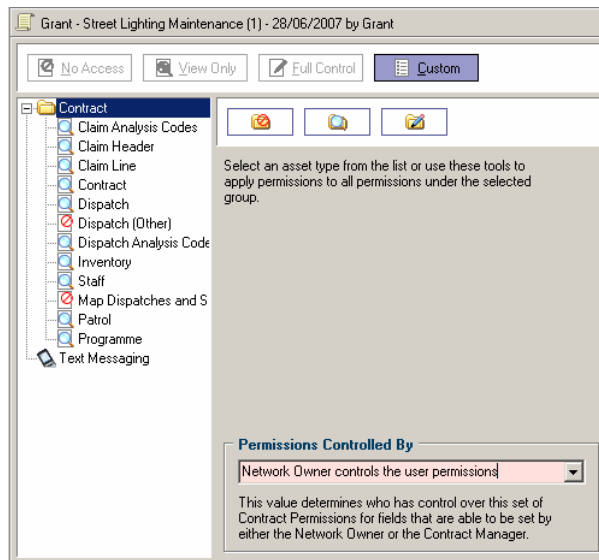
▶ **To Add a User**

1 Launch **RAMM Manager**.

2 Follow the menu path Maintenance > Staff to open the **Staff Permissions** screen.

3 Press Add New Record ⬜ and select Add New User from the drop-down list which appears. The **Select User to Add** screen opens.

4 Type the name for the user in the Name field.

By default you are expected to add a named person at this dialog, so Add New User is highlighted. You can choose to add a default Permission for all users in which case you select All Users.

If you are on the **RAMM** Hosting Service, then, when you start typing, you will see a list of all the people who are users of the Hosting service whose names match the initial letters you have typed. As you type more of the name of the person to whom you want to give access, the list will progressively grow smaller as **RAMM** performs a match against the name you type. When you see the name you want, select it. If you have **RAMM** installed locally, you will need to type the name of the person in full.

5 Press OK to open the **Add Staff Permissions** dialog.

6   Select the Security Zone for the person to access from the **Security Zone** drop-down list and press **OK**.

7   The new user record initially appears below the list of users. On the right hand side of the screen you will see the details of the new person.

The name of the person will be filled in and in addition, if you are on the Hosting Service, their other known details will also default.

8   You should now type in the following user details if the fields are blank:

- **Name**
  The full name of the person should already be complete.
- **Login Name**
  The name the person uses to log in to your **RAMM** database. This must be completed accurately for your Security to work properly. An incorrectly typed login name may result in the person having no access to the Database.

- **Organisation**
  The name of the organisation to which the person belongs. Once you have completed this field the person will be listed under the name of the organisation on the left had side of the screen. You must complete this mandatory field.
- **Phone**
  The land line telephone number of the person
- **Mobile**
  The mobile phone number of the person
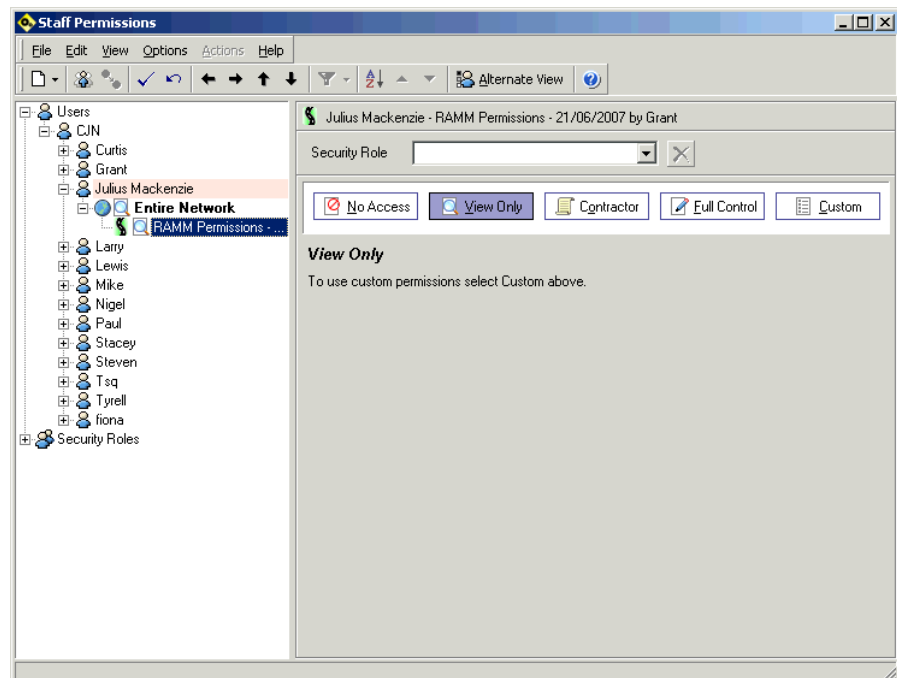- **Fax**
  The fax number of the person
- **SMS Mobile**
  The mobile phone number of the person on which they receive SMS text messages.
- **[Notes]**. Free-format notes about this user.

9 Press the Plus button ⊞ adjacent to the name of the person on the left hand side of the screen. When the tree opens, select the RAMM Permissions Record from beneath the Security Zone.

The default Security Profile when you add a new person is **View Only**. This gives them Permission to view all the information in your Database. You can leave the person with this Permission or choose one of the other Global Permission Settings.
The other settings are:

- **No Access**

  The person will not be able to access your **RAMM** Database at all. This person will be rejected when they try to log in.
- **Contractor**

  The person does not need access to **RAMM** or to **RAMM Manager**. They are a Contract Manager using Pocket **RAMM** and **RAMM Contractor**.
- **Full Control**

  The person has full access to your **RAMM** Database to manage all the inventory, condition surveys and to run any process.
- **Custom**

  The person has a set of individual Permissions which do not correspond to one of the Global settings. See Setting Custom Security Permissions (on page 50).

As an alternative you can select one of the predefined Security Roles from the **Security Role** drop-down list.

10 Save your changes by pressing **Save Record** ✓ or CTRL+S. A new **Profile** record with the data entry date is created beneath the Security Role name.

> Your changes are effective immediately in **RAMM** but corresponding Informix Permissions are automatically granted or revoked when you close the **Staff Permissions** screen. See Grant and Revoke Permissions (on page 32).

Changing User Security Settings

When there is a change in how a person uses **RAMM** you will need to update their security settings. This could be because they now have a different role or extra responsibilities.

> You will need to have the correct Security Permissions before you can perform this procedure. See your Systems Administrator for assistance if required.

▶ To Change User Security Settings

1 Launch **RAMM Manager**.
2 Follow the menu path Maintenance > Staff to open the **Staff Permissions** screen.
3 Select the person whose details you want to change from the list on the left hand side of the screen.
4 Beneath the name of the person you will see one or more Security Zone Profile records. If you can not see them then press the adjacent Plus button ⊞ and the tree will open revealing the dated Profile Records.

> **NOTE**
>
> If you choose to display the expired permissions for the person by following the menu path Options > Show Expired Permissions you will see any Security Permissions for the person which are no longer valid. You can not change historical Profile records.

5   Add or change the Security Role details for the person.

- **Name**
  The full name of the person should already be complete.
- **Login Name**
  The name the person uses to log in to your RAMM database. This must be completed accurately for your security to work properly. An incorrectly typed login name may result in the person having no access to the Database.
- **Organisation**
  The name of the organisation to which the person belongs. Once you have completed this field the person will be listed under the name of the organisation on the left had side of the screen. You must complete this mandatory field.
- **Phone**
  The land line telephone number of the person
- **Mobile**
  The mobile phone number of the person
- **Fax**
  The fax number of the person

- **SMS Mobile**
  The mobile phone number of the person on which they receive SMS text messages.
- **[Notes]**. Free-format notes about this user.

6 Select the Profile Record of the person. The details will appear on the right hand side of the screen.

7 Either:

- Select a standard Security Profile from the buttons across the top of the right hand side of the screen. The current Profile is highlighted in blue. Or
- Set Custom Permissions. See Setting Custom Security Permissions (on page 50). Or
- Select one of the predefined Security Roles from the Security Role drop-down list at the top of the right hand side of the screen.

> ⚠ **NOTE** You can not change the Profile of a Security Role without looking at the details of the person. See Changing Security Role Settings (on page 39).

8 Save your changes by pressing **Save Record** ✓ CTRL+S.
A new Profile record with the data entry date is created beneath the name of the Security Role.

> **NOTE** Your changes are effective immediately in **RAMM** but corresponding Informix Permissions are automatically granted or revoked when you close the **Staff Permissions** screen. See Grant and Revoke Permissions (on page 32).

Setting Custom Security Permissions

When you are adding or changing user Security Settings, you may need to customise their access to parts of **RAMM** within a Security Zone, particularly if the person needs to run processes.

> **NOTE** You will need to have the correct Security Permissions before you can perform this procedure. See your Systems Administrator for assistance if required.
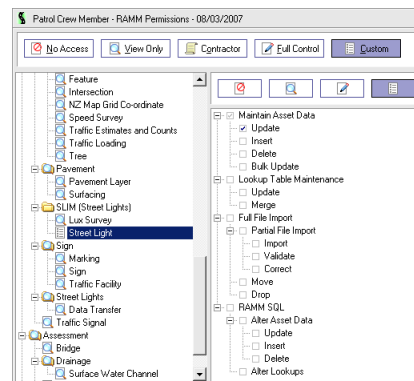
▶ To Set Custom Security Permissions

1 Launch **RAMM Manager** and follow the menu path Maintenance > Staff to open the Staff Permissions screen.
2 Select the person or Role whose details you want to change from the list on the left side of the screen.
3 Beneath the name of the person you will see one or more Security Zones. If you can not see them then press the adjacent Plus button ⊞ and the tree will open revealing them. Security Roles do not apply to specific Security Zones. So you will not see Security Zones underneath a Security Role.
4 Beneath the Security Zones, or beneath the Security Roles of the person you will see one or more Security Zone dated Profile records. If you can not see them then press the adjacent Plus button ⊞ and the tree will open revealing the dated Profile records. Select the record you wish to change and the details of the current Permission settings will display on the right side of the screen.

> **NOTE** If you choose to display the expired Permissions for the person by following the menu path Options > Show Expired Permissions you will see any Security Permissions for the person which are no longer valid. You can not change historical Profile records.

5 If the user or Role already has Custom Permissions, the Custom Global Setting switch will be highlighted in blue and the details will be displayed.
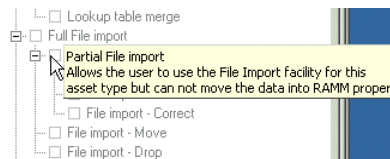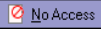If the user or Role does not already have Custom Permissions, press the Custom Global Setting button [▣ Custom].

6 You will notice that Permissions are grouped together into related items shown in the tree in the middle section of the screen.

- Some groups have further Permission Groups listed under their name. If you can not see them then press the adjacent Plus button ⊞ and the tree will open.
- When you select a group, the Permissions for each task in that group are listed in the Custom Permissions panel on the right hand side of the screen.
- For information about a particular task, point to it and a Tool Tip appears:

- To quickly change permissions for all the tasks in the selected group, press on one of the standard Profile icons. There are standard Profiles for No Access [No Access], View Only [View Only] or Full Control [Full Control]. The current Profile is highlighted in blue and you can see its icon to the left of the Permissions Group.
- To customise Permissions for specific tasks, go to the Standard Profiles panel and press ▣. You can then select and clear Permissions one by one. A selected Permission signifies that the user or Role has Permission for that task. For examples see Examples of Customised Security Permissions (on page 55).

7 **RAMM** will warn you if you need other permissions in addition to the ones which you have selected.

8   Save your changes by pressing **Save Record** ✔ CTRL+S. A new Profile record will be created for the user in the Security Zone or for the Security Role.

Removing Custom Security Permissions

When a user no longer needs Custom Permissions, you can revert their settings to one of the Global Definitions or to a Security Role.

> ⚠️ **NOTE**
> You will need to have the correct Security Permissions before you can perform this procedure. See your Systems Administrator for assistance if required.

▶ To Remove Custom Permissions from a User

1   Launch **RAMM Manager** and follow the menu path Maintenance > Staff to open the Staff Permissions screen.
2   Select the person, from whom you wish to remove Custom Permissions, from the list on the left hand side of the screen.
3   Beneath the name of the person you will see one or more Security Zones. If you can not see them then press the adjacent Plus button ⊞ and the tree will open revealing them.
4   Beneath the Security Zones of the person you will see one or more dated Profile records. If you can not see them then press the adjacent Plus button ⊞ and the tree will open revealing the dated Profile records. The most recent Profile will be at the top of the list. When you select the record which you wish to change, the details of the current Permission settings will be displayed on the right hand side of the screen.
5   Remove the Custom Permissions from this user by performing one of the following actions:

   •   Define the Permissions Profile for the Security Role by selecting one of the Global settings:

      • No Access
      • View Only
      • Contractor
      • Full Control or

   •   Select one of the predefined Security Roles from the Security Role drop-down list at the top of the right hand side of the screen or

   •   From the menu at the top of the **Staff Permissions** screen, follow the menu path Edit > Use Default. This can also be done from the tool bar at the top of the Staff Permissions screen by pressing the Use the All Users Permissions 👤 button.

Using the Alternative View

When you want to see which users have which Permissions you can use the **Alternative View** of the Security Profiles. You can also use this screen to manage Profiles for individual users if you prefer.

> You will need to have the correct Security Permissions before you can perform this procedure. See your Systems Administrator for assistance if required.

► **To Change User or Security Role Permissions**

1 Launch **RAMM Manager**.

2 Follow the menu path Maintenance > Staff to open the **Staff Permissions** screen.

3 Press Alternate View ![Alternate View] to open the **Select Security Zone and Contract** dialog.

4 The default value at the Security Zone drop-down list will be Entire Network. Select a different Security Zone from the Security Zone drop-down list if required.

5 Select, from the Contract drop-down list the Maintenance Contract for which you wish to view the Security Profile if appropriate.

6 Press OK to open the Staff Permissions screen in its Alternate View.

7   Select one of the Permissions Groups from the (unnamed) Permissions Groups drop-down list at the upper left hand side of the screen. The available options will be listed below. A list of Users will be displayed in the panel on the right hand side of the screen.

8   You can see from the list of users displayed in the panel on the right hand side of the screen, whether or not each user has the selected Permission in their current Security Profile. If you wish to add the selected Permission to a person or to a Security Role which does not have it, select the check box adjacent to the name of the person or Security Role.

9   Save your changes by pressing Save Record ✔ or CTRL+S. A new Profile record with the data entry date will be created for each of the updated people or Security Roles.

> ⚠️ **NOTE**   Your changes are effective immediately in **RAMM** but corresponding Informix Permissions are automatically granted or revoked when you close the **Staff Permissions** screen. See Grant and Revoke Permissions (on page 32).

Examples of Customised Security Permissions

RAMM allows you to be very flexible about which combinations of Permissions you assign to each user. See Setting Custom Security Permissions (on page 50).

Please view the following examples:

- Roughness Surveyor (on page 55)
- Data Entry Operator (on page 56)
- Bridge Inspector (on page 55)
- Asset Valuer (on page 57).

Roughness Surveyor

This user can view Carriageway and Road Name data for this Security Zone, so that they can export the information before doing a Roughness Survey. They also have Full Access to the Roughness Survey tables.

Bridge Inspector

This user can create and enter Bridge Assessment data, but has no other access.

Data Entry Operator

This user can enter data into all Asset and Condition tables, but cannot change Carriageway data. The user has no access to Asset Valuation or Assessment data.

Asset Valuer

In addition to Permission for Asset Valuation, this user can maintain asset data for the Entire Network, but can not insert or delete assets. The user has View Only access for everything else.

RAMM Network Manager

You use **RAMM Network Manager** to manage your Network.

RAMM Network Manager is a powerful and complex tool that you use to make changes to a number of areas of **RAMM**. One thing **RAMM Network Manager** will not do is to automatically correct mistakes if your existing Road Network data is invalid. For example, if you have assets attached to a Carriageway that you have since deleted, **RAMM Network Manager** is unlikely to fix this. Please check your Road Network data before using **RAMM Network Manager**.

If this is the first time you are working with **RAMM Network Manager** you should probably have an introduction to the **RAMM Network Manager** concepts. See Understanding **RAMM Network Manager** (on page 60).

If you are already familiar with **RAMM Network Manager** you probably need general information including brief descriptions of all basic screens and tools in **RAMM Network Manager** and a good quick reference. See **RAMM Network Manager** Overview (on page 64).
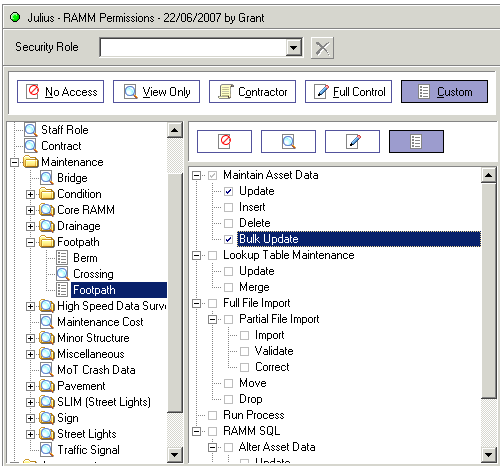
If you are already skilled in using **RAMM Network Manager** you probably want detailed information on working with **RAMM Network Manager**. See Using **RAMM Network Manager** (on page 79).

In This Chapter

Understanding RAMM Network Manager

RAMM Network Manager is a powerful, flexible and comprehensive Road Network maintenance tool that helps you automate tasks and perform complex Network management actions. For example, you can reverse a Road with a single press of your mouse. When you apply this change **RAMM Network Manager** will update all relevant tables within the database.

It also has a graphical display which displays current and historical views of the changes you are making.

There are four key **RAMM Network Manager** functions which allow you to have greater control over your Network changes. They are described in detail below. They are:

- **Sessions**
  See Sessions (on page 60)
- **Transaction Logging**
  See Transaction Logging (on page 61)
- **Compare Network Changes**
  See Compare Network Changes (on page 64)
- **Context Sensitive Help**
  See Context Sensitive Help (on page 64).

Sessions

You use Sessions to work in **RAMM Network Manager**.

A Session begins when you start up **RAMM Network Manager** and ends when you close it. Every time you start **RAMM Network Manager** you will be prompted to configure a Session. See Setting up a Session (on page 69).

Sessions are important for two reasons.

- They record a history of the changes you are making to the Network, like an audit trail.
- You can export Sessions. They can then be imported into a copy of the database that may be in a different location, for instance with a Street Lights Contractor, Signs Contractor or Network Consultant. See Exporting and Importing Sessions (on page 152).

Transaction Logging

Transaction Logging provides you with a roll-back function in case of unforeseen circumstances such as power failure or hardware failure.

Transaction Logging is especially important when you are working with a tool as complex as **RAMM Network Manager**, where a single press of a button makes a number of changes simultaneously and you need to be sure that all the changes you wanted have been performed. If you know your way around **RAMM Network Manager** you will be able to reverse mistakes, viewing and comparing your changes before committing those changes to the database.

What are Transactions?

Transaction Logging logs Transactions. A Transaction is a record of all the changes you make to your Road Network. This includes changes to data and actions performed in **RAMM**, **RAMM Network Manager** and **RAMM SQL**.

Transaction Logging in RAMM Network Manager

In **RAMM Network Manager** all Sessions (on page 60) consist of a number of Transactions. Each Transaction records the changes to the tables associated with that particular Transaction. If all the changes necessary to complete a Transaction are not executed the proper way for any reason whatsoever, **RAMM Network Manager** will abort that particular Transaction.

Transaction Logging is automatically enabled. So **RAMM Network Manager** tracks all the changes you make and gives you the option of reviewing your changes before committing them to the database.

If Transaction Logging were not enabled, your changes would be saved to the database every time you pressed the **Apply** ☑ button.
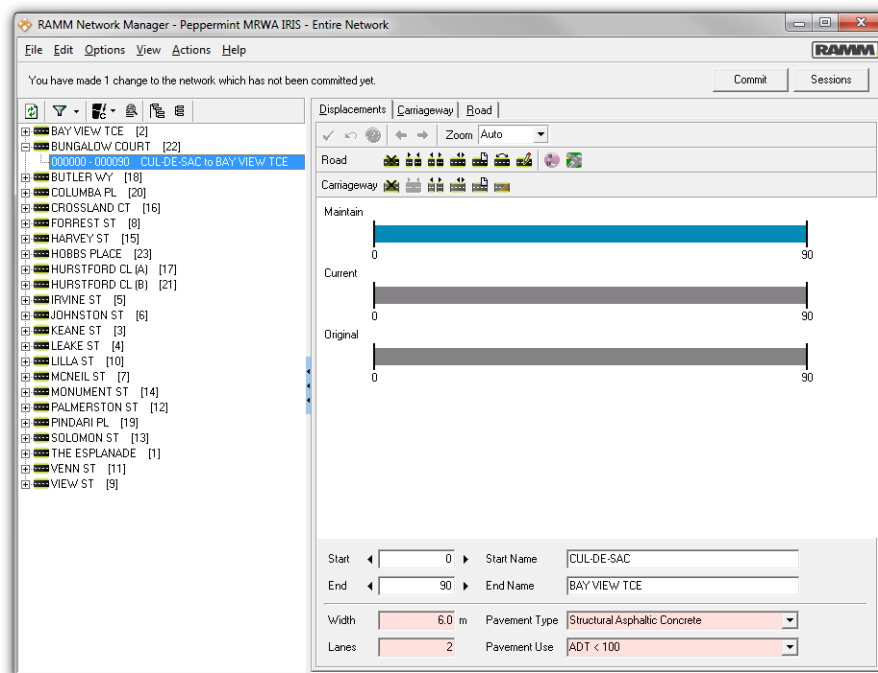
> If you are not using the **RAMM** Hosting Service but are running Informix SE on a local drive, you are allowed only one uncommitted action at a time even if Transaction Logging is enabled. As soon as you perform another change, the previous change will be permanently committed to the database.
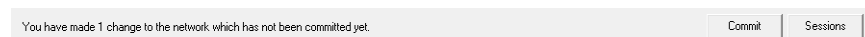
Rolling Back Changes

You can use Transaction Logging to roll back changes you have made if you have made an error when managing the Network.

▶ **To Roll Back Changes**

1   Log in to **RAMM Network Manager** and make your change. In this example the Reverse Road button has been pressed to reverse Bungalow Court.

2   Press [✓]. A progress screen will open showing the steps taken to make the changes you have made. When this closes, a message will appear telling you of your uncommitted changes to the Network. The Commit and Sessions buttons will become available.

3   Press Sessions to take advantage of Transaction Logging. The **RAMM Network Manager Session** screen will open with your session displayed.

4 You now have the following options:

- Press **Commit changes to the database**
  Your changes will be committed to the database and Transaction Logging will no longer be available to you for these changes.
- Press **Rollback changes on the database**
  RAMM Network Manager will use Transaction Logging to reverse the changes you have made.
- Press **Print changes**
  A **Print Preview** screen will open listing your changes. You then have the option to print this report.
- Press **Action help**
  RAMM Network Manager will generate a **Help** message which will be based on the actions which you have taken.
- Press **Compare Data**
  The **Compare Snapshots** panel will open. You select the Asset for comparison at the **Asset** drop-down list and compare the **Before** and **After** snapshots.
- Press **Continue**
  The **RAMM Network Manager Session** screen will close and you can make more changes to the Network.
- Press **Complete**
  The **RAMM Network Manager Session** screen will close, your changes will be committed to the database and Transaction Logging will no longer be available to you for these changes.

Compare Network Changes

While working with **RAMM Network Manager** you can access detailed before and after comparisons of the changes you are making to the Road Network tables from the Session bar. The purpose of this tool is to give you a level of confidence that **RAMM Network Manager** is actually making the correct changes to the data. See Viewing and Comparing Network Changes (on page 149).

Context Sensitive Help

After making any Network change, and before you press the Apply button, you can press an Action Help button to see a detailed, printable description of the changes that will be made to the database tables.

You can also use Action Help as a detailed reference even if you are not currently working with **RAMM Network Manager** by following the menu path Help > All Items.

RAMM Network Manager Overview

In this section you will learn how to start **RAMM Network Manager**, how to set up a Session and how to use the **RAMM Network Manager** main screen. In particular you should read:

- **Launch RAMM Network Manager**
  Your manner of launching **RAMM Network Manager** will depend on whether you use the **RAMM** Hosting Service or if you use a locally installed copy of the software.   See Launch **RAMM Network Manager** (on page 65).
- **Setting up a Session**
  Every time you use **RAMM Network Manager** you do so within a Session. In that Session you can make changes to the Road Network and either commit them or roll them back depending on their success. You select the Assets you want available for comparison after you have made the changes but before you have committed the changes so that you can make a Before and After comparison and decide whether or not to commit. See Setting up a Session (on page 69).
- **RAMM Network Manager Main Screen**
  There are several aspects which are unique to the **RAMM Network Manager** main screen. You have a Sessions bar, a Road Editor panel and a variety of tool bar commands. See **RAMM Network Manager** Main Screen (on page 71).

Launch RAMM Network Manager

There are two methods of setting up **RAMM**. You either install it on your computer from the CDROM supplied by RAMM Software Limited, or contact us to set up **RAMM** for you on the **RAMM** Hosting Service. See Contact RAMM Software Limited (on page 26).

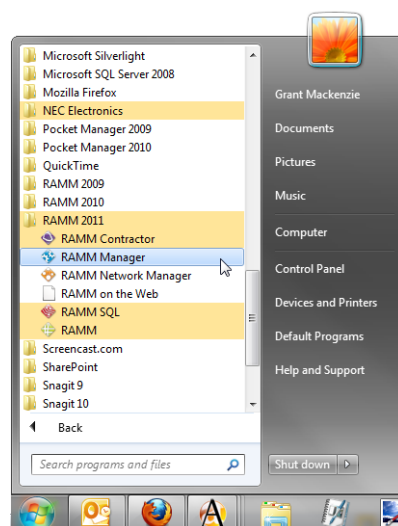If you are launching a local copy of **RAMM Network Manager** see Starting from a Local Copy (on page 65).

If you use the **RAMM** Hosting Service see Starting from the Hosting Service.

Starting from a Local Copy

Once you have installed a local copy of **RAMM** on your computer, you are ready to launch **RAMM Network Manager**. You do this from the program folder in which you have installed **RAMM**. It will be available from your Windows Start menu. The actual menu path will depend on the version of Windows you are using. In this procedure Windows 7 is being used. In the graphic below the folder is   RAMM 2011 It is recommended that regularly upgrade to the latest version of **RAMM**.

▶ **To Launch RAMM Network Manager**

1 Follow the menu path Start > All Programs > (your folder name) > RAMM Network Manager.

2   The **RAMM Network Manager** login screen will open. Select your database from the Database drop-down list.

3   Type your login name in the **User Name** field and your password in the **Password** field.

4   In the graphic above the options **Login to a different Security Zone** and **Login to Entire Network** to are available. You may or may not see one or both of these options. For instance, if your Staff Permissions allow you access to only one Security Zone, you will not be offered any options. Press the appropriate link to open the **RAMM Network Manager** home screen.

5   You now have a number of options open to you. Under the **File** menu path you will have a number of database import, export and recovery options. Under the **Database** menu path you may have the option to select another database, change Security Zone and check who else is logged in to the database. You will most often use the **Action** menu path to select **Manage Network**. Pressing **Manage Network** opens the **Sessions** screen. See Setting up a Session (on page 69).

6   When you have finished setting up the session you will see the **RAMM Network Manager** main screen. See **RAMM Network Manager** Main Screen (on page 71).

Logging in to the RAMM Hosting Service

Introduction

You log in to the **RAMM** Hosting Service to access the **RAMM** applications.

Before you do this you need to have:

- been granted access with a username and password by RAMM Software Limited. To contact RAMM Software Limited for assistance, see Contact RAMM Software Limited (on page 26).
- Downloaded the MetaFrame Presentation Server Client for 32-bit Windows. You do this by clicking the link on the RAMM Software Limited website **Log in** page and following the instructions.
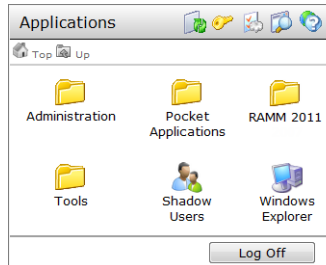- opened your web browser such as Internet Explorer or Mozilla Firefox.

Menu Path

Follow the menu path ramm.co.nz https://login.ramm.co.nz/ to open the **Log in** page.

▶ To Log in to the RAMM Hosting Service

To do this you follow these steps:

1 Type your username and password in the User name: and Password: fields.
2 Press Log In.
   The Applications panel will open. What you see in the Applications panel will depend on your Security Permissions.

The icons you see in the **Applications** panel will depend on your **Staff Permissions**

3   Do you want to use **Pocket RAMM**?

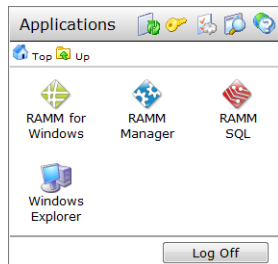| Yes	go to step 4.
No	go to step 6.

4   Press the Pocket Applications icon.
       The **Pocket RAMM** applications will become available.
5   Go to step 7.
6   Press RAMM 2011.
       The Applications panel will open. The software icons will be available.

Again, the icons you see in the **Applications** panel will depend on your **Staff Permissions**

7   Press the icon for the **RAMM** software you want to use.
       The **RAMM** software application will open. If you have access to more than one
       database, a dialog will open so that you can choose the database which you require.

> **NOTE**
>
> If you use an older version of Mozilla Firefox as your internet
> browser, a Warning telling you that you do not have the MetaFrame
> Presentation Server Client for 32-bit Windows will display as in
> the Log in page screen shot above. Once you have downloaded the
> software you can ignore this warning.

Setting up a Session

Every time you want to work in **RAMM Network Manager** you must set up a Session and select Assets for comparison. See Viewing and Comparing Network Changes (on page 149).

▶ **To Set Up a Session**

1 Every time you press Manage Network, **RAMM Network Manager** asks you to define a Session by opening the **RAMM Network Manager Session** screen.

2 When you make a change to a Road or Carriageway, **RAMM Network Manager** updates the Audit fields for the Road or Carriageway record. If you want **RAMM Network Manager** to update the audit fields of other Assets at the same time, select Yes from the Update the audit fields of other assets drop-down list. Otherwise, accept the default No.

> When you make changes to an Asset such as a Carriageway, **RAMM Network Manager** may change other Assets such as Street Lights. It may not be appropriate to have your name attached to these Street Light updates. In this case you accept the default No.

3 When **RAMM Network Manager** updates the Audit fields, it will add your login by default. If you want a different name prefixed to the audit updates, type the name in the Prefix the logname when updating audit fields field.

> **Tip**
>
> Rather than your own Login prefixed to the Audit fields you might prefer **RAMM Network Manager**. This would be useful if you selected Yes from the Update the audit fields of other assets drop-down list.
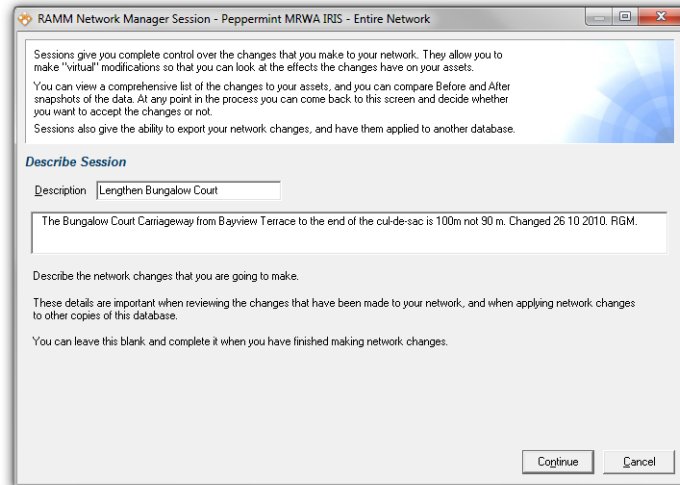
4   Press Next to open the **Setup Comparison** panel.

5   Select the Assets that you want listed for comparison for the Compare Network Changes function. When you open this screen for the first time, all Assets are selected by default. If you have already used this screen, your selections from the previous Session will be the defaults.

You can select the Assets individually or press Select All , Select None or Revert to Default Selection which automatically selects Assets on the basis of existing data). The more Assets you select for comparison, the slower your system will run.

6   Press Next to open the **Describe Session** Panel.

7 Type the name for the Session in the **Description** field.

8 Type a description of the changes you are going to make in the (unnamed) **Notes** field. This screen is available at the end of your Session, so you can change this information later if required.

> Meaningful Session Description notes can help remind you exactly what you are exporting if you export Sessions. See Exporting Sessions (on page 153).

9 Press **Continue** to close the **RAMM Network Manager Session** screen and open the **RAMM Network Manager** main screen.

RAMM Network Manager Main Screen

The **RAMM Network Manager** main screen is similar to the **RAMM** main screen.

You can select the Road or Carriageway you are working with in the standard **RAMM** Road Selection panel on the left.

On the right is the Road Editor panel. See Road Editor (on page 77).

There is also a tool bar. See **RAMM Network Manager** Tool Bar (on page 73).

The default view is the Displacements tab.

The other tabs show details of the selected Road or Carriageway. You can change the Road Name, Road Type and Suburb, Town and Postal Code information at the Road tab. All of the other details can be changed at the Carriageway tab.

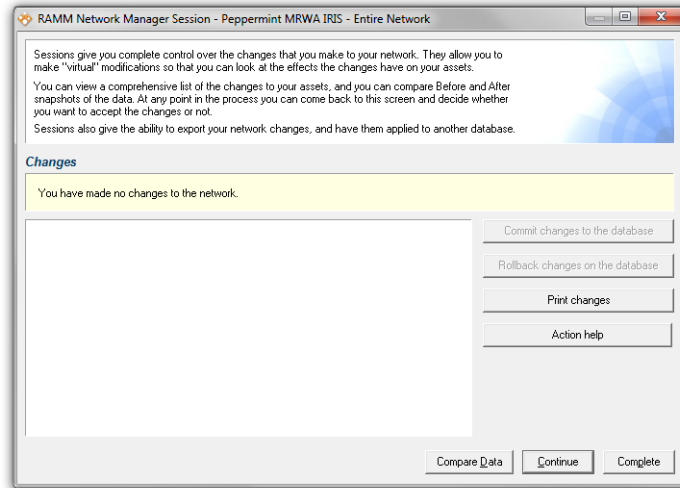See Carriageway and Road Tabs (on page 78).

Session Bar

At the top of the **RAMM Network Manager** main screen, the Session bar shows you how many Network changes you have made and their status. In the graphics below, the Session has just opened so there have been no changes made.

Pressing the Sessions button opens the **RAMM Network Manager Session** screen which lists the Network changes you have made.

You can also view your Session by following the menu path File > Sessions.

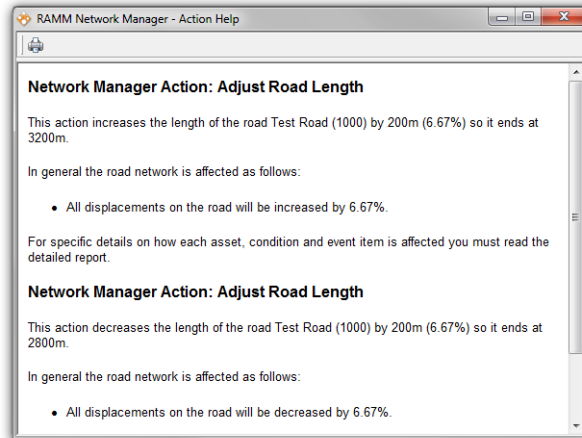## RAMM Network Manager Tool Bar

The **RAMM Network Manager** tool bar is just above the Road Editor panel. It has three levels. The first contains standard **RAMM** functions. The second level has the Road action buttons. The third level has the Carriageway action buttons.

> If you hover your mouse arrow over an icon, a tool tip description of the button function appears for a few seconds.
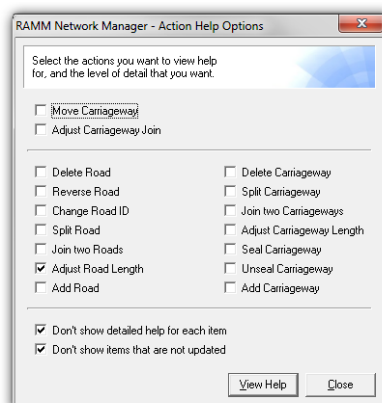
Action Help

Pressing the Action Help button ![icon] gives you extensive, context sensitive help that details the changes you are making to the Network.

You can print the entire contents of the screen for your reference by pressing the Print 🖨 button on the **Action Help** screen. You can also use Action Help as a detailed reference even if you are not currently working with a specific tool by following the menu path Help > All Actions.

▶ To View Help for All Items

1 Following the menu path Help > All Actions to open the **RAMM Network Manager - Action Help Options** dialog.

2 Select the Help which you want to view and press View Help to open the **RAMM Network Manager - Action Help** screen with the Help shown.

3 Read the Help. You can then print the Help, or close the screen.

> Select the Don't show detailed help for each item option to see a summary of the Help for the actions selected. Clear it to see detailed descriptions of the changes to the individual tables in the database.
>
> Select Don't show items that are not updated to exclude Assets and tables that are not affected by your selection.
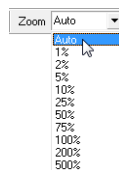
Carriageway Selection

The two arrow controls help you switch quickly from one Carriageway to the next or previous one in the Road Editor panel. This is particularly useful when Carriageway sections are too close to each other to be selected with your mouse.

- ◀ Previous Carriageway
- ▶ Next Carriageway.

Zoom

The Zoom drop-down list allows you to choose a preset zoom level for the Road you are viewing. The default zoom level, Auto, is fine for most situations.

Save Changes and Cancel Changes Buttons

The **RAMM Network Manager** tool bar has the standard **RAMM** Save Changes ✓ and Cancel Changes ↶ buttons.

> The ✓ and ↶ buttons do not become enabled for changes such as adjusting a Road length as the decision to save or cancel your changes is made at the dialog which opens.

These buttons operate in the normal **RAMM** fashion when you make a change within the Road Editor panel.

Actions

The Action buttons represent the basic functions available in **RAMM Network Manager** and correspond with the items on the Actions menu. They are discussed in more detail elsewhere. See Actions in **RAMM Network Manager** (on page 80).

Road

Use the following buttons when you are working with a Road:

- Delete Road
  See Deleting a Road (on page 81).
- Join another Road to the end of this one
  See Joining Two Roads (on page 81).
- Split into two Roads
  See Splitting a Road into Two (on page 83).
- Adjust Road length
  See Adjusting the Length of a Road (on page 85).
- Add a new Road
  See Adding a New Road (on page 86).
- Reverse the Road
  See Reversing a Road (on page 88).
- Edit Road Details
  See Edit Road Details (on page 90).
- Edit the Map Line for this Road.
  See Editing a Road Line on the Map (on page 91).
- Specify Intersections
  See Specifying Intersections on a Road (see "Adding an Intersection to the Network" on page 110).

Carriageway

Use the following buttons when you are working with a Carriageway:

- Delete Carriageway
  See Deleting a Carriageway (on page 116).
- Join Carriageways
  See Joining Two Carriageways (on page 118).
- Split Carriageway
  See Splitting a Carriageway in Two (on page 120).
- Adjust Carriageway Length
  See Adjusting the Length of a Carriageway (on page 122).
- Add Carriageway
  See Adding a New Carriageway (on page 123).

- Toggle Sealed/Unsealed Carriageway Surface
  See Toggling a Carriageway Between Sealed and Unsealed (on page 125).

Road Editor

The Road Editor panel displays your Network changes in graphic format. There are three bar graphics you use to manage the Road or Carriageway on which you are working.

Maintain Bar

The upper Maintain bar is where you make your changes by selecting either a:

- Carriageway Section
  See Moving a Carriageway Section (on page 129).
- Carriageway Join
  See Adjusting a Carriageway Join (on page 127).

Current Bar

The middle Current bar shows the current state of the selected Road or Carriageway within your session. Uncommitted changes will display on this bar.

Original Bar

The lower Original bar shows the selected Road or Carriageway as it was when you started working with it.

Road Editor Panel

In the graphic below, you will see in the Original bar that a Road with three Carriageway sections is being maintained. The first section has been extended once already. You can see the result of this change in the first section of the Current bar which differs from the first section of the Original bar. The first section has then been extended again as you can see by the blue section of the Maintain bar. This change has not been applied. When the change is applied, the Maintain and Current bars will be the same.

You use your mouse to make changes to Carriageways and Roads in the Road Editor panel. You can also type specific values manually if you wish. See Manually Entering Carriageway Values (on page 79).

> **NOTE**
>
> If you make changes to the current Road and switch to another Road, the Original display is reset to reflect the state of the currently selected Road.

Carriageway and Road Tabs

The Carriageway tab of the **RAMM Network Manager** main screen shows details of any Carriageway that you have selected.

Three Carriageway Tabs

The Dimensions, General, Miscellaneous and Traffic Link tabs expand on the information displayed on the Displacements tab to give you detailed information about the selected Carriageway. You change the values to reflect the changes you want to make to the Network.

Road Tab

The **Road** tab of the Manager screen shows details of the Road, and these too can be edited in the same way.

Using RAMM Network Manager

This section has detailed procedures for standard Network maintenance tasks.

- **Manually Entering Carriageway Values**
  It can be difficult to choose the correct value when you are using your mouse to make changes in RAMM Network Manager. In this situation you should type the values in the appropriate fields. See Manually Entering Carriageway Values (on page 79).
- **Options**
  When you are using RAMM Network Manager you have a number of display options. You should configure these at the start of your Session. See Options (on page 80).
- **Actions in RAMM Network Manager**
  You can take a number of standard actions by pressing the appropriate button. For instance, you can delete, join, add, split, reverse and adjust the length of the Road or Carriageway using buttons. See Actions in RAMM Network Manager (on page 80).

> Press the Action Help button 🔘 at any time for detailed and context sensitive help information on the action you are performing.

Manually Entering Carriageway Values

If you do not want to make changes in the Road Editor panel using the mouse, you can enter values manually. You do this at the (unnamed) Carriageway Manual Entry panel beneath the Road Editor panel. You can also make changes at the various fields on the Carriageway and Road tabs.

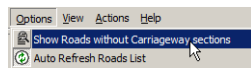| Start	◀	409	▶	Start Name	AWAKINO PLACE
End	◀	516	▶	End Name	WORDSWORTH ROAD
Width		7.6 m		Pavement Type	Thin Surfaced Flexible
Lanes		2		Pavement Use	ADT 100-500

▶ **To Enter Values Manually**

1   Type a numeric value in the Start, End, Width and Lanes fields
2   Press on the Left Arrow or Right Arrow at the sides of the Start and End fields to increase or decrease the field value
3   Choose an item from the drop-down lists associated with the Pavement Type and Pavement Use fields.

Options

RAMM Network Manager has two display-related options. You access them from the menu path Options.

Show Roads without Carriageway Sections

This is a toggle to view or hide these Roads. The default is not to show these Roads.

Auto Refresh Roads List

This is a toggle to automatically refresh the Road list to update it with the changes you have made. If you have a large Network, this option may slow down your system. In this case you should disable the option.

Sessions

The status of these controls is saved from one Session to the next.

Actions in RAMM Network Manager

This section describes how you use the **Action** buttons. For the purpose of these examples we assume that you have the RAMM Network Manager main screen open, and you are looking at the tool bar. See **RAMM Network Manager** Tool Bar (on page 73).

> Press the Action Help button ⓘ at any time for detailed and context sensitive help information on the action you are performing.

Deleting a Road

The Delete Road button ![icon] deletes a Road completely, together with all data attached to it.

When to Use This Action

You would typically require this action if a Road has been:

- permanently closed
- transferred to another Road Controlling Authority
- made into a private Road
- made no longer the responsibility of the respective Road Controlling Authority.

> The Delete Road action will delete every record in the database associated with the selected Road ID.
>
> Use with extreme caution.

▶ To Delete a Road

1   Select the Road in the Road Selection panel.
2   Press ![icon]   or follow the menu path Actions > Delete Road.
3   Press ![icon] to apply your changes. A **Progress** screen then opens with the details of the tables as they are being updated.
4   When the Network changes are complete, the **Progress** screen closes and you are returned to the **RAMM Network Manager** main screen.

> Press the Action Help button ![icon] at any time for detailed and context sensitive help information on the action you are performing.

Joining Two Roads

You use Join with Another Road ![icon] to combine two Roads into one.

When to Use This Action

You would typically require this action if a Road has been:

- constructed in two different sections and each was added to the database separately, with unique names and Road IDs. This is not uncommon when new subdivisions are built and the sections are joined together at a later date.
- changed to become part of an existing Road.

Use this feature to combine two State Highway reference station lengths into one.

This is a two-step process. You select a Road and then join the second Road to the end of the first.

In this example, two Roads were originally set up as below:

Beryl Place	0 – 150m	Wedgewood to Beryllium Ave	(Road 1)
Beryllium Ave	0 – 157m	Beryl Place to End	(Road 2)

Beryl Place and Beryllium Ave now need to be combined into one Road called Beryl Place.

They will become one Road with the following Carriageway sections.

Beryl Place	0 – 150m	Wedgewood to Beryl Place
Beryl Place	150 – 307m	Beryl Place to End

▶ To Join Two Roads

1 Select the first Road in the Road Selection panel. In this case it is Beryl Place.

2 Press ▣▣ or follow the menu path Actions > Join With Another Road to open the **Join to Road** selection screen.

3 Select the Road to be joined. In this case it is Beryllium Ave.

4 Press OK to open a **Confirmation** dialog asking if you really want to join the Roads.

5   Press **Yes** to apply your changes. A **Progress** screen then opens with the details of the tables as they are being updated.

6   When the Network changes are complete, the **Progress** screen closes and you are returned to the **RAMM Network Manager** main screen. As you can see in the graphic below, Beryllium Ave has disappeared and Beryl Place now has two Carriageways.

Splitting a Road into Two

The Split Road button splits an existing Road into two Roads.

You can split a Road at any Displacement

When to Use This Action

You would typically require this action if:

• you have relocated an existing reference station on the State Highway Network
• you have inserted a new reference station on the State Highway Network
• an existing through-Road has been altered and access through it is no longer possible.

You can either start the beginning of the new Road at 0m or leave the beginning of the Road at the current displacement.

In this example a Road with the following Road sections is to be split into two Roads, one named Beryl Place (1) and the other Beryl Place West (2).

In this example, two Roads were originally set up as below:
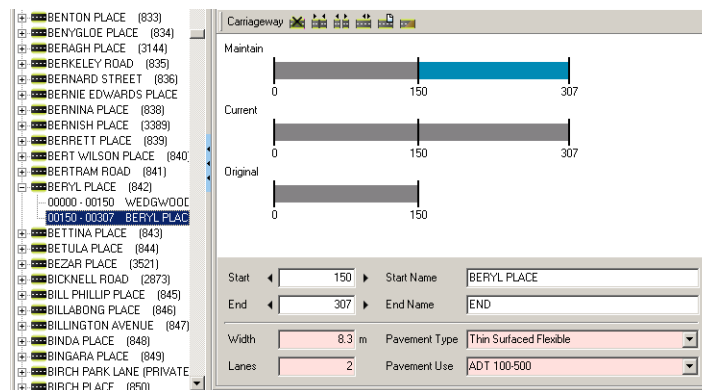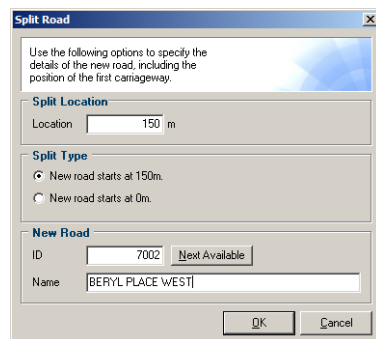
Original Carriageway displacements:

Beryl Place	0 - 150m	Wedgewood to Beryl Place
Beryl Place	150 - 307m	Beryl Place to End

After inserting the split:

Beryl Place	0 - 150m	Wedgewood to Beryl Place West	(Road 1)
Beryl Place West	0 - 157m	Beryl Place to End	(Road 2)

► **To Split a Road**

1   Select the Carriageway to the right of the intended split on the relevant Road in the Road Selection panel or on the Maintain bar.

2   Press or follow the menu path Actions > Split Road to open the **Split Road** dialog.

3   You now have the option to select the position from which the new Road is going to start. In the example above the options are from 0 or from 150 metres.

4   Press the Next Available button to default the next available Road ID into the ID field and type the name of the new Road into the Name field. This makes the OK button available.

5   Press OK to apply your changes. A **Progress** screen then opens with the details of the tables as they are being updated.

6   When the Network changes are complete, the **Progress** screen closes and you are returned to the **RAMM Network Manager** main screen where the new Road is visible.

> If the item you are splitting is a Locality rather than a Road **RAMM Network Manager** will offer you the option to keep the single Locality or to create a new Locality.

Adjusting the Length of a Road

The Adjust Road Length button is used to modify the length of a Road. It will also proportionately adjust the displacements of all items along the Road.

When to Use This Action

You would typically require this action if a Road has been found to be the wrong length because of:

- calibration error
- measurement error.

▶ To Adjust the Length of a Road

1 Select the Road you wish to work with in the Road Selection panel.

2 Press or follow the menu path Actions > Adjust Road Length to open the **Adjust Road Length** dialog.

3   Type the new end displacement for the Road in the available field.

4   A percentage change will be calculated and displayed. Check for accuracy.

5   Press OK to confirm and apply your changes. **RAMM Network Manager** then shows you the tables that are being updated. When the Network changes are complete you are returned to the **RAMM Network Manager** main screen.
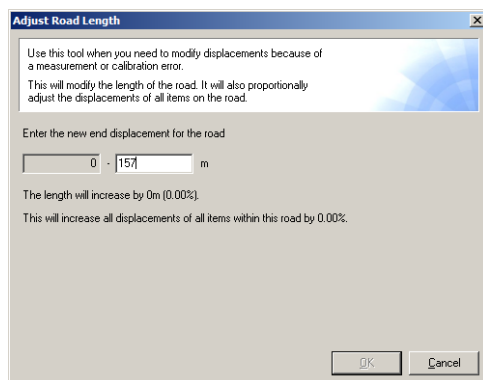
> You can only correct small measurement or calibration errors of ten percent or less. To increase the length of the Road by a greater amount you add a new Carriageway.

Adding a New Road

The Add New Road button enables you to add a completely new Road to your Network, together with all the relevant data.

When to Use This Action

You would typically require this action if a Road has been:

- created
- transferred to you from another Road Controlling Authority
- made from a private Road into a Public Road
- made your responsibility.

Follow these steps to add a new Road to your Network.

▶ **To Add a Road**

1   Press or follow the menu path Actions > Add Road to open the **Add a New Road** dialog.

2 Press the Next Available button to default the numerically lowest unused Road ID. You have the option to type your own user-defined Road ID into the ID field.
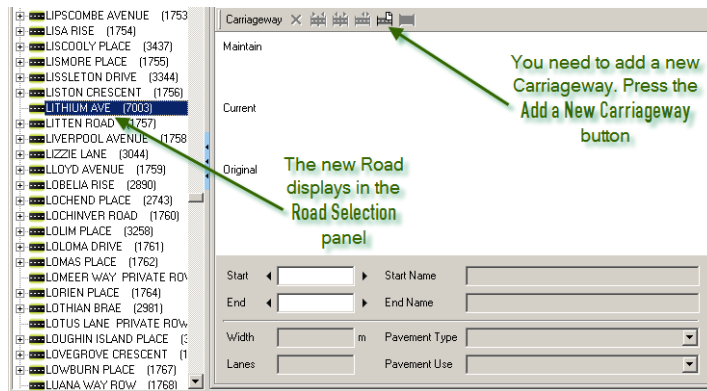
> Road IDs in **RAMM** must be unique. Normally if you were adding a new Road you would accept the next sequential Road ID offered by **RAMM**, but you may enter your own.
>
> **RAMM** will warn you if you enter a Road ID that has previously been used.

3 Type the name for the new Road in the Name field.
4 Press OK.
5 If you have disabled the option to Show Roads without Carriageway Sections, the **Add Road** information screen will open to advise you that this option is being enabled so that you can see and select the new Road in the Road Selection panel.

6 Press OK to apply your changes.
7 A **Progress** screen then opens with the details of the tables as they are being updated.
8 When the Network changes are complete, the **Progress** screen closes and you are returned to the **RAMM Network Manager** main screen.
9 The Road Editor panel will be empty because the new Road does not yet have a Carriageway. See Adding a New Carriageway (on page 123).

Reversing a Road

The Reverse Road button ⬛ reverses a Road, together with all data attached to it. It automatically adjusts the displacements.

When to Use This Action

You would typically require this action if:

- the existing direction of a Road is impractical or incorrect
- the Road has changed from a two-way Road to a one-way Road
- you wish to join another Road to the currently selected one and one of the Roads is opposed in direction to the other. If so, one of the Roads must be reversed before the Roads are joined.

In the following example, Birdwood Ave will be reversed.
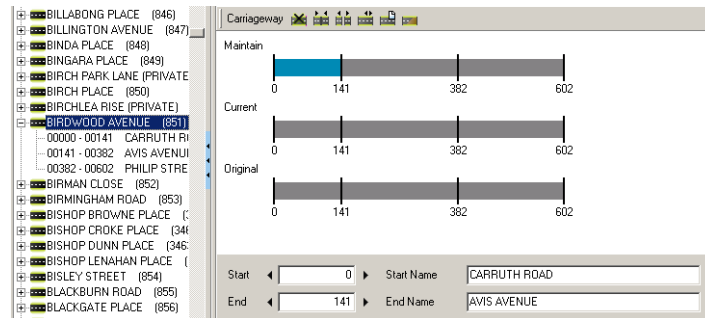
Original Carriageway sections:

Birdwood Ave	0 - 141m	Carruth Rd - Avis Ave	(1)
Birdwood Ave	141 - 382m	Avis Ave - Philip St	(2)
Birdwood Ave	382 - 602m	Philip St - Great South Road	(3)

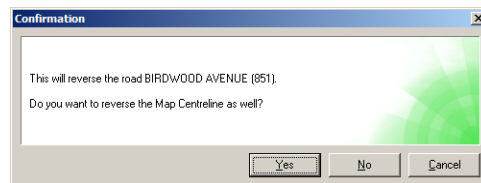After reversing the Road, the resulting Carriageways would be:

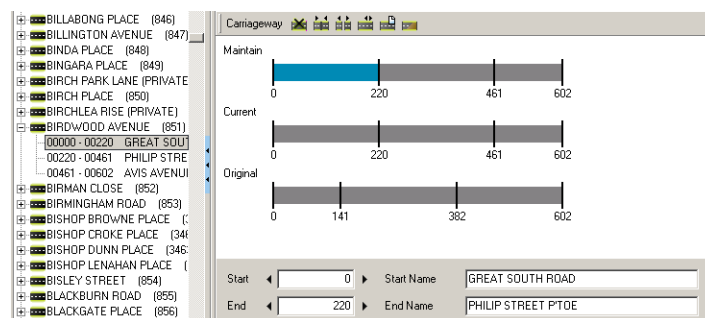|			
Birdwood Ave	0 - 220m	Great South Road - Philip St	(1)
Birdwood Ave	220 - 461m	Philip St - Avis Ave	(2)
Birdwood Ave	461 - 602m	Avis Ave - Carruth Rd	(3)

▶ **To Reverse a Road**

1   Select the Road in the Road Selection panel.

2   Press or follow the menu path Actions > Reverse Road to open a **Confirmation** dialog asking whether you want to reverse the Map Centreline as well as reversing the Road in the database.

3   Normally, you would press Yes. If you have a valid reason for not reversing the **Map** Centreline, press No. This could be when the Map Centreline direction does not match the **RAMM** Road direction. **RAMM Network Manager** then shows you the tables that are being updated.

4   A **Progress** screen then opens with the details of the tables as they are being updated.

5   When the Network changes are complete, the **Progress** screen closes and you are returned to the **RAMM Network Manager** main screen, where the Maintain and Current bars of the Road Editor show you how the Road has been reversed and displacements rearranged.

> If the item you are reversing is a Locality rather than a Road, **RAMM Network Manager** will offer you the option to reverse either the entire Locality or to reverse individual Roads which are components of the Locality.

Edit Road Details

The Edit Road Details button ![button] enables you to change a Road ID and name. All linked items will then be updated to reflect the new Road ID.

When to Use This Action

You would typically require this action if a Road has:

* been incorrectly spelt
* an inappropriate Road ID and you want to define your own one.

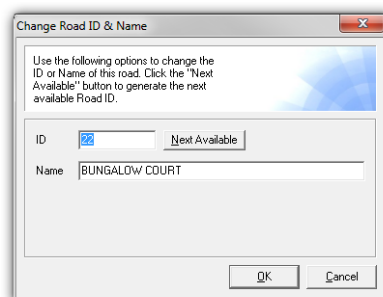When you change a Road ID using the Next Available button the default value is always one number higher than the last Road ID in the database.

> You may choose a user-defined Road ID number only if it is not already being used.

▶ To Change a Road ID

1 Select the Road in the Road Selection panel and press ![button] or follow the menu path Actions > Change Road ID to open the **Change Road ID and Name** dialog.

2 Press the Next Available button to change the Road ID or type your user-defined Road ID in the ID field. If you are changing the name as well, type the new name in the Name field.

3 Press OK to apply your changes. A **Progress** screen then opens with the details of the tables as they are being updated.

4 When the Network changes are complete, the **Progress** screen closes and you are returned to the **RAMM Network Manager** main screen, where the Road will display reflecting the changes you have made.

Editing a Road Line on the Map

The Edit Map button opens the **Map** at the Road selected in the Road Selection panel. You are then able to make changes to the **Map**.

When to Use This Action

You would typically require this action when:

- the information from your **Map** supplier, such as Critchlow, is incorrect or out of date
- you have made a change in **RAMM** which is not reflected in the **Map**.

> **!** NOTE
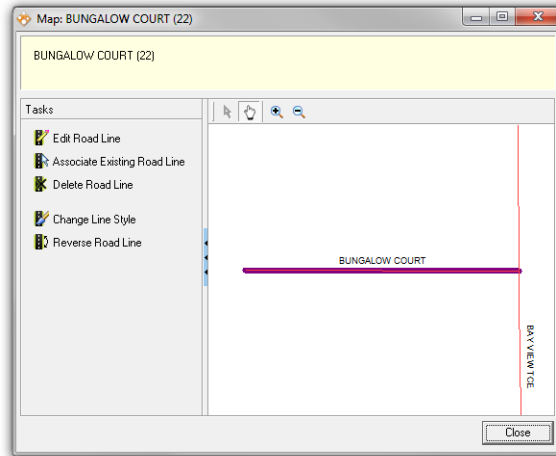>
> If you reverse or split a Road, this is automatically reflected in the **Map**. Other actions are not reflected automatically in the **Map**.
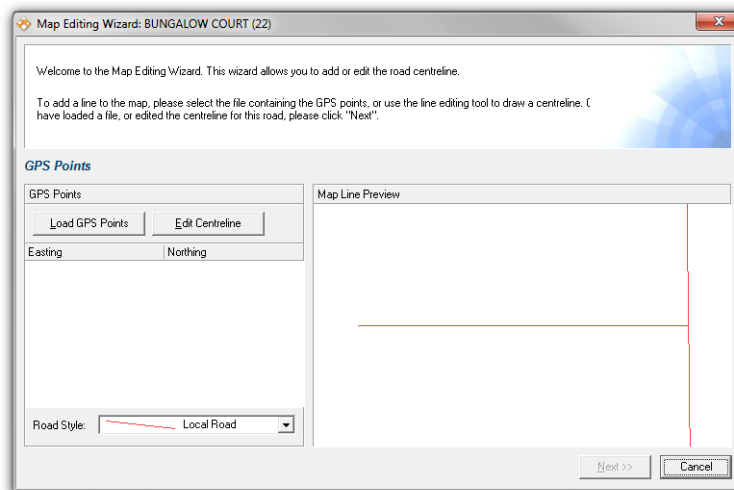
▶ **To Edit a Road Line on the Map**

1 Select the Road in the Road Selection panel which you want to edit in the **Map.**

2 Press to open the **Map** screen. It will be centred on the selected Road. The Tasks panel will be available.

3   You now have the following options. You can press:
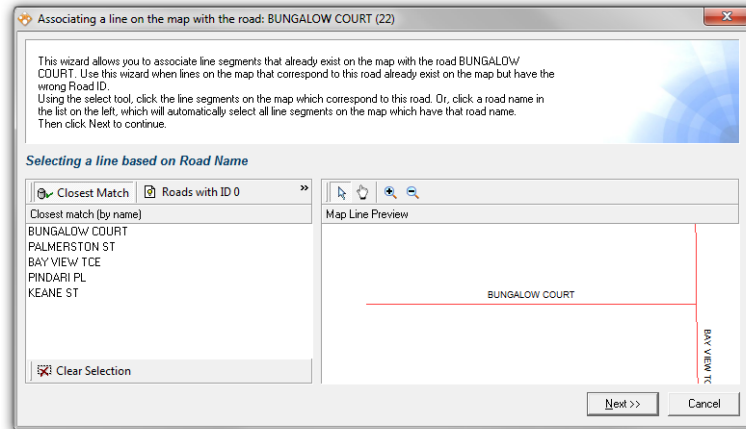
- **Edit Road Line**
  The **Map Editing Wizard** will open. First you load the file containing the new GPS
  points for the Road. Then you can choose the new style for the Road and follow
  the **Map Editing Wizard** to the end.

- **Associate Existing Road Line**
  The **Associating a line on the map with the road** screen will open. Follow the
  instructions on the screen.

- **Delete Road Line**
  A **Confirmation** dialog will open asking if you really want to delete all **Road Lines** on the **Map** with the particular **Road ID**.
- **Change Line Style**
  An **Information** dialog will open advising you to select the new style for the Road from the **Road Style** drop-down list which has become available. It also advises that you can select only a portion of the Road to which to apply the new style.
- **Reverse Road Line**
  A **Confirmation** dialog will open asking if you really want to swap the start and end points of the Road.

4   Press **Close** to be returned to the **RAMM Network Manager** main screen.

Centre Lines

You can now edit Road Centre Lines in **RAMM Network Manager** using your mouse pointer.

In **RAMM Network Manager** if you select a Road record in the **Roads** list panel and then press ![icon], the **Map** will open with Road display editing options available.

In the example below the   Centre Line of **Shakespeare Road** has become inaccurate where it meets the **Westlake Bus Station Ring Road.**

You press **Edit Road Line** to begin the process of fixing the Centre Line.

This opens the **Map Editing Wizard**.

Map Editing Wizard

When you have opened the **Map** in **RAMM Network Manager** and located the Centre Line which you need to edit, you press Edit Road Line. This opens the **Map Editing Wizard**. The wizard is used to add or edit a Road Centre Line.

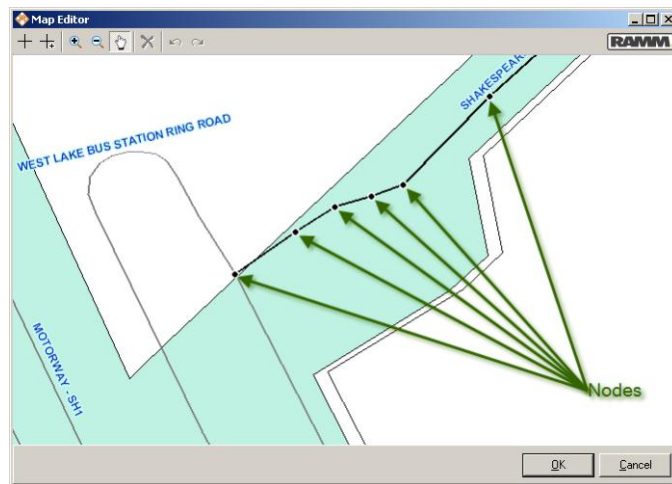You press ⟦Edit Centreline⟧ to open the **Map Editor** and view the Centre Line Nodes.

Centre Line Nodes

Once you have opened the **Map Editor** you use the Zoom In 🔍, Zoom Out 🔍 and Pan tools 🖑 to centre the **Map** on the Centre Line you want to edit. You should see Nodes on the Centre Line.

Nodes

Nodes are points that exist on a Centre Line to positively locate each end of a straight line Centre Line link. You use the Nodes to accurately locate the straight line links which comprise the Centre Line.

In the example below you can see the Shakespeare Road Centre Line needs to be shifted into the middle of the Road where it meets the Westlake Bus Station Ring Road. The **Map Editor** is is in Edit Centre Line mode so the Centre Line Nodes are visible and available for edit.

There are two tools to assist you.

- Add and Edit Nodes (on page 95) (F2) ➕
- Add Node to the Start or End (on page 98) ➕.

Add and Edit Nodes

You use the Add and Edit Nodes tool ➕ for most of your Centre Line editing. You use it to add a new Node or to reposition existing Nodes.

Add a New Node

You click in empty space to add a new Node. **RAMM Network Manager** will calculate the closest existing Nodes. Then:

- if the start or end Node is the closest, more Centre Line will be added from the start or end of the Centre Line to the new Node
- if the Centre Line middle section Nodes are the closest, The new Node will be joined to the closest two Nodes.

Reposition Existing Nodes

You locate the existing Node you wish to reposition and click on the Node. Then:

- you use the mouse pointer to drag the existing Node to its new position
- **RAMM Network Manager** extends or reduces the two contiguous Centre Line links to the new Node position.

Add a Node to the End of the Centre Line

In the examples above, it is the mid section of the Centre Line which is being edited. If you need to add Nodes to the start or the end of a Centre Line and you use the mouse pointer to click in an empty area near the end of the Centre Line a new Node will be added. This Node:

- will extend the Centre Line if the start or end Node is closest to the mouse pointer
- may not extend the Centre Line under some circumstances. See Add Node to the Start or End (on page 98).

Adjust a Centre Line

You use the Add and Edit Nodes tool ➕ to shift Nodes.

Select and use the **Add and Edit Nodes** tool to shift **Centre Line Nodes**

This adjusts Centre Lines. In the example below the Shakespeare Road Centre Line needs to be shifted into the middle of the Road where it meets the Westlake Bus Station Ring Road.

To do this you would use the Add and Edit Nodes tool ➕ to correct the Centre Line so that it looks like the example below.

① This Node is in its original position

② A new Node was added to account for the Road widening

③ These Nodes were dragged and dropped into the correct positions

④ A new Node was added to the end of the Centre Line to extend it

Add Node to the Start or End

In some situations you could use the Add and Edit Nodes ＋ tool to add a Node to the start or end of a Centre Line. See Adjust a Centre Line (on page 97).

Sometimes the design of the tool will defeat you as in the example below.

The unnamed Road (Blackteal Crescent) branches off Bluebird Crescent and circles in on itself. The end of the Centre Line should match the Road. It should circle in on itself. It does not. It is shorter than the Road.

You will want to extend the end of the existing Centre Line to the Intersection where it meets the mid section of the existing Centre Line.

The Node Attaches to the Wrong Spot on the Centre Line

If the spot where you click the Add and Edit Nodes tool is closer to a mid section of the Centre Line than to the end of the Centre Line, then the new Node which is added will associate itself with the mid section of the Centre Line rather than the end. This has happened in the example below. In this case you need to use the Add Node to the Start or End tool. See Extend a Centre Line (on page 99).

Extend a Centre Line

In the previous example, the Add and Edit Nodes tool ➕ was unable to extend the Centre Line to meet its own midsection. So use the Add Node to the Start or End tool ➕ to extend a Centre Line. See Add Node to the Start or End (on page 98).

Select and use the **Add Node to Start or End** tool to extend a **Centre Line**

Add Node to Start or End Tool ⊞

When you click the Add Node to the Start or End tool on the **Map**, **RAMM Network Manager** creates a Node where you clicked and adds a Centre Line link from the new Node to the closer of the existing start or end Nodes. If you click again anywhere on the **Map**, another Node and link will be added to the previous Node. This behaviour continues until the tool is turned off.

You can then use the Add and Edit Nodes ⊞ tool to adjust the position of the Nodes by dragging them with the mouse pointer.

> You can not use the Add Node to Start or End tool to adjust the Centre Line extensions you create. If you try to drag and drop Nodes **RAMM Network Manager** will just add a new Nodes and links every time you click on the **Map**.

In the example below, Blackteal Close is a Road which turns in on itself. The Centre Line does not meet its own mid section and needs to be extended. You use the Add Node to the Start or End tool ⊞ to achieve this.

In the example above you place the mouse pointer cross hairs on the Node up to which you want the Centre Line to be extended. You then click the mouse pointer. A new Node will be created on the site of the existing Node and a link will be added from the last existing Node of the Centre Line. See the example below.

Specify an Intersection

When you have added a Road in **RAMM Network Manager** you should define the Intersections for the Road at the same time.

You do this by pressing Specify Intersections [icon]. This opens the **Intersections for Road: (Road Name)** screen. You add Intersections at this screen. Before you do this you will want to understand the:

Intersections List

When you create Intersections for a Road, or want to view existing Intersections associated with a Road, they are listed in the Intersections list panel of the **Intersections for Road: (Road Name)** screen.

The Intersections are listed in order from the Start of the Road to the End. They are listed in ascending Carriageway Displacement order. The default Intersection Descriptions are the Major Road followed by the other Road(s).

You press [icon] to start the process of adding an Intersection at the **Intersections for Road: (Road Name)** screen.

Intersection Details

When you select an Intersection in the Intersections list panel, the details and the Intersection Clock for the selected Intersection default into the Intersection Details panel.

Intersection Description

The Description is the name for the Intersection in **RAMM**. AURUM ST - EASTERN ST is an example of a default Intersection Description. AURUM ST has been defined as the Major Road in the Intersection. So it precedes the name(s) of the other Road(s).

You create user defined Intersections at the Intersections for Road: (Road Name) screen. You create default Intersections at the Map in **RAMM Manager**.

When you create user defined Intersections you can use your own naming convention. You can edit default Intersection Descriptions to fit your business practices.

Intersection Names for a Subsidiary Road

If you select a subsidiary Road in the Roads list panel and press to open the **Intersections for Road: (Road Name)** screen, the name of the subsidiary Road will be in the screen name but will not necessarily be the name by which the Intersections are listed in the Intersections list panel.

In the graphic below the **Intersections for Road: SALEM PLACE** screen has one Intersection in the Intersections list panel. As ARMADALE RD is the Major Road in the Intersection, the other Road SALEM PLACE is appended to it in the default Intersection Description.

Intersection Type

When you are adding an Intersection, you select the type of Intersection from the Intersection Type drop-down list. You can change this value later if the Intersection changes.

You have the option to define your own Intersection Type codes. In **RAMM Manager** you follow the menu path Maintenance > Lookups > Intersections > Type to open the **Intersection Type** screen. It is a standard **RAMM** maintenance screen.

Add Intersection Details.

When you are adding an Intersection you add the Description for the Intersection, its Intersection Type and its Location details at the **Create New Intersection** dialog. You can edit the details at a later date.

Intersection Location Details

The Intersection Locations and the Location Details panels positively Locate the Intersection at the point where the Roads meet. They also determine the direction of the Road on the Intersection Clock.

When you highlight a Location in the Intersection Locations panel by selecting it with your mouse pointer, the details for that Location default into the Location Details panel. These are editable.

You define these details for all Roads in the Intersection.

Road

If the Location listed in the Intersection Locations panel is incorrect, you can change the Road by selecting the correct Road from the Road drop-down list.

Start and End

The Start and End fields are populated by default. You can edit these values.

Major Road

You select the Major Road option to define a Road as the Major Road in the Intersection.

Only one Road can be the Major Road for an Intersection at any one time. If you select the Major Road option for one Road when another Road in the Intersection has previously been defined as the Major Road, the Major Road option for the other Road is cleared.

Intersection Locations

You list the Carriageway Section Displacements on the Roads which comprise the Intersection in the Intersections Locations panel. In the example above, the Intersection is Located at a Displacement of 1580 m along ARMADALE RD and at a Displacement of 0 m along SALEM PLACE.

Create New Location

When you press Add a New Location to the Intersection , the **Create New Location** dialog opens. You use this to first select the Road which intersects with the other Intersection Roads and then to select the Carriageway Displacement which is the Location of the Intersection on the Road.

Intersection Clock

A clock-style display represents a close-up of the Intersection, as might be seen on the **Map**. The arrows represent the direction in **RAMM** of each Road. You can edit the Intersection Clock if required.

RAMM Generated Intersections – North and South

If you have generated your Intersections from the Map in **RAMM Manager** the Intersection Clock represents the orientation of the Roads to due North. A Road whose direction is towards 12 is facing due North. A Road whose direction is towards 6 is facing due South as in the above graphic.

User Defined Intersections

If you have generated the majority of your Intersections from the Map in **RAMM Manager** and you are adding a small number of Intersections from within **RAMM Network Manager**, you should attempt to match these user defined Intersections to the **RAMM** generated items. So you should align the arrows on the Intersection Clock so that they are a representation of the orientation of the Roads to due North.

If you are defining all your Intersections from **RAMM Network Manager** you could align the arrows on the Intersection Clock in the manner described above. Alternatively you could use your own system.

Increasing and Decreasing Clock

Roads in **RAMM** have a Start Displacement of zero (0) and an End Displacement. The direction of the Road is said to be from the Start of the Road to the End Displacement.

The arrows on the Intersection Clock are directional. Each arrow represents the direction of the Road as seen from the centre of the Intersection. In the example above, ARMADALE RD is the Road going through the Intersection. It is decreasing in Displacement value from the centre of the Intersection Clock to 12. It is increasing in Displacement value from the centre of the Intersection Clock to 6.

Set Arrow Positions and Directions

You determine the direction of the arrows by the values you type in the Increasing Clock and Decreasing Clock fields.

In the example above you can see the effect of changing the values in the Increasing Clock and Decreasing Clock fields. ARMADALE RD is still the Road going through the Intersection. It is reversed so that it is heading East of North increasing in Displacement value from the centre of the Intersection Clock to 1. It is decreasing in Displacement value from the centre of the Intersection Clock to 8. This has caused a bend in the Road at the point of the Intersection.

Deal with the Other Road

ARMADALE RD is the Road used in the above examples. It meets SALEM PLACE at the Intersection. After correctly positioning ARMADALE RD on the Intersection Clock you would want to position the intersecting Road SALEM PLACE.

You select, in the Intersection Locations panel, the Description of the Road you want to deal with. The arrows in the Intersection Clock representing the Road will then become highlighted. You then set its Increasing Clock and Decreasing Clock field values.

In the example above SALEM PLACE will have only one value as it does not pass right through the Intersection. As the SALEM PLACE Displacement value at the centre of the Intersection is zero (0), it is an Increasing Clock value which is required.

> The direction of the arrow on the clock face reflects the direction of the Road. The Road direction is normally the course from the lowest street number to the highest.
>
> The lowest number is normally closest to the Major Road with which the Road intersects.

Hovering your mouse above the line representing the Road direction will pop up the Road Name and Road ID.

Navigation Restrictions

If it is useful for your users to be able to see the restrictions on traffic flow for each of the Roads in your Network which intersect, you add this information at the Intersection Navigation Restrictions panel.

> Navigation Restrictions in **RAMM** are used for user information. They are also used for Bylaws, the creation of Speed Limit zones and the validation of the positioning of Signs based on speed restrictions.

Add a Navigation Restriction

You add your own Navigation Restrictions. You do this by pressing 🔲 at the Intersection Navigation Restrictions panel to open the **Create New Restriction** dialog.

First you select from the From Road drop-down list the Road along which the traffic to be restricted is travelling. The available values default from the Roads on the Intersection Clock.

Then you select from the To Road drop-down list the Road into which the traffic is to be restricted from travelling. The available values default from the Roads on the Intersection Clock not including the Road already selected at the From Road drop-down list.

Next you select from the Entry Permission drop-down list the Navigation Restriction for the traffic travelling from the first Road into the second.

When you save the record a row is created in the Intersection Navigation Restrictions panel. An image is generated for the restriction.

Intersection Navigation Restrictions					
From Clock ▽	From Road ▽	To Clock ▽	To Road ▽	Image	Entry Permission ▽
6	ARMADALE RD	3	SALEM PLACE	🚫	No vehicles
12	ARMADALE RD	3	SALEM PLACE	🚫	No vehicles

Close

> The icon indicating the type of Navigation Restriction, as in the Image column above has no connection with the Sign table. It is merely a visual confirmation of the Navigation Restriction.

Adding an Intersection to the Network

Specify Intersection ▣ enables you to add and maintain Intersections in your Network.

When to Use This Action

You would typically require this action if:

- a new Road has been added and you want to define the Intersections for the Road
- a Pedestrian Crossing has been added to a Road
- a Railway Crossing has been added to a Road
- an Intersection has been wrongly described in your Network
- traffic patterns have changed and you want to update the Intersection records to reflect this
- a traffic restriction has been added to an Intersection.

Follow these steps to add an Intersection to your Network.

▶ **To Add an Intersection to the Network**

1 Select, from the (unnamed) Roads list panel, the Road for which you want to add an Intersection.

2 Press ⬛ or follow the menu path Actions > Intersections.
The **Intersection for Road: (Road Name)** screen will open with Intersections for the Road, if any, defaulted.

3 Press Add Intersection ⬛.
The **Create New Intersection** dialog will open.

4 Type, in the Intersection Description field, the name by which the Intersection will be known. The standard convention is to combine the names of all the roads which comprise the Intersection with the name of the Major Road first. See Intersection Details (on page 103).

5   Select, from the Intersection Type drop-down list, the type of Intersection.

6   Select, from the Location drop-down list, the Carriageway Displacement at which the Intersection is Located.

7   Press [Save].

The **Create New Intersection** dialog will close and your changes will be saved. The **Intersection for Road: (Road Name)** screen will be populated with the details of the Intersection.

8   Go to Adding Road Locations to an Intersection (on page 112).

Adding Road Locations to an Intersection

Specify Intersection [icon] enables you to add Road Locations to an Intersection in your Network.

When to Use This Action

You would typically require this action if:

* a new Intersection has been added but only one of the intersecting Roads has been associated with the Intersection
* a new Road has been added to the Network which intersects with an existing Intersection.

Follow these steps to add Road Locations to an Intersection which exists in your
Network.

▶ To Add a Road Location to an Intersection

1   Press Add a New Location to the Intersection 📋.
The **Create New Location** dialog will open.

2   Select from the Road drop-down list the Road to be added to the Intersection.

3   Select, from the Location drop-down list Carriageway Displacement at which point the
Road intersects with the other Roads comprising the Intersection.
The Carriageway Displacement value at which the Road intersects with the others will
default into the Location m field.

4   Does the Road increase in Displacement value from the centre of the Intersection?

Yes	go to step 5.
No	go to step 6.

5   Type in the Increasing Clock field, the Intersection Clock numeral to which the Road heads away from the Intersection.

6   Does the Road decrease in Displacement value from the centre of the Intersection?

Yes	go to step 7.
No	go to step 8.

7   Type in the Decreasing Clock field, the Intersection Clock numeral from which the Road heads towards the Intersection.

8   Press Save .

The **Create New Location** dialog will close and your changes will be saved. The **Intersection for Road: (Road Name)** screen will be populated with the details of the new Carriageway Location added to the Intersection. The Intersection Clock will be populated with the arrow(s) specified for the new Road.

9   Do you want to add another Road Carriageway Location to the Intersection?

Yes	go to step 1.
No	go to step 10.

10 Go to Defining the Intersection Clock Arrows (on page 115).

Defining the Intersection Clock Arrows

Specify Intersection [icon] enables you to add and maintain Intersections in your Network.

When to Use This Action
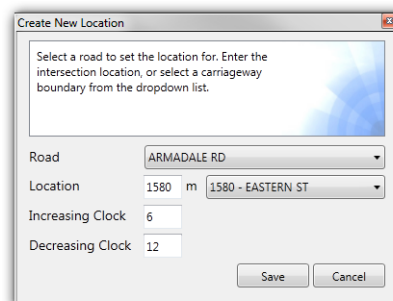
You would typically require this action if:

- the Intersection Clock arrows for a Road Location added to an Intersection have not been defined.

Follow these steps to define the Intersection Clock arrows for a Road Location added to an Intersection which exists in your Network.

▶ To Define Intersection Clock Arrows

1 Highlight, in the Intersection Locations panel, the Road Carriageway Location whose Intersection Clock arrows you wish to define. You do this by selecting the Location with your mouse pointer.
The details for the Road Carriageway Location will default into the Location Details panel.

2 Does the Road increase in Displacement value from the centre of the Intersection?

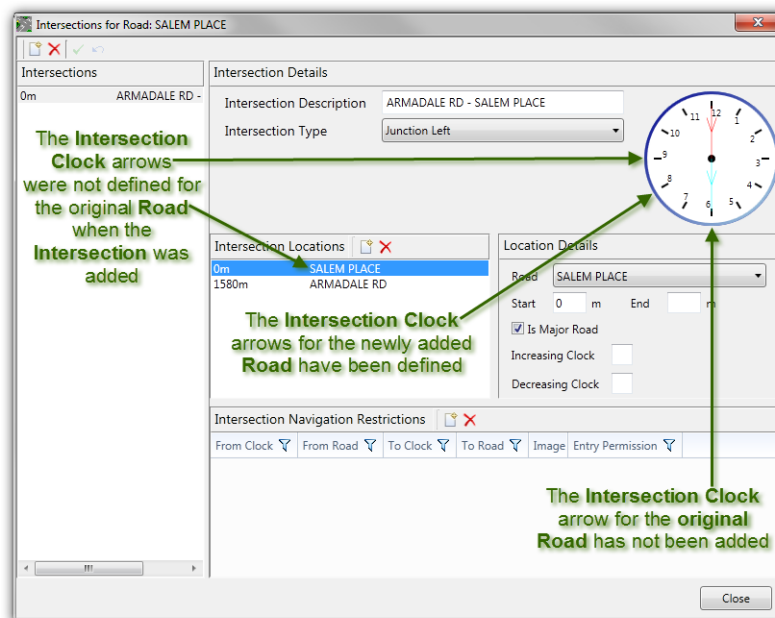| Yes	go to step 3.
No	go to step 4.

3   Type in the Increasing Clock field, the Intersection Clock numeral to which the Road heads away from the Intersection.
An arrow will appear on the Intersection Clock from the centre to the Clock numeral.

4   Does the Road decrease in Displacement value from the centre of the Intersection?

Yes	go to step 5.
No	go to step 6.

5   Type in the Decreasing Clock field, the Intersection Clock numeral from which the Road heads towards the Intersection.
An arrow will appear on the Intersection Clock from the Clock numeral to the centre.

6   Do you want to define another Intersection Clock arrow?

Yes	go to step 1.
No	go to step 7.

7   Press ✓.
Your changes will be saved. The Intersection Clock will be populated with the arrow(s) specified.

Deleting a Carriageway

The Delete Carriageway button ✖ deletes a Carriageway completely, together with all data attached to it.

When to Use This Action

You would typically require this action if a Carriageway has been:

- permanently closed
- transferred to another Road Controlling Authority
- made into a private Road
- interrupted such as when a gap needs to be inserted in a Road but while maintaining continuity of the running distance.

You would use this to ensure that there is a gap across a Roundabout or staggered Intersection.

Data Deleted

Data attached to the Carriageway being deleted, such as Drainage or Traffic, is also deleted.

> The Delete Carriageway action will delete every record in the database associated with the selected Carriageway.
>
> Use with extreme caution.

Data not directly attached to the Carriageway being deleted, such as Carriageway Surfacing or Markings, is affected in three ways

- a feature with both displacements in the deleted Carriageway is deleted
- a feature with either displacement in the deleted Carriageway is truncated at the point of deletion
- a feature with only a single displacement in the deleted Carriageway, such as Falling Weight data, is deleted.

In the following example, the Carriageway section 2 of Chestnut Road is going to be deleted as it has been closed.

Original Carriageway sections are as follows.

Chestnut Road	0 – 120m	Kenderdine St - Ramsey St	(1)
Chestnut Road	120 – 356m	Ramsey St – Parking Ends	(2)
Chestnut Road	356 – 426m	Parking Ends – Tutere Rd	(3)

After deleting Carriageway 2, the resulting Carriageways are as follows.

Chestnut Road	0 – 120m	Kenderdine St - Ramsey St	(1)
Chestnut Road	356 – 426m	Parking Ends – Tutere Rd	(2)

▶ To Delete a Carriageway

1   Select the Carriageway you wish to delete. You can do this either by selecting the relevant Carriageway section on the Maintain bar of the Road Editor panel or selecting the Carriageway section in the Road Selection panel.

2   Press ✖ or follow the menu path **Tools > Delete Carriageway** to remove the section of Carriageway from the Maintain bar.

3   Press to apply your changes. A **Progress** screen then opens with the details of the tables as they are being updated.

4   When the Network changes are complete, the **Progress** screen closes and you are returned to the **RAMM Network Manager** main screen.

Joining Two Carriageways

The Join Carriageway button joins two Carriageway sections and their associated data into one Carriageway section.

The data associated with the second Carriageway is amalgamated into the new single Carriageway. Data not directly associated with either Carriageway, such as Treatment Length and Markings, is not affected at all.

When to Use This Action

You would typically require this action when:

- a Road section node or split is no longer required.

In this example, the two Carriageway sections in Adams Road will be joined.

> If you select a Carriageway to join to another one, it joins the Carriageway to its right.

This could be because you have previously inserted a split in a Road to indicate the end of a kerb and channel but since then the street has been kerbed along the full length of the street block. The original Carriageway sections are as follows.
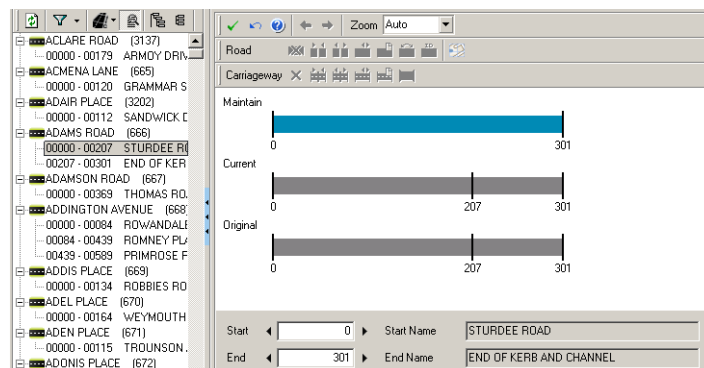
Adams Road	0 – 207m	Sturdee Road - end of kerb and channel	(1)
Adams Road	207 – 301m	end of kerb and channel - End	(2)

After joining Carriageways 1 and 2 the resulting Carriageway would be as follows.

Adams Road	0 - 301m	Sturdee Road - End	(1, 2)

▶ **To Join Two Carriageway Sections**

1 Select the Carriageway to be joined to the one on its right. You can select it on the Maintain bar in the Road Editor panel or select it in the Road Selection panel.

2 Press or follow the menu path Actions > Join Carriageway to join the adjacent Carriageways into one Carriageway on the Maintain bar.

3 Press to apply your changes. A **Progress** screen then opens with the details of the tables as they are being updated.

4 When the Network changes are complete, the **Progress** screen closes and you are returned to the **RAMM Network Manager** main screen.

> ! **NOTE**
>
> You should check that all the other details for the Carriageway, including default width and the other data, are correct before you proceed.

Splitting a Carriageway in Two

The Split Carriageway button ⬚ divides a Carriageway into two.

When to Use This Action

You would typically require this action if:

- there are insufficient Carriageway sections on a particular Road
- the Road structure has changed and it now requires additional Carriageway sections
- there has been a width change or a passing lane has been constructed
- a new subdivision Road has been built off an existing Road.

Data Affected

In general the Road network is affected as follows:

- any Point items previously linked to the selected Carriageway section but now lie within the new Carriageway section will be linked to the new Carriageway section.
- any Length items linked to the selected Carriageway section which start before the split and end after it will be split into two lengths. The second length is linked to the new Carriageway section. Any data in these lengths based upon the length of the item, such as the cost amount in maintenance cost, will be updated based on the new length of the item.

This example shows the result of splitting Carriageway 1 of Adel Place into two sections at displacement 50m. Original Carriageway sections are as follows.

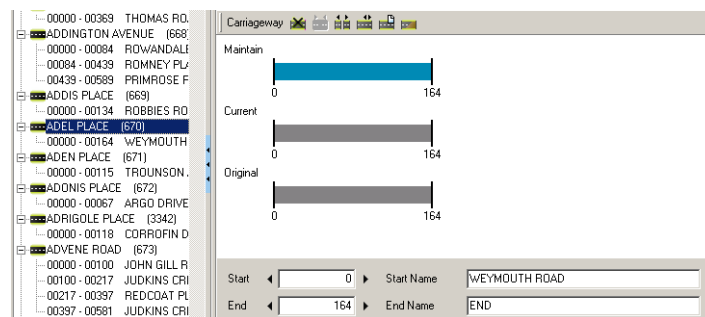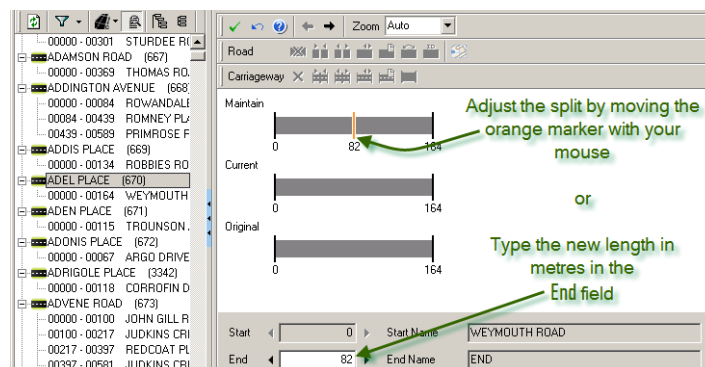| Adel Place	0 – 164m	Weymouth Rd – End	(1)

After splitting Carriageway 1 the resulting Carriageways would be:

Adel Place	0 – 50m	Weymouth Rd – Adel Place	(1)
Adel Place	50 – 164m	Adel Place – End	(2)

▶ **To Split a Carriageway**

1   Select the Carriageway you wish to split either by selecting it in the Maintain bar in the Road Editor panel or by selecting it in the Road Selection panel.

2   Press 🔳 or follow the menu path Actions > Split Carriageway to insert a split in the exact centre of the selected Carriageway.

3   You can now select and drag the orange-coloured split with your mouse or type the appropriate value in the End field to bring the split to the position you require. If you type a value in the End field the Maintain bar display refreshes immediately to reflect your changes.

4   Press ✔ to apply your changes. **RAMM Network Manager** then shows you the tables that are being updated. When the Network changes are complete you are returned to the **RAMM Network Manager** main screen.

> ⚠️ **NOTE**
>
> Data attached to the Carriageway table, such as Drainage or Traffic, is relocated to the appropriate Carriageway section. Data not directly attached to the Carriageway table such as Carriageway Surfacings and Markings is not affected. Traffic and Loading Estimates are duplicated in both Carriageway sections.

Adjusting the Length of a Carriageway

The Adjust Carriageway Length button 🔧 is used to modify the length of a Carriageway. It will also proportionately adjust the displacements of all items along the Carriageway.

When to Use This Action

You would typically require this action if a Carriageway has been found to be the wrong length because of:

- calibration error
- measurement error.

When you have moved a Carriageway it may be necessary to adjust its length.

▶ **To Adjust the Length of a Carriageway**

1   Select the Carriageway whose length you want to adjust either by selecting it on the Maintain bar in the Road Editor panel or by selecting it in the Road Selection panel.

2   Press 🔧 or follow the menu path **Actions > Adjust Carriageway Length** to open the Adjust Carriageway Length dialog.

3   Type the new end displacement for the Carriageway in the available field.

4   A percentage change will be calculated and displayed. Check that this looks reasonable.

5   You also have the option of selecting Proportional Re-calibration to correct errors that have occurred over the entire Carriageway section.

6   Press OK to confirm and apply your changes. **RAMM Network Manager** then shows you the tables that are being updated. When the Network changes are complete you are returned to the **RAMM Network Manager** main screen.

> ⚠ **NOTE**   You can only correct small measurement or calibration errors of ten percent or less. To increase the length of the Carriageway by a greater amount you add a new one.

Adding a New Carriageway

The Add New Carriageway button   enables you to add a completely new Carriageway to your Network.

When to Use This Action
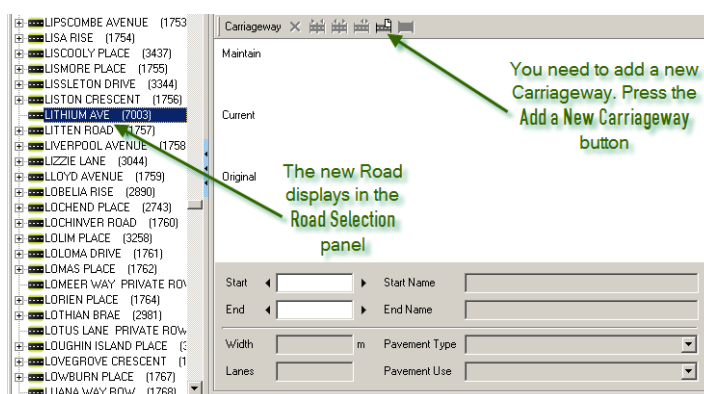
You would typically require this action when:

• you have deleted an existing Carriageway and need to replace it
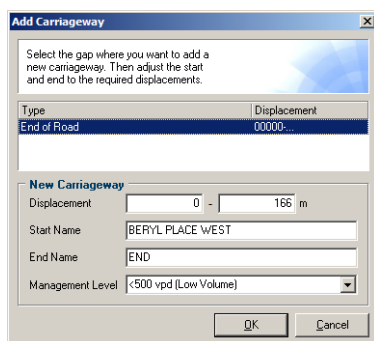• to fill a gap in the Road
• after adding a new Road to the Network.

In the example below, a new Carriageway is added to a brand new Road Lithium Ave. When you have added a new Road, it will display in the Road Selection panel but you will need to add a Carriageway for it.
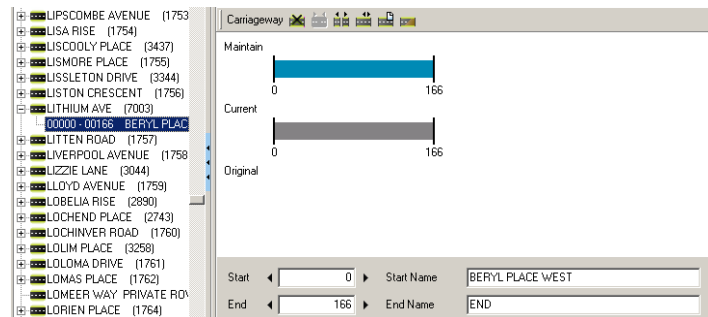
► **To Add a Carriageway**

1   Select the Road in the Road Selection panel**.** In this example Lithium Ave has been
chosen. It has no Carriageways at all. So the Maintain, Current and Original bars in the
Road Editor panel have no values.

2   Press or follow the menu path Actions > Add Carriageway to open the **Add
Carriageway** dialog.

3   Select the new Carriageway and specify the displacements in the Displacement fields.
4   Type in the Start Name and End Name fields the correct identification information for
the start and end of the Carriageway.
5   Select the appropriate traffic volume from the Management Level drop-down list.
6   A **Progress** screen then opens with the details of the tables as they are being updated.
7   When the Network changes are complete, the **Progress** screen closes and you are
returned to the **RAMM Network Manager** main screen. In the graphic below the Maintain
and Current bars in the Road Editor panel reflect the changes made. The Original bar has
no value as this is a new Carriageway and so there was no original value.

Toggling a Carriageway Between Sealed and Unsealed

The Toggle Sealed or Unsealed button ▣ marks an Unsealed Carriageway as Sealed.

If the Carriageway is Sealed, it is marked as Unsealed.

When to Use This Action

You would typically require this action if:

* you have extended a sealed section of the Road to cover a Carriageway
* a Sealed section has reverted to Unsealed
* a Carriageway is marked as Sealed or Unsealed in error

A sealed Carriageway surface is displayed in the Road Editor panel in dark grey, and becomes dark blue when selected.

An unsealed Carriageway surface is displayed in light grey and becomes light blue when selected.

> Changing the Carriageway surface from Unsealed to Sealed deletes any Unsealed Condition Rating data.
>
> Changing the Carriageway surface from Sealed to Unsealed deletes any associated Carriageway Surfacing and Sealed Rating records.
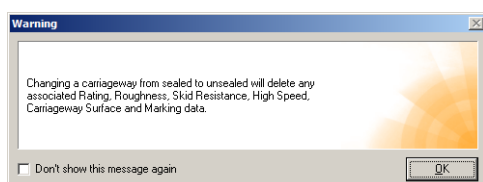>
> This includes Rating, Roughness, Skid Resistance, High Speed Carriageway Surface and Marking data.
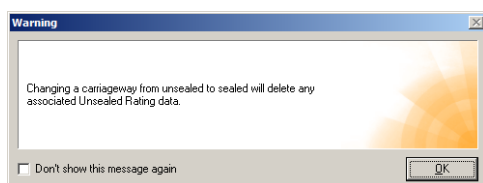
▶ **To Toggle a Carriageway Between Sealed and Unsealed**

1   Select the Carriageway whose surface you want to toggle.

You do this either by selecting it on the **Maintain** bar in the **Road Editor** panel or by selecting it in the **Road Selection** panel**.**

2   Press [ ] or follow the menu path **Actions > Sealed/Unsealed.**

3   A **Warning** dialog will open. If the Carriageway is **Sealed**, the following **Warning** dialog will open.

4   If the Carriageway is **Unsealed**, the following **Warning** dialog will open.

5   Press **OK** to close the **Warning** dialog.

6   If you are switching from an **Unsealed** Surface to a **Sealed** one you may also choose the **Pavement Type** and other relevant parameters from the section below the **Road Editor** panel.

7   Press [ ] to apply your changes. A **Progress** screen then opens with the details of the tables as they are being updated.

8   When the Network changes are complete, the **Progress** screen closes and you are returned to the **RAMM Network Manager** main screen.

Combining Actions to Perform a Complex Task

When you are reasonably familiar with **RAMM Network Manager**, you may wish to perform advanced tasks that combine a number of standard actions.
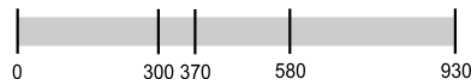
Road Realignment

You combine a number of **RAMM Network Manager** actions to realign a Road.

In this hypothetical example the original Road is 1000m long and has an existing Carriageway split at 300m. Our Road has a curved section (370m to 650m) which will be removed and replaced with a shorter section running from 370m to 580m. The new Carriageway sections will then be joined and the new second Carriageway shortened to reflect the new layout.

▶ **Realigning and Shortening a Road**

1   Insert a split in the Carriageway at 370m. See Splitting a Carriageway in Two (on page 120).

2   Insert a split in the Carriageway at 650m using the Split Carriageway action.

3   Remove 370m to 650m. See Deleting a Carriageway (on page 116).

4   Insert a Carriageway at 370m. See Adding a New Carriageway (on page 123).

5   Adjust the Carriageway end displacement to be 580m. See Adjusting the Length of a Carriageway (on page 122).

6   Move the Carriageway left beginning at 650m to close the gap and begin at 580m instead. See Moving a Carriageway Section (on page 129). After adjusting the Carriageways, the Road should look like the graphic below.

7   Originally the Road from 300m to 1000m was one Carriageway. Now it is three. If the new section added to straighten the Road is different from the older ones, you will want to keep the three discrete Carriageway sections. However, if they are still essentially the same, you will want to join the Carriageways at 370m and 580m. See Joining Two Carriageways (on page 118).

Adjusting a Carriageway Join

You can adjust join between two linked Carriageway sections.

You select the join marker with your mouse and when the marker turns orange, drag it to the required position.

When to Use This Action

You would typically require this action if you need to adjust only a single displacement and the Carriageway sections on either side of it.

This occurs when:

•   an intersection has been changed or realigned

- you wish to change a Carriageway split from one feature to another, such as from an intersection to a bridge abutment
- your Field Surveys indicate that the position of a displacement on your Network is not correct and you need to adjust it.

In the following example, Carriageways 1 and 2 are each adjusted to reflect the shift of the displacement between them by 51m.

Original Carriageway sections:

Smith Rd	0 – 122m	SH 2 – Black Rd	(1)
Smith Rd	122 – 409m	Black Rd – White St	(2)
Smith Rd	409 – 516m	White St – Browns Dr	(3)

After modifying Carriageway (2) start displacement by + 51m the resulting Carriageways would be:

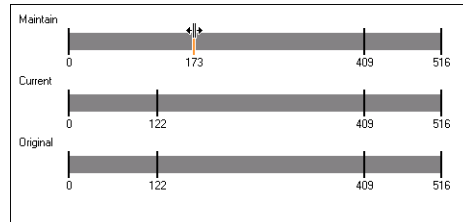| Smith Rd | 0 – 173m | SH2 – Black Rd | (1) |
| Smith Rd | 173 – 409m | Black Rd – White St | (2) |
| Smith Rd | 409 – 516m | White St – Browns Dr | (3) |

> **NOTE**
>
> Data attached to the Carriageway table such as Drainage or Traffic is automatically updated to reflect the relocation of the displacements.
>
> For example a drain located at 369m on Carriageway 2 above would now appear as an asset attached to Carriageway 1 instead.
>
> Data not attached to the Carriageway table such as Markings, is not changed.

▶ **To Adjust a Carriageway Join**

1   Select the Road in the Road Selection panel.
2   Select the Carriageway whose join you wish to adjust either by selecting it on the Maintain bar of the Road Editor panel or selecting the Carriageway in the Road Selection panel.
3   Select the join you wish to adjust so that it turns orange. While holding down the mouse button, drag it left or right to increase or decrease its value. You can also type the values directly in the fields below the Road Editor panel.

4   Press ☑ to apply your changes. A **Progress** screen then opens with the details of the
tables as they are being updated.

5   When the Network changes are complete, the **Progress** screen closes and you are
returned to the **RAMM Network Manager** main screen.

Moving a Carriageway Section

You can move Carriageways.

You select the Carriageway in the Road Editor panel and drag it.

When to Use This Action

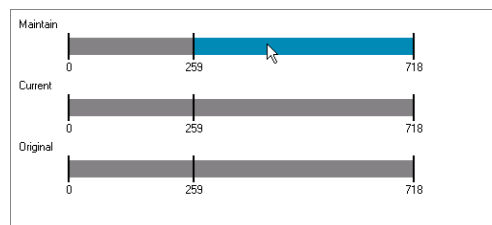You would typically require this action if:

- a Carriageway has been deleted and there is a gap you want to close
- a Carriageway has changed and its start needs to be modified
- the origin of a Road in your Network has changed.

You can move a Carriageway section.

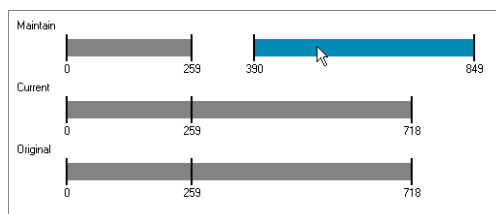You do this to make a gap in a Road or to close one.

▶ **To Move a Carriageway to Make a Gap**

1   Select the Road in the Road Selection panel.

2   Select the Carriageway you wish to move.

3   Holding the mouse button down, drag it to its new value.

4   You can also type the values directly in the fields below the Road Editor panel.

5 The Carriageway will shift to the right and the displacement values will change to reflect your actions.

6 Press ✔ to apply your changes. A **Progress** screen then opens with the details of the tables as they are being updated.

7 When the Network changes are complete, the **Progress** screen closes and you are returned to the **RAMM Network Manager** main screen.

▶ **To Move a Carriageway to Close a Gap**

1 Select the Road in the **Road Selection** panel.

2 Select the Carriageway you wish to move to fill a gap.

3 Holding the mouse button down, drag it left to its new value.

4 You can also type the values directly in the fields below the **Road Editor** panel.

5 Press ✔ to apply your changes. A **Progress** screen then opens with the details of the tables as they are being updated.

6 When the Network changes are complete, the **Progress** screen closes and you are returned to the **RAMM Network Manager** main screen.
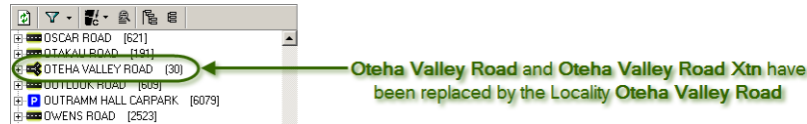
> ⚠️ This action moves the entire Carriageway section as well as any other Carriageway sections on the right of the section.
>
> **NOTE**

Localities

A Locality is a group of associated Road records which constitute a named Road. You use Localities in situations where a single **RAMM** Road ID is not sufficient to describe an entire Road configuration. For instance, a Slip Road parallel to its associated parent Road or an extension which branches off the parent Road are really one item with the parent Road but are two Road records in the Roads list panel in **RAMM**. You create a Locality to associate branch, extension and other Road records with the parent Road record.

This is more accurate and tidy manner of recording Roads in your Network.

Oteha Valley Road and Oteha Valley Road Xtn have been replaced by the Locality Oteha Valley Road

You can use Localities for configurations such as:

- Branches
- Dual Carriageways
- Extensions
- Hammerheads
- Ramps
- Roundabouts
- Slip Roads.

To create a Locality you must first select the major or starting Road in the Locality.
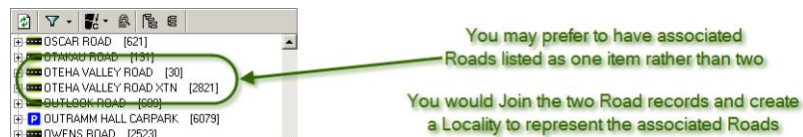
Examples

In this section there are two examples. The first shows how to create a Locality for a major Road and its Extension. See Locality for a Major Road and Its Subsidiary Roads (on page 131). The second shows how to create a Locality for a Road with Dual Carriageways. See Dual Carriageway Locality (on page 137).

Locality for a Major Road and Its Subsidiary Roads

You can use **RAMM Network Manager** to create a Locality when you Split or Join Roads. In the following example the Locality will be created when Joining two Roads.
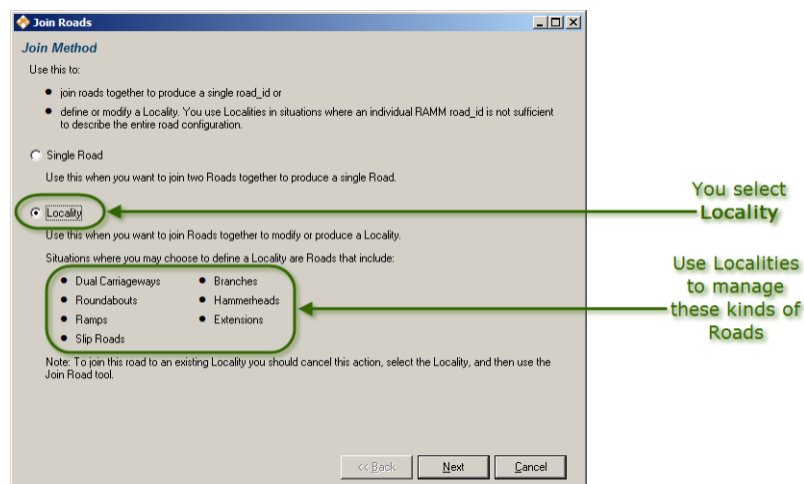
Road Extension and Road Records

Where one Road record in **RAMM** is an extension of another Road record, it may be more logical to create one record which combines the two. You do this by creating a Locality to associate the two Road records.

You may prefer to have associated Roads listed as one item rather than two

You would Join the two Road records and create a Locality to represent the associated Roads

Associate Two Records

You can join the Oteha Valley Road Extension to Oteha Valley Road. The Extension meets the Road at a displacement of 03192. So that is where the Join should occur.

In **RAMM Network Manager** you select the major or parent Road, in this case Oteha Valley Road in the Roads list panel. You press Join Roads ▦. The **Join Roads** screen will open. This is where you select the Locality option.

Next you name the Locality. By default the name will be the same as the major Road. This is usually an appropriate name for the Locality.

Define Locality ID and Name

You then define the name of the Locality. Normally this would be the name of the major Road. You also have the opportunity to change the Locality ID if for some reason the default value is unsuitable.

Road Name

In the example below, the Locality being defined is Oteha Valley Road. The name of the major Road has defaulted. So you would probably not edit the name of the Road at the Locality Name field.

This Road becomes a part of the Locality and is will no longer be listed independently of the Locality in the Roads list panel. It will be a subsidiary listing as part of the Locality record.

Road ID and Locality ID

The value which has defaulted into the Locality ID field is the Road ID for the major Road. In this case Oteha Valley Road. You will probably want to accept this default value.

If you want to change this Locality ID you press the Next Available button and **RAMM Network Manager** will default the next available Locality ID.

> Locality IDs in **RAMM** must be unique. Normally if you were adding a new Locality you would use the ID of the major Road, but you may enter your own, or use the next available.
>
> **RAMM** will warn you if you enter a Locality ID that has previously been used.

Now that you have created a Locality, you then define the details of the major Road in the Locality.

The default **Locality ID** value will be the **Road ID** for the Major Road

Press **Next Available** if you do not wish to accept the default **Locality ID** value

The default **Locality Name** will be the **Description** of the Major Road

You would normally accept this default value

Define Major Road in Locality

Once you have defined the Locality you then associate it with the Roads which comprise the Locality. Normally you would have selected the major Road as the one on which to base the Locality. In the example below, the Locality is based on the major Road Oteha Valley Road.

Road Name

The default value will be the name of the Road. As this is the actual name of the Road in this case, Oteha Valley Road, you would not edit the name.

If the Road were, for instance, a Roundabout, you might want to edit the Road Name value to be certain that the Roundabout Road was positively identified.

Road Type

Similarly, Oteha Valley Road, is a normal Road. So you would accept the default Normal at the Locality Road Type drop-down list. If the Road were a Hammerhead or Branch you would select the appropriate value from the Locality Road Type drop-down list.

Locality Start

The Locality Start field is where you define the Start Displacement in the Locality for the Road being defined as part of the Locality. As Oteha Valley Road is the major Road, its Start Displacement is the same as the Start Displacement of the Locality Start. Its value is zero (0).

> **Tip**
>
> If you were defining a Roundabout Road as a part of the Locality, its Locality Start value would be its Displacement on the major Road.

Now that the Locality and its major Road have been defined, you associate the other Roads which comprise the Locality and define them as part of it.

Select the Road to Join

You then select the next Road to be added to the Locality. In the example below, Oteha Valley Road Xtn has been selected to be added to the Locality Oteha Valley Road.

Next you define the subsidiary or child Road and its relationship with the Locality.

> If you want to add a Road to an existing Locality, you must select the existing Locality and Join the Road to the Locality.
>
> You can not select the Road and Join the Locality to the Road.

Define Subsidiary Road in Locality

You define the subsidiary or child Road in the Locality in the same manner as you defined the major or parent Road. This Road becomes a part of the Locality and is no longer listed independently in the Roads list panel.

Road Name

In the example below, the Road being defined as a part of the Locality, is the subsidiary or child Road, Oteha Valley Road Xtn. So you would not change the name of the Road at the Road Name field. If the child Road were a Roundabout Road you may have to define a Road Name to positively identify the Road.

This name is the Description which appears beneath the Locality Name in the Roads list panel.

Road Type

Oteha Valley Road Xtn is a Branch Road of Oteha Valley Road. So you would select Branch at the Locality Road Type drop-down list.

Locality Start

The Locality Start field is where you define the Start Displacement in the Locality for the Road being defined as part of the Locality. Oteha Valley Road Xtn is a Branch Road of Oteha Valley Road. **RAMM Manager** is aware of the Displacement at which they intersect. So this is the value which defaults in the Locality Start field. This value is 3413 m.

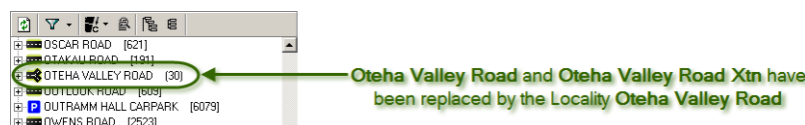You then press   Finish   to save the Locality.

> If you want to add a Road to an existing Locality, you must select the existing Locality and Join the Road to the Locality.
>
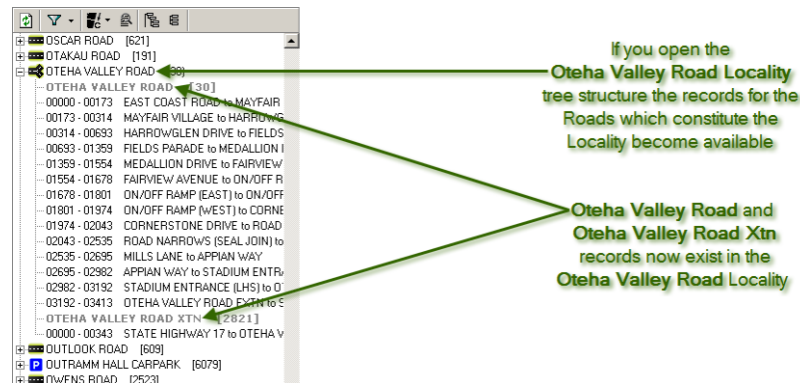> You can not select the Road and Join the Locality to the Road.

Locality Defined

Once you have created your Locality, the (unnamed) Roads List panel will refresh and the new Locality will appear. Its component parts will have disappeared.

Locality Tree

The component parts of the Locality are now listed beneath the Locality name in the (unnamed) Roads List panel. In the example below Oteha Valley Road and its associated Branch Road Oteha Valley Road Xtn are both listed.
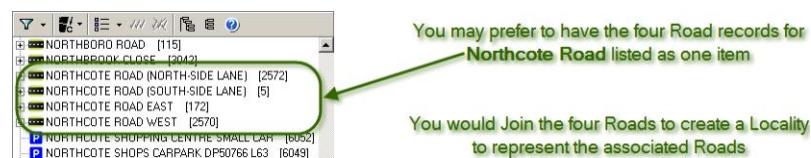

Dual Carriageway Locality

You can use **RAMM Network Manager** to create a Locality when you Split or Join Roads. In the following example the Locality will be created when Joining four Road records, two of which are Dual Carriageway lane records.

Dual Carriageways and Road Records

Often, one actual Road in your Network will be recorded as a number of Roads in **RAMM**. This is especially true for Dual Carriageway Roads. It may be more convenient and logical to create one record which combines the Road records. You do this by creating a Locality to associate the Dual Carriageway and other Road records.

Associate Four Records

You can join the Northcote Road East, Northcote Road West, Northcote Road (North-side Lane) and Northcote Road (South-side Lane). First you must decide which is to be the major or start Road in the Locality.
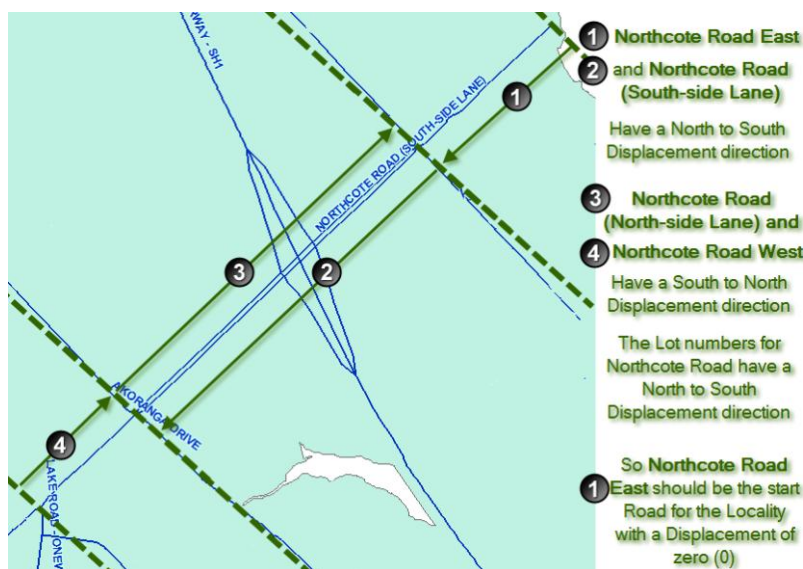
> **Tip** The major or start Road in the Locality is the one which will have the Displacement value of zero (0) in the Locality. In the Northcote Road example this will be Northcote Road East.

The Start Road

The Displacements for the four Road records are not all in the same direction. Two are from North to South and two from South to North. If you zoom in on the **Map** you can see that the Lot numbers increase from North to South. So you should define the Locality to match this.

So the start Road will be the northernmost. This is Northcote Road East.
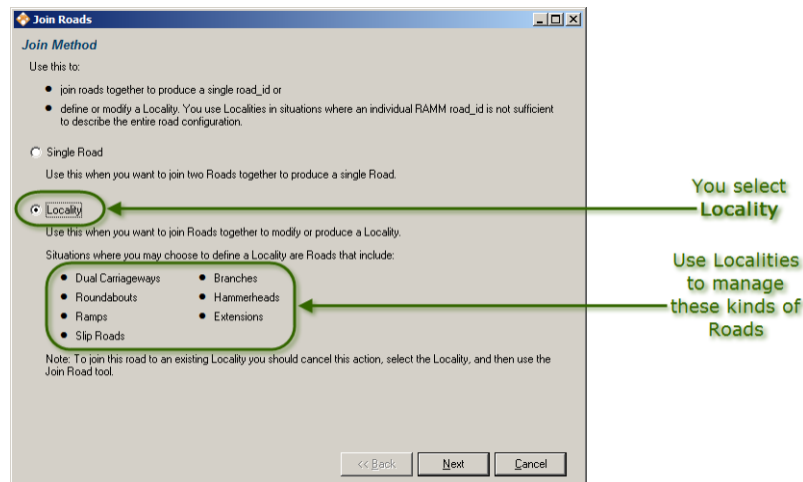

> **NOTE** The Roads with South to North Displacement direction will need to be reversed before they are added to the Locality.

Select the Start or Major Road

In **RAMM Network Manager** you start a Session to Manage the Network. See Setting up a Session (on page 69).

As you have chosen Northcote Road East as the Road with the Locality Displacement of zero (0), you select this Road in the Roads list panel. You press Join Roads ⬚⬚. The **Join Roads** screen will open. This is where you select the Locality option.

Next you name the Locality and its ID. By default the name will be the same as the major Road. This will not be the appropriate name for the Locality in this case.

Define the Locality ID and Name

Once you have selected the Locality option at the Join Method step of the **Join Roads** screen, you need to name the Locality and define the Locality ID.

Locality Name

The default value for the Locality Name will be the name of the major or start Road you selected in the Roads list panel. In the example below this is Northcote Road East. As the actual name of the Road which this Locality will represent is Northcote Road, you would edit the Locality Name to reflect this.

Road ID and Locality ID

The value which has defaulted into the Locality ID field is the Road ID for Northcote Road East. You may want to change this default value as Northcote Road East is not really the major section of Northcote Road, it is just the start.

If you want to change this Locality ID you press the Next Available button and **RAMM Network Manager** will default the next available Locality ID.

>
>
> Locality IDs in **RAMM** must be unique. Normally if you were adding a new Locality you would use the ID of the major Road, but you may enter your own, or use the next available.
>
> **RAMM** will warn you if you enter a Locality ID that has previously been used.

Now that the Locality Name and Locality ID values have been defined, you associate the other Roads which comprise the Locality and define them as part of it.

Define the Road in the Locality

Now that you have chosen the name and ID for the Locality, you specify the kind of Road the start or major Road is and its function in the Locality. This could be Normal, Branch, Slip Road or other value. You also specify its position in the Locality. In this case Northcote Road East has been chosen as it is the the section of Northcote Road which will have the Locality Displacement of zero (0).

Road ID and Name

The Road Name and Road ID will default. The Road ID will be unable to be entered or edited. You can edit the Road Name if required. The value in the Road Name field is the one which will appear in the list of associated Roads under the Locality Name in the Roads list panel.

> If you were defining a Roundabout Road as a part of the Locality, you would want to edit its name to ensure that the Roundabout was positively identified. In the example below there is no need to rename Northcote Road East.

Locality Road Type

Northcote Road East is a normal stretch of Road. So you would accept the default Normal at the Locality Road Type drop-down list. If the Road were a Hammerhead or Branch you would select the appropriate value from the Locality Road Type drop-down list.

Locality Start

The Locality Start field is where you type the number of metres Displacement from the Locality Start Displacement that the Road, being defined as part of the Locality, starts.

Northcote Road East is the start of the Northcote Road Locality. Its start Displacement is the same as the start Displacement of the Locality. Its value is zero (0).

You then select a second Road to associate with the Locality.

Select a Road to Add to the Locality

You then select the next Road to be added to the Locality. In the example below, Northcote Road (South-side Lane) has been selected to be added to the Locality Northcote Road.

Northcote Road (South-side Lane) is the southern Dual Carriageway.

Note: If you want to add a Road to an existing Locality, you must select the existing Locality and Join the Road to the Locality.

You can not select the Road and Join the Locality to the Road.

Next you define the subsidiary or child Road and its relationship with the Locality.

Define Dual Carriageway Section in Locality

You define the subsidiary or child Roads in the Locality in the same manner as you defined the major or start Road. In the example below the Road record is for a Dual Carriageway section. So it will be defined as such within the Locality. This Road then becomes a part of the Locality and is no longer listed independently in the Roads list panel.

Road Name

In the example below, the Road being defined as a part of the Locality, is the subsidiary or child Road, Northcote Road (South-side Lane). This is the left hand side Dual Carriageway section. So you would not change the name of the Road at the Road Name field.

This name becomes the Description in the list beneath the Locality Name in the Roads list which identifies this Dual Carriageway.

Road Type

Northcote Road (South-side Lane) is a Dual Carriageway section of Northcote Road. As you travel from the Start Displacement of the Northcote Road Locality, Northcote Road (South-side Lane) is on the left. So you would select Dual Carriageway Left at the Locality Road Type drop-down list.

Locality Start

The Locality Start field is where you define the Start Displacement in the Locality for the Road being defined as part of the Locality. Northcote Road (South-side Lane) is a Dual Carriageway Lane Road of the Northcote Road Locality. **RAMM Manager** is aware of the Displacement at which it intersects with Northcote Road East. So this is the value which defaults in the Locality Start field. This value is 480 m.

You then press   Finish   to save the Locality. A **Confirmation** dialog will open asking if you really want to join Northcote Road East and Northcote Road (South-side Lane). Of course you do.

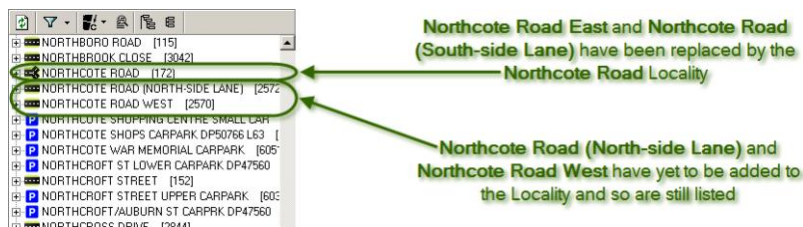You then need to add the two remaining Northcote Road records to the Locality.

> If you want to add a Road to an existing Locality, you must select the existing Locality and Join the Road to the Locality.
>
> You can not select the Road and Join the Locality to the Road.

Finish the Locality

Once you have created and saved your Locality, the Roads list panel will refresh and the new Locality will appear. Its component parts will have disappeared. In the example below, the component parts Northcote Road (North-side Lane) and Northcote Road West have yet to be added to the Locality and so are still listed independently.

Northcote Road East and Northcote Road (South-side Lane) have been replaced by the Northcote Road Locality

Northcote Road (North-side Lane) and Northcote Road West have yet to be added to the Locality and so are still listed

Locality Tree

The component parts of the Locality are now listed beneath the Locality name in the Roads list panel. In the example below Northcote Road (South-side Lane) and Northcote Road East are both listed.

There is still the second Dual Carriageway and the final Road to add to the Locality. As you can see from the Northcote Road (North-side Lane) record, its direction of travel is opposed to the direction of travel for the Northcote Road Locality. So you will need to Reverse this Road prior to adding it to the Locality. See Reversing a Road (on page 88).

> **NOTE**
>
> If you want to add a Road to an existing Locality, you must select the existing Locality and Join the Road to the Locality.
>
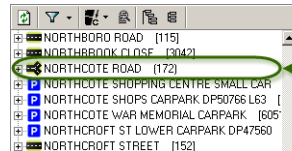> You can not select the Road and Join the Locality to the Road.

Northcote Road East and the Dual Carriageway Section Northcote Road (South-side Lane) are now listed as part of the Northcote Road Locality

The Dual Carriageway Section Northcote Road (North-side Lane) and Northcote Road West need to be added to the Northcote Road Locality

Northcote Road (North-side Lane) needs to be reversed before it is added to the Northcote Road Locality

New Dual Carriageway Locality Record

When you have reversed the Northcote Road (North-side Lane) Dual Carriageway record and added that record and Northcote Road West to the Northcote Road Locality, the Roads list panel will refresh and there will be only one record for Northcote Road listed. It will be the Locality Northcote Road.

The four records which comprise
Northcote Road have been joined
to become one Locality record

Locality Roads Edit

When you are editing Localities or the Roads which comprise a Locality you will encounter the following behaviours.

Split Road

When you use the Split Road option for a Road within a Locality **RAMM Network Manager** will offer you the option of either keeping a single Locality or creating a new one.

Reverse Road

You can reverse Localities. When you exercise the Reverse Road option **RAMM Network Manager** will enable you to reverse either the entire Locality or a single Road which is a component of the Locality.

Road and Carriageway Changes

If you have a Locality which includes Dual Carriageways and you move the Location of the end of the last Carriageway section on a Normal Dual Carriageway Left or Dual Carriageway Right, **RAMM Network Manager** will move the corresponding Locations of all the Roads following the Carriageway Section.

If you change Roads of type Normal, **RAMM Network Manager** will change the Location of all the following Roads.

If you change Roads of type Dual Carriageway Left or Dual Carriageway Right **RAMM Network Manager** will not change the Location of the opposite Dual Carriageway but will change the Location of all following Roads. In this case you must change the Location of the opposite Dual Carriageway yourself if required.
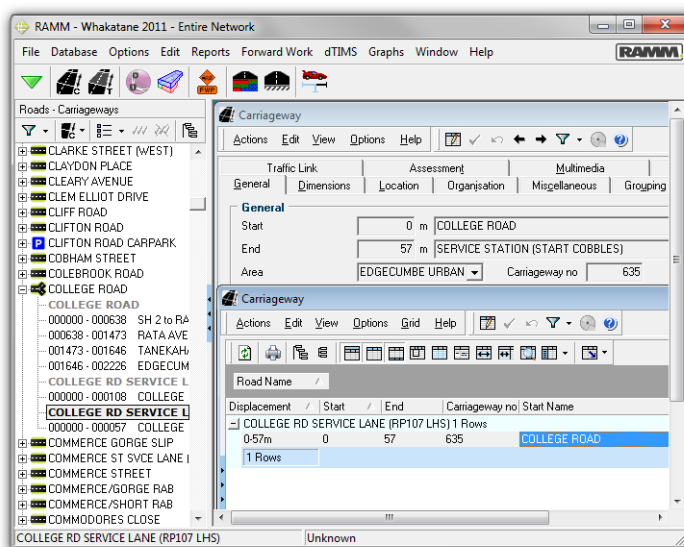
If you change the Location of Roads of type Roundabout, Ramp, Slip Pad, Branch, Hammerhead and Extension **RAMM Network Manager** will not move the following sections of the Locality. This is because these Road Types do not necessarily have consecutive Locations.

Localities, Grid and Detail Screens and Reports

When you have defined a Locality, this does not make it appear in its own Grid screens, Detail screens or reports.
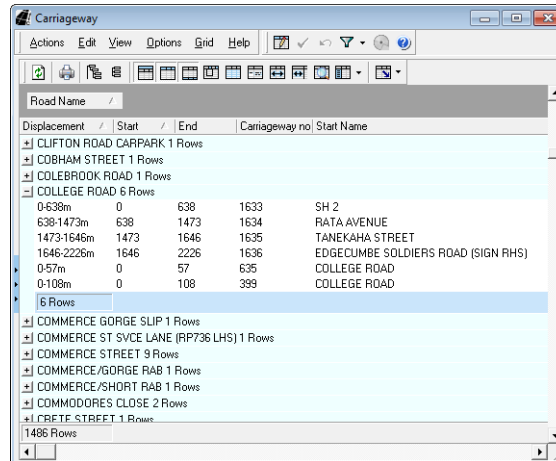
In the example below the College Road Locality has been created. It is comprised of the original College Road and two College Road Service Lanes.

When you want to view details of the Locality, if you highlight the Locality itself, the details you view will be those for the first component listed in the Roads list panel. Similarly, if you highlight a different component, its details will default into the Grid or Detail screen.

Grid Screen Lists

Localities appear in Grid screen lists in the same manner as they appear in the Roads list panel. In the example below the College Road Locality appears in the Grid Road list. Its six Carriageways are the four from College Road itself and one each from the two College Road Service Lanes.

See the Grid Screen chapter of the *Using RAMM* guide.

Localities on Detail Screens

Locality Descriptions do not appear on Detail screens unless the Asset details are being edited as below. The name of the Road (College Road) is displayed and is editable if required. The name of the Locality (College Road) is also displayed but is not editable. If you select a different Road for the Asset from the Road drop-down list, then, if the selected Road is another constituent Road of the named Locality, the name of the Locality will not change. If the selected Road is not a constituent Road of the named Locality, the name of the Locality will change to the Locality for the selected Road.

See the Detail Screen chapter of the *Using RAMM* guide.

Reports

Localities do not appear in **RAMM** reports. Only their constituent parts appear in reports.

Network Changes

When you use **RAMM Network Manager** to make changes to the Network, you use the following process.

Step	Action	Comments
1	Make the Network changes.	You do this at the **RAMM Network Manager** main screen. See Changes to the Network (on page 148).
2	View and compare the Network changes.	You do this at the **Sessions** screen. See Viewing and Comparing Network Changes (on page 149).
3	Commit the Network changes.	You do this at the **Sessions** screen. See Committing Virtual Modifications to the Database (on page 150).
4	Set the Audit fields.	**RAMM Network Manager** does this for you. See Audit Fields (on page 151).

Changes to the Network

The changes you make in **RAMM Network Manager** are initially executed but not written to the database. So you can compare snapshots of your changes before committing them to the database.

You can make a number of changes and commit them, make more changes and compare them too before committing them to the database.

Once you changes are committed to the database they can not be undone. If you need to reverse the changes, your only option is to recover the entire database from your backup.
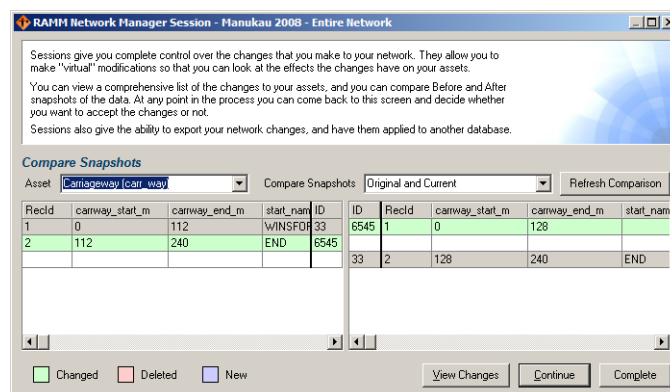
Viewing and Comparing Network Changes

You can access a detailed Before and After snapshots of the changes you are making to the Road Network. You use this to be sure that **RAMM Network Manager** is actually making the correct changes to the data.

▶ **To View and Compare Changes**

1   Press Sessions on the Session bar on the **RAMM Network Manager** main screen to open the Changes panel of the **RAMM Network Manager Session** screen which lists all the changes you have made in the current Session.

2   Select the change which you want to view and compare.
3   Press Compare Data to open the Compare Snapshots panel which will have a side-by-side comparison of the changes you made.

>
>
> If you do not see any changes, you may need to select another Asset value from the Asset drop-down list.
>
> You may also have switched to another Road, or you might not have made any changes on the currently selected Road. A colour key helps identify changed, deleted or new sections.

4 You can configure the comparison in a number of ways. You select the Asset for comparison from the Asset drop-down list which contains the Assets you selected when setting up your Session. See Setting up a Session (on page 69).

5 You can also configure your view of the chronology of your Session with the Compare Snapshots drop-down list.

6 Press the Refresh Comparison button to refresh the view with each change. Once you are satisfied that the changes you see are what you intended to make, you press Complete to apply your changes to the database and conclude your **RAMM Network Manager** Session. If not, you can return to the previous screen by pressing View Changes or go back to the **RAMM Network Manager** main screen by pressing Continue.

Committing Virtual Modifications to the Database

Your changes to the database are virtual rather than actual changes until you commit them.

This gives you the advantage of being able to make changes to your database in safety, knowing that your modifications can be reversed if necessary.

It also gives you a greater flexibility and security in the management of your Sessions.

Example

For example, you can make Network changes up to a certain point (Point A) and then commit them to the database. You can then continue with your Session up to another point (Point B). If you make a mistake you can return to this screen and roll back all Network changes between Points A and B by pressing the Rollback changes on the database button.

▶ To Commit Virtual Modifications to the Database

1 Press the Sessions button on the Session bar of the **RAMM Network Manager** main screen to view the Changes panel on the **RAMM Network Manager Session** screen. See Session Bar (on page 72).

2 You can now commit the changes to the database by pressing

> Commit changes to the database

If the button is inactive (dimmed), you have not made any changes to the Network yet, or all changes that you have made have been committed to the database.

3 To roll back all virtual modifications since the last time you committed the virtual modifications to the database, press ▢ Rollback changes on the database

Audit Fields

Audit fields record information about a given Network change, such as who made the change, and when it was made.

This information is stored in the following columns:

- **added_on**
  The date the Asset was added.
- **added_by**
  The log-in name of user who added a particular Asset.
- **chgd_on**
  The date the Asset was changed.
- **chgd_by**
  The log-in name of the user who changed the Asset.

When you start **RAMM Network Manager** you are always prompted to configure a Session, and during this process you are asked whether you would like to update the audit fields of all assets when you make a Network change.

The available options are Yes, No and Unknown. When you first connect to a database the selected option will be Unknown, and **RAMM Network Manager** will not proceed with setting up the session until you choose either Yes or No.

If you do not wish to make a choice, pressing Cancel will abort the current **RAMM Network Manager** Session and return you to the **RAMM Network Manager** main screen.
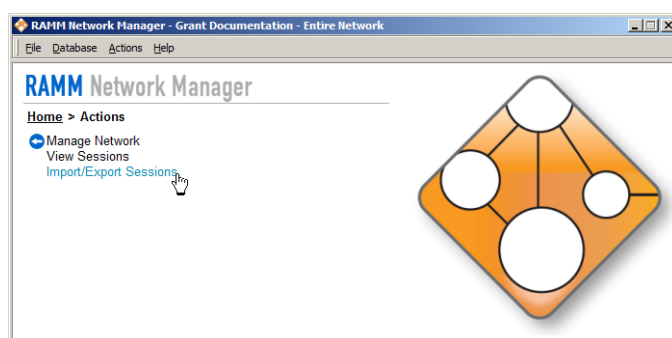
If you select Yes, **RAMM Network Manager** will update the audit fields of Roads, Carriageways and all other Assets you make changes to while working in **RAMM Network Manager**.

If you select No, **RAMM Network Manager** will update only the audit fields of Roads and Carriageways.

Exporting and Importing Sessions

RAMM Network Manager allows you to export your Session for the purpose of importing the Session to a copy of the same database at another location.

To do this you follow the menu path Actions > Import/Export Sessions.

Primary Databases and Copy Databases

Before you export or import Sessions, **RAMM Network Manager** will ask you to define the database you are currently connected to as either the Primary database or a Copy.

If simultaneous and different changes are made to both databases, exporting and updating either database will cause serious flaws.

Defining the database as either the Primary database or the Copy is crucial, therefore, to prevent this from happening.

Only Primary databases will be allowed to export Sessions, and only Copy databases will be able to import Sessions.

The actions you can perform will be governed by your choice of database type.

Exporting Sessions

If you have defined your database as the Primary database, you are able to review the changes you have made to the database and then to export them to a Network Manager Session file.

If your database is a copy of the original database and so not the Primary database, you must not export Sessions.

▶ To Export Sessions

1 Follow the menu path Actions > Import/Export Sessions from the **RAMM Network Manager** main screen.

2 The Primary or Copy panel of the **RAMM Network Manager Sessions** screen will open with the Select the type of this database drop-down list available.

3 If your database is the original database for your Network, choose Primary at the Select the type of this database drop-down list and press Next.

> If your database is a subset, duplicate or modification of a database, do not choose Primary as the database type. Failure to observe this precaution will result in serious flaws.

4 The Sessions panel of the **RAMM Network Manager Sessions** screen will open with a list of sessions for the Security Zone into which you are logged and any child Security Zones, displayed.

5   Select the Session you want to export and press [icon] to open a **Save As** dialog.
6   Navigate to the appropriate folder and type the name for the export file.
7   Press **Save**.
8   When the export is complete, close the **RAMM Network Manager Sessions** screen to return to the **RAMM Network Manager** main screen.
9   You can now transfer that file, either by disk, CD or email, and import the sessions into a **Copy** of the database.

Importing Sessions

You can import Sessions to a database copy once you have exported your Sessions.

> [!NOTE]
> If you are not on the Hosting Service, it is advisable to backup your database before importing Sessions in case you wish to reverse the changes. See Backing up and Recovering Databases (on page 498).

▶ **To Import Sessions**

1   Follow the menu path **Actions > Import/Export Sessions** from the **RAMM Network Manager** main screen.
2   The **Primary** or **Copy** panel of the **RAMM Network Manager Sessions** screen will open with the **Select the type of this database** drop-down list available.

3 If your database is a copy of the original database for your Network, select **Copy** at the **Select the type of this database** drop-down list and press **Next** to open the Backup Database panel.

4 Make a backup of the database and press **Next** to open the **Audit Fields** panel.

5 Make your selections and press **Next** to open the **RAMM Network Manager Sessions** list screen.

6 Press 🔁. A check is made on the Security Zone for the import Session. If the Security Zone of the Session data to be imported does not match the Security Zone into which you are logged, the import will not be allowed. If the Security Zones are compatible, the **Open** dialog will open. Navigate to and select the file containing the exported sessions, and press **Open**.

7 The update process now starts and the saved Sessions are applied to your database tables.

8 Close the **RAMM Network Manager Sessions** screen to return to the **RAMM Network Manager** main screen.

Centre Line Import

RAMM Network Manager provides the capability to bulk import centrelines for one or more Roads using a pipe "|" delimited text file which contains Well Known Text Line Strings.

To use this select the Import map centrelines from a well known text file option on the Road tool bar.

> ⚠️ **NOTE**
> This does not import the centrelines against the selected Road. Instead it imports the centrelines against Roads specified in the file.

Text File Example

The file should be a pipe "|" delimited text file with 3 columns:

- `road_id`
    - The ID of the Road the centreline is for.
- `sequence`

- • A centreline should be broken into multiple segments at features such as Intersections similar to Carriageway Sections.
- • The sequence specifies the order of those different segments.
- • Where the centreline for a road is made of multiple consecutive parts, the start of each segment must match the end of the previous segment unless there truly are gaps.
- • The order of the points in each segment should match so that **RAMM** can effectively process the centreline from start to end.

- • `WKT LINESTRING`

    - • A `WKT LINESTRING` is a text definition of a poly-line with at least 2 points in the format: `LINESTRING(WKT POINT 1, WKT POINT 2[, WKT POINT N])`

        - • A `WKT POINT` is a text definition of a point where each part is separated by a space in the format: `EASTING NORTHING`

    - • If your data contains `Measures` then the format of the a line should be: `LINESTRING M (WKT POINT 1, WKT POINT 2[, WKT POINT N])`

        - • The format of each point should be: `EASTING NORTHING MEASURE`

The following is an example of the contents of the file:

```
7|1|LINESTRING(383397.10 6459548.01 0, 383404.20
6459544.23 21, 383407.83 6459544.22 36, 383706.55
6459547.19 42)
```

```
7|2|LINESTRING(383706.55 6459547.19 0, 384000.05
6459551.07 19)
```

```
8|1|LINESTRING(383497.10 6459648.01, 383504.20 6459644.23,
383507.83 6459644.22, 383806.55 6459647.19)
```

```
8|2|LINESTRING(383806.55 6459647.19, 384100.05 6459651.07)
```

```
8|3|LINESTRING(384100.05 6459651.07, 384150.01 6459752.04)
```

This includes two roads. Road 7 has 2 segments and includes `Measures`. Road 8 has 3 segments with no `Measures`.

Run RAMM Map Processes

After you have imported centrelines, committed the work, and finished the **RAMM Network Manager** Session you should run two **Map** processes in **RAMM**:

1 Start **RAMM**
2 Show the **Map**
3 Select Map -> Options -> Options from the main menu
4 Select the Tools item
5 Run Regenerate Roads Layer

6   Run Generate Calibration Index.

> ⚠ **NOTE**
>
> If you changed the number of **Map** features You will be prompted to Regenerate the Roads Layer anyway.

RAMM SQL

RAMM SQL enables the advanced **RAMM** user to manage, control and query their database using Structured Query Language (SQL). You use standard SQL statements to access, filter and manage database information.

RAMM SQL records the Query progress so that you have a history of the SQL statements that have been run. It also allows you to print reports, save Queries, and export your Queries.   You can make your Queries available to others, or restrict access to them as you choose.

Default System SQL Queries are also available.

In This Chapter

Launch RAMM SQL

Local Version of RAMM SQL

If you use a local version of **RAMM**, then **RAMM SQL** is launched from the **RAMM** Program Group available from the standard Windows Start menu. This Program Group contains all your **RAMM** applications.

Hosting Service

If you use the **RAMM** Hosting Service then, once you have logged in, you open **RAMM SQL** from the Applications panel.

RAMM SQL Login

If you double-click on the RAMM SQL icon, the **RAMM SQL Login** screen will open. Depending on your Staff Permissions, you may have the option of logging in to the Entire Network or a Security Zone.

RAMM SQL Main Screen

After connecting to your database you are taken to the **RAMM SQL** main screen. Unlike the other **RAMM** applications, there is not a **Home** screen from which the working screens are launched. The first screen that opens is the one in which you work.

The left hand panel is the Query List. It opens at the Personal tab by default. See Query List (on page 162).

The panel on the right is the Query Editor where you type your SQL statements. See Query Editor (on page 165).

Working with RAMM SQL

RAMM SQL has a number of unique functions. This section describes the principal functions and contains usage examples.

Query List

When you launch **RAMM SQL** you will have access to three groups of Queries on the SQL Query List panel. These are available at the Personal, Public and System tabs. See Query Types (on page 163).

Query List Permissions govern which Queries are visible to you and others using your shared Queries or database. If you wish to edit Query List Permissions, you need to take ownership of the Queries first. See Setting Query List Permissions (on page 175).

Query List Panel

Query List Tool Bar

The Query List panel has a tool bar for quick access to a number of functions.

Query List Tool Bar Buttons

The following buttons are available:

- Add Query
  You press this to create a new Query in the Query List panel. By default, this will be titled Unnamed. You change the name either by right-clicking the Query and selecting Rename or you go to the Properties tab on the Query Editor panel and change the value in the Name field.
- Add Folder
  You press this to create a new folder in the Query List panel at the current level. By default, this will be titled Unnamed. You change the name either by right-clicking the folder and selecting Rename or you go to the Properties tab on the Query Editor panel and change the value in the Name field.

> **Tip** Organising your Queries is an important part of working with **RAMM SQL**. Folders are an excellent way of grouping Queries together. You can drag and drop Queries into folders, add subfolders to existing folders and write detailed description notes.

- Delete
  You press this to delete the selected Query or folder.
- Save Changes
  You press this to save the selected Query. Unsaved Queries in the Query List panel are indicated by blue bars on the Query icon.
- Save All
  You press this to save all unsaved Queries.
- Import
  You press this to import a saved Query.
- Export
  You press this to export a saved Query.

> **Tip** If you hover your mouse over each button, a tool tip description of its function appears, together with its quick-access key combination if available.

Query Types

There are three tabs at the Query List panel. They are the Personal, the Public and the System tabs. You use the different tabs to view, run and group the different types of Query.

You use the individual tabs as follows:

- **Personal**
  Personal Queries are controlled by you and are not visible to anyone else. This is the default view when you start **RAMM SQL**. You have full and unrestricted access to Personal Queries at all times, and no one else will see your Personal Queries.
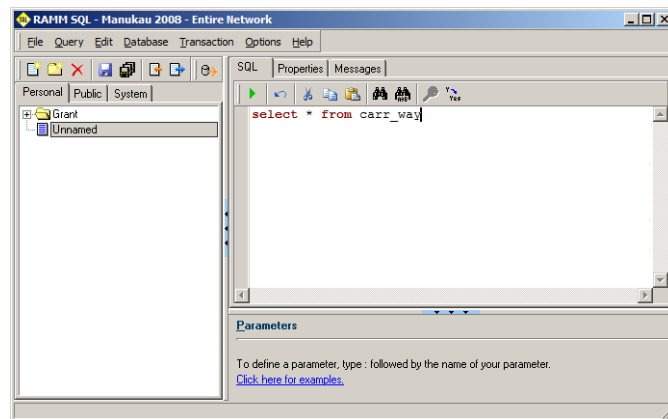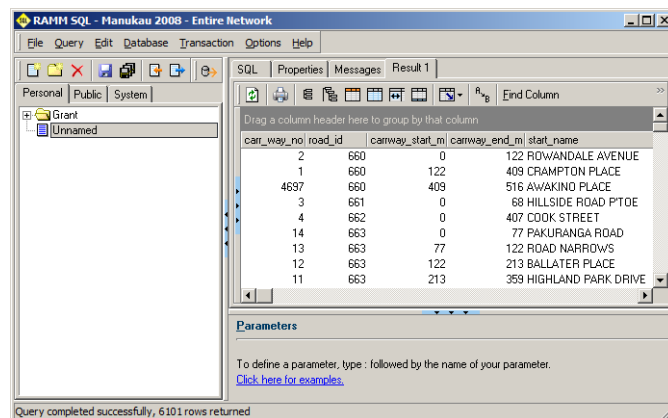
  If you wish to distribute or share a Query, you will need to copy or move it into the Public tab and set the appropriate permissions. See Setting Query List Permissions (on page 175).

- **Public**
  Public Queries are those that you or your colleagues have made public to allow others to use. You can take ownership of Public Queries and then set individual permissions for them.

- **System**
  System Queries have been set up by CJN Technologies for your convenience. They include a number of useful functions. If you press on this tab you will be able to select the individual Queries and then read a detailed description of their function on the Properties tab of the Query Editor panel.

  You cannot modify a System Query directly, but you can right-click the Query to make a Personal or Public copy of it and then modify it as you wish.

Taking Ownership of Queries

Every Query has an owner.

Only the owner can decide to grant others permission to use that Query or take ownership of it. If you are able to take ownership of a Query, Take ownership will be enabled on the Properties tab of the Query Editor panel.

As soon as you take ownership of a Query you can set permissions for the Query, edit the SQL statements and add notes.

Comparing Query Types and Actions

Your ability to take ownership of, make copies of and to set permissions for Queries depends on whether you are accessing a local copy of **RAMM SQL** or if you are using the **RAMM** Hosting Service.

You will have greater powers and access to more Public Queries if you use the **RAMM** Hosting Service.

The table below shows the ownership, copy and permissions structure in **RAMM SQL**. See Setting Query List Permissions (on page 175).

	Personal	**Public**	**System**

	Local	**RAMM Hosting**	**Local**	**RAMM Hosting**	**Local**	**RAMM Hosting**
Take Ownership	–	–	No	Yes	No	No
Make Copy	Yes	Yes	Yes	Yes	Yes	Yes
Set Permissions	Yes	Yes	No	Yes	No	No

Query Editor

The Query Editor panel is where you type your SQL statements. When **RAMM SQL** starts it shows you the SQL tab of the Query Editor panel by default.

Query Editor Tool Bar

You use the Query Editor panel tool bar to work with SQL statements.

Query Editor Tool Bar Buttons

The following buttons are available:

- ▶ Run Query

  You press this to run the SQL Query in the Query Editor panel. Alternatively, you can also press F9 on your keyboard.

- ↶ Cancel Changes

  You press this to undo your changes in the Query Editor panel.   Alternatively, you can also press CTRL+Z on your keyboard.

- ✄ Cut

  You press this to remove selected text in the Query Editor panel and place it on the clipboard for later use. Alternatively, you can also press CTRL+X on your keyboard.

- 📋 Copy Query

  You press this to copy to the clipboard, the selected SQL statements in the Query Editor panel. Alternatively, you can also press CTRL+C on your keyboard.

- 📋 Paste

  You press this to replace a selected text string within the Query with one from the clipboard. Alternatively, you can also press CTRL+V on your keyboard.

- 🔍 Find

  You press this to search for a text string within the selected Query. Alternatively, you can also press CTRL+F on your keyboard.

- 🔍 Replace

  You press this to replace a text string within the selected Query or CTRL+R.

- Show SQL Without Parameters

  You press this to open an **Actual SQL** dialog which shows the SQL statement with values substituted for the appropriate parameters.

- Auto Lookup/Expand

  You press this to toggle between different ways of displaying information in **RAMM SQL**. The default setting is Expand (button in). It expands the Lookup and displays its full description in the columns. The other setting is Lookup (button out). This returns the Lookup code in the columns that **RAMM SQL** displays when you run a Query. You can change the default setting for new Queries using the Options menu item. See Auto Lookup and Expand Options - Show Descriptions (on page 168).

> If you hover your mouse over each button, a tool tip description of its function appears, together with its quick-access key combination if available.

Selecting All Carriageways

This is a simple SQL statement example selects all Carriageways in the database.

▶ To Select All Carriageways

1 Type **select * from carr_way** in the Query Editor panel. The words **select** and **from** turn red. They are standard SQL keywords which **RAMM SQL** recognises.

2 Press ▶ to process the **Query**. A **Progress** screen will display the process.

3 When the **Progress** screen closes you will be returned to the Query Editor panel. A new tab called **Result 1** will list the results of the **Query**.

4 You can now have many of the standard **RAMM** Grid screen options. The tab and the information will remain until you exit **RAMM SQL**.

Auto Lookup and Expand Options – Show Descriptions

It is standard practice when designing a relational database that the Descriptions, which are written in plain English are separate from the codes which are written in computer-speak. When you are manipulating the database, it is much quicker to use only the codes. However, when you want to view the results, unless you know the codes very well, it is very helpful to have the associated Descriptions displayed.

Code – Description Links

The **RAMM** database is quite complex and it is not always obvious where the Descriptions linked to codes are. So when you are running Queries you will not always know how to link the Descriptions with codes. In this situation, you can use the Auto Lookup/Expand button.

Examples

Two virtually identical Queries are reproduced to highlight the difference between having the button turned to Lookup (button out) and Expand(button in).

Lookup

This screen shows the result of the Query with the Auto Lookup/Expand button set to Lookup (button out). You will notice that the column headers use the code and no descriptions are shown.

Expand

This screen shows the result of the same Query with the Auto Lookup/Expand button set to Expand (button in). You will notice that the column headers use the Descriptions instead of the code and that there is now an Expand column containing the Descriptions of the Option codes.

> You will want to leave the Auto Lookup/Expand button turned on at all times unless the information you are looking for is actually better known by its codes rather than its descriptions. An example of this is Signs.

Viewing Results

The results of running your SQL Query are reported to you in a number of different ways.

Results Tab

If the SQL statements you type into the Query Editor panel are successfully executed, **RAMM SQL** will add a tab named Result 1 in the Query Editor panel for each Query. The results are displayed on this tab.

Results Tab Tool Bar

The Results tab also has its own tool bar.

The tool bar contains three controls which are specific to **RAMM SQL**. See:

- Show Full Column Titles (on page 171)
- Rename the SQL Result (on page 171)
- Find Column (on page 172).

The tool bar contains some of the standard **RAMM** Grid screen controls as below. You can read the *Using RAMM* guide for further information if required.

- Refresh
  You press this to run the Query again using the latest data.
- Print
  You press this to open a **Print Preview** screen where you can view and format the information before you print it.
- Collapse All
  You press this to collapse a tree view which has been expanded fully or partially. This hides items from view.
- Expand All
  You press this to expand a tree view which has been collapsed fully or partially. This makes items visible or selectable.
- Show Grid Lines
  You press this to display grid lines if they are not showing or to hide them if they are displayed.
- Resize Columns to Fit the Data
  You press this to make each column just wide enough so its contents fit exactly.
- Show Summary Footer
  You press this to show footers that summarise the column contents.
- Export
  You press this to export the tab contents in one of several common file formats. This button expands to show you the export options as below.

Show Full Column Titles

When you are viewing the contents of an SQL Query you may prefer to view the column headers as descriptions rather than the actual column name from the database which my not have as much meaning for you.

In this case you press ▦ the Show Full Column Titles button. Similarly, if you want to view the actual column name in the database rather than the column heading description, you press the button again to toggle between the views.

Actual Column Names

In the graphic below you can see that the button is not pressed and the column headers are the actual names in the database.

Column Names Are Descriptions

In the graphic below you can see that the button has been pressed and the column headers are the descriptions rather than the actual names in the database.

Rename the SQL Result

When you have successfully run an SQL Query it appears on its own tab in the Query Editor panel, usually with the name Result 1.

This is not often a very useful name. You will probably want to rename at least the tab and probably the Report Title as well.

To do this you press the Rename the SQL Result button. This opens the **Rename SQL Result** dialog.

Rename SQL Result Dialog

Find Column

When you are viewing the results of an SQL Query you may have difficulty manipulating the screen to show exactly the information you want.

You use the Find Column drop-down list to select the column you want displayed. This is particularly useful when your Query has returned a number of columns and you want to jump to a specific one.

Messages Tab

Each time you run a Query, the actions and events involved are listed at the Messages tab. This can be useful for verification and debugging purposes.

Editing Query Properties

Each new Query in the Query List panel is Unnamed until you rename it.

▶ **To Edit Query Properties**

1 Press the Properties tab to open the Properties panel.

2 Type a unique name for your Query in the Name field or rename the Query directly in the Query List panel by right-clicking it and selecting Rename.

3 You can also type extensive notes on the Query in the Notes field if you wish.

Previewing and Printing Reports

Once you have run a Query you may want to print the result.

▶ **To Preview and Print a Report**

1   Press 🖶 to print a report from an SQL Query you have run. A **Print Preview** screen will open.

2   Check and format the report if required.
3   Press 🖶 to print the report.

Exporting and Importing Queries

You can export a Query to a file and distribute it using a CDROM or email.

▶ **To Export SQL Queries**

1   Select the Query you wish to export. Right-click it and select Export or press 📤 to open the **Export Query** dialog.

2 Navigate to the folder where you want to save the file, type the name for the file in the File name field and press Save.

> When you import the Query back into **RAMM SQL**, the Query will appear in your list with the same name as the file name you chose. You can rename the Query if you wish.

▶ To Import SQL Queries

1 Select, in the Query List panel, the location for the Query you are going to import. This can be a folder, a subfolder or another Query. If you select a Query, the imported Query will be added to the Query List panel at the same level as the selected Query in alphabetical order.

2 Right-click the selected folder or Query and select Import or press to open the **Import Query** dialog at the location of your exported Queries.

3 Select the Query you wish to import and press Open. **RAMM SQL** imports the Query and adds it to your Query List panel at the selected location.

Setting Query List Permissions

If you do not have permissions enabled for a Query, it will not be visible to you in the Query List panel.

Take Ownership

Your ability to control permissions for a Query depends on whether you are using the **RAMM** Hosting Service or using a local copy of **RAMM SQL**. See Query Types (on page 163).

In order to set permissions you must first take ownership of the Query. You can do this only if the Take Ownership button Take ownership is enabled. You can take ownership only if you are using the **RAMM** Hosting Service.
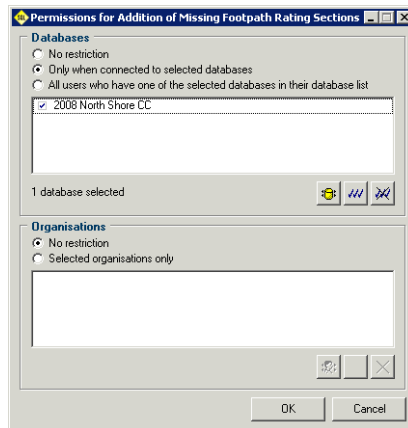
You set Query permissions on the **Permissions** dialog which is available from the Properties tab.

▶ To Set Permissions

1 Select the Query whose permissions you wish to set.

2   Press the Properties tab and press [Permissions...] to open the **Permissions for [Query]** screen.

3   The **Permissions for [Query]** screen enables you to define permissions for the selected Query. If you accept the default setting No restriction, anyone on the **RAMM** Hosting Service can see the Query and take ownership of it if they wish. You have the option to set permissions by database connection and access, or by organisation.

4   Press OK to close the screen and return to the Properties tab on the **RAMM SQL** main screen.

Security

Your access to Security Zones, your Staff Permissions in **RAMM** and your Security levels on the **RAMM** Hosting service also apply to **RAMM SQL**. For further information on security, see RAMM Security (on page 29).

Queries and Database Access Levels

The statements you are able to run in **RAMM SQL** depend on your level of access to the database.

- If you can view an item in **RAMM** such as Top Surface or Pavement Structure, you can run an equivalent SQL Select statement in **RAMM SQL**.
- If you wish to run an Update, Insert or Delete statement, however, explicit **RAMM SQL** permissions to execute these statements must be given in the **RAMM** Staff Security module. See Setting Custom Security Permissions (on page 50).

RAMM 3D

RAMM 3D provides views of Pavement and Surface data sectioned by Carriageway or Treatment Length.

In This Chapter

RAMM 3D View Selections

You press the **RAMM 3D** button on the **RAMM** main screen tool bar to launch **RAMM 3D**. This provides views of Pavement and Surface data sectioned by Carriageway or Treatment Length.

The **RAMM 3D** views are synchronised to the **RAMM** Road Selection panel, and will immediately show details for the Road or Carriageway you select.

View Selection Panel

You use the options in the View Selection panel on the left of the **RAMM 3D** screen to include or exclude views.

If the Select toggle ▣ displays, the adjacent option is displayed in the Pavement Structure Display panel to the right.   If the Deselect toggle 🔍 displays, the adjacent option does not displayed in the Pavement Structure Display panel to the right.

Within a view section such as Pavement Structure, you can select only one view at a time. In that section, **RAMM 3D** is currently set to show Major pavement structure. Selecting Detail will show both major and minor pavement structure.

Panel Sizer

If you do not need the View Selection panel, you can collapse it by pressing the Panel Sizer control.   You press it again to show the View Selection panel again.

To expand a panel you press the
Panel Sizer and to collapse the
panel you press it again

For more information on **RAMM** workspace, tool bars and controls, see the *Using RAMM* guide.

RAMM 3D Tool Bar and Controls

There is a tool bar at the bottom of the **RAMM 3D** screen.

Location Controls

The following buttons and fields help you move along the Road pictured:

- **Move to the Start of the Road**
  Press to move to the start of the road or press the HOME key.
- **Move Left Down the Road**
- Press to move one interval to the left or press the LEFT ARROW key.
- **Location** (in metres)
  Type the displacement in metres to go directly to any point along the Road. The Status bar at the bottom of the screen will confirm your location.   Location = 56m

- **Move Right Up the Road**
  Press to move one interval to the right or press the RIGHT ARROW key.
- **Move to the End of the Road**
  Press to move to the end of the road or press the END key.

- Interval [1000m ▾] **Interval** setting
  Select an Interval from the drop-down list. This is how much the view will move up or down the Road when you press the Move Left Down the Road or Move Right Up the Road buttons above.

> Left-click and drag your mouse left or right in the RAMM 3D screen to move along the Road at the selected view angle.

Zoom Controls

- 🔍 **Zoom In**
  Press this button to zoom in and increase magnification of the view of the Road or press the UP ARROW key.
- 🔍 **Zoom Out**
  Press this button to zoom out and decrease magnification of the view of the Road or press the DOWN ARROW key.

As you zoom, you will see the camera position in metres in the Status bar at the bottom of the screen change to correspond with the selected zoom level.

Camera at 43m

> If you have a wheel mouse, you can use it to zoom in and out.
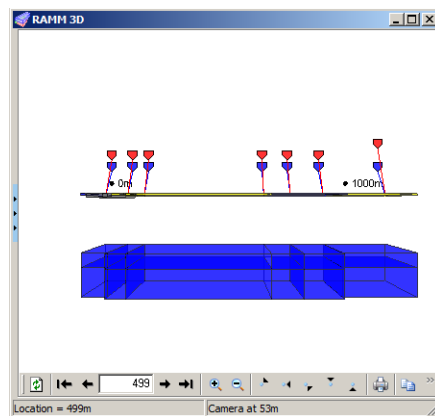
View Angle Controls

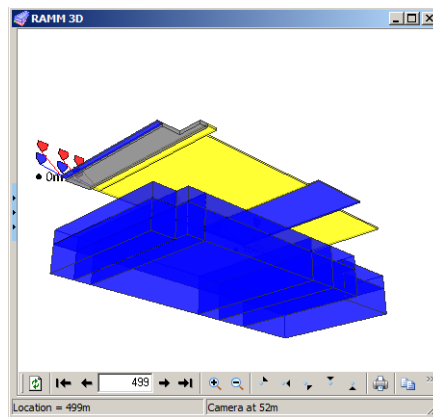You use the following buttons to change the perspective of your view of the Road in **RAMM 3D**:

- **View From Above**
  This is the default view. You can press this button to view the Road from above or press the F2 key.
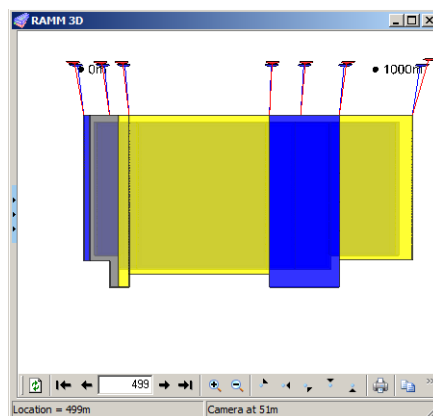
- **View From the Side**
  You can press this button to view the Road from the side or press the F4 key.
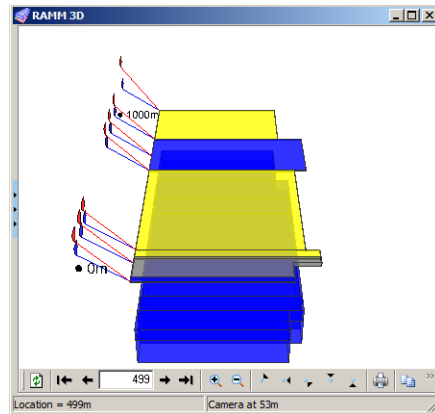

- **View From Below**
  You can press this button to view the Road from below or press the F3 key.

- **View from top**

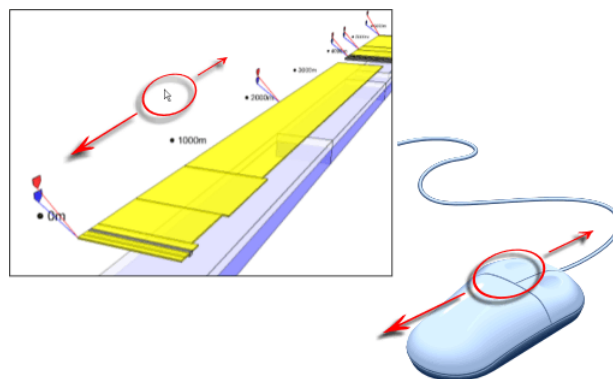 You can press this button to view the Road from on top for a plan view of the Road.

- **View along road**

  You can press this button to view the Road from along the Road.

RAMM 3D Mouse Controls
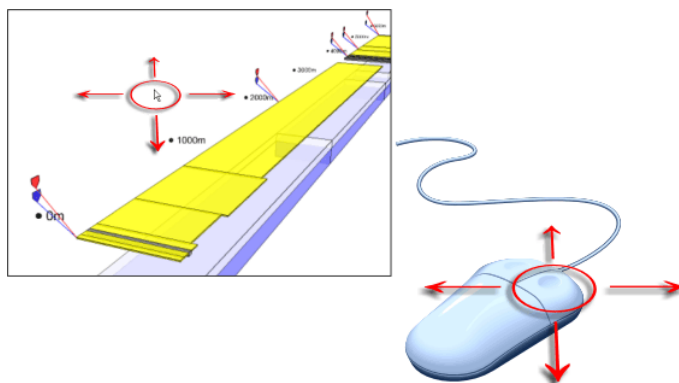
Moving Along the Road with the Mouse

You can use your mouse to move along the road in **RAMM 3D**. You left-click anywhere in the **RAMM 3D** screen and drag your mouse along the road to move along the road at the current angle and zoom setting as indicated by the arrows below.

View Angle Global Rotation

Right-click anywhere in the **RAMM 3D** Detail screen and drag your mouse left, right, up or down as indicated by the arrows below to rotate the view angle through a full 360 degrees in any direction.

Combined with the wheel zooming and the left-click options above, this gives you the ability to view any section of the road at any angle, just by using your mouse.
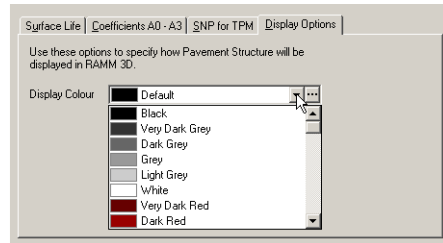

Configuring Colours in RAMM 3D

You can change the colours you see for Surfaces or Pavement Structure sections in **RAMM 3D**.

This is not done in **RAMM 3D**, however, as colour options are specific to an Asset and are intended to be consistent wherever they occur. For example, if you set a colour for a Surface Type, you would expect it to be the same in **RAMM 3D** and Mapping. For this reason setting and changing colours is done within the Asset lookup screens.
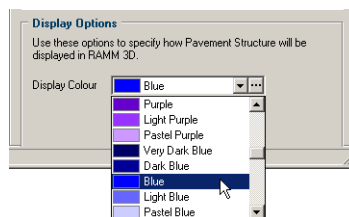
▶   **To Configure Colours for Surfaces**

1   Double-click any Surface in **RAMM 3D**.
2   Press the Carriageway Surface button to open the **Carriageway Surface** Grid screen.
3   Follow the menu path Actions > Maintain Lookups > Material to open the **Surface Material** maintenance screen.
4   Press the Display Options tab.
5   Select the Surface Material in the Surface Material List panel on the left.
6   Select the colour for the Surface from the drop-down list or press ⋯ to open a standard Windows **Color** selection screen and define your own custom colour for each individual Surface Material.

7   Repeat steps 5 and 6 as required.

8   Close the screen to save your settings.

▶ **To Configure Colours for Pavement Structure**

1   Double-click any Surface in **RAMM 3D**.

2   Press the Pavement Layer button to open the **Pavement Layer** Grid screen.

3   Follow the menu path Actions > Maintain Lookups > Material to open the **Pavement Material** maintenance screen.

4   Select the Pavement Material in the Pavement Material List panel on the left.

5   Select the colour for the Pavement from the drop-down list or press ⋯ to open a standard Windows **Color** selection screen and define your own custom colour for each individual Surface Material.
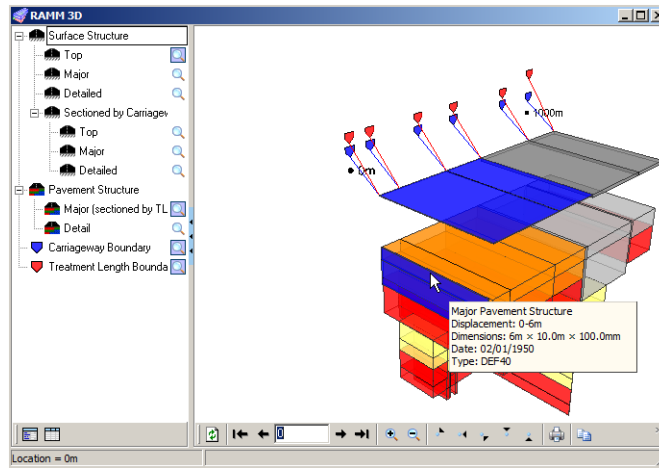

6   Repeat steps 5 and 6 as required.

7   Close the screen to save your settings.

Information from RAMM 3D

The **RAMM 3D** screen presents detailed information to you in two ways.

Details Pop-up

If you hover your mouse arrow above an item whose details you wish to view, a tool tip panel appears, showing dimensions, displacement, material, layer date, notes and more.

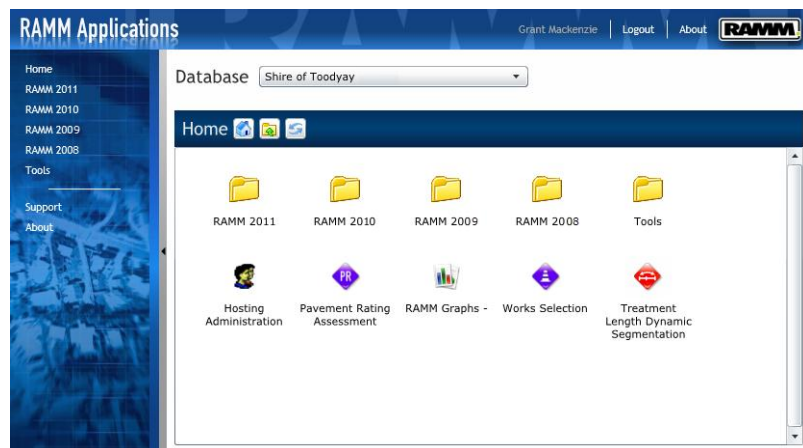## Launching Detail and Grid Screens from RAMM 3D

You can also view more detailed information for the items you are viewing in **RAMM 3D** by launching the relevant Detail or Grid screen for the asset.

Select the asset in the View Selection panel. At the bottom of the panel are two buttons:

- Press ⊞ to launch the Detail screen for the selected Asset and Road or Carriageway selection.
- Press ⊞ to launch the Grid screen for the selected Asset and Road or Carriageway selection.

RAMM Graphs

RAMM Graphs is the application for displaying your **RAMM** data in graphical form. You can display Inventory, Condition and other details in a variety of formats.
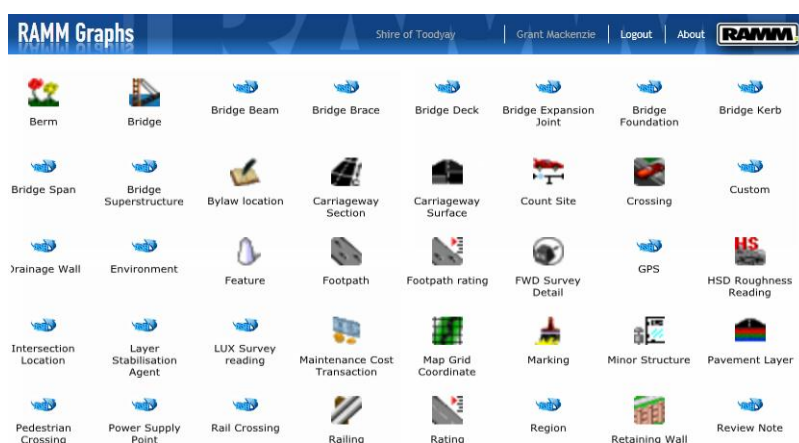

In This Chapter

Introduction to RAMM Graphs

RAMM Graphs is a highly configurable application which you use to view your **RAMM** data in a graphical form. The icons for the **RAMM** Items and their components are available in ascending alphabetical order. Inventory, Condition and other **RAMM** items are available.

Inventory Item Graphs

You use Inventory Item Graphs to view aspects of your Network Inventory. You can do this for most **RAMM** Inventory items and also for their components.

See Inventory Item Graphs   (on page 191)

Condition Graphs

You use Condition Graphs to view aspects of the Condition of the Roads in your Network. This is particularly useful for Pavement Rating Assessment.

See Condition Graphs (on page 191).

Other RAMM Item Graphs

You use **RAMM Graphs** to view aspects those **RAMM** items which are neither Inventory nor Condition data. Examples of this are Bylaw and User Defined Tables. Most **RAMM** items, which are neither Inventory nor Condition data, such as the **Map** and **RAMM 3D**, cannot sensibly be graphed.

See Other **RAMM** Item Graphs (on page 192).

Inventory Item Graphs

You use Inventory Item Graphs to view aspects of your Network Inventory. You can do this for most **RAMM** Inventory items and also for their components.

First you select the Inventory item such as Bridge. Then you select the parameter which you want to summarise such as Quantity or Length. Then you select the Category and Sub Category for display.

Condition Graphs

You use Condition Graphs to view aspects of the Condition of the Roads in your Network. This is particularly useful for Pavement Rating Assessment.

First you select the Condition item such as Roughness. Then you select the parameter which you want to summarise such as NAASRA Average or Length. Then you select the Category and Sub Category for display.

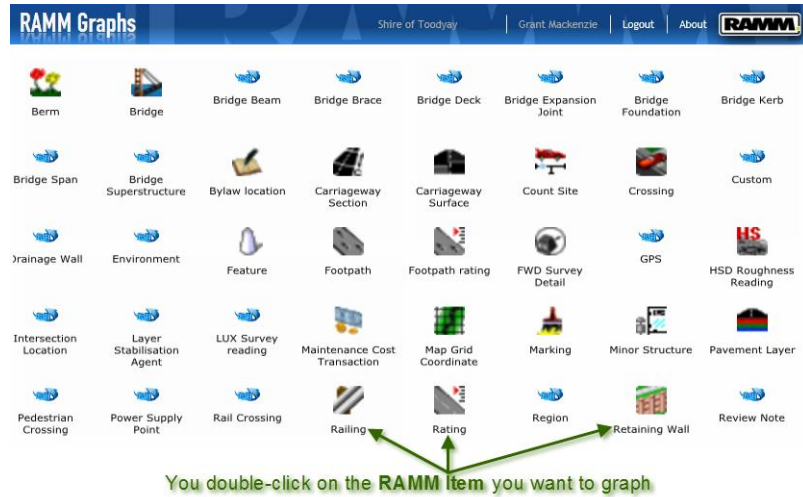You can configure the graph to display for one Road or for all the Roads in your Network combined.

Other RAMM Item Graphs

You use **RAMM Graphs** to view aspects those **RAMM** items which are neither Inventory nor Condition data. Examples of this are Bylaw and User Defined Tables. Most **RAMM** items, which are neither Inventory nor Condition data, such as the Map and **RAMM 3D**, cannot sensibly be graphed.
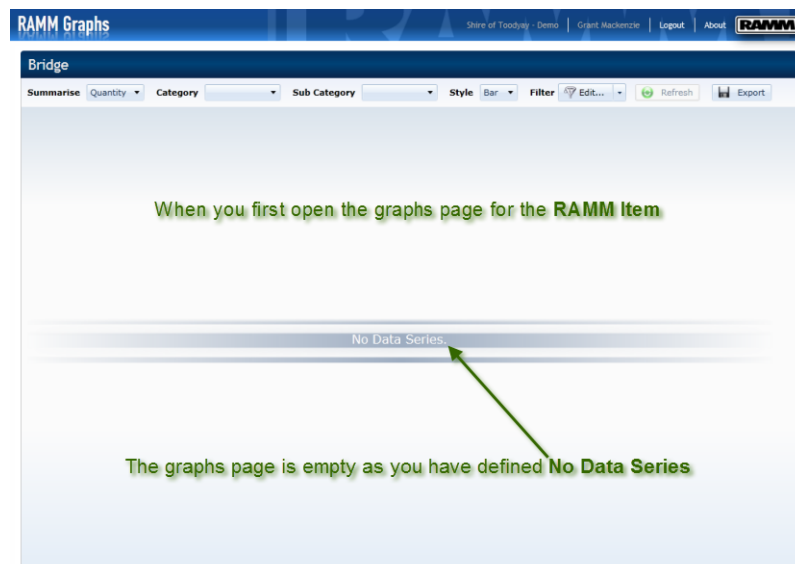
First you select the other item such as Bylaw. Then you select the parameter which you want to summarise. This will vary by the **RAMM** Item as will the Category and Sub Category values.

Select Your RAMM Item

The first step you take when using **RAMM Graphs** is to select the **RAMM** Item whose attributes you want to graph. You double-click the icon for the **RAMM** Item.

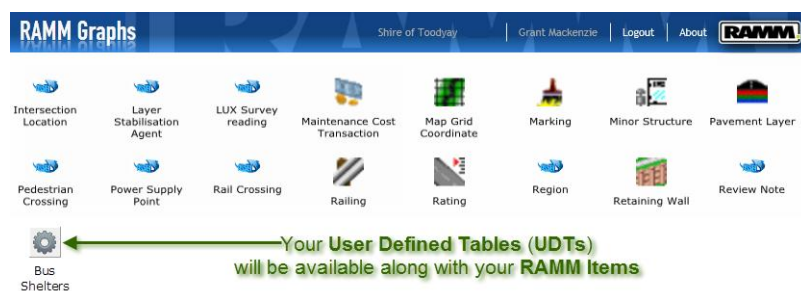You double-click on the **RAMM Item** you want to graph

The page for your **RAMM** Item will open. It will be empty as you have set no parameters to be graphed. The expression No Data Series is a reminder to you that you need to set parameters.

When you first open the graphs page for the **RAMM Item**

No Data Series.

The graphs page is empty as you have defined **No Data Series**

User Defined Tables

If you have created User Defined Tables (UDTs) for your **RAMM** data you can view this in **RAMM Graphs**. The icon you have used for the UDT will be available amongst the standard **RAMM** icons.
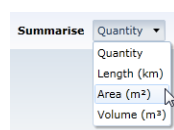

Select the Graph Parameters

The graph will not display until you have selected the parameters. Firstly you select the value by which you want to Summarise the data. You then select the Category (and Sub Category if appropriate), the Style of the graph and define any Filter you want to use.

Summarise

First you select the parameter by which you want the graph to summarise the selected **RAMM** Item. Common **RAMM** Inventory Item Options are:

- Quantity
- Length (km)
- Area (m2)
- Volume (m3)

You select the value from the Summarise drop-down list. The values available will be dynamically determined by the nature of the **RAMM** Item you have selected for graphing.
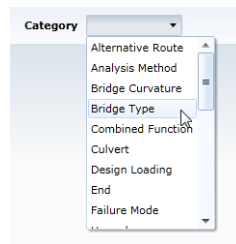
Category

When you have determined the aspect by which you want to summarise data for the **RAMM** Item, you must then select the parameter by which you want the data categorised.

The values available will vary dynamically dependent on the **RAMM** Item you have chosen. The options below are for Bridges.
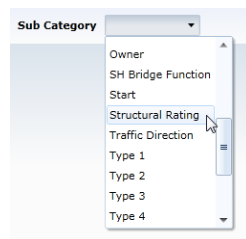
You do this from the Category drop-down list.

Sub Category

When you have selected the parameter by which you want the data categorised, you then have the option to choose a second parameter by which to categorise the data. You can then compare the data. Often the Stack Graph option becomes available at the Style drop-down list once you have selected a second categorisation parameter.

The values available will vary dynamically dependent on the **RAMM** Item you have chosen. The options below are for Bridges.

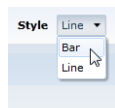You do this from the Sub Category drop-down list.

Graph Styles

You choose the particular styles of graph which best suits the purpose of your information display. The styles of graphs available will depend on the parameters you have set. Where a particular style of graph is either not logical or not possible, **RAMM Graphs** does not offer it. Possible styles are:

- Bar Graph (on page 196)
- Stack Graph (on page 197)
- Line Graph (on page 198)
- Scatter Graph (on page 198).

You select the style of the graph at the Style drop-down list.

Bar Graph

A Bar Graph consists of parallel vertical bars with lengths proportional to the frequency with which specified quantities occur in the data set.

You use the Bar Graph when you need a simple visual comparison of a data set.
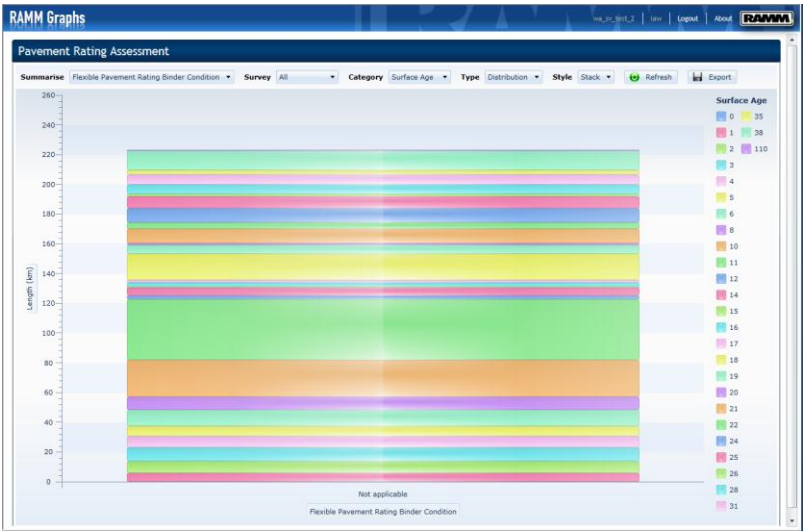
Stack Graph

A Stack Graph is a Bar Graph which has been divided into categories. It is used to compare the parts to the whole. Each bar represents a total. It is divided into categories where the data exists. These categories display in different colours.
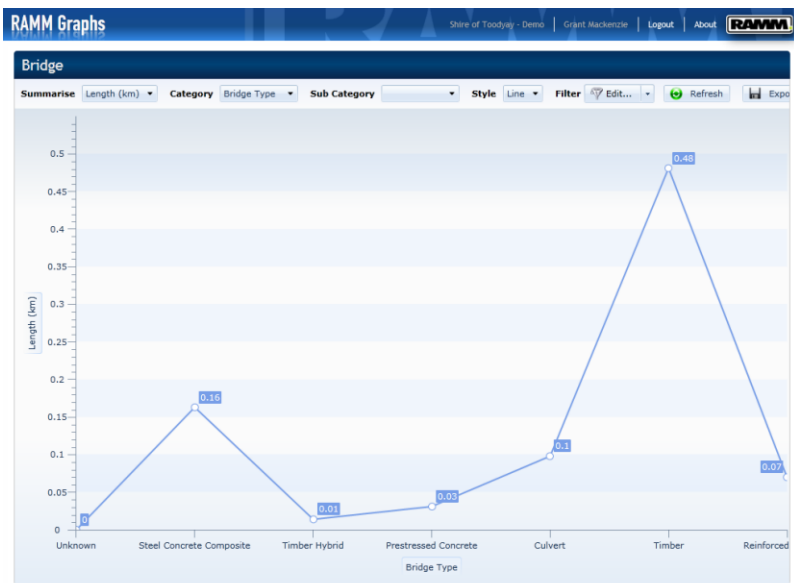
A legend is displayed in the top right-hand corner of the graph which describes the category represented by each colour.

The values represented by the bars are displayed in the centre of each stacked bar.

Line Graph

A Line Graph uses line segments to connect data points. It is very useful for displaying changes in data over time.

Scatter Graph

A Scatter Graph is sometimes referred to as a Scatter Plot. It is a plotted series of points. The density and direction of the plotted points shows the type of relationship, or lack of relationship, between dependent and independent variables.
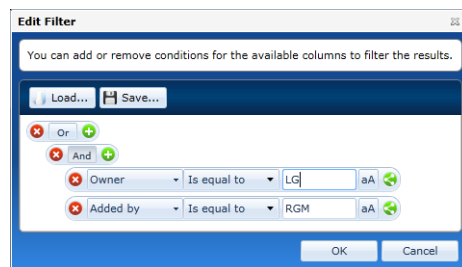
The Scatter Graph is particularly useful when Condition data is placed on the vertical axis and the other data is plotted in series along the horizontal axis. An example of the data series could be Pavement Age or Surface Age.

Filter the Dataset for the Graph

You use Filters to sort the data in the graph according to selected criteria. This streamlines the information you see in **RAMM Graphs**. You can save and share Filters which you use more than once.

You press [Edit...] to open the **Edit Filter** dialog.

Once you have set up your Filter so that it has the appropriate settings to display the information you need, you can save those settings. This way you can return to these settings quickly and consistently.

You can share Filters with a wide variety of other **RAMM** users. You can do this for:

- a specific set of users
- all users in your organisation
- all users and
- many other options.

To understand the options available to you to save and share your Filters see the Share Filters and Layouts section of the Use Filters chapter of the *Using RAMM* guide.

Display the Graph

Once you have made your parameter selections, the graph does not display automatically.

You make the graph display by pressing ⟳ Refresh .

Refresh the Graph

RAMM Graphs is browser-based. So any changes you make will not be reflected until you refresh the web page. This is sometimes referred to as reloading the page. You have the following options to see your changes. You press:

- ⟳ Refresh or F5 or CTRL+R
  This refreshes the page
- CTRL +F5 or CTRL+SHIFT+R
  This refreshes the page overriding the cache.

Save Your Graph Settings

Once you have set up your graph so that it has the appropriate settings to display the information you need, you can save those settings. This way you can return to these settings quickly and consistently.

You can share these graph settings with a wide variety of other **RAMM** users. You can do this for:
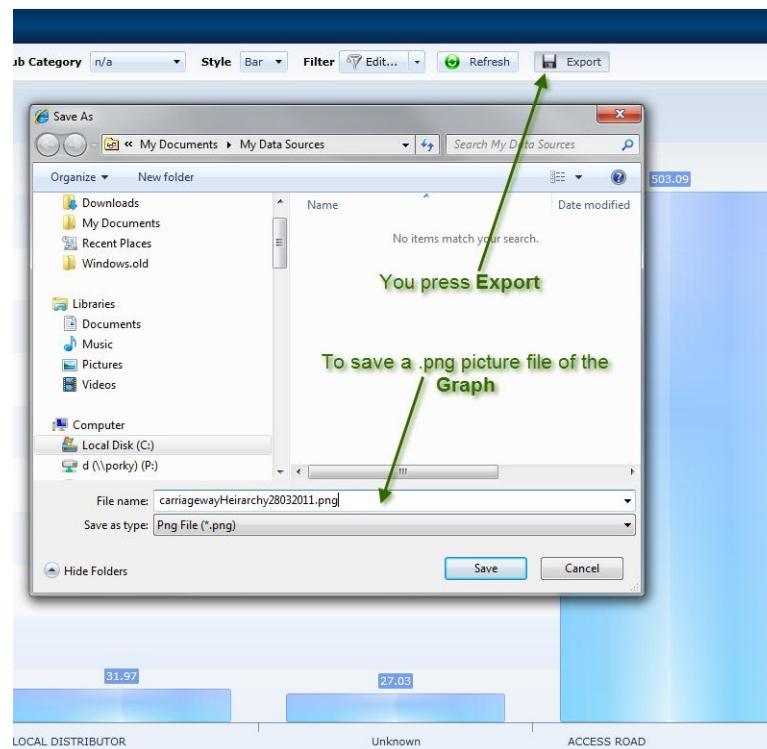
- a specific set of users
- all users in your organisation
- all users and
- many other options.

To understand the options available to you to save and share your graph settings see the Share Filters and Layouts section of the Use Filters chapter of the *Using RAMM* guide.

Export and Share the Graph

Once you have set up your graph so that it has the appropriate settings to display the information you need, you can export and share it.

You press [💾 Export] to open a standard Windows **Save As** dialog. In the graphic below the Graph is being saved as a .png picture file.

Surfaces

The Surface is the medium on which the traffic rides. It rests on top of the Formation or Pavement. The Surface can be Metal, Chip Seal, Asphaltic Concrete, Concrete or some other material.

RAMM gives you a number of tools and reports so that you can manage your Surface data.

Press **Carriageway Surface** to view the **Carriageway Surface** row from which the **Surface Structure** was generated

In This Chapter

Introduction to Surfaces

The data relating to the Surface of the Roads in your Network is one of the most important data sets in **RAMM**. It is used when calculating future Road maintenance priorities.

RAMM has features to make working with Surfaces simple and systematic.

Surface Data

Surface data is stored in the c_surface table. You edit and maintain this data.

As the Network ages and remedial maintenance is performed on the Roads, the Surface data becomes more and more complex. This makes it difficult to envisage exactly what the Surface of a Road looks like. So **RAMM** does this for you. **RAMM** creates three options for viewing Surfaces. See Surface Structure Views (on page 206).

Surface Viewing Options

The three main views of **RAMM** Surface Structure are:

- **Detailed Surfaces**
  This takes all the available data and presents it to you. If the Surface data is complex, the view may be cluttered.
- **Top Surfaces**
  This removes short and narrow surfaces and gaps, based on parameters you set. It identifies Major Surfaces from seal join to seal join. It shows the Surfaces that are directly in contact with traffic.
- **Major Surfaces**
  Major Surfaces are those that are the widest at every point on the Road. They are used to calculate summary Surface figures for Treatment Lengths for dTIMS modelling, skid resistance analysis or other applications. This is the simplest view.

The data for these views is created when you perform a Status Check.

Status Check

You run Status Check to recreate your Surface Structure views. This will identify and separate the Top, Major and Minor Surfaces from each other so that you can work with them later.

Before running the Status Check, you set tolerances for minimum width, minimum length and maximum gap for the seal length. **RAMM** uses these settings to determine what it should include or ignore in Surface Structure views.

The actual Surface data from the c_surface table is taken and manipulated according to the parameters you set. The resulting data is stored in the surface_structure table. It is this data which is used to create the Surface views.

> You add and maintain Surface data in the c_surface table. You can not edit or maintain the data in the surface_structure table. The data in this table is dynamically calculated based on the information in the c_surface and pavement_structure tables.
>
> The only way to change it is to run Status Check with modified parameters. See Recreate Surface Structure Views with the Status Check (on page 211).

You view the information in **RAMM 3D**.

Eliminate Removed Surfaces

During the process of building the Surface Structure views, **RAMM** first identifies Surfaces that have been removed due to pavement reconstruction and eliminates them from the Surface Structure view.

This is essential for many things such as the Status Check task that identifies Surfaces and recreates the Surface Structure. It is also essential for determining Surface depth. See Determining Surface Depth (on page 216).

Surface Options

You can use **RAMM** to:

- generate Start and End names for each Surface. See Assigning Start and End Names to Surfaces (on page 210).
- eliminate unnecessary Top Surfaces from your Surface views. See Eliminating Removed Surfaces from Surface Structure (on page 209).
- determine the depth, number and age of Surfaces present on the Carriageway. See Determining Surface Depth (on page 216).
- set a Design Life for a Surface. See Surface Design Life (on page 217).
- track modifications to a Surface and measure whether the Surface has performed as expected using the Achieved Surface Life Decision Cube. See Achieved Surface Life Decision Cube (on page 218).
- add full width Surfaces. See Full Width Option (on page 223).
- configure a Surface offset in metres, and enter negative offset values for areas like parking bays. See Negative Offsets for Surfaces (on page 225).
- calculate a depth for the Surface by multiplying 1st coat or 2nd coat Chip ALD by the values set in the **Surface Task Parameter** screen. See Surface Task Parameter Screen (on page 220).
- maintain Surface Lookups. See Surface Lookups (on page 228).

Working with Surfaces

This section describes common actions related to Surfaces. It takes you through the steps needed to carry them out.

Before You Run Status Check

You may want to run the Status Check and recreate your Surface Structure views. This will identify and separate Top, Major and Minor Surfaces from each other so that you can work with them later.

Before running the Status Check, you should read about setting minimum width, length and maximum stretch (on page 208), eliminating removed Surfaces from Surface Structure (on page 209), and assigning start and end names to Surfaces (on page 210).

Surface Structure Views

There are three main views of **RAMM** Surface Structure:

- Detailed Surfaces
- Top Surfaces
- Major Surfaces.

In addition, you can view Surfaces seal join to seal join or split by Carriageway.

You can do this in **RAMM** by selecting Options > Surface Structure Views > [View] in the main **RAMM** screen. You can do this in **RAMM 3D** (on page 179).

View Comparison Diagram

The diagram below compares the Detailed Surfaces, Top Surfaces And Major Surfaces views on the same section of Road.

Detailed Surfaces View

This view is the most comprehensive, and shows you all Surfaces regardless of how small or narrow. Sometimes the clutter resulting from unnecessary inclusion of small strips of Surface will make working with Surfaces difficult. See Cleaning Up Top Surfaces (on page 213).

Top Surfaces View

The Top Surfaces view you see above removes the extraneous Surfaces B and D, and identifies Major Surfaces A and C seal join to seal join. This view would show you the Surfaces that are directly in contact with traffic.

Major Surfaces View

Use this view if you prefer to view only the Major Surfaces. Major Surfaces are those that are the widest at every point on the road, and are used to calculate summary Surface figures for Treatment Lengths. This data can then be used in other applications such as dTIMS modelling or skid resistance analysis. In the example above, Major Surface C shows rural and urban road sections as well.

> You can identify Major Surfaces split by Urban/Rural in **RAMM SQL** (on page 159) with the help of a supplied SQL script. In **RAMM SQL**, press the System tab, select Miscellaneous Reports and run Major Surfaces split by Urban/Rural SQL.

Setting Minimum Width, Length and Maximum Stretch

Before running Status Check to recreate Surface Structure views, you can set tolerances for minimum width, length and maximum gap for the seal length. The default values below should be sufficient. You can change them.   **RAMM** uses these settings to determine what it should include or ignore in Surface Structure views.

▶   **Setting Status Check Options**

1   In **RAMM Manager**, follow the menu path Processes > Status Check.

2   Clear all selected tasks except Surface Tasks and Recreate Surface Structures from surface layer information.

3   Press Begin Processing to open the **Surface Structure Task Options** screen.

4 Press **All Roads** or **Modified Roads** to recreate Surface Structure. See Recreate Surface Structure Views with the Status Check (on page 211).

> ⚠️ **NOTE** These options can also be set at the **Parameter** screen. See Determining Surface Depth (on page 216).

Eliminating Removed Surfaces from Surface Structure

During the process of building the Surface Structure views, **RAMM** first identifies Surfaces that have been removed due to pavement reconstruction and eliminates them from the Surface Structure view.

This is essential for many things. For example, the Status Check task that identifies Surfaces and recreates the Surface Structure, see Recreate Surface Structure Views with the Status Check (on page 211). It is also essential for determining Surface depth. See Determining Surface Depth (on page 216).

Once **RAMM** has eliminated removed Surfaces, the Surface Structure process builds a picture of surfacing activity on the road or Carriageway section in question.

> ⚠️ **NOTE** **RAMM** has safeguards built in to ensure that a Top Surface is never identified as removed.

Identifying Removed Surfaces Older Than Reconstructed Layers

RAMM identifies the presence of pavement reconstruction. See Maintaining Pavement Layer Data (on page 254). It sets an appropriate Removed Date for Surfaces older than the reconstruction, since it is logical to assume that those Surfaces would have been removed, overlaid or recycled into the pavement layers.

Since it is unlikely that a pavement is reconstructed just one month after a new Surface is laid, RAMM does not set a Removed Date for Surfaces less than a month old. These are displayed in a warning report so that you can review and correct the pavement layer and the Surface dates.

You can change the default threshold value of one month if necessary, in the Surface Task Parameter screen (on page 220) or in the **Surface Tasks** screen you are shown when you recreate Surface Structure views with the Status Check (on page 211).

Using 1st and 2nd Coat to Identify Removed Surfaces

In addition to the dates of the most recent pavement layer, RAMM uses the dates of 1st and 2nd Coats to indicate pavement reconstruction when you run the Status Check for Surface tasks.

For example, there may be a sequence of Surfaces like the one below.

RAMM identifies Layer C as the date of reconstruction, and identifies A and B as removed Surfaces. C, D and E are left as they are.

But if layer information is missing, as can often be the case:

RAMM will infer that the presence of a second 1st Coat Surface I indicates that pavement reconstruction has taken place, and identify F, G and H as removed Surfaces.

Before running the Status Check to identify removed Surfaces, ensure that you have defined the parameters. See Setting Minimum Width, Length and Maximum Stretch (on page 208). You then recreate Surface Structure views with the Status Check (on page 211).

Assigning Start and End Names to Surfaces

When RAMM builds the Surface Structure table the Start and End name for each Surface is generated using the rules below.

1   **RAMM** first looks in the c_surface row, and assigns Start and End names if they are present. You can assign Start and End names if necessary in the Carriageway Surface screen (on page 220).

2   When two Surfaces are consecutive, and if the End name of the first Surface has a value, but the Start name of the second Surface is null, the End name of the first Surface is assigned to the Start name of the second. Surface B above would be assigned a Start name of Black St.

3   When the End name of the first Surface is null and the Start name of the second has a value, the Start name of the second Surface is assigned to the End name of the first. Surface B would be assigned an End name of Fox St.

4   If there is no Start and End name for a Surface at all, **RAMM** assigns the Carriageway Start and End names, if there is a corresponding Carriageway at the same location. In the example above, if neither Surface A nor C had Start and End names, and Surface B corresponded to a Carriageway that had Start and End names, those names would be assigned.

5   If all of the above fails, the Start and End names are left blank.

Recreate Surface Structure Views with the Status Check

▶ To Recreate Surface Structure Views with the Status Check

1   In **RAMM Manager**, follow the menu path Processes > Status Check to open the **Status Check** screen.

Depending on how current your database is, you may see other tasks selected for processing. Select or clear the tasks so that only those you wish to run are selected. The image above shows what you need to select to recreate Surfaces only. Press **Begin Processing** when you are done.

2   The **Surface Structure Task Options** screen will open with the default parameters for setting minimum width, length and maximum stretch. Make changes as necessary, and then press **All Roads** or **Modified Roads** to begin the processing.

Please be patient as this may take some time, depending on the size of your database.

3   You may see a message about warnings that were generated during the process - for example, if the Removed Date was not set on a Surface that may not be current.

You can preview or print the warnings as a report.

4   Close the **Surface Structure Task Warning Report** screen. You will be returned to the main **RAMM Manager** screen.

Cleaning Up Top Surfaces

You may wish to eliminate unnecessary Top Surfaces from your Surface views. **RAMM** has a number of tools to help you do this.

Existing Surfaces

- Eliminate short and/or narrow Surfaces from your Top Surface view. See Recreate Surface Structure Views with the Status Check (on page 211). This is done by setting minimum length, width and maximum gap parameters and running the Status Check to recreate your Surface Structure. You will still be able to view all Surfaces in the Detailed view.

New Surfaces

- Set the Full Width option (on page 223) to ensure that unnecessary pieces of Surface are not displayed in the Top Surface view.
- Carriageway Surface screen validation warnings will help to check whether seal joins and offsets match, to avoid narrow strips and short lengths. See Carriageway Surface Validation Warnings (on page 223).
- Surface location and width defaults will help ensure that new Surfaces are aligned to the old. The Carriageway Surface screen (on page 220) now has the option to set default location and width values from the currently selected Surface. If you are resealing at the same seal joins, use this method to ensure that the reseal perfectly covers the seal joins and width of the existing Surface.

Adding Surfaces

Adding a new Surface is done from the Carriageway Surface screen (on page 220).

It is assumed that you have already selected the Road and/or Carriageway you wish to work with. If you need help on selecting Roads or Carriageways, see the *Using RAMM* guide. Before you enter a new Surface, you may also wish to examine the existing Surface Structure. See Surface Structure Screen (on page 222).

Before Entering or Updating Surfaces

Before you begin adding a new Surface, you should be aware of the following options when managing Surfaces. You may wish to refer to the linked topics for more detail, and return to this section.

- **Full Width**
  You can now instruct **RAMM** to treat the Surface you are entering or updating as full width. See Full Width Option (on page 223).

- **Offset**

  You can now configure an offset in metres, and enter negative offset values for areas like parking bays. See Negative Offsets for Surfaces (on page 225).

- **Surface Function and Surface Material**

  Surface Material selections in the Material drop-down list will change according to the Function selected. If you do not see the Surface Materials you expect, open the **Surface Material** lookup screen and adjust the Function/Material links. See Surface Material (on page 235).

  If you set Function as N/A, you will only see Surfaces within a Surface Category that has Allow N/A in Surface Function selected. The Surface Category is set for each material in the **Surface Material** lookup screen.

- **Surface Life**

  Default Life cannot be modified directly, and is set by RAMM. You can, however, enter a Design Life if the Surface life is likely to differ from the Default Life. See Surface Design Life (on page 217).

- **Surface Depth**

  The Use Calculated Depth option, when selected, will calculate a depth for the Surface by multiplying 1st coat or 2nd coat Chip ALD by the values set in the **Surface Task Parameter** screen. See Surface Task Parameter Screen (on page 220).

▶ To Add a New Surface

1. In RAMM, select the Road for the new Surface.

2. Press [icon] to open the **Carriageway Surface** screen and follow the menu path View > Show Detail to open the Detail screen.

3. Press [icon] to add a new record.

4. Type the details of the new Surface at the General tab.

> **NOTE**
>
> If the ALD (Average Least Dimension) and PSV (Polished Stone Value) fields are greyed out and inactive, this is because the Surface Category for the respective material is something other than Chipseal. See Surface Category (on page 231).

The coloured fields are mandatory so you must enter information before **RAMM** allows you to save the record.

5   Press the Binder tab and type in the relevant information.

> **NOTE**
>
> Polymer % is the percentage of polymer modification in the binder, not the percentage of polymer in the additive. For example, if the additive is 50% polymer and is applied at 6pph, the polymer is 3%.

6   When you have entered all essential information for your new Surface, press ✓ to save your Surface.

7   At this point, the Warning tab may turn red and a dialog may open with a **Warning** message. Press OK and review the warnings on the **Warnings** tab.

8   Take the necessary action. You will be returned to the **Carriageway Surface** Grid screen. The new Surface record you entered will be highlighted.

Determining Surface Depth

You determine the depth, number and age of Surfaces present on the Carriageway.

Surfaces Older Than Reconstructed Layers

RAMM detects pavement reconstruction and identifies as removed, Surfaces older than the reconstruction. See Eliminating Removed Surfaces from Surface Structure (on page 209).

Determining Surface Depth from Chip ALD

You use the **Surface Task Parameter** screen to set Surface depth calculation options from the Chip ALD. See Surface Task Parameter Screen (on page 220).

▶ **To Determine Surface Depth**

1   Follow the menu path RAMM Manager > Maintenance > Parameter to open the **Parameter** screen. Press Security Zone and then **Surfaces** to make the Surface depth parameter options available.

2 The default values should be sufficient. If you change them, you should recreate Surface structure views with the Status Check (on page 211).

This will sum the depth data in the Surface structure views and calculate a start depth for every Surface. avg_surf_depth, the predominant Surface depth for the Treatment Length, will also be populated.

Surface Design Life

You set a Design Life for a Surface, track modifications, and measure whether the Surface has performed as expected with the **Achieved Surface Life** Decision Cube.

Surface Life Management

RAMM works with three different Surface Life values to allow careful monitoring of the life of a Surface. You view and maintain Surface Life in the **Carriageway Surface** Detail screen. See Carriageway Surface Screen (on page 220).

You can enter a Design Life. RAMM assigns a Default Life from the lookup tables. In addition, RAMM assigns a Modified Life is and this is the only Life it adjusts.

Modified Default Surface Life is updated by RAMM from:

- The related Surface Life lookup table
- Carriageway pavement use
- Surface chip size
- Material

- Carriageway area - if the option to maintain Surface Life by Carriageway Area (**cway_area**) is activated.

All three Life values are included in exported Surface data for analysis elsewhere.

Achieved Surface Life Decision Cube

The Decision Cube generates a report of the Achieved Surface Life for all Surface structures. It provides an analysis of the Years to Reseal by Surface Material, Chip Size, Pavement Use and Area. Top Surfaces are excluded since they are not yet resealed or defined as Surfaces removed by pavement reconstruction work.

You follow the menu path RAMM Manager > Reports > Summary > Achieved Surface Life to open the **Achieved Surface Life** screen.

> The Decision Cube can also show Standard Deviation. While this is displayed, the pivot and filtering features will be disabled. For more information on the Decision Cube, see the Decision Cube section in the *Using RAMM* guide.

Years to Reseal

Years to Reseal shows the time, in years, between a Surface birthday seal and the date it was resealed. The calculation is:

Years to Reseal = Reseal Date – Birth date

When only part of a Surface is resealed, this appears in Surface structure as two separate Surfaces. One Surface will be at layer 2 and will show a Years to Reseal figure while the other remains a Top Surface and will be excluded from the figures.

Surface Tools

RAMM has features to make working with Surfaces easier and more systematic.

Carriageway Surface Screen

Press the **Carriageway Surface** button from the main **RAMM** screen tool bar to launch the **Carriageway Surface** screen. This is where you enter and maintain most Surface information. The Grid is filtered to show only Surfaces that are current.

Double-click a Surface record to open up its Detail screen.

Surface Task Parameter Screen

The Surface Task **Parameter** screen is where you set the following Surface options:

- **Single Chip Multiple**
  The value by which to multiply the single chip ALD (Average Least Dimension), when determining Surface depth from ALD. See Determining Surface Depth (on page 216).
- **Two Chip Multiple**
  The value by which to multiply the two chip ALD, when determining Surface depth from ALD.
- **Mandatory Surface Width**
  Whether Surface Width is required when adding or maintaining Surfaces in the Carriageway Surface screen. See Carriageway Surface Screen (on page 220).
- **Maintain Surface Life by Area**
  Whether to maintain Surface Life by Area when adding or maintaining Surface materials. See Surface Material (on page 235).
- **Removed Date Threshold**
  The threshold below which a Removed Date is not set when recreating Surface Structure. See Eliminating Removed Surfaces from Surface Structure (on page 209).
- **Ignore surfaces narrower than**
  When summarising Treatment Length data, RAMM will ignore Surfaces narrower than the value stated.
- **Ignore surfaces shorter than**
  When summarising Treatment Length data, RAMM will ignore Surfaces shorter than the value stated.
- **Stretch Surfaces to fill gaps of less than or equal to**
  When summarising Treatment Length data, RAMM will stretch the adjacent Surfaces to fill in gaps smaller than or equal to the value stated.

In RAMM Manager, follow the menu path Maintenance > Parameter > Security Zone > Surfaces to view and maintain these settings.

> You can set these options for each Security Zone or for your Entire Network.
>
> **NOTE**

Surface Structure Screen

Surface Structure is a virtual map. It would be the result of placing all Carriageway Surface rows on top of each other in descending chronological order and rolling them flat.

It is calculated from the Carriageway Surface information. Any Surface in this Grid has a corresponding Surface in the Carriageway Surface table.

The Grid screen is read-only, and is not filtered since no removed Surfaces are included in Surface Structure views.

Detail Screen

You press the **Surface Structure** button [icon] on the main **RAMM** screen tool bar to open the **Surface Structure** Grid. The Detail screen shows the relevant Surface record only. If you open the **Carriageway Surface** screen from the tool bar you can view the currently selected Carriageway Surface row from which the Surface Structure view was generated. See Carriageway Surface Screen (on page 220).

Press **Carriageway Surface** to view the **Carriageway Surface** row from which the **Surface Structure** was generated
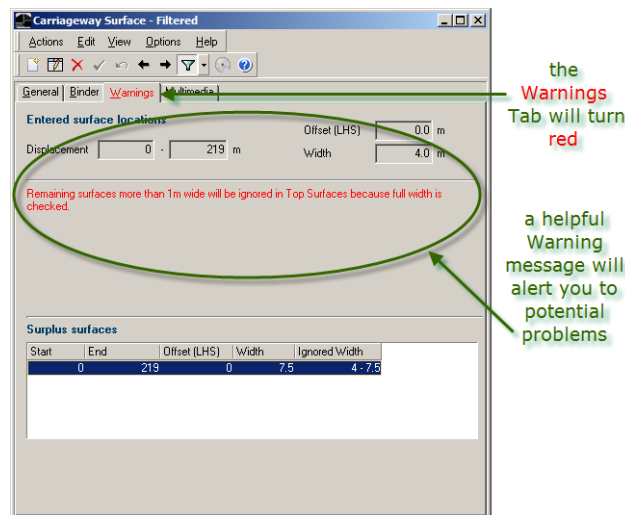
Carriageway Surface Validation Warnings

When entering a new Surface at the **Carriageway Surface** screen, validation warnings will be automatically generated if the new Surface mismatches the seal joins or width of an existing Surface.

This would cause nonexistent narrow strips or short lengths of old Surface to appear in Top Surfaces.

You can view the warnings in detail on the Warnings tab of the **Carriageway Surface** Detail screen and decide whether to proceed with entering a new Surface or to clean up your Top Surfaces first.

Full Width Option

If matching Surfaces to seal width is not necessary when adding new Surfaces or maintaining existing Surfaces, you can specify that **RAMM** should treat the new Surface as full width.

Two options are available if the Surface you are adding or maintaining covers the Carriageway completely.

1 Leave width null and let **RAMM** calculate the Surface width from the Carriageway width for Surface Structure views. Then, if the Carriageway width changes, the Surface width will also change.

For Seal Join to Seal Join views, Surfaces with null width remain null.
Where there are variances in Carriageway width over a single Surface:

- For views sectioned by Carriageway this is not necessary.
- **RAMM 3D** views of such Carriageways will have a zigzag right hand edge to represent the varying widths.

Your Surface Structure views will be tidier because the most recent Surface will always cover the complete Carriageway. With this option, however, historical analysis such as square metres of seal by year, would not be possible because c_surface width and calculated area varies with the Carriageway width.

2 Use the Full Width check box and enter a width. With this option, Surface history is better preserved. Minor differences between the current Surface and older Surfaces are ignored because Full Width tells **RAMM** that, regardless of the offsets and width of older Surfaces, the Surface now on the top is the most recent one.

> ⚠ **NOTE** With either option, when you have Surfaces that do not cover the entire Carriageway, manually enter the width and clear the Full Width check box.

Selected Full Width Option

You select the Full Width check box on the **Carriageway Surface** detail screen, as indicated below.

> It is advisable to decide at an early stage whether you will be using the Full Width function and be consistent over all Surfaces in **RAMM**. Confusion will result from some Surfaces using this function if other Surfaces do not.

Negative Offsets for Surfaces

Negative offsets can be recorded for areas of seal not directly on the Carriageway in the relevant field of the **Carriageway Surface** screen. See Carriageway Surface Screen (on page 220).

This is useful for features like bus bays or parking bays. You record a negative offset rather than record a standard (LHS) offset for this type of Surface.

Surface Graphs

You can generate a number of graphs in **RAMM** to visually represent aspects of your Network.

From the main **RAMM** screen, you follow the menu path Graphs > Surfaces and then select either Top Surfaces or All Surfaces.

> Graphing Average Years To Reseal is possible only for All Surfaces.
>
> **NOTE**

Below are two examples of graphs generated through this process.

▶ To Show Top Surfaces by Category and Material

1 From the main **RAMM** screen, follow the menu path Graphs > Surfaces > Top Surfaces to open the **Graph Options** screen.

2 Select either Entire Network or Selected Road Only from the Road Selection drop-down list. For this example, Entire Network has been selected
3 Select Material by M^2 from the Summarise drop-down list in the Values section.
4 Select Surface Category from the Main Series drop-down list. The preview map will change. This is still only sample data displayed.
5 Select Surface Material from the Secondary Series drop-down list.
6 Press OK to generate the graph.

> ⚠️ **NOTE**
>
> **RAMM** shows you only the graph and the legend by default. To view the Data Series, as above, right-click anywhere on the graph and select Data Editor. The image above shows the Data Series panel docked, but you can also float the Data Series panel by dragging it out of the graph screen.

7 You can now Save or Print the graph.

▶ To Show All Surfaces by Average Years to Reseal, Surface Material and Chip size

1 From the main **RAMM** screen, follow the menu path Graphs > Surfaces > All Surfaces to open the **Graph Options** screen.

2 Select either Entire Network or Selected Road Only from the Road Selection drop-down list.

3 Select Surface Chip Size from the Secondary Series drop-down list.

> ⚠️ **NOTE**
>
> Since the Secondary Series drop-down list is set to Surface Material by default, you need to set it to a different selection, in this case, Surface Chip Size, to be able to select Surface Material as the Main Series in the next step below.

4 Select Surface Material from the Main Series drop-down list.

5 Press OK to generate the graph and Save or Print it.

Surface Lookups

You can maintain Surface Lookups in **RAMM** and in **RAMM Manager**. You follow one of these two menu paths:

- RAMM Manager > Maintenance > Lookups > Surface > [Lookup]
- RAMM > Carriageway Surface > Actions > Maintain Lookups > [Lookup].

A number of default lookups will be available. See:

- Surface Additive (on page 228)
- Surface Adhesion (on page 229)
- Surface Binder (on page 230)
- Surface Category (on page 231)
- Surface Chip ALD (on page 233)
- Surface Material (on page 235)
- Surface Reason (on page 240)
- Surface Recycled Component (on page 241)
- Surface Source (on page 242)
- Surface Specification (on page 243).

You then use the menu selections described below and the tool bar controls of the screen you are working in to **Add** 🔲, **Delete** ❌ or **Save** ✔ Lookup records. For more information on common tool bar controls, read the **RAMM** Workspace section of the *Using RAMM* guide.

Surface Additive

The binding additive added to the mix affects the performance of a Carriageway Surface. When trying to understand the performance of a particular Carriageway Surface, it will be useful to know which binding additive was used.

Additive Type

When adding or maintaining Carriageway Surfaces, you specify the Additive Type by selecting a value from the Additive Type drop-down list in the Binder Modification section on the Binder tab of the **Carriageway Surface** screen.
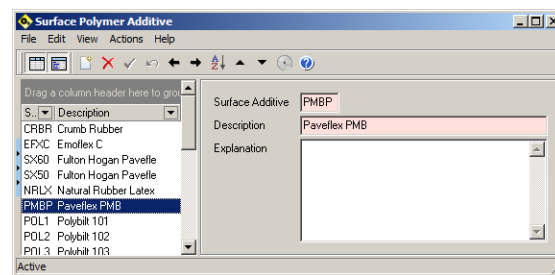

To make a value appear in the Additive Type drop-down list, you add it at the **Surface Polymer Additive** screen

Default Values

The **RAMM** default values represent the most common binding additives used in the industry. The list is likely to contain all the Additive Type values required.

User Defined Values

If the Additive Type you require is not available from the drop-down list you add it. Follow the menu path RAMM Manager > Maintenance > Lookups > Surface > Additive to open the **Surface Polymer Additive** screen.
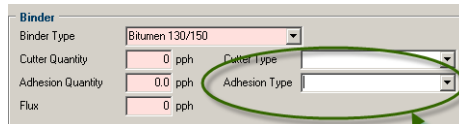

Percentage of Polymer Modification (Polymer %), Minimum Elastic Recovery at 25 degrees Celsius, Residual Rate and Minimum Softening Point (in degrees Celsius) are maintained in the Binder Modification section of the **Carriageway Surface** screen. See above.

Surface Adhesion

One of the parameters which affect the performance of a Carriageway Surface is the adhesion additive added to the mix. When you are trying to understand the performance of a particular Carriageway Surface, it will be useful to know which adhesion additive was used.

Adhesion Type

When you are adding or maintaining Carriageway Surfaces, you have the option of specifying the Adhesion Type which has modified the binder used. You select a value from the Adhesion Type drop-down list in the Binder section on the Binder tab of the **Carriageway Surface** screen.
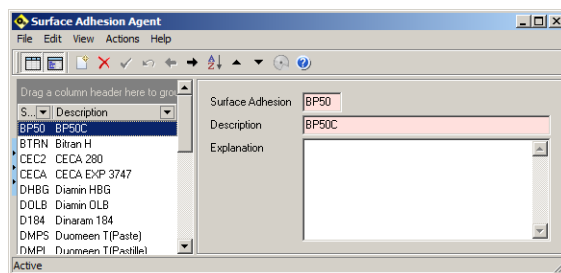
To make a value appear in the **Adhesion Type** drop-down list, you add it at the **Surface Adhesion Agent** screen

Default Values

RAMM has a number of default values which represent the most common adhesion additives used in the industry. It is likely that the list will contain all the Adhesion Type values which you require.

User Defined Values

If the Adhesion Type you require is not available from the drop-down list you can add it. You do this in **RAMM Manager**. Follow the menu path RAMM Manager > Maintenance > Lookups > Surface > Adhesion to open the **Surface Adhesion Agent** screen.

Surface Binder

The central parameter which affects the performance of a Carriageway Surface is the binder itself. When you are trying to understand the performance of a particular Carriageway Surface, it will be useful to know which binder was used.

Binder Type

When you are adding or maintaining Carriageway Surfaces, you have the option of specifying the Binder Type which has modified the binder used. You select a value from the Binder Type drop-down list in the Binder section on the Binder tab of the **Carriageway Surface** screen. See Carriageway Surface Screen (on page 220).

To make a value appear in the Binder Type
drop-down list, you add it at the
Surface Binder screen

Default Values

RAMM has a number of default values which represent the most common binders used in the industry. It is likely that the list will contain all the Binder Type values which you require.

User Defined Values

In the unlikely event that the Binder Type you require is not available from the drop-down list you can add it. You do this in **RAMM Manager**.

Follow the menu path RAMM Manager > Maintenance > Lookups > Surface > Binder to open the **Surface Binder** screen. This screen works the same as all other **RAMM** Lookup maintenance screens.

Surface Category

One of the parameters which affects the performance of a Carriageway Surface is the construction material used.   When you are trying to understand the performance of a particular Carriageway Surface, it will be useful to know which construction material was used.

So this information can be held in **RAMM**.

Material

When you are adding or maintaining Carriageway Surfaces, you have the option of specifying the Material used.

You select a value from the General drop-down list in the General section on the General tab of the **Carriageway Surface** screen. See Carriageway Surface Screen (on page 220). Surface Category is also used when maintaining Surface Material Lookups. See Surface Material (on page 235).

General Section on General Tab of Carriageway Surface Detail Screen

Default Values

RAMM has a number of default values which represent the most common construction materials used in the industry. It is likely that the list will contain all the Material values which you require.

User Defined Values

In the unlikely event that the Material you require is not available from the drop-down list you can add it. You do this in **RAMM Manager**.

Follow the menu path RAMM Manager > Maintenance > Lookups > Surface > Category to open the **Surface Material Category** screen.

This screen works the same as all other **RAMM** Lookup maintenance screens with the exception of the aspects mentioned below.

Surface Function

Selecting Yes at the Surface Function can be n.a drop-down list will ensure that the Surface materials in this Surface category will be shown in the Surface Materials list of the **Carriageway Surface** screen when the Surface Function is set to Not Applicable.

By default, Chipseal and Asphalt Mix have this option disabled.

These selections let **RAMM** know what Surface categories should be associated with Surface functions to give you greater control over them. You also have more options, like setting up two different categories of Chipseal.

Surface Chip ALD

You need to set up Chip ALD (average least dimension) parameters only if you use **RAMM** to calculate the depth of your Carriageway Surfaces. So you would only use Surface Chip codes if you had Materials for which you had selected the Calculate Surface Depth from Chip ALD check box on the **Surface Material** screen.

If you do not intend to use this function, skip this topic.

Calculate Surface Depth from Chip ALD

Follow the menu path RAMM Manager > Maintenance > Lookups > Surface > ALD to open the **Surface Chip** screen. This screen differs from the standard **RAMM** Lookup maintenance screens. The Add New Record ⬜ and Delete Record ❌ functions have been disabled.

> ⚠️ **NOTE**
> There are six default Chip ALDs. You can maintain these but may not delete or merge them. You can not add new Chip ALDs.

Default Values

RAMM has six default Chip ALD values which represent the median average least dimension for the grade of chip. These are measured in millimetres.

You can change these Default ALD values.
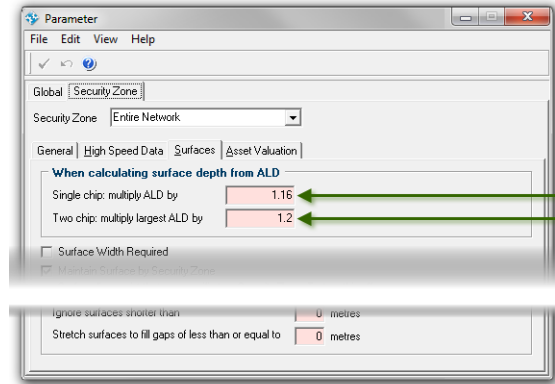
User Defined Minimum and Maximum ALD Values

You have the option to define Minimum ALD and Maximum ALD values. These are used for validation purposes when importing a file containing Carriageway Surface values.

Surface Depth

In the Surface Depth section there are two calculated values being the Single Chip and Two Chip Surface depths.

RAMM calculates these values by multiplying the Default ALD (13.00 in the above graphic) with the two factors on the Surfaces tab of the Security Zone tab of the **Parameter** screen.

In the graphic below these values are 1.16 and 1.2.

Surface Material

The most complex and important parameter which affects the performance of a Carriageway Surface is the Surface Material itself.

Default Values

RAMM has a number of default values which represent the most common Surface Materials used in the industry. It is likely that the list will contain all the Surface Material values which you require.

User Defined Values

If the Surface Material you require is not available, you add it in **RAMM Manager**. Follow the menu path RAMM Manager > Maintenance > Lookups > Surface > Material to open the **Surface Material** screen.

Surface Valid for 1st Coat

Select this check box if the Surface Material will be used as a First Coat treatment. If this option is cleared, then, when 1st Coat is selected at the Function drop-down list on the General section of the General tab on the **Carriageway Surface** screen, the Surface Material will not be available at the Material drop-down list.

Calculate Surface Depth from Chip ALD

This option is selected by default for most Surface materials. It is cleared by default for the Surface Materials Locking Seal, Texturising Seal and Void Fill Seal. These are smaller chip seals where the depth added by the Surface is considered immaterial, and therefore set to zero. See Surface Chip ALD (on page 233).

You can override these settings in the **Carriageway Surface** Detail screen.

2nd Chip

You can define whether a 2nd Chip Size value for a particular Surface Material is Required, Optional or Not Available. Depending on this setting at the 2nd Chip drop-down list, the 2nd Chip Size row of fields will be available or not.

Chip size

Chip size can be left null, in which case **RAMM** will apply default values to all chip sizes.

User Defined Minimum and Maximum Values

You have the option to define Minimum and Maximum Depth and Chip Size values. These are used for validation purposes when importing a file containing Carriageway Surface values.
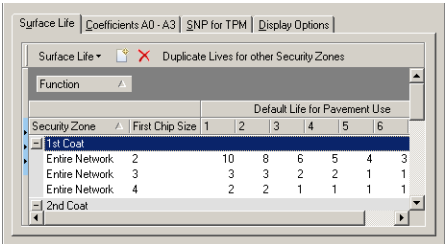
Default Values Panel

You can view and maintain default values for each Surface Material for:

- **Surface Life**
  See Surface Life (on page 237).
- **Coefficients A0 - A3**
  See Coefficients A0 - A3 (on page 238).
- **SNP for TPM**
  See SNP for TPM (on page 239).
- **Display Options**
  See Display Options (on page 240).

Surface Life

You can view and maintain the Default Life for Pavement Use values at the Surface Life tab in the panel at the lower section of the **Surface Material** screen.

You can do this for each Material type.

The panel displays the default value which **RAMM** will use for Pavement Life when insufficient data is available for calculation. The Pavement Life value depends on the combination of Chip Size and Pavement Use.

These values can be for the Entire Network or can be entered for each Security Zone. Values exist for first and second coats.

Default Carriageway Surface Life

When you are adding a Carriageway Surface at the **Carriageway Surface** screen, you must choose a Material Type at the Material drop-down list on the General section. When you do this the Default Life, Modified Life and Expires fields will default with values based on those from the Surface Life tab.
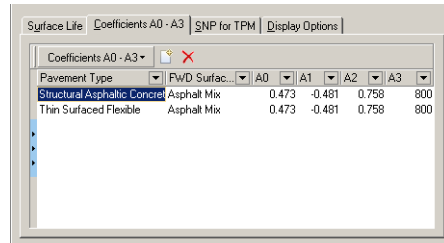

Default Life, Modified Life and Expires

The Default Life value is initially the same as the Modified Life value. If you change values in the Surface Life tab for the Surface Material, this may cause a change in the Modified Life value, and the Expires value, to reflect the changes you have made.

Also, if a parameter, such as the Traffic Count changes for the Carriageway Surface, **RAMM** will then select a different value from the existing values in the Surface Life tab for the Surface life expectancy. The Modified Life field value will then change to reflect the new circumstances. The Expires value will also change to reflect the modification.

Coefficients A0 – A3

You can view and maintain the Coefficients used in SNP calculations at the Coefficients A0 - A3 tab in the panel at the lower section of the **Surface Material** screen.

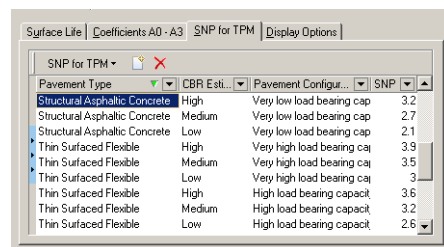You can do this for each Material type.

> It is strongly recommended that you do not edit these default values.

SNP for TPM

You can view and maintain the Adjusted Structural Number (SNP) for the Typical Pavement Method (TPM) at the SNP for TPM tab in the panel at the lower section of the **Surface Material** screen.

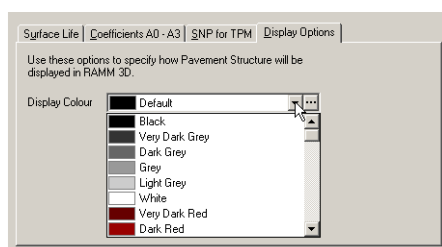You can do this for each Material type.

Default Manual Values

RAMM potentially uses seven methods to calculate the SNP. In the event that insufficient data is available for the SNP calculation, **RAMM** will use the SNP number in this table based on the Surface Material and parameters.

That is why you are able to maintain these numbers in case your experience is different from the default values.

Display Options

At the Display Options tab in the panel at the lower section of the **Surface Material** screen, you can configure the manner in which Surface Material will display in **RAMM** 3D.
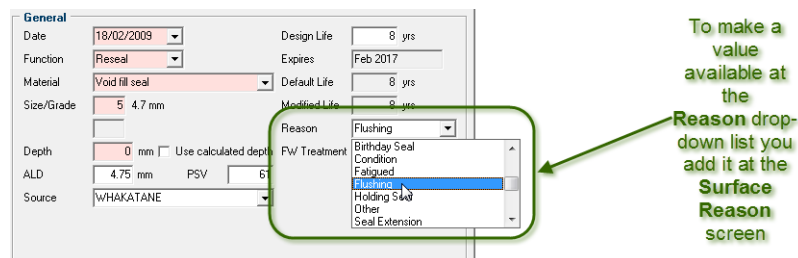

You can use the drop-down list as in the above graphic or press ⋯ to open a standard Windows **Color** selection screen and define your own custom colour for each individual Surface Material.

Surface Reason

When you are adding or maintaining Carriageway Surfaces, you have the option of specifying the Reason why the Carriageway Surface record has been modified. You select a value from the Reason drop-down list in the General section on the General tab of the **Carriageway Surface** screen. See Carriageway Surface Screen (on page 220).

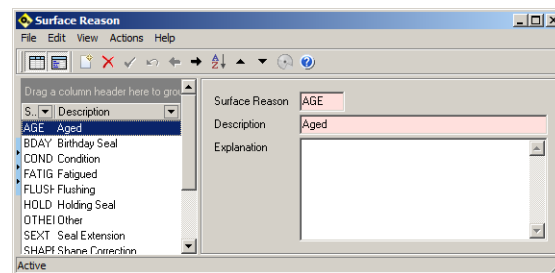## General Section on General Tab of Carriageway Surface Detail Screen

Default Values

RAMM has a number of default values which represent the most common reasons used in the industry. It is likely that the list will contain all the Reason values which you require.

User Defined Values

In the unlikely event that the Reason you require is not available from the drop-down list you can add it. You do this in **RAMM Manager**.
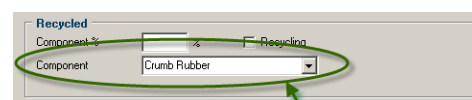
Follow the menu path RAMM Manager > Maintenance > Lookups > Surface > Reason to open the **Surface Reason** screen. This screen works the same as all other **RAMM** Lookup maintenance screens.

Surface Recycled Component

When you are adding or maintaining Carriageway Surfaces, you have the option of specifying the Recycled Component which has modified the binder used. You select a value from the Component drop-down list in the Recycled section on the Binder tab of the **Carriageway Surface** screen. See Carriageway Surface Screen (on page 220).

Recycled Section on Binder Tab of Carriageway Surface Detail Screen

To make a value appear in the Component drop-down list, you add it at the **Recycled Component** screen
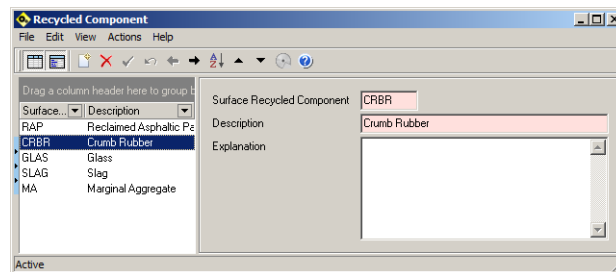
Default Values

RAMM has a number of default values which represent the most common Recycled Components used in the industry. It is likely that the list will contain all the Recycled Component values which you require.

User Defined Values

In the unlikely event that the Recycled Component you require is not available from the drop-down list you can add it. You do this in **RAMM Manager**.

Follow the menu path RAMM Manager > Maintenance > Lookups > Surface > Recycled Component to open the **Recycled Component** screen. This screen works the same as all other **RAMM** Lookup maintenance screens.

Surface Source

When you are adding or maintaining Carriageway Surfaces, you can specify the Source of the Surface Material. You select a value from the Source drop-down list in the General section on the General tab of the **Carriageway Surface** screen. You can then do a comparison report on the Source of particular Surface Materials for efficiency and economy reasons.

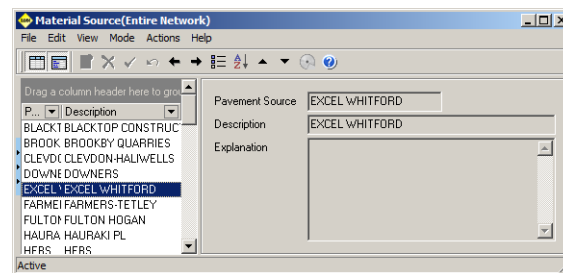## General Section on General Tab of Carriageway Surface Detail Screen

Default Values

Unlike the other Surface Lookups, there are no default Source values. This is because the available Sources for Surface Materials will differ dependent on the Carriageway location. You define your own Surface Material Sources.

User Defined Values

You must add all the Source values which you require. You do this in **RAMM Manager**. Follow the menu path RAMM Manager > Maintenance > Lookups > Surface > Specification to open the **Material Source** screen.
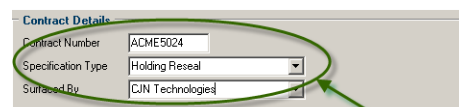

Surface Specification

If Carriageway Surface maintenance is being carried out under a Contract, there may be particular Contract Specifications which need to be recorded in **RAMM**.

Specification Type

When you are adding or maintaining Carriageway Surfaces, you have the option of specifying the Specification Type in the Contract under which the work was carried out. You select a value from the Specification Type drop-down list in the Contract Details section on the Binder tab of the **Carriageway Surface** screen. See Carriageway Surface Screen (on page 220).

Contract Details Section on Binder Tab of Carriageway Surface Detail Screen
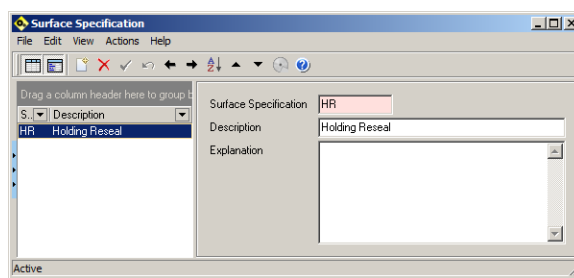

Default Values

Each Contract is different. So the Specifications for each Contract will also be different. So, unlike the other Surface Lookups, there are no default Specification Type values.

User Defined Values

You must add all the Specification Type values which you require. You do this in **RAMM Manager**. Follow the menu path RAMM Manager > Maintenance > Lookups > Surface > Specification to open the **Surface Specification** screen. This screen works the same as all other **RAMM** Lookup maintenance screens.

CHAPTER 9

Pavement Structure

You use **RAMM** Pavement Structure to maintain and reconstruct pavement layers. Pavement Structure data can be exported to dTIMS.

In This Chapter

Introduction to Pavement Structure

You need to understand basic Pavement Structure concepts if you want to work with **RAMM** Pavement Structure. If you are new to **RAMM** or to the Road maintenance industry, you should read this section before working with Pavement Structure.

Reconstruction

Pavement reconstruction details are all part of the same table as other Pavement details. Reconstruction can extend over more than one layer necessary.

Pavement Builder Wizard

You use the Pavement Builder Wizard to make maintaining reconstruction data simple and accurate.

Pavement Test Pits

You can store Pavement Test Pit data in **RAMM**, and use it to automatically validate the Pavement Layer data.
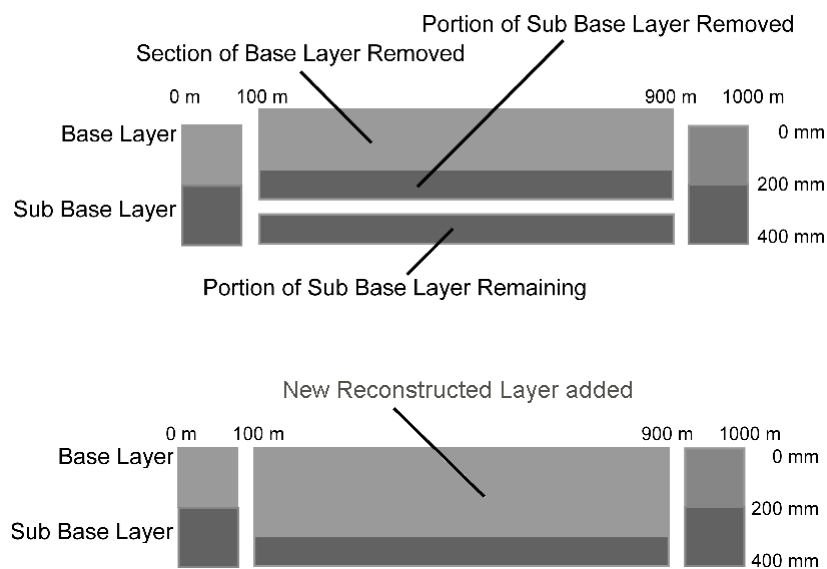
Layers and Pavement Structure

You maintain details of the various layers of material that make up the structure of your Roads. Over the life of the Road, layers of material are added and removed. **RAMM** derives Pavement Structure information from these detailed layer records, to show a current model of the Road that takes account of all the reconstruction work that has been done. The diagrams below show the layers in longitudinal section.

The start depth of the layer immediately below the Top Surface is assumed to be zero. Original and reconstructed layers are arranged beneath. **RAMM** can store up to nine separate layers for any seal length.
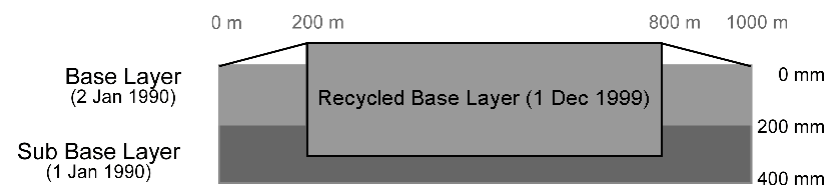
Reconstruction

When you remove existing layers and replace them with new layers, **RAMM** automatically breaks up the existing structure into blocks at the necessary displacements and offsets. The reconstructed layer can extend beyond the current base layer.

Recycled Layers

You can recycle existing layers, in this case with an increase in formation level.

The reconstructed structure is shown in **RAMM** as below.

Overlaid Layers

Reconstruction can involve adding new layers without removing existing layers. Top Surface seals are automatically converted into Pavement Layer records.

The original Carriageway Surface (c-surface) row in the table may be split to correspond with the Start and End displacements of the recycled layer and the Removed Date set equal to the recycle date.

Major Layers

When you are recording Pavement Layer changes, minor work often results in fragmented and complex layer data. This could be as a result of:

- narrow strips from seal widening
- minor differences in measuring width
- differences in pavement layer start and end.

You can recreate Pavement Structure to define Major Pavement Structure from these minor layers. They then become part of the detailed Pavement Structure views below. See Recreating Pavement Structure (on page 248).

When you are working with Treatment Lengths you can choose to view only the Major Seal Lengths. You can also simplify Pavement Structure by showing only Major Structures.

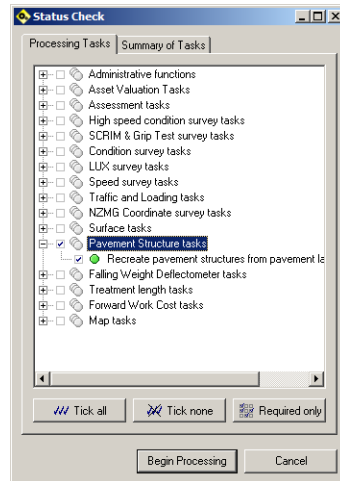This also enhances the usefulness of data for export to dTIMS.

Recreating Pavement Structure

If your pavement structure data needs surface redefinition to make it more accurate you should recreate your Pavement Structure. This will give you more flexibility in viewing the information.
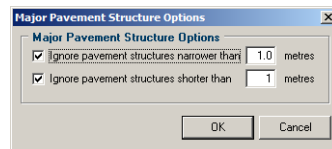
You may also want to recreate Pavement Structure to redefine your Major Pavement Structures to differentiate them from the Minor Pavement Structures which are ignored for certain calculations.
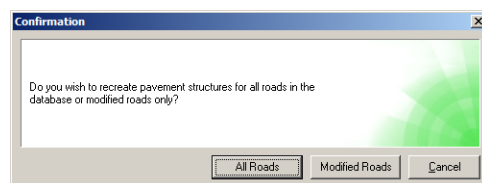
▶ **To Recreate Pavement Structure**

1   In **RAMM Manager**, you follow the menu path Processes > Status Check to open the **Status Check** dialog.

2   Clear any selected options.

3   Select Recreate pavement structures from pavement layer information from beneath Pavement Structure tasks.

4   Press Begin Processing to open the **Major Pavement Structure Options** dialog.

5   You now set the options for Major Pavement Structures. You do this so that when **RAMM** is recreating Pavement Structure it will ignore digouts and other minor repairs. The values above are the defaults. These options control how **RAMM** will separate major pavement layers from minor pavement layers. See Major Layers (on page 248).

6   Press OK to open a **Confirmation** dialog which asks if you want to recreate Pavement Structures for all Roads in the Network or for only those Roads which have been modified.

7   You would press All Roads if this procedure has never been performed before. You would save time and press Modified Roads if you have previously recreated Pavement Structure.

8   A **Progress** screen will display while Pavement Structure is recreated. This screen will close and you will be returned to the **RAMM Manager** home screen.

Viewing Pavement Structure Details

When you are working with Pavement Structure, you will want to view the various structures that make up your Roads. See Layers and Pavement Structure (on page 246).

RAMM 3D

With **RAMM 3D**, the pavement structure is shown as a three dimensional coloured model which is able to be rotated. You can:

- set the location
- view additional details
- control the magnification and viewing angle.

See **RAMM 3D** (on page 179).

Data Update

When you are viewing Pavement Structure, you can view detailed data for the current structure record. You should take into account the following:

- Pavement Structure data is derived, so you cannot add, change or delete details in this screen. See Maintaining Pavement Layer Data (on page 254).
- you can change the original Pavement Layer details.

You can view Pavement Structure details in **RAMM 3D**, the Pavement Structure Detail or Grid screen as below.

Viewing Pavement Structure Details in RAMM Grid and Detail Screens

1   Launch **RAMM**.
2   Select one or more Roads in the Road Selection panel and press the **Pavement Structure** button on the **RAMM** main screen tool bar to open the Pavement Structure Grid screen.

3   Double-click in any row or follow the menu path View > Detail to open the **Pavement Structure** Detail screen for the record.

4   The Grid screen can also be launched from the Detail screen if you follow the menu path View > Grid.

5   View the details. In particular, note:

-   **Type**
    Whether the Pavement Structure record is a Major or Detailed Structure.
-   **Start Depth**
    Depth at which the layer begins.
-   **[Notes]**
    At the bottom of the screen, you will see text notes about the Pavement Structure, including whether or not it has been validated against Test Pit data. See Validating Pavement Data Against Test Pits (on page 261).

6   You can change only the original Pavement Layer details. Pavement Structure details are derived. See Maintaining Pavement Layer Data (on page 254).

Viewing Pavement Structure Details in RAMM 3D

1   On the tool bar at the top of the **Pavement Structure** Detail screen, press the Pavement Layer ▮ Pavement Layer ▮ button to open the **Pavement Layer - Filtered** screen.

2   Press Show RAMM 3D ▮ to open the **RAMM 3D** screen.

3   Hover your mouse over any pavement section. A tool tip pop-up will appear listing the Top Surface, Location, Dimensions, Date, Life, Type, Chip Size and Note information.

4   You can launch the **Pavement Structure** Detail or Grid screens from here by pressing ▮ or ▮ respectively. These buttons are located at the bottom of the List panel on the left.

Maintaining Pavement Layer Data – Minor Changes Only

When you are working with Pavement Structure you will need to maintain Pavement Layer data.

You perform this procedure for minor changes only.

> **Tip**
>
> You can manually update records in the **Pavement Layer** screen. For any changes other than minor data correction it is strongly recommended that you use the Pavement Builder because it helps you minimise errors. See Maintaining Pavement Layer Data (on page 254).

▶ **To Maintain Pavement Layer Data**

1 Launch **RAMM**.

2 Select, in the **Road Selection** panel, the Road whose Pavement Layer you want to maintain.

3 Press to open the **Pavement Structure** Grid screen.

4 Double-click in the row of the Pavement Layer you want to maintain to open the **Pavement Structure** Detail screen.

5 Press to open the **Pavement Layer** screen which will display as **Filtered**.

> Read the *Using RAMM* guide for details about working with filters.

6   Make the minor changes to the record.

7   Press ✓ to save your changes and exit from the screens.

Maintaining Pavement Layer Data

When you are maintaining Pavement Layer data, you should use the **Pavement Builder Wizard** to record changes. You can manually update records in the Pavement Layer screen for minor changes. But use the Pavement Builder Wizard for all but the most minor changes as it will help you minimise errors.

> You need to take special note of the Layer Date. This defaults to the data entry date or to one day later than the previous new layer date. **RAMM** uses this to determine the order of layers. **RAMM** ensures that each layer has a unique date. You should ensure that you select the correct date of the physical work done. This is especially true if you are maintaining the information after the physical work has been completed.
>
> This is especially important when entering more than one layer at a time because the **RAMM** date validation process will ensure that you will not be able to enter the same date for two layers, or to set a layer date in the future.
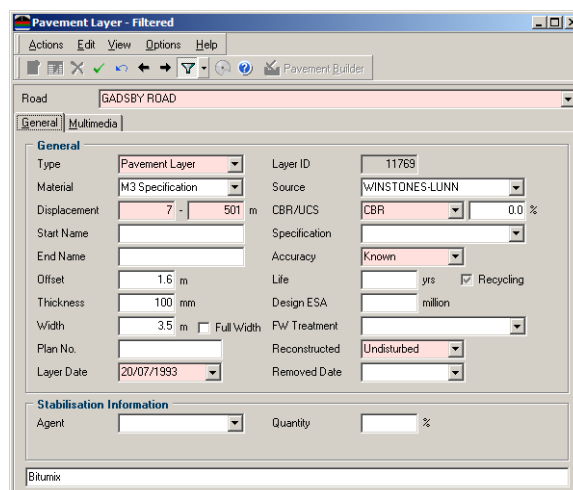
▶   **To Maintain Pavement Layer Data Using the Pavement Builder**

1   Launch **RAMM**.

2   Select, in the Road Selection panel, the Road whose Pavement Layer you want to maintain.

3   Press ▨ to open the **Pavement Structure** Grid screen.

4   Double-click in the row of the record containing the start or end displacement of the seal length whose pavement you want to reconstruct. The **Pavement Structure** Detail screen will open.

5   Press [Pavement Layer] to open the **Pavement Layer** screen which will display as **Filtered**.

> ⚠ **NOTE**
>
> A database filter is set so that only current layers are shown. That is those records whose Removed Date is null. To view historical layer data, you need to clear the filter.
>
> Read the *Using RAMM* guide for details about working with filters.

6   Press [Pavement Builder] or follow the menu path **Actions > Pavement Builder** to open the **Pavement Builder** Wizard screen. The layers for the selected displacement will be listed.

7 Type in or select the details of the reconstructed pavement length. Please note that the Displacement **Start** and **End** are measured in metres and this can span more than one existing record.

8 Take particular care with selecting the reconstruction date from the **Reconstructed** drop-down calendar. See the Warning above.

9 Press **Next** to open the **Pavement Builder - Material Modified/Removed** screen.

10 If the existing surfaces were removed, accept the default **Existing surfaces were removed...** option and go to step 11. Otherwise select the **Existing surfaces were retained...** option and go to step 12.

11 Type in the **Depth...** field, the depth in millimetres of the Pavement Layers which were removed or replaced. Surface records are then either marked as historical with their **Removed Date** set to the reconstruction date you specified or converted into Pavement Layer records. Go directly to step 15.

12 Press **Next** to open the **Pavement Builder - Create pavement layer from existing surfaces** screen.

13 Specify, in the **Depth...** field, the depth in millimetres of the existing surfaces which were retained.

14 Select the material from which the Pavement Layer was constructed from the **Material** drop-down list and add notes if useful.

15 Press Next to open the **Pavement Builder - New Layer** screen.

16 Press [icon] and type in or select the details of your new layer.

- When you specify a Material, if you have not already specified a Thickness it is set to the default thickness for that material.
- If you are recycling old seals, in the Layer Material field, select the material representing the highest percentage content of the new layer. For instance, if a significant amount of AP40 is added to the recycle, select AP40 and add a note to say Recycled with 150mm old layers as below. You can also use Composite of Different Recycle and add an explanatory note.
- You can add Fabric and Filter layers with Thickness set to zero (0).

17 Press [icon] to save the current layer. You can add more than one layer and their details will display at the bottom of the screen. For instance if you added two-coat chip seal you need to add both layers. If you need to add another layer, go to step 16. Otherwise, go to step 18.

18   Press **Next** to open the **Pavement Builder - New Surface** screen.

19   Add new Surface layer details at the **General** and **Binder** tabs. You can add more than one layer. The details will display at the bottom of the screen.

20 Press **Finish** to close the Pavement Builder and return to the Pavement Layer screen. You can use **RAMM 3D** to view the layers. See **RAMM 3D** (on page 179).

21 Launch **RAMM 3D** from the main **RAMM** screen, and remove the Surface views in the **View Selection** panel to see the Pavement Structure.

Maintaining Pavement Test Pit Data

When working with Pavement Structure, you can maintain data from Pavement Test Pit readings. You do this at the **Pavement Test Pit** Detail and Grid screens.

You may need to maintain the **Test Pit Survey Method** Lookup. You do this at the **Test Pit Survey Method** screen.

These screens are quite standard in their behaviour. Read the *Using RAMM* guide for general details about working with standard **RAMM** screens.

You can validate Pavement data against your Test Pit readings. See Validating Pavement Data Against Test Pits (on page 261).

▶ **To Maintain Pavement Test Pit Data**

1 Launch **RAMM**.

2 Press to open the **Pavement Test Pit** Grid screen.

3 You can add a new record, select and maintain an existing record. You do this in the Detail screen. Follow the menu path View > Detail to open the **Pavement Test Pit** Detail screen.

4 Type and select the Pavement Test Pit details at the Test Pit, Readings and Multimedia tabs and then save your changes.

▶ **To Maintain Test Pit Lookup Data**

1 Launch **RAMM**.

2 Press [icon] to open the **Pavement Test Pit** Grid screen.

3 Follow the menu path Actions > Maintain Lookup > Survey Method to open the **Test Pit Method** screen. You can also make the changes in **RAMM Manager** by following the menu path Maintenance > Lookups > Pavement > Survey Method.

4   Make your changes and then close the screen to save them.

Validating Pavement Data Against Test Pits

When you are working with Pavement Structure, you can validate your Pavement Layer data against Pavement Test Pit data for the same seal lengths. This happens during the Treatment Length Summarise process and produces a report showing potential issues.

▶ **To Set Validation for Pavement Data**

1   Launch **RAMM Manager**.
2   Follow the menu path Processes > Status Check to open the **Status Check** screen.

3   Clear all options except Treatment length tasks.
4   Press Begin Processing to open the **Recalculate Treatment Length Summary Data** screen.

5   Press the **Pavement Layer Options** tab to access the (unnamed) **Warnings** panel.

6   Select **Warn where no pavement layer data exists**.

7   Select **Warn where the Total Pavement Depth differs between Test Pit and Pavement Structure data by more X % or more**. Type the percentage figure in the field or accept the default 10%.

8   Press OK to begin processing. A **Progress** screen will display **RAMM** actions.

9   An Exception report is produced which you can use for validation purposes.

Maintaining Pavement Lookups

When you are working with Pavement Structure, there are Lookup tables for **Material**, **Source** and other parameters. You may need to maintain these from time to time.

The Lookup screens all behave like other standard **RAMM** Lookup screens. For general details about working with standard screens, read the *Using RAMM* guide.

> You will need to have the correct Security Permissions before you can perform this procedure. See your Systems Administrator for assistance if required.

▶ **To Maintain Lookups**

1 Launch **RAMM**.

2 Press [icon] to open the **Pavement Layer** screen.

3 Follow the menu path Actions > Maintain Lookup > [Lookup Name]. It is also possible to perform this procedure in **RAMM Manager**. You follow the menu path Maintenance > Lookups > Pavement > [Lookup Name].

4 One of the screens below will open depending on the Lookup Name you chose. You maintain the Lookup in the standard **RAMM** fashion and then save your changes.

Pavement Material

Material Source

Pavement Specification

Stabilising Agent

Pavement Subgrade

Pavement Strength

Pavement Strength is measured using the Adjusted Structural Number (SNP) Number in **RAMM**.

SNP is calculated against Treatment Lengths. SNP lengths are recorded and maintained separately in **RAMM** matching the Treatment Length Road and Displacements for each possible SNP method. These lengths are then used by the process for choosing SNP according to priority, which picks the highest priority value to return to the Treatment Length.

This information is then used in dTIMS.

In This Chapter

Introduction

With the introduction of dTIMS, the methodologies used for the calculation of Pavement Strength in the form of the Adjusted Structural Number (SNP) have been implemented in **RAMM**.

Of the original seven methodologies, the following methods have been implemented in **RAMM**:

- FWD (Falling Weight Deflectometer) with Thickness.
- FWD without Thickness.
- Typical Pavement Method.
- Direct data entry.

Using Treatment Lengths as the Road Sections, a value for SNP is calculated using each of the first three methods listed above. This assumes that the appropriate data is available for the chosen method.   All of the calculated values are recorded and, using predefined preferences, the best value for SNP is assigned to the Treatment Length.

This value for the SNP can then be exported, along with other Treatment Length characteristics, for modelling either with dTIMS.

Pavement Strength Controls

RAMM and **RAMM Manager** are both used to manage Pavement Strength.

In general, configuration settings such as values for the A0 to A7 coefficients are found in **RAMM Manager**. You follow the menu path Projects > Pavement Strength > [Option] to launch the relevant screens.

Calculation of SNP for Treatment Lengths takes place in **RAMM**, using the Treatment Length grid.

> Coefficients A0 to A3 are related to Surface Materials and Pavement Types. You configure these coefficients at the **Surface Material** maintenance screen which is available from the menu path Maintenance > Lookups > Surface > Material.

Pavement Strength Calculation Parameters

You set parameters for the Pavement Strength calculation in **RAMM Manager**. If you follow the menu path Projects > Pavement Strength > Parameter, the **Set Default Formula for FWD Only Method** screen will open. You then have the option to select one of three default formulae and define the Adjusted Structural Number (SNP) value range for the chosen option.

Choosing the Default Formula

You can select one of three available formulae to use as default in **RAMM** to calculate SNP by the FWD Only method. They are:

- **NZ Equation**
  This is the default
- **Roberts**
- **Jameson**.

Defining Valid SNP Values

You have the option to set upper and lower limits, between which the calculated SNP will be considered valid. The default values should be sufficient for most purposes, but you can broaden or restrict the range as required.

SNP Methods Definition

There are five default **RAMM** methods for calculating the Adjusted Structural Number (SNP).

You follow the menu path Projects > Pavement Strength > SNP Method in **RAMM Manager** to view and maintain them.

SNP Method Screen

Priority

Where you choose to have **RAMM** calculate the SNP using more than one method, you need to set Priority values to determine which resulting SNP value will be assigned to the Treatment Length, should more than one value be successfully calculated.

The Priority values will depend on the number of SNP Methods defined.

As there are five default SNP Methods, there are five Priority values ranging from 1 (use this one first) to 5 (use this calculated value only if no other value was successfully calculated)

You must assign a Priority to each SNP Method.

You use the Up ▲ and Down ▼ arrows to rearrange the relative priority of the methods.

When you rearrange the relative priority of an SNP Method, **RAMM Manager** changes other affected values. For instance, if you change an SNP Method Priority value from 5 to 4, **RAMM Manager** automatically changes the Priority value of the SNP Method which was 4 to 5.

Method Chosen for Calculation

You have the option for each SNP Method, to enable or disable it.

If you select the **Method Chosen for Calculation** check box then **RAMM** will use the selected method when calculating values for the SNP for your Treatment Lengths.

All methods enabled this way will be used, whenever possible, for a given Treatment Length. In those cases where there is insufficient information available for a Treatment Length to use a method, a report is produced. See View Error Log (on page 283).

Reset Calculated SNP

You select the Reset Calculated SNP check box to remove all previously calculated results for a given Treatment Length when calculating a value using the selected method.

If you clear the check box the SNP values will not be deleted during the calculation process. They will remain in the SNP Lengths data where you can use them for reference.

Explanation

You can add additional comments, in particular the reason why a particular method has not been selected for use.

Notes which are added at the time of creation or editing can be very useful at a later date. Notes can help if you have forgotten why you did something or if another user needs to understand your reasoning and purpose.

Road Subnetwork Definition

You can define discrete areas in your Network for SNP calculation.

You might do this because you want to analyse only part of the Network. It is also possible that the settings which you define, at the **SNP Method** screen, as the defaults for your Network may not be appropriate for some areas within the Network. See SNP Methods Definition (on page 267).

To divide your Network into areas of particular characteristics you define a Road Subnetwork. You do this in **RAMM Manager** by following the menu path Projects > Pavement Strength > Road Sub-Network to open the **Sub-Network** screen. When you have defined the Subnetwork you associate Treatment Lengths with it.

SNP Method

When you define a Road Subnetwork you have the option to define which SNP Methods are to be used within the Road Subnetwork when calculating the Pavement Strength and the priority given to each method.

If you choose not to assign SNP Methods to the Subnetwork, the methods and Priorities which you set at the **SNP Methods** screen will be used.

Pavement Thickness Coefficient Definition

The thickness of the pavement affects the Adjusted Strength Number (SNP) calculation.

The Pavement Thickness Coefficients used in the calculations have been optimised.

You maintain and view these coefficients at the Pavement Thickness Coefficients screen. In **RAMM Manager**, you follow the menu path Pavement Strength > Pavement Thickness Coefficients.

Total Thickness

When calculating the SNP value, the process will determine the total thickness of major pavement layers within the selected Treatment Length. This determines which set of coefficients to use. The coefficients used will be those which belong to the maximum total thickness, equal to or less than that which is calculated for the Treatment Length.

For example, given the above settings, if the total thickness of major pavement layers within the Treatment Length is calculated to be 500mm, the coefficients used will be those with a total thickness of 380mm.

> The Pavement Thickness Coefficients have been optimised. You should exercise extreme caution before changing or adding to these values.

Coefficients A4, A5, A6, A7

When you have defined a Total Thickness value, you assign coefficient values to the A4, A5, A6, and A7 coefficients.

> **NOTE**
> Coefficients A0 to A3 are related to Surface Materials and Pavement Types. You configure these coefficients at the Surface Material maintenance screen which is available from the menu path Maintenance > Lookups > Surface > Material.

Soil Type Coefficient Definition

The soil beneath the Pavement affects the Adjusted Structural Number (SNP) calculation.

You maintain Soil Type Coefficients in **RAMM Manager** at the **Soil Type Coefficient** screen. You launch this by following the menu path Projects > Pavement Strength > Sub-Grade Soil Type Coefficients.

You define the name of the Soil Type, assign the Coefficient value and set the SNP Increment.

Soil Types and Treatment Lengths

Treatment Lengths are not automatically associated with a particular Soil Type. You will need to assign a soil type to each of your Treatment Lengths manually where appropriate.

To do this you would open a grid screen with the Treatment Lengths to which you want to assign the Soil Type and then use the **Bulk Update** option. See Assigning SNP Characteristics to Treatment Lengths (on page 273).

Surface Material Coefficient Definition

The A0 to A3 Coefficients depend on the Surface Material and a Pavement Type. They are defined in **RAMM Manager** with the other of the Surface Material characteristics. You follow the menu path Maintenance > Lookups > Surface > Material. See Surface Material (on page 235).

You press the Coefficients A0-A3 tab to open the panel.

You define A0, A1, A2, and A3 coefficient values for each Surface Material. You also need to decide whether the Surface Material/Pavement Type combination falls into the Asphalt Mix or Surface Treatment FWD Surface Type as required by the FWD methods for calculating SNP.

SNP for TPM Definition

The Typical Pavement Method (TPM) for estimating the Adjusted Strength Number (SNP) defines a value for each combination of the Surface Material, Pavement Type, CBR estimate, and Pavement configuration.

You define these values in **RAMM Manager** from the **Surface Material** maintenance screen. Follow the menu path Maintenance > Lookups > Surface > Material and press the SNP for TPM tab.

The CBR estimate and Pavement configuration are not automatically assigned to Treatment Lengths. You need to assign them to each Treatment Length in turn.

Assigning SNP Characteristics to Treatment Lengths

You can assign values for the Soil Type, CBR Estimate and Pavement Configuration for an individual Treatment Length or you can assign the values in bulk. You do this in **RAMM** at the **Treatment Length** Detail or Grid screens.

> !
> NOTE
>
> If you do not see the tabs you need on the **Treatment Length** Detail screen, you may have enabled only the default tabs. Follow the menu path Options > Treatment Length Views and select the tabs you need.

► To Add SNP Characteristics to a Treatment Length

1 Launch **RAMM**.

2 Select, in the Road Selection panel the Road containing the Treatment Length to which you wish to assign SNP characteristics.

3 Press [icon] to open the **Treatment Length** Grid screen.

4 Double-click the Treatment Length to which you wish to assign SNP characteristics. The Detail screen for the Treatment Length will open.

5 Press the Pavement Layer tab.

6 Press [icon] to make the fields in the Strength Number section available.

7 Select the SNP characteristics from the Soil Type, CBR Estimate and Pavement Configuration drop-down lists.

8 Press [icon] to save your changes.

► To Add SNP Characteristics to a Number of Treatment Lengths

1 Launch **RAMM**.

2 Select, in the Road Selection panel the Roads containing the Treatment Lengths to which you wish to assign SNP characteristics in bulk.

3   Press to open the **Treatment Length** Grid screen.

4   Follow the menu path **Actions > Bulk Update** to open the Bulk Update - treatment Length screen.

5   Select the SNP characteristics from the **Soil Type**, **CBR Estimate** and **Pavement Configuration** drop-down lists.

6   Press **OK** to close the screen and save your changes.

Assigning a Treatment Length to a Subnetwork

You can assign Treatment Lengths to a Subnetwork.

These are discrete areas in your Network for SNP calculation. You might have created the Subnetwork because you want to analyse only part of the Network. It is also possible that the settings which you define, at the **SNP Method** screen, as the defaults for your Network may not be appropriate for some areas within the Network. So you have created Subnetworks to apply other default values. See SNP Methods Definition (on page 267).

You assign Treatment Lengths to a Subnetwork one at a time or in bulk. You do this in **RAMM** at the **Treatment Length** Detail or Grid screens.

> **NOTE**
>
> If you do not see the tabs you need on the **Treatment Length** Detail screen, you may have enabled only the default tabs. Follow the menu path Options > Treatment Length Views and select the tabs you need.

► To Assign a Treatment Length to a Subnetwork

1 Launch **RAMM**.

2 Select, in the Road Selection panel the Road containing the Treatment Length which you wish to assign to a Subnetwork.

3 Press ⬛ to open the **Treatment Length** Grid screen.

4 Double-click the Treatment Length to which you wish you wish to assign to a Subnetwork. The Detail screen for the Treatment Length will open.

5 Press the Grouping tab.

6 Press ⬛ to make the fields in the Grouping section available.

7 Select the Subnetwork from the Sub-Network drop-down list.

8 Press ✓ to save your changes.

► To Assign a Subnetwork to a Number of Treatment Lengths

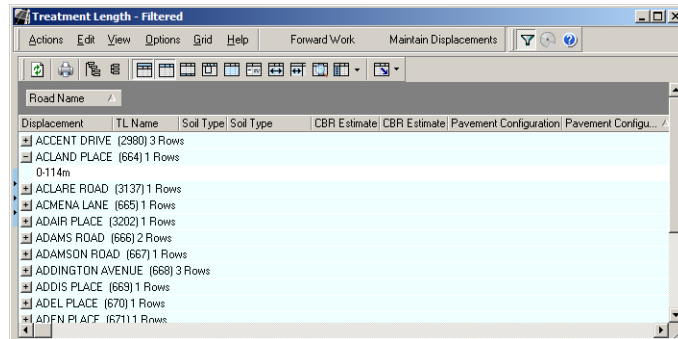**1** Launch **RAMM**.

2 Select, in the Road Selection panel the Roads containing the Treatment Lengths to which you wish to assign a Subnetwork in bulk.

3 Press to open the **Treatment Length** Grid screen.

4 Follow the menu path **Actions > Bulk Update** to open the **Bulk Update - Treatment Length** screen.

5 Select the Subnetwork from the **Sub-Network** drop-down list.

6 Press **OK** to close the screen and save your changes.

Validation and Calculation of Pavement Strength

You will want to calculate the Adjusted Strength Number (SNP) values for the Treatment Lengths in your Network. You do this at the **Treatment Length** Grid screen.

Treatment Length Grid Screen

The processes for the validation of source data and the calculation of values for the SNP are all available from the Action menu option at the **Treatment Length** Grid screen.

Filter Your Treatment Lengths

If you want to perform the calculations for only a section or portion of the Network Treatment Lengths, you will want to use the filtering functions from the Grid to select the Treatment Lengths that you wish to analyse. This process is easier for you if you have divided your Network into Subnetworks for this purpose. See Road Subnetwork Definition (on page 269) and Assigning a Treatment Length to a Subnetwork (on page 275).

Edit Filter

When you use the filter to select only those Treatment Lengths which have been assigned to a Subnetwork, the Treatment Length Grid will initially show you the Treatment Length **Filter** configuration screen, from which you can follow the menu path Edit Filter to add filtering criteria.

Select the Subnetwork(s) you require in the list, press OK and apply the filter to All Roads to view the results.

Pavement Strength Validation Process.

The SNP calculation process is as follows.

Step	Action	Comments
1	validate source data	The first step in the calculation of the Adjusted Strength Number (SNP) values for the Treatment Lengths in your Network is to validate the source data. See Validate Source Data (on page 279).
2	calculate SNP	The second step in the calculation of the Adjusted Strength Number (SNP) values for the Treatment Lengths in your Network is to perform the calculations. See Calculate Strength Number (on page 280).
3	validate SNP	The third step in the calculation of the Adjusted Strength Number (SNP) values for the Treatment Lengths in your Network is to validate the calculated SNP values. See Validate SNP Value (on page 281).
4	choose SNP according to priority	The fourth step in the calculation of the Adjusted Strength Number (SNP) values for the Treatment Lengths in your Network is to choose the SNP according to the priority. See Choose SNP According To Priority (on page 282).
5	view error log	The final step in the calculation of the Adjusted Strength Number (SNP) values for the Treatment Lengths in your Network is to check the error log. See View Error Log (on page 283).

Validate Source Data

The first step in the calculation of the Adjusted Strength Number (SNP) values for the Treatment Lengths in your Network is to validate the source data.

SNP Source Data Validation Error Warning Report

To run this report you first select your Treatment Length set. See Validation and Calculation of Pavement Strength (on page 277). In the **Treatment Length** Grid screen, you follow the menu path Actions > Pavement Strength > Validate Source Data to open a **Confirmation** dialog asking if you want to view the report.

You press Yes to commence the validation process. This process will review source data associated with the Treatment Lengths. The CBR estimate, Pavement configuration and other data will be validated and any errors reported. The report will open in a preview screen. You can print the report if required.

The errors identified here should be corrected before you continue to the next step and calculate the SNP. Once you have made your corrections, you should rerun the report to ensure that there are no further problems. This report will only check those Treatment Lengths which are currently displayed in the Grid screen.

Calculate Strength Number

The second step in the calculation of the Adjusted Strength Number (SNP) values for the Treatment Lengths in your Network is to perform the calculations. You do this after you have validated the source data. See Validate Source Data (on page 279).

SNP Source Data Validation Error Warning Report

To run this report you first select your Treatment Length set. See Validation and Calculation of Pavement Strength (on page 277).

In the **Treatment Length** Grid screen, you follow the menu path Actions > Pavement Strength > Calculate Strength Number to start the process. A **Progress** screen will open and close when the process is complete. **RAMM** will calculate a value for the SNP for each Treatment Length currently displayed in the Grid screen. It will use each of the SNP Methods you selected. See SNP Methods Definition (on page 267) and Road Subnetwork Definition (on page 269).

At the end of the process a report is available which tells you any problems which may have been encountered during the calculations. A **Confirmation** dialog will open asking if you want to view the error report for the SNP calculation process.

The calculated SNP, by each method, is not directly assigned to the Treatment Length to which it applies. Instead an entry is made in the SNP Lengths table corresponding to the Road, Start and End displacement of the Treatment Length.

A separate process is used to select which of the SNP values calculated for the Treatment Length is to be formally recorded against it. See Choose SNP According To Priority (on page 282).

Validate SNP Value

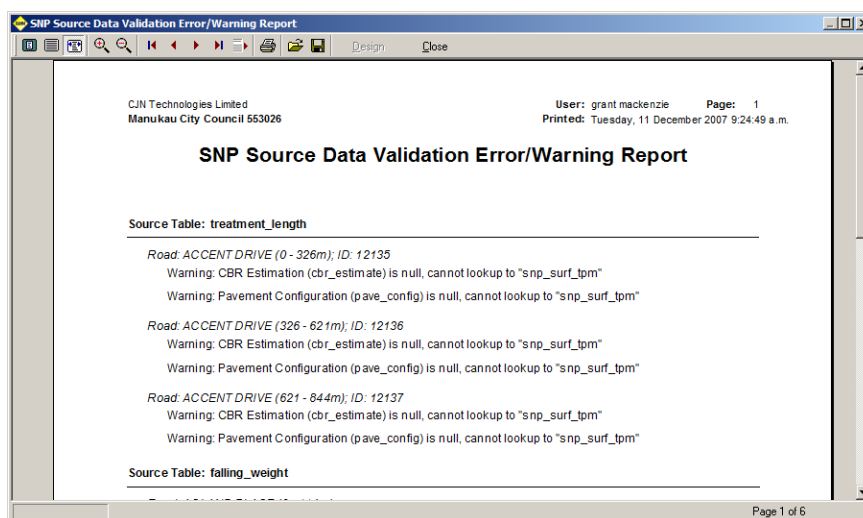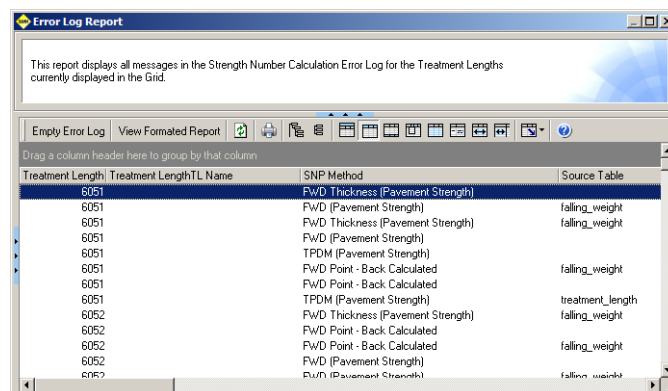The third step in the calculation of the Adjusted Strength Number (SNP) values for the Treatment Lengths in your Network is to validate the calculated SNP values.

SNP Validation Error Warning Report

To run this report you first select your Treatment Length set and then calculate the SNP values. See Calculate Strength Number (on page 280).

In the **Treatment Length** Grid screen, you follow the menu path Actions > Pavement Strength > Validate SNP Value. Once you have calculated the Structural Number by all available methods, this process will review the results and report back any problems. For example, it will tell you which Treatment Lengths have not had any SNP calculated by any method, along with problems encountered with any of the results.

You will typically see any SNP values which are outside your predefined validity range reported here. See SNP Methods Definition (on page 267).

A **Confirmation** dialog will open asking if you want to view the error report for SNP validation. You press Yes to open the **SNP Validation Error/Warning Report** screen in Print Preview mode.

This process validates only the SNP data calculated for the Treatment Lengths currently displayed in the grid.

Choose SNP According To Priority

The fourth step in the calculation of Adjusted Strength Number (SNP) values for Treatment Lengths in your Network is to choose the SNP according to priority.

SNP Source Data Validation Error Warning Report

To perform this operation you first select your Treatment Length set, calculate the SNP and then validate the SNP value. See Validate SNP Value (on page 281).

In the **Treatment Length** Grid screen, you follow the menu path Actions > Pavement Strength > Choose SNP According to Priority. A Progress screen will open displaying the process progress. This process reviews all possible SNP values calculated by all the allowed methods and, using the predefined Priority, assigns the highest priority value to the Treatment Length.

A **Confirmation** dialog will open asking if you want to view the summary report for SNP Selection. This report shows, for each of the Treatment Lengths in the Grid, how an appropriate SNP value was chosen.

Press Yes to open the **Choosing SNP Summary Report** screen Print Preview.

Once this process is complete, you can confirm that the Treatment Length has now been assigned a value for SNP, by looking at Strength Number section of the Pavement Layer tab on the **Treatment Length** Detail screen.

The SNP, together with the method used to calculate it, will be displayed in the Strength Number section.

View Error Log

The final step in the calculation of the Adjusted Strength Number (SNP) values for the Treatment Lengths in your Network is to check the error log.
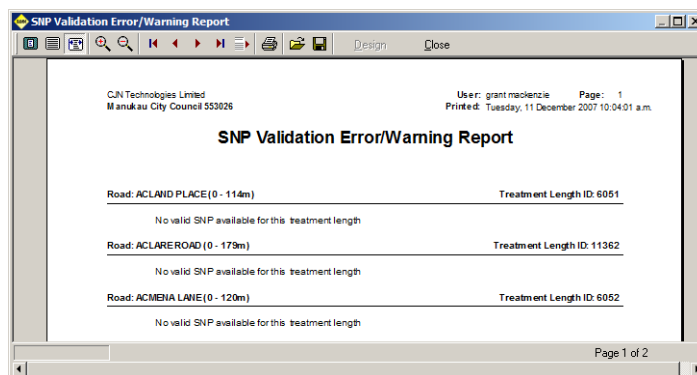
SNP Number Validation Error Log Report

To run this report you first select your Treatment Length set, run the SNP calculation, validate the SNP value and then choose the SNP according to the Priority values which you set. See Choose SNP According To Priority (on page 282).

In the **Treatment Length** Grid screen, you follow the menu path Actions > Pavement Strength > View Error Log to open the report.

All error messages generated by any of the previous four processes are recorded in an error log.

If you are satisfied that you no longer want to keep the contents of the error log then press the Empty Error Log button on the tool bar of the screen. This will delete those messages, recorded in the log, which are currently displayed. Note that they will be associated with the Treatment Lengths currently displayed in the Grid.

SNP Lengths

The process of calculating SNP by all available methods does not actually update the Treatment Length.

Instead, an SNP Length is recorded that matches the Treatment Length Road and displacements for each of the methods possible.

These are in turn used by the process for choosing SNP according to priority, which picks the highest priority value to return to the Treatment Length.

View Calculated SNP Lengths

Press on the main RAMM screen tool bar to view the calculated SNP Lengths.

The SNP Length data for the selected Road will be shown in the standard Grid and Detail format.

If you want to view SNP Length data for all Roads, you can reconfigure the filter.

If you want to view or maintain an individual record, double click anywhere on the record row to open the **Structural Number Length** Detail screen for the record.

Treatment Length Dynamic Segmentation

A Treatment Length is a section of a Road with consistent performance and purpose. For example, it could have the same Top Surface material and Annual Average Daily Traffic (AADT) count along its length. A Treatment Length may have had similar Treatments applied along its length and is often different from its adjoining sections.

Treatment Length Dynamic Segmentation is the process by which **RAMM** divides Roads into Treatment Lengths. You can run the process several times using different criteria you have defined. Each time you run the process you can compare the existing Treatment Lengths with those created by the process. You can then accept or discard the new Treatment Length set per Road.

In This Chapter

How Does the Segmentation Process Work?

When you use Treatment Length Dynamic Segmentation a Script is run to create a set of recommended Treatment Lengths for your Network.

The Treatment Length Dynamic Segmentation Script ignores existing Treatment Lengths. It runs the process across your Entire Network, Road by Road.

It starts at the Road with Road ID 1 and moves moves through the Roads in ascending Road ID order until there are none left.

One Road at a Time

The Script considers Roads one at a time. It starts at Road Displacement zero (0) for each Road. It continues to the end of the Road before moving to the next Road.

As it traverses the Road it looks at the characteristics and condition of the Road. Where there is a significant change, it creates a division in the Road. Treatment Lengths are created on each side of the division.

Road Attributes

This process is carried out sequentially for a number of Road Attributes such as Pavement Age and ADT. It does this based on Options and value Bands you have set.

Lengths with Uniform Characteristics

These individual lengths have relatively uniform characteristics. So they can be managed in a standard fashion along their length.

Compare

You can compare the recommended Treatment Lengths with your existing Treatment Length set.

If you have several sets of Treatment Lengths, based on different options and value Bands you have set, you can compare them with each other before comparing the best set with your existing Treatment Lengths.

Apply

If you prefer the recommended set to the existing set, you apply them to your Network, per Road.

Menu Path

You access Treatment Length Dynamic Segmentation from **RAMM Applications** or from **RAMM Manager**.

Access from RAMM Applications

Once you have logged in to **RAMM Applications** you press   to open Treatment Length Dynamic Segmentation.

Access from RAMM Manager

Once you have logged in to **RAMM Manager** you follow the menu path Projects > Treatment Length Dynamic Segmentation to open Treatment Length Dynamic Segmentation.

The First Time

The Treatment Length Dynamic Segmentation process does not consider your   existing Treatment Lengths. So you can run the process whether or not you already have a Treatment Length set.

When you run the Treatment Length Dynamic Segmentation process for the first time the Previous Runs panel will be empty. So at this stage you have nothing to compare with your existing Treatment Lengths (if any).

Add a Set of Options

When you run the Treatment Length Dynamic Segmentation Script you set Options so that the process matches your Network requirements.

If you have not created an existing set of Options you must add one or more. In the Administration panel you press Treatment Length Dynamic Segmentation Options and Bands to open the **Manage Parameters** page.

You press New to open the **New Set** dialog.

You name the new **Options** set at the Name field, select the Script you want to use and press Add. The **Manage Parameters** page will open

Define Your Option Set

Your data will have its strengths and weaknesses. You will want Treatment Length Dynamic Segmentation to take into account only your Network data which are reliable and complete.

So when you define an Option set to be used with Treatment Length Dynamic Segmentation you will want to exclude any of your datasets which is unreliable.

You select only those parameter Options which contain data which is reliable and relevant to your Treatment Length decision-making. You clear the check boxes for the Options that you wish the Treatment Length Dynamic Segmentation Script to ignore.

Define your Bands

When you have defined your Options, you then define the parameter value ranges, or Bands, so that Treatment Length Dynamic Segmentation will operate in a manner which matches your intentions. You press the Bands tab.

On the Bands tab will be listed all of the Options you selected at the Options tab. You need to define a band for each Option.

There are two Band types being Difference and Range.

Difference Band

You define Difference Bands for parameters to enable Treatment Length Dynamic Segmentation recognise a change in parameter value which is so great that it is significant.

For instance, if a Difference Band of 100 were defined for a parameter, then if a Carriageway had a value of 200 at Displacement zero (0), a new Treatment Length would not be created until a value 100 greater or 100 smaller was encountered.

> If you add a Difference Band which remains Undefined, then Treatment Length Dynamic Segmentation considers a difference in values of one (1) to be significant and will create a new Treatment Length whenever any difference in value is encountered.
>
> This may create more Treatment Lengths than is desirable.

Range Band

You define Range Bands for parameters to enable Treatment Length Dynamic Segmentation create Treatment Lengths which have parameter values within defined ranges.

For instance, if you defined a number of ranges from 1 - 100, 101 - 200, 201 - 300 and 301 to 400, Treatment Length Dynamic Segmentation would not check the difference in value of the parameter when a new parameter value is encountered. It would check whether the new value was within the Range Band at the start of the Treatment Length. If not, the start of a new Treatment Length would be created.

Inclusive or Exclusive

When defining Range Bands for parameters you add the number defining the Band and **RAMM** dynamically creates the ranges for you. You need to decide how the numbers defining the Ranges will be treated. Will they be Inclusive or Exclusive.

Toggle the Exclusive and Inclusive values at the Options drop-down list to discover how Treatment Length Dynamic Segmentation affects Range Bands you have created. Below is an Exclusive example.

Below is an Inclusive example.

Run the Process

When you have created the set of Options and Bands you wish to use to create a potential Treatment Length set, you are ready to run the Treatment Length Dynamic Segmentation process. You press Add New Segmentation to open the Dynamic Segmentation panel.

Filter

You Filter the Roads to include only those with the attributes you select and if there is more than one Script, you select the one to use for the run.

You press ⬚ Start ⬚. The Script runs. The following message displays.

When the run is complete it displays in the panel as below. Runs 35 and 36 are listed below.

View the Results

You can view the results of any previous Script runs which have not been deleted.

You highlight the Script run you want to view and press . The **Treatment Lengths for Header** page will open. There you can view the Treatment Lengths. They are grouped by Road ID and listed in ascending order of Displacement.

You use the dynamic column filters to limit the list to only those Treatment Lengths you want to view.

Compare Treatment Lengths

You will want to compare the Dynamic Segmentation Treatment Length set you have created with your existing Treatment Length set.

Treatment Lengths to Compare

You press to open the **Treatment Lengths to Compare** dialog.

You select the Existing Treatment Lengths option to compare the run you have performed with your existing Treatment Lengths. You then press [OK] to open the Compare Treatment Lengths page.

Compare Dynamic Segmentation Results

It is likely that your first Treatment Length Dynamic Segmentation run will need adjustment.

You will probably then perform a series of runs using different Options so that you can compare the resulting Treatment Lengths and decide which set is best for your Network requirements.

You select the Dynamic Segmentation Headers option (as above) to compare runs. You then select the comparison run and press OK to open the Compare Dynamic Segmentation Results page.

Apply Treatment Lengths

When you have the Dynamic Segmentation Treatment Length set which you believe is the optimum, you will want to compare it with the existing Treatment Length set. If it compares favourably, you will want to apply the new set to replace the existing Treatment Length set.

Treatment Lengths to Compare

You press to open the **Treatment Lengths to Compare** dialog.

You select the Existing Treatment Lengths option to compare the run you have performed with your existing Treatment Lengths. You then press to open the Compare Treatment Lengths page.

You press Apply to replace the existing Treatment Length set with the new run.

Delete the Proposed Treatment Lengths

When you have performed your comparisons and decided which Treatment Length set is the optimum, you will probably want to discard the other Treatment Length sets. You would then delete them.

To delete a run you highlight it and then you press ⬜. The run is deleted.

> If you delete a run in error, you can simply repeat the run using the same Option set which you saved.

Scripts

The Treatment Length Dynamic Segmentation process logic has been defined in a Script.

> The Treatment Length Dynamic Segmentation Script is not documented in this guide and its maintenance is beyond the scope of this document. The following merely describes the fact that you can maintain the Script. It does not attempt to explain how to maintain the Script.

You press Edit Script to maintain Treatment Length Dynamic Segmentation Scripts. You can Add, Edit, Rename, Delete, Import, Export and Define Variables for Treatment Length Dynamic Segmentation Scripts.

Script Maintenance

> The Treatment Length Dynamic Segmentation Script is not documented in this guide and its maintenance is beyond the scope of this document. The following merely describes the fact that you can maintain the Script. It does not attempt to explain how to maintain the Script.

Copy and Edit Scripts

You can use the default Script or define your own Scripts. You cannot modify the default Script but you may copy the default Script and make changes to the copy.

You can copy the main **Script** and edit the copy

Script Versions

You can commit changes to scripts and attach comments about the changes. This enables you to view the Script history and understand why you made changes.

You can write your own **Scripts** and edit your copies of the main **Script**

You write your notes in the **Script Information** panel so that you can understand the changes you have made

Editing the Script is Not Recommended

You would edit the Script only if you were and advanced **RAMM** user with skills either in a programming language such as C# or with expertise in the creation of high level Excel macros.

Maintenance Activity

Maintenance Activity is the measure of the actions taken to maintain the Network inventory. Network Owners use Maintenance Activity to compare the how much work was done in different years. They can also be used to compare the maintenance costs from one year to the next. You set up Maintenance Costs in **RAMM Contractor**.

You use **RAMM** Maintenance Activity to ensure details of Network maintenance are up-to-date.

In This Chapter

Introduction to Maintenance Activity

Most people find it easier to work with **RAMM** Maintenance Activity if they first understand some of its underlying assumptions. If you are new to **RAMM** or to the Road maintenance industry, you should read this section before you begin working with Maintenance Activity.

History of Maintenance Activity in RAMM

Maintenance Activity details were originally handled by the Maintenance Cost module in **RAMM** for UNIX.

Contractors supplied data in a variety of formats and imported data did not necessarily have the correct **RAMM** codes for Activities, Costs and Fault Groups or the correct units of measure.

Consultants had to set up conversion rules to work out the correct codes and units, and to apportion cyclic costs over many roads.

Maintenance Activity is now available in **RAMM**. Contractors are now supplying the correct data and Cyclic Costs are handled separately by **RAMM** during import, so Conversion Rules are no longer needed. There is also more flexibility in handling Cost Codes. A Failure column can be used for export to dTIMS.

Handling Cyclic Costs

Maintenance Activities always include some items that are cyclic in nature and are not specific to one Road or section. Examples of this are a month of mowing costs or pothole repair in a certain Contract Area.

There are two ways of apportioning such costs:

- have the Contractor supply, for import, the Maintenance Activity data, already broken into separate transactions for each Road.
- import cyclic transactions, as a separate file from noncyclic transactions, into the Cyclic Cost table.

   The transaction will then be automatically summarised to each Treatment Length that matches the criteria loaded with the transaction such as Area, Subarea, Urban or Rural, Sealed or Unsealed.

Importing Maintenance Activity Details

To get Maintenance Activity details into **RAMM**, you use the File Import function.

Importing Cyclic Costs

Cyclic costs are imported as a separate file, which will have costs apportioned across the relevant Treatment Lengths. That is, unless you have persuaded your Contractors to supply you with costs that are already apportioned correctly, in which case they will be part of the normal import file.

Calculating Adjusted Quantities and Dollars

When you are working with Maintenance Activity, you calculate adjusted quantities and adjusted dollar values for transactions. This is so you are comparing apples with apples.

- You will calculate adjusted quantities when you import a batch of transactions. See Importing Maintenance Activity Transactions (on page 316).
- You will adjust dollar values whenever the dates of transaction batches get out of step with one another. See Updating Costs Using the RCI (on page 327).

Adjusted Quantity Calculation

RAMM calculates adjusted quantities for each Maintenance Activity transaction so they are all in metres squared.

This is achieved by multiplying the original amounts by the factor specified for each Activity and Unit of Measure in the **Activity** lookup screen. See Maintenance Activity Lookups (on page 310).

The factor should be zero (0) if the Unit cannot be converted. For instance Each can not be converted into metres squared. Original and adjusted amounts are both stored for each record.

Maintenance Activity Life Cycle

Maintenance Activity details follow a particular life cycle in **RAMM** if you are a consultant.

1   You will maintain Lookup details, so you can categorise Maintenance Activity transactions.

2 You will import batches of transactions supplied by Contractors as delimited text files from external programs like MS Access or Excel.

3 You will maintain Batch Header details so you can identify each batch of transactions.

4 You will calculate adjusted quantities and dollar values, so that you are comparing apples with apples.

5 When you are happy with the quality of the data, you will unload batches to send a subset of your **RAMM** database to your client RCA.

6 The RCA will load batches received from you directly into their **RAMM** database.

Viewing Maintenance Activity Details

When you are working with Maintenance Activity, you can view Maintenance Activity details in the standard **RAMM** Grid and Detail screens. You can also view the Batch Header of the batch which contains the Maintenance Activity details. You launch **RAMM Manager** to maintain Maintenance Activity details. You can view Maintenance Activity details in **RAMM**.

▶ **To View Maintenance Activity Details**

1 Press [icon] to open the **Maintenance Cost** Grid screen.

2 For any particular record in the grid, you can open a Detail screen by either double-clicking in the row or by following the menu path View > Detail.

Viewing Maintenance Activity Batch Headers

When viewing Maintenance Activity details, you can view the Batch Header for any selected transaction. You maintain Batch Headers using **RAMM Manager**.

▶ **To View Batch Header Details**

1 From either of the **Maintenance Cost** Grid or Detail screens, follow the menu path View > Batch Header to open the **Maintenance Cost Header** screen.

2 Press the Details tab so view batch identification details.

3 Press the Totals tab to view a summary of the transactions and costs in the batch. To generate current values, press the **Generate** button.

4   Press the **Import** tab to view how and when the batch was brought into **RAMM**.

5   Press the **Loaded** tab to view when the batch was unloaded.

Maintenance Activity Lookups

When you are working with Maintenance Activity, there are some Lookup values you will maintain. Lookup screens are all quite standard in their behaviour. For general details about working with standard screens, read the *Using RAMM* guide. Any special considerations are listed below.

> ⚠ **NOTE**
>
> You will need to have the correct Security Permissions before you can perform this procedure. See your Systems Administrator for assistance if required.

To open the Lookup screens:

- In **RAMM**, go to the menu at the top of the **Maintenance Costs** Detail or Grid screen and follow the menu path Actions > Maintain Lookup > [Lookup Name].
- In **RAMM Manager**, follow the menu path Maintenance > Lookups > Maintenance Costs > [Lookup Name].
- In **RAMM Contractor**, follow the menu path Maintenance > Costs > [Lookup Name].

Activities

An Activity code is a **RAMM Contractor** item which represents the activity carried out under the Contract to maintain the Network. Activity codes assist the Network Owner with Network maintenance planning. They are the Maintenance Cost data which is gathered in **RAMM Contractor** to be transferred to **RAMM** Maintenance Costs to show what was done to maintain the Network. Activities are associated with Fault Categories, CSIs or both. For each Activity, you can associate quantity conversion figures which are used to calculate adjusted quantities for Maintenance Costs.

Failures

Maintenance Cost Failure categories are the causes of the Faults which were repaired. Examples are Surface Water, Subsidence and Unknown. These are exported to dTIMS. For details about working with dTIMS, see the *RAMM Forward Work Programme 2008* guide. The initial default Failure category is Unknown.

Please note that Failure in Maintenance Costs differs from Failure in **RAMM** Assessment where Inspectors Assess the Likelihood of Failure and the Consequences of that Failure. In **RAMM** Assessment the Failure of an Asset occurs when the Asset no longer functions or performs as expected.

> ⚠️ **NOTE**
>
> Failure is not commonly used and may be removed in a future version of **RAMM Contractor**.

Cost Groups

A Cost Group is a **RAMM Contractor** item used to group linked remedial Activities and Faults. Cost Groups assist the Network Owner with Network maintenance planning. They group Maintenance Costs data in **RAMM Contractor** to be transferred to **RAMM**. Cost Groups are associated with CSIs, Fault Categories or both.

Faults

A Fault code is a **RAMM Contractor** item which identifies the weakness or defect in the Network Inventory item which gave rise to the need for maintenance. Fault codes assist the Network Owner with Network maintenance planning. They show what was repaired when the Activities where undertaken. Fault code data is gathered and grouped in **RAMM Contractor** to be transferred to **RAMM** Maintenance Costs. Fault codes are associated with CSIs, Dispatch Fault Categories or both. The actual Fault giving rise to the Dispatch (as opposed to the Maintenance Cost Fault) is referred to as a Fault Category.

Maintaining Maintenance Activity Batch Headers

When you are working with Maintenance Activity, you will need to maintain details of the Batch Headers to which individual transactions belong. You use the **Maintenance Cost Batch Header** screen in **RAMM Manager** to do this.

You can view Batch Header details using **RAMM**, but you can not maintain them there. See Viewing Maintenance Activity Batch Headers (on page 309).

> You will need to have the correct Security Permissions before you can perform this procedure. See your Systems Administrator for assistance if required.

▶ **To Maintain a Batch Header**

1   Launch **RAMM Manager**.

2   Follow the menu path Maintenance > Headers > Maintenance Cost to open the **Maintenance Cost Batch Header** screen.

3   Maintain batch header details. You can add, change or delete records as you do in other screens, then save your changes. You can also:

- maintain individual transaction details. See Maintaining Maintenance Activity Transaction Details (on page 314)
- start importing a batch of transactions. See Importing Maintenance Activity Transactions (on page 316)
- produce a transaction report. See Producing a Transaction Report (on page 316).

Maintaining Maintenance Activity Transaction Details

When you are maintaining Maintenance Activity Batch Headers, you can also maintain details of individual transactions in **RAMM Manager**. You may need to edit transaction details after you have imported them - although you can do this as part of the import process. Things differ slightly if you are working with cyclic costs.

From **RAMM** you can only view transactions but not change them. See Viewing Maintenance Activity Batch Headers (on page 309).

> You will need to have the correct Security Permissions before you can perform this procedure. See your Systems Administrator for assistance if required.

▶ **To Add or Change Maintenance Activity Details**

1   Open the **Maintenance Cost Batch Header** screen. See Maintaining Maintenance Activity Batch Headers (on page 313).

2   Select the **Batch Header** whose transaction records you want to work with.

3   If you want to work with normal maintenance costs, go to step 5. If you want to work with Cyclic Costs, press **Cyclic Costs** or follow the menu path **Cost Data > Maintenance > Cyclic Cost Data** to open the Cyclic Cost Data screen.

4   Go to step 6.

5   To work with normal maintenance costs, press **Normal Costs** or follow the menu path **Cost Data > Maintenance > Normal Maintenance Cost Data** to open the **Normal Maintenance Cost Data** screen.

6   Maintain transaction details. Add, change or delete records as you do in other screens.

7   To calculate the total **Length** for cyclic cost transactions, press the **Recalculate** button.

8   Save your changes and close the screens.

Producing a Transaction Report

When you are working with Maintenance Activity, you can produce a Transaction Report for a selected batch or all batches of transactions.

You use the **Batch Header** screen in **RAMM Manager** for this.

For general details about running reports, read the *Using RAMM* guide.

▶ **To Produce a Transaction Report**

1   Open the **Maintenance Cost Batch Header** screen. See Maintaining Maintenance Activity Batch Headers (on page 313).

2   Select the **Batch Header** whose transaction records you want to work with.

3   Follow the menu path Cost Data > Transaction Report > The selected batch only to report only the selected batch, or to report all batches, follow the menu path Cost Data > Transaction Report > All batches. The **Transaction Report** screen will open.

4   Select, in the Layout panel, the columns to include in your report.

5   Produce the report.

Importing Maintenance Activity Transactions

When you are working with Maintenance Activity, you will import batches of transactions using the File Import process in **RAMM Manager**.

You should use the File Import process from the **Maintenance Cost Batch Header** screen. That way, the required table and temporary table information is defaulted for you.

Some of the steps in the process are described in detail in separate linked topics. You may need to go back and forth between these procedures, depending on your experience and knowledge, complete this procedure.

> You will need the correct security permissions in **RAMM** to perform the import. You may have permission to do only part of the process such as importing into the temporary table. See your Systems Administrator for assistance.

▶ To Import Maintenance Activity Transactions

1 Maintain the details of the Batch Header for the transactions you are about to import. See Maintaining Maintenance Activity Batch Headers (on page 313).

2 From the menu at the top of the **Maintenance Cost Batch Header** screen, follow one of the two following menu paths:

- If you are importing cyclic costs, File > Import > Cyclic Maintenance Cost.
- If you are importing normal costs, File > Import > Maintenance Cost Transaction.

3 The **Import File** screen will open. Some of the required information will already have defaulted. The **RAMM** table is mc_cost and the temporary import table is:

- For cyclic costs, z_mc_cyclic_cost.
- For normal costs, z_mc_cost.

4 Load the file. See Loading Maintenance Activity Transaction Files (on page 318).

5 If you have already loaded files into a temporary table, and you are now resuming the Import process press **Table**. See Resuming File Import (on page 324).

6 Map the imported columns to the database columns. See Mapping Imported Columns to Database Columns (on page 321).

7 Validate the data. See Validating Imported Data (on page 325).

8 Correct any errors. See Loading Maintenance Cost Batches (on page 330).

9 When you have finished correcting errors, validate the data again.

10 If there are too many errors, you can drop the temporary table and cancel the import process.

11 You can optionally check for duplicates in the data, both within the batch you are importing and against the records already in the destination table. See Checking for Duplicates (on page 326).

12 Move the records from the temporary table into the destination table in **RAMM**.

13 Process data to calculate adjusted quantities and apportion Cyclic Costs. See Adjusted Quantity Calculation (on page 307).

Loading Maintenance Activity Transaction Files

When you are importing Maintenance Activity transactions, you specify which files to load and how to load them. See Importing Maintenance Activity Transactions (on page 316).

You can load a file of transactions and then define the layout or you can load a transaction file and a separate layout file that specifies how to load the transactions.

▶ To Load Transaction Files

1   Open the **Maintenance Cost Batch Header** screen and then open the **Import File** screen. See Importing Maintenance Activity Transactions if you do not know how to do this.

2   Press [Load] to open the **Load Dialog** screen.

3   Press the ellipsis [...] adjacent to the **File to load** field and navigate to the file which contains the Maintenance Activity transactions you want to import.

4   If you have a layout file to load, press the ellipsis [...] adjacent to the **Optional Layout File** field and navigate to the file which contains the Maintenance Activity layout you want to import.

> **Tip**
>
> The data file must be a .unl file.
>
> The layout file must be a .ucl file.
>
> The file which is a combination of data and layout is a .ucd file.

5   Press ⬚Next⬚ to open the **Load Dialog - Specify the field delimiter** screen.

6   Select the delimiter option. If you are loading a layout file, this will already be done.

7   Type, in the Heading Lines field, the number of rows at the top of the file which contain headings rather than data. Those rows will not then be imported.

8   Press ⬚Next⬚ to open the **Load Dialog - Specify the format of dates in a load file** screen.

9   Select, from the Order, Year Digits and Separator drop-down lists the format of the dates in the transaction file. If you are loading a layout file, this will already be done.

10   Press ⬚Next⬚ to open the **Load Dialog - Specify how to interpret the data in load file** screen.

11 Link the columns in the transaction file to the columns in the database table. If you are not using a layout file, you must do this manually. If you are loading a layout file, this will already be done. See Mapping Imported Columns to Database Columns (on page 321).

12 If you are loading a layout file, it will include a fixed value for batch_id. Change that value for the current batch.

13 Press [Next] to open the **Load Dialog - Save the load file format or load** screen.

14 You can now see the import settings you have defined. You may want to save these as a layout file to save time with future file imports. If not, go to step 19. Otherwise, press [Save] to open the **Save as** dialog.

15 Accept the default Save layout file only option.

16 Type notes in the Notes field if useful.

17 Press the ellipsis [...] and navigate to the folder to which you want to save the layout file.

18 Press [OK] to save the file and return to the **Load Dialog - Save the load file format or load** screen.

19 Press [Load].

20 The file is loaded. The screen will close and you are returned to the **Import File** screen where the Validate button will be enabled.

Mapping Imported Columns to Database Columns

When you are loading files as part of importing Maintenance Activity transactions, you specify how columns in the imported file correspond to columns in the database table into which you are importing.

The **Load Dialog - Specify how to interpret the data in load file** screen lists the columns from the database table at the top of the screen and the columns from the imported file at the bottom of the screen.

There are two ways to map columns. There is dragging and linking. If you are using the **RAMM** Hosting service, you use linking rather than dragging.

There are some special situations where columns contain unique identifiers, derived values or batch identifiers. These are all described separately below.

You can unlink columns if you make a mistake.

Mandatory Columns

The names of columns that must have a value are coloured red.

Unique Identifiers

You should type a zero (0) in the This column requires a value field for columns which contain unique identifiers such as transaction_id. This tells the **RAMM** database to assign a unique serial number to that column for each transaction record you import.

Derived Values

Some columns contain a value derived from the value in another column – **RAMM** identifies these automatically. For instance, the **financial_year** is derived from the transaction_date.

Batch Identifiers

For the batch_id column, select a value from the drop-down list on the right of the screen, or press the ⊞ button to add a new batch header in the Maintenance Batch Header screen. See Maintaining Maintenance Activity Batch Headers (on page 313).

► To Map a Column By Dragging and Dropping

1   Select the name of the database column you are mapping. In the graphic below, transaction_date has been selected.

2   Drag the database column name onto the top of the corresponding column in the import file at the bottom of the screen.

3   The database column name is written at the top of the import file column and a link symbol appears next to the database column name.

▶   **To Map a Column Using the Link Button**

1   Select the name of the database column you are mapping.
2   Select the import file column to which you are mapping. In the graphic below the fault database column is going to be linked to the unnamed import column with the fault descriptions.

3   Press [link icon]. The database column name is written at the top of the import file column and a link symbol appears next to the database column name.

▶ **To Unlink a Mapped Column**

1 Go to the list at the top of the screen and press the name of the database column you want to unlink.
2 Press the ⬚ button.
3 The link symbol next to the database column name disappears and the top of the import file column is blank.

Resuming File Import

When you are importing Maintenance Activity transactions, you will sometimes get only part way through the process. If you have already loaded files into the temporary tables, you can resume the Import process from that point onwards.

▶ **To Specify a Table When Resuming Import**

1 Launch **RAMM Manager**.
2 Follow the menu path File > Import File to open the **File Import** screen.

3 Press ⬚Table⬚ to open the **Choose Table** screen with a list of the existing temporary tables.

4 Type, in the Load into table field, the name of the database table you loaded the transactions into or select it from the list:

• For cyclic costs, the temporary table is z_mc_cyclic_cost
• For normal costs, the temporary table is z_mc_cost
• The corresponding final table is mc_cost.

5   Press to go back to the **Import File** screen where the **Validate** button will be enabled.

6   Carry on with your file import process.

Validating Imported Data

You need to validate Maintenance Activity transaction data which you have loaded into a temporary table before importing it into the final database table.

▶ **To Validate Imported Data**

1   Press on the **Import File** screen to start the data validation progress. A **Progress** screen will open while **RAMM** checks that:

- Activity, Fault, Failure and Cost Group codes exist in your **RAMM** database
- where no Cost Group is supplied, all combinations of Activity and Fault exist in your database
- all mandatory columns for the Batch Header and for the Transactions have values
- if transactions have an Asset code, the Cost Group has an Asset Type and the Asset code exists in your database.

2   If there are errors, for example, duplication of values which must be unique such as the transaction id, **RAMM Manager** produces an Import Validation report. The **Import Validation Report** dialog will open.

3   You may print the report or preview it and then correct the errors.

4   If there were no errors, a **Confirmation** screen opens to announce this. Press to continue.

Checking for Duplicates

When you are importing Maintenance Activity transactions, after you have loaded
data into a temporary table and validated that data, you can optionally check
whether imported records are duplicates of one another or of any existing records
in the final database table.

▶ **To Check Duplicates**

1   Load your Maintenance Activity file. See Loading Maintenance Activity Transaction
Files (on page 318).

2   Map the imported columns to the database columns. See Mapping Imported Columns
to Database Columns (on page 321).

3   Validate the data. See Validating Imported Data (on page 325). The **Correct, Drop,
Check Duplicates** and **Move to RAMM** buttons will become enabled.

4   Press ⸤Check Duplicates⸣ to open the **Columns to Check for Duplicates** screen.

5   Specify which columns to check for duplicate values by moving columns from the
Available list to the **Selected** one. All the columns you specify must be the same in both
records before **RAMM** thinks the records are duplicates. You may wish to use the list
in the graphic above.

6   Press ⸤OK⸣. The imported records are compared with the database records. The
Duplicate Records dialog will open with the number of duplicates displayed.

7   If there are any duplicates amongst the imported records, you can:

- Press Preview to see a list of them.
- Press **Delete** to delete the duplicate records.

8 Press Continue to see the next set of results. **RAMM** now compares the imported records against those already in the final database table.

9 Again you can delete or preview any duplicates. If you press Preview, a standard report preview screen appears.

10 When you have finished, press Close to go back to the **Import File** screen.

Updating Costs Using the RCI

The Road Construction Index (RCI) is a value that is used to factor Maintenance Activity values to a certain date. You use this to compensate for cost inflation so that when you are comparing Maintenance Activity cost prices the comparison is more meaningful. You apply the RCI to all Maintenance Activity transactions in your database. RCI values are installed with **RAMM**. RCI values are updated when you update **RAMM**.

Example

All your existing Maintenance Activity transactions are adjusted to the RCI value at 1 March 2003. You receive a batch of transactions for the June quarter. You will first set the RCI to its June value. **RAMM** adjusts all existing transaction values to that date, so they match when you subsequently import the new ones.

▶ **To Update RCI**

1 Launch **RAMM Manager**.

2 Follow the menu path Projects > Maintenance Cost > Update Cost Amount RCI to open the **Update Cost Amount RCI** screen.

3 Select, from the RCI Date drop-down list, the date to which you want values adjusted. The corresponding RCI value is shown.

4 Press [Update] to start the update process. A **Maintenance Cost** progress screen will open showing the process progressing.

5 Press Close to return to the **RAMM Manager** home screen.

Unloading Maintenance Cost Batches

If you are a Road Maintenance Contractor who holds Maintenance Activity Costs in **RAMM** not **RAMM Contractor**, you need to send a .mcb file to the RCA so that they can load this information to update their **RAMM** database. You group and store this information for transfer by unloading Maintenance Cost batches.

> You should send the Maintenance Cost Batch Header Summary report with your .mcb file to your RCA so that when they upload the file they can audit the result.

Tip

▶ **To Unload Maintenance Cost Batches**

1   Launch **RAMM Manager** and follow the menu path Project > Maintenance Cost > Unload to open the **Maintenance Cost Unload** screen.

2   Your Username or the login appears by default in the **Created By** field. Change this if necessary.

3   Type useful notes in the **Notes** field for your client to read.

4   Select the batch or batches to unload.

5   Press the ellipsis ⋯ and navigate to the folder into which to save the file. Type the file name and press **Save** to return to the **Maintenance Cost Unload** screen.

6   Press ⸢ OK ⸣ to open a **Progress** screen. When the processes are complete, the **Unload Maintenance Cost Print** dialog will open.

7   Press ⸢ Yes ⸣ to open a *.txt* file listing the number of batches unloaded and the number of records in each. It shows file sizes and notes.

8   Save this report to a location of your choice and the **Unloaded Maintenance Cost Batches Report** dialog will open asking if you want to generate the report.

9   Press Yes for the **Maintenance Cost Batch Header Summary Report** screen.

10   You now have a variety of options and what you do next depends on your normal business practices. If you send the .mcb file on a disk for your RCA to upload, then press [icon] and save the report in your preferred file format. If you send your data by email, then save the report as a .pdf. Press [icon] to open a **Print Preview** screen if you want to print the report.

Loading Maintenance Cost Batches

If you are a RCA (Road Controlling Authority) which uses **RAMM** to hold records of Maintenance Activity Costs, but does not use **RAMM Contractor**, you need to receive and upload .mcb files from the Road Maintenance Contractor to update your **RAMM** database.

You receive the information grouped and stored for transfer by uploading Maintenance Cost batches.

▶ **To Upload Maintenance Cost Batches**

1 Launch **RAMM Manager**.

2 Follow the menu path Project > Maintenance Cost > Load to open the **Maintenance Cost Load** screen.

3 Press the ellipsis ⋯ adjacent to the Load File field and navigate to the file to load. The file will have the file extension **.mcb**.

4 Press ⎵Open▼ to default the filename and file path into the Load File field. The file details and any notes from the Consultant will also default. The list of the batches contained in the file will display in the lower panel.

5 Select the batches to load. You may decide to load one batch at a time.

6 Press ⎵OK⎵. A **Progress** screen will open alerting you to the processes occurring.

7 When the processes are complete, it is likely that the **Invalid Road/Carriageway Links** dialog will open. This is normal if there have been changes to the Network made by the Contractor which are not yet reflected in your database.

8 Press Preview to open the **Maintenance Cost Load Error Report** screen to view a list of the errors.

9 Press **Close** to close the screen.

10 Press Print to print the report if required. Otherwise, press Fix to open the **Invalid Road/Carriageway Links** screen.

11 You now have the option to correct the errors by Road or by Carriageway. You either press the **Correct Carriageways** button to open the **Correct Carriageway Links** screen or press the **Correct Roads** button to open the **Correct Road Links** screen.

12 Press [Correct] to correct the errors. Do this until all the errors are fixed and then close the screen.

13 Another possible error is a Cost Group Defaults clash.

14 What you do next depends on the exact nature of the error.

15 When all the errors are fixed, press the **Close** button to return to the **RAMM Manager** home screen.

> If the version of **RAMM** used to create the file does not match your version of **RAMM**, an error message will appear and the load is aborted.

Running the Maintenance Costs by Cost Group Report

When you are working with Maintenance Activities, there are two versions of the Maintenance Costs by Cost Groups report that you can run. One is for the Maintenance Cyclic Cost option. The other is the default Maintenance Cost option.

▶ **To Run the Maintenance Costs by Cost Groups Report**

1 Launch **RAMM Manager**.

2 Follow the menu path Reports > Summary > Maintenance Costs by Cost Group to open the **Maintenance Costs by Cost Group** screen.

3 If you select the **Maintenance Cyclic Cost** option, go to step 5. Otherwise, accept the default **Maintenance Cost** option.

4 Specify the Security Zone, Region, Area and Sub Area to include in your report.

5   Press [Print] to print the report directly if required.

6   Press [Preview] if you want to view the report before printing or saving the report to file. The **Monthly Maintenance Costs by Cost Groups** screen will open.

7   View, print or save the report.

Bridges

A Bridge is a structure designed to carry a Road or path over an obstacle by spanning it. Bridges are one of the more complex Inventory items.

In This Chapter

Introduction to Bridges

Bridges generally are considered to be composed of three separate parts being substructure, superstructure, and deck. The substructure or foundation of a Bridge consists of the piers and abutments which carry the superimposed load of the superstructure to the underlying soil or rock. The superstructure is that portion of a Bridge or trestle lying above the piers and abutments. The deck or flooring is supported on the Bridge superstructure. It carries and is in direct contact with the traffic for which passage is provided.

Bridges are classified in several ways. According to the use they serve, they may be termed railway, highway, canal, aqueduct, utility pipeline, or pedestrian Bridges. If they are classified by the materials of which they are constructed, principally the superstructure, they are called steel, concrete, timber, stone, or aluminium Bridges.

Deck Bridges carry the deck on the very top of the superstructure. Through Bridges carry the deck within the superstructure.

The type of structural action is denoted by the application of terms such as truss, arch, suspension, stringer or girder, stayed-girder, composite construction, hybrid girder, continuous, cantilever, or orthotropic (steel deck plate).

You need to have a good grasp of the underlying concepts of Bridges in **RAMM**. The following topics explore some of the fundamental knowledge you need to get the most out of the software.

Answers Elsewhere

You may want to read these references to better understand Bridges:

- The *RAMM Assessment* guide.
- The section below named Maintenance Activity (on page 305).

Common Tasks

When you are working with Bridges, the common tasks you will encounter are:

- Adding a Bridge (on page 343).
- Adding a Component to a Bridge (on page 347).
- Updating Bridge details (on page 348).
- Removing a Bridge (on page 345).
- Bridge Reports (on page 367).

Less commonly, you may have to replace existing structures. See Replacement of Existing Structures (on page 365).

Culverts and Bridges

A culvert is a transverse and totally enclosed drain under a Road or railway. It is a covered structure that conveys a flow under a Road or other obstruction. Culverts are used to divert stream or rainfall runoff to prevent erosion or flooding on Roads. Culverts are smaller than Bridges. Many Culverts look like pipes.

Most Culverts are relatively small and are normally used in situations where a full Bridge is not required. A pedestrian or cattle underpass is probably the most common example of a Culvert with a large cross-sectional area.

Any Culvert with a cross-sectional area greater than 3.4 square metres is treated within **RAMM** as a Bridge.

- Such a Culvert is referred to in this guide as a Bridge or as a Major Culvert.
- Any Culvert smaller than that is referred to as a Culvert or a Minor Culvert.

Database Tables

RAMM stores the details of Bridges and Culverts differently:

- Details about Bridges are stored in the Bridge table and associated tables.
- Details about Minor Culverts are stored in the Drainage table and associated tables.
- Details about Major Culverts are stored in both the Bridge and Drainage tables, as well as associated tables.

Replacing Structures

The Culvert dual identity results in some special cases, for example in these circumstances:

- Replacing a Bridge with a Culvert (on page 365)
- Replacing a Major Culvert with a Bridge (on page 366)
- Replacing a Major Culvert with a Minor Culvert (on page 367).

> When you want to replace a Minor Culvert with a Major Culvert, you should use the **Bridge Insert Wizard.**

Adding a Culvert

A Major Culvert does not have some Bridge components like Foundations or Spans. These are automatically left out when you add a new Major Culvert using the Bridge Insert Wizard. Use the **Drainage Detail** screen to add a Minor Culvert.

Components of a Bridge

Within **RAMM**, the Bridge is broken into standardised components, no matter what type of Bridge it is.

The components include parts of the Bridge like the Deck or the Foundation. They also include the Services and Restrictions associated with the Bridge. The Services are lights and other Bridge paraphernalia.

The following diagrams show the major components, although not all Bridges will have all of them.

Below, you can read which **RAMM** component holds details about each part of the Bridge and proceed directly to the topic about working with that component.

Culverts have some special components of their own. See Components of a Culvert (on page 339).

Bridge Components

Span, Beam and Brace Components

This close-up shows the derived Span component between two Piers, and the Beam and Brace components which lie within the Span:

This RAMM Component...	Includes These Items
General (on page 349)	**A** Waterway
Foundation (on page 353)	Footing, Pile, **B** Pier
	C Pier Cap, Cross-beam, Bearing
	K Abutment
Foundation Protection (on page 354)	Wingwall, Scour Protection
Span (on page 355)	**D** Span, Deck
Brace (on page 356)	**H** Brace, Truss
Beam (on page 357)	**J** Beam
Deck (on page 358)	**E** Deck, Approach Slab, Run-on Slab, Expansion Joint, Drainage Scupper, Kerb, Running surface
Footpath (on page 358)	Footpath
Railing (on page 359)	**F** Railing, Barrier, Handrail, Ground Fixture
Superstructure (on page 360)	**G** Superstructure, Cross Section, Long Section
Services (on page 361)	Service, Utility
Restrictions (on page 362)	Restriction, Vertical Clearance, Axle Limit, Gross Limit, Speed Limit, Width Limit

Components of a Culvert

Within **RAMM**, the Culvert is broken into standardised components.

The following diagram shows the major components, although not all Culverts will have all of them.

Below, you can read which **RAMM** component holds details about each part of the Culvert and proceed directly to the topic about working with that component.

Culvert Components

This RAMM Component...	Includes These Items
Culvert (on page 351)	**A** Culvert
Culvert Wall (on page 352)	**B** Headwall, **C** Wingwall, **D** Apron

Detached Components

Some Components of a Bridge are referred to as detached.

These are footpaths or railings which fall within the start and end displacement of the Bridge, but which were not necessarily constructed as part of the Bridge.

You can choose to include detached components when you are viewing the Bridge details and you can attach these components to the Bridge so you can maintain their details from the Bridge screen. They are also then associated for valuation purposes.

Showing Detached Components

To show detached components when you are maintaining Bridge details, press the Detached 🖾 button so that it is in (concave). See Bridge Detail Maintenance (on page 346).

Attaching Components

To attach a detached component to the Bridge, you select it from the list of components on the left of the screen, then right-click and choose Attach to Bridge from the pop-up menu.

Bridge Data Storage

Most Bridge data in RAMM is stored in the br_Bridge table and associated subtables. Some details about Culverts are stored in the Drainage and Drainage_walls tables. Similarly, details about Footpaths are actually stored in the RAMM Footpath table, and details about Railings are stored in the Railings table.

Bridge Detail Screen

You will notice that the **Bridge Detail screen** is different from the ones used for other Asset Types.

The components that make up the Bridge are listed in the Component Selection panel on the left side of the screen. They each have their own distinctive icon.

When you highlight a component, the tabs in the right hand panel change to reflect the component you have selected.

Bridge Grid Screen

The Bridge Grid view is the same as that used for other Asset types in **RAMM**.

When you are working with a Bridge Grid view, only the general details about the Bridge are available, not the details about any other Bridge component.

Bridge Filter

The Bridge filter works the same way as filters for other asset types in **RAMM**. For more details about working with filters, read the *Using RAMM* guide.

Getting Started with Bridges

When you are working with Bridges in **RAMM**, there are some initial steps you will need to take. For more information, feel free to Contact ROMAN II (see "Contact RAMM Software Limited" on page 26).

1   **Data Conversion**
    If you have been using another system to store details about the Bridges in your Network, you will need to convert the data so that **RAMM** can work with it. If you used to work with any other system, ROMAN II can help with your data conversion on a case-by-case basis.

2   **Add Extra Lookups**
    You will need to make sure that all the details **RAMM** needs are entered. Use **RAMM Manager** to maintain the lookups.

3   **Add Bridge Details**
    One by one, add the required details for the Bridges in your Network. The amount of work required here depends mainly on how much data you were able to migrate from your old system.

4   To open the **Bridge Detail screen**, start **RAMM**, and then press ![icon].

Bridge Maintenance

When a Bridge has been added to your network, you need to add the Bridge into **RAMM**. You use the **Insert Bridge Wizard**.

When a Bridge has been removed from your Network, you need to delete the details of the Bridge from **RAMM**.

> You will need to have the correct Security Permissions before you
> can perform this procedure. See your Systems Administrator for
> assistance if required.

Adding a Bridge

When you add a new Bridge or Culvert to the Network, you use the **RAMM** Bridge
Insert Wizard.

If you are replacing an existing Bridge or Culvert, there are some special
considerations. See Replacement of Existing Structures (on page 365).

► To Add a Bridge

1 Launch **RAMM**.
2 Select, at the Road Selection panel, the Road to which you want to add the new Bridge.
3 Press [icon]. You will find this on the Favourites tool bar if you have placed it their.

Otherwise, press [icon] and select the Bridge icon from the drop-down list to open the
Bridge Detail screen.
4 Press Add Bridge [icon] or follow the menu path Edit > Add to open the **Bridge Insert
Wizard** screen.

5 The default value in the Bridge/Culvert drop-down list is Bridge. Accept this value.
6 On the left of the screen is the Component Selection panel. If you want to add a
component using the Wizard, you select the adjacent check box. If the component icon
has a red circle to its left, you can not add it.

The Wizard is intended to help you enter Bridge components in
sequence.

However, you can return to an earlier step if necessary, for
instance, to add something you forgot earlier, by pressing the
Previous button.

7 Press Next to make the tabs for the General details available.

8 Type or select the required details for each component of your Bridge, one after the
other.

- The component you are currently working on has an hourglass to its left, and on
  its right has a check box highlighted in grey.
- Components you have already added have a green tick to their left
- Components you have already added have a count of how many of that
  component you have already added to their right.
- When you have completed the details for the component you press ✓ to save the
  record.
- You then press Next to move to the following component.

You will see something like this:

If there are any special considerations you need to be aware of, they are described
separately in the topics linked from this list of components:

- **General** (on page 349)
- **Culvert** (on page 351)
- **Culvert Wall** (on page 352)
- **Foundation** (on page 353)
- **Foundation Protection** (on page 354)
- **Span** (on page 355)
- **Brace** (on page 356)

- **Beam** (on page 357)
- **Deck** (on page 358)
- **Footpath** (on page 358)
- **Railing** (on page 359)
- **Superstructure** (on page 360)
- **Services** (on page 361)
- **Restrictions** (on page 362).

> ⚠ **NOTE**   You can not enter negative values

9   Press ✓ when you have worked through the entire sequence. The Finish button will then become available.

10   Press ⬚Finish⬚ to save your new Bridge and you will be returned to the **Bridge** Detail screen with the details of your new Bridge displayed.

Removing a Bridge

When a Bridge or Culvert is removed from your Network, you will need to update the records accordingly.

- You can also remove just one component of a Bridge or Culvert, not the entire structure. See Removing a Bridge Component (on page 363).
- If you are replacing an existing Bridge or Culvert, there are some special points you need to be aware of. See Replacement of Existing Structures (on page 365).

▶ To Remove a Bridge

1   Select the Bridge you want to remove and show its details in the **Bridge** Detail screen.

2   Select the Bridge itself, at the top of the list of components in the Component Selection panel on the left of the screen.

3   Press [X] to open a **Delete Confirmation** dialog.

4   Press **Yes** to delete the Bridge and all its components.

Bridge Detail Maintenance

You may need to add, change or delete details about Bridges.

You can view the current Bridge components in the Component Selection panel of **Bridge Detail screen.**

The details for each component are available in the Details panels for the various components that make up the Bridge. These become available on the right-hand side of the screen when you select the component.

The Services and Restrictions associated with the Bridge can also be maintained.

Lookups

If the components you require are not visible in the Component Selection panel, you may need to add or edit components in **RAMM Manager**.

To do this you follow the menu path Maintenance > Lookups > Bridge > [Lookup].

Validation

RAMM has validation processes built in to the Bridge Insert Wizard and the Detail and Grid screens to ensure that the edits or changes you make to components are logical.

> ⚠️ **NOTE**
>
> You will need to have the correct Security Permissions before you can perform this procedure. See your Systems Administrator for assistance if required.

Adding a Component to a Bridge

You can add a new component to an existing Bridge whose details are recorded in RAMM.

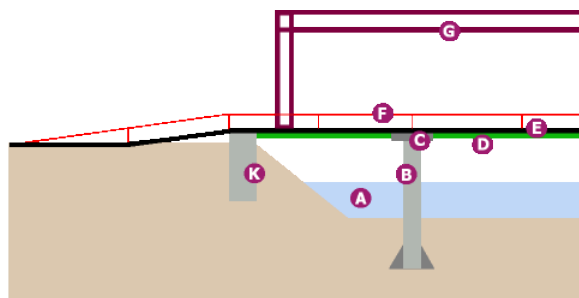- Components include parts of the Bridge like the Deck or the Foundation and also the Services and Restrictions associated with the Bridge.
- Some components also have subcomponents. For example, Foundations can have Protections and Spans can have Beams.

▶ To Add a Component to a Bridge

1 Select the Bridge to which you want to add another component. Display its details in the **Bridge** Detail screen.
2 Select, in the Component Selection panel, the component to which the new one will be attached.

- If you are adding a component to the Bridge itself, highlight the Bridge icon.

• If you are adding a subcomponent, highlight the icon for the component with which the new item will be associated. For example, to add Foundation Protection to a Foundation, select the Foundation. To add a Beam to a Span, select the Span.

3   Right-click on the highlighted Bridge or component and select the component or subcomponent that you want to add or follow the menu path Edit > Add Component > [component or subcomponent].

4   The Detail fields for your new component are shown on the right side of the screen. Enter the item details.

5   Use the links below for further details for each component:

- **Culvert Wall** (on page 352).
- **Foundation** (on page 353).
- **Foundation Protection** (on page 354).
- **Span** (on page 355).
- **Brace** (on page 356).
- **Beam** (on page 357).
- **Deck** (on page 358).
- **Footpath** (on page 358).
- **Railing** (on page 359).
- **Superstructure** (on page 360).
- **Services** (on page 361).
- **Restrictions** (on page 362).

6   Press ☑ to save your changes.

Updating Bridge Details

You can update the details of a Bridge recorded in **RAMM** to reflect changes in the Asset and its components.

You do this for any of the various components that make up the Bridge such as the Deck or the Foundation as well as the Services and Restrictions associated with the Bridge.

► To Update Bridge Details

1 Select the Bridge whose details you want to update. Display its details in the **Bridge** Detail screen.

2 Select, in the **Component Selection** panel, the component you want to change.

3 Press ▦ or CTRL+U to make the fields for updating details available.

4 The Detail fields for your new component are shown on the right side of the screen. Enter the item details. Use the links below for further details for each component:

- **General** (on page 349).
- **Culvert** (on page 351).
- **Culvert Wall** (on page 352).
- **Foundation** (on page 353).
- **Foundation Protection** (on page 354).
- **Span** (on page 355).
- **Brace** (on page 356).
- **Beam** (on page 357).
- **Deck** (on page 358).
- **Footpath** (on page 358).
- **Railing** (on page 359).
- **Superstructure** (on page 360).
- **Services** (on page 361).
- **Restrictions** (on page 362).

5 Press ✓ to save your changes.

General

When you are adding or changing Bridge details, some details apply to the entire Bridge. When you select a Bridge record, these details are shown on the General, Details, Structure, Waterway, Miscellaneous, Position, Valuation and Assessment tabs of the **Bridge** Detail screen.

The fields on the various tabs are fairly self-explanatory. However, there is an interesting **Stream Bed Type** screen available from the Waterway tab.

Waterway Stream Bed Types

On the Waterway tab, you can keep detailed **Stream Bed Type** records. You press the Update button on the Waterway tab to open the **Stream Bed Type** screen. This screen is divided into bars. You can select one option from each bar to describe the stream bed.

You press the OK button to save your selections and return to the Waterway tab. The results of your selections will be displayed in the Type field in the Stream Bed section.

Culvert

When you are adding or changing Culvert details, some details apply to the entire Culvert.

When you select a Culvert record, these details are shown on the General, Details, Structure, Waterway, Miscellaneous, Position, Valuation and Assessment tabs of the **Bridge** Detail screen.

You can also maintain the same details in the **Drainage** Detail screen and Grid screen.

Culvert Dimensions

When you are entering the dimensions of a Culvert into **RAMM**, the actual length of the Culvert is shown as y in the following diagram, and the Bridge Length is taken from x, which is actually the width of the Culvert.

Culvert Wall

When you are adding or changing Culvert details, some details apply only to the Walls of the Culvert.

When you select a Culvert Walls record, these details are shown on the General tab of the **Bridge** Detail screen.

You can also maintain the same details in the **Drainage Walls** Detail screen and Grid screen.

Foundation

When you are adding or changing Bridge details, some details apply only to the Foundation of the Bridge. When you select a Foundation record, these details are shown on the General tab and Pier and Bearing tab of the **Bridge** Detail screen.

Pier and Bearing Tab

The Pier and Bearing tab enables you to record information for the Pier, Pier Cap and Bearing separately, each in its own section.

Foundation Protection

When you are adding or changing Bridge details, some details apply only to the Foundation Protections of the Bridge.

When you select a Foundation Protection record, these details are shown on the General tab of the **Bridge** Detail screen.

Span

When you are adding or changing Bridge details, some details apply only to the Span component of the Bridge. When you select a Span record, these details are shown on the General tab of the **Bridge** Detail screen.

Structure Tab

Some Span details are also shown on the Structure tab of the **Bridge** Detail screen. If you enter a value for the Span Count, you may be prompted to add the appropriate number of Span records, if none exist.

Brace

When you are adding or changing Bridge details, some details apply only to the Braces within a Span of the Bridge.

When you select a Brace record, these details are shown on the General tab of the **Bridge** Detail screen.

Beam

When you are adding or changing Bridge details, some details apply only to the
Beams within a Span of the Bridge.

When you select a Beam record, these details are shown on the General tab of the
Bridge Detail screen.

Deck

When you are adding or changing Bridge details, some details apply only to the Deck of the Bridge.

When you select a Deck record, these details are shown on the General tab of the **Bridge** Detail screen.

Footpath

When you are adding or changing Bridge details, some details apply only to the Footpath of the Bridge.

When you select a Footpath record, these details are shown on the General tab of the **Bridge** Detail screen.

You can maintain the same details in the **Footpath** Detail screen and Grid screen.

Detached Footpaths

If you select the Show all detached Footpaths and Railings option, then, Footpaths which are detached from the Bridge are listed along with the other Footpath records and are identified clearly. See Detached Components (on page 340).

Railing

When you are adding or changing Bridge details, some details apply only to the Railings of the Bridge.

When you select a Railing record, these details are shown on the General, Rail and Support tabs of the **Bridge** Detail screen.

You can also maintain the same details in the **Railings** Detail and Grid screens.

Detached Railings

If you have selected the Show all detached Footpaths and Railings option, those Railings which are detached from the Bridge, are listed along with the other Railing records and are identified clearly.   See Detached Components (on page 340).

Superstructure

When you are adding or changing Bridge details, some details apply only to the Superstructure of the Bridge.

When you select a Superstructure record, these details are shown on the General tab of the **Bridge** Detail screen.

The Superstructure is defined as any part of the Bridge which is above the Bearings.

Services

When you are adding or changing Bridge details, some details apply only to the Services carried on the Bridge. When you select the top level Services record, these details are summarised in a table in the panel on the right.

When you press ![icon] to add a Service, the General, Miscellaneous and Assessment tabs become available at the **Bridge** Detail screen. Similarly, when you select a particular Service record, its details are shown on the **General** tab of the **Bridge** Detail screen.

Restrictions

When you are adding or changing Bridge details, some details apply only to the Restrictions associated with the Bridge.

When you select a particular Restriction record, its details are shown on the General tab of the **Bridge** Detail screen.

When you select the top level Restrictions record, the details of the latest Restrictions are shown.

Updating Restrictions

Restrictions are dated, so when you change Restriction details, a new record is automatically created and the old one is closed off.

Removing Restrictions

You can not remove a Restriction. However, when you remove the entire Bridge, all Restrictions associated with that Bridge are removed.

Removing a Bridge Component

When a component is removed from a Bridge in your Network, you need to update your records in **RAMM** Bridges.

- You can also remove the entire Bridge, not just one component. See Removing a Bridge (on page 345).
- If you are replacing an existing Bridge or Culvert, there are some special points you need to be aware of. See Replacement of Existing Structures (on page 365).
- If you want to remove a component which has subcomponents, you must remove all the subcomponents first. For example, you must remove all the Beams in a Span before you can remove the Span.

> ⚠️ **NOTE**
> You will need to have the correct Security Permissions before you can perform this procedure. See your Systems Administrator for assistance if required.

▶ **To Remove a Bridge Component**

1 Select the Bridge whose component you want to remove, and show its details in the **Bridge** Detail screen.

2 Go to the list of components at the left of the **Bridge** Detail screen, and select the component you want to remove.

> ⚠️ **NOTE**
> You can not remove a Restriction record.

3 Press ❌ to delete the component. A **Delete Confirmation** screen will open.

4 Press **Yes** to delete the component.

Replacement of Existing Structures

When a Bridge or Culvert in your Network is replaced, you need to update the records in **RAMM** Bridges.

This section describes three special cases:

- Replacing a Bridge with a Culvert (on page 365).
- Replacing a Major Culvert with a Bridge (on page 366).
- Replacing a Major Culvert with a Minor Culvert (on page 367).

See Culverts and Bridges (on page 337).

> When you want to replace a Minor Culvert with a Major Culvert, you should use the **Bridge Insert Wizard.**

Replacing a Bridge with a Culvert

When you are replacing a Bridge with a Culvert, you first need to decide whether the resulting Culvert is a Minor Culvert or a Major Culvert. See Culverts and Bridges (on page 337).

Then you follow the appropriate set of steps below.

▶ To Replace a Bridge with a Minor Culvert

1 Add a component for the Culvert details. See Adding a Component to a Bridge (on page 347). See Culvert (on page 351).
2 If required, add components for the Culvert Walls. See Culvert Wall (on page 352).
3 Remove all the other components, which do not apply to a Culvert. See Removing a Bridge Component (on page 363).

- **Foundation** (on page 353)
- **Foundation Protection** (on page 354)
- **Span** (on page 355)
- **Brace** (on page 356)
- **Beam** (on page 357)
- **Deck** (on page 358)
- **Footpath** (on page 358) - you will probably detach these rather than delete them.
- **Railing** (on page 359) - you will probably detach these rather than delete them.
- **Superstructure** (on page 360)
- **Services** (on page 361)
- **Restrictions** (on page 362).

4   The Culvert is no longer available from the **Bridge** Detail screen. To maintain it from now on, use the **Drainage** Detail screen. If you detached Footpaths or Railings, you maintain them from now on in the **Footpath** Detail or **Railing** Detail screens. See Detached Components (on page 340).

▶ **To Replace a Bridge with a Major Culvert**

1   Keep the Bridge General details. See General (on page 349).
2   Add a component for the Culvert details. See Adding a Component to a Bridge (on page 347). See Culvert (on page 351).
3   If required, add components for the Culvert Walls. See Culvert Wall (on page 352).
4   Remove these components, which do not apply to a Culvert. See Removing a Bridge Component (on page 363).

- **Foundation** (on page 353).
- **Foundation Protection** (on page 354).
- **Span** (on page 355).
- **Brace** (on page 356).
- **Beam** (on page 357).

5   Update the remaining components, or remove them if they are no longer relevant. See Updating Bridge Details (on page 348).

- **Deck** (on page 358).
- **Footpath** (on page 358) – you will probably detach these rather than delete them.
- **Railing** (on page 359) – you will probably detach these rather than delete them.
- **Superstructure** (on page 360).
- **Services** (on page 361).
- **Restrictions** (on page 362).

6   If you detached Footpaths or Railings, you now maintain them at the **Footpath** Detail or **Railing** Detail screens. See Detached Components (on page 340).

Replacing a Major Culvert with a Bridge

You may need to replace a Major Culvert with a Bridge. See Culverts and Bridges (on page 337).

▶ **To Replace a Major Culvert with a Bridge**

1   Update the Bridge **General** details. See Updating Bridge Details (on page 348).
2   Remove the components for the Culvert details. See Removing a Bridge Component (on page 363). See Culvert (on page 351).
3   Remove the components for the Culvert Wall details. See Culvert Wall (on page 352).
4   Add the following components to the Bridge, if required. See Adding a Component to a Bridge (on page 347).

- **Foundation** (on page 353)
- **Foundation Protection** (on page 354)

- **Span** (on page 355)
- **Brace** (on page 356)
- **Beam** (on page 357)
- **Deck** (on page 358)
- **Footpath** (on page 358)
- **Railing** (on page 359)
- **Superstructure** (on page 360)
- **Services** (on page 361)
- **Restrictions** (on page 362).

Replacing a Major Culvert with a Minor Culvert

When you are replacing a Major Culvert with a Minor Culvert, you follow the steps below.

To read more about the difference between a Minor Culvert and a Major Culvert see Culverts and Bridges (on page 337).

▶ To Replace a Major Culvert with a Minor Culvert

1   Update the components for the Culvert General details. See Updating Bridge Details (on page 348).
2   Update the Culvert details. See Culvert (on page 351).
3   Update the Culvert Wall details. See Culvert Wall (on page 352).
4   Remove all the other components, which do not apply to a Minor Culvert. See Removing a Bridge Component (on page 363).

- **Deck** (on page 358)
- **Footpath** (on page 358) - you will probably detach these rather than deleting them.
- **Railing** (on page 359) - you will probably detach these rather than deleting them.
- **Superstructure** (on page 360)
- **Services** (on page 361)
- **Restrictions** (on page 362).

5   The Culvert is no longer available from the **Bridge** Detail screen. You now maintain it at the **Drainage** Detail screen. If you detached Footpaths or Railings, you now maintain them at the **Footpath** or **Railing** Detail screens. See Detached Components (on page 340).

Bridge Reports

When you are working with Bridges, you can get information out of **RAMM** by printing or exporting the contents of the **Bridge** Grid. Because the **Bridge** Grid shows only the details of the Bridge but not those of its components, if you print or export from the Grid those details are all you can include.

However, there are two reports you can produce:

- **Bridge Restrictions**
  The Restrictions report includes the main details about the Bridge and its Restrictions. It does not include any details about the other Components of the Bridge.

  You produce this report for many Bridges from the Grid screen only. See Running the Bridge Restrictions Report (on page 368).

- **Bridge Detail**
  The Detail report includes all the details of the Bridge and its Components.

  You can produce this report either for one Bridge from the Detail screen or for many from the Grid screen. See Running the Bridge Detail Report (on page 369).

You can also report on Bridge Assessments. See the *RAMM Assessment* guide.

Running the Bridge Restrictions Report

The Bridge Restrictions report includes the main details about the Bridge and its Restrictions. It does not include any details about the other components of the Bridge. You can produce this report for many Bridges at once from the Grid screen.

▶ **To Run the Bridge Restrictions Report**

1   Set the Grid screen to include the Bridges with Restrictions for the report.
2   Follow the menu path **Actions > Report > Restrictions** to open the **Bridge Restrictions** report selection screen.

3   Select, in the **Layout** panel, the columns to include in the report.
4   Modify the Grid layout to order or group the columns.

5 Press 🖶 to open the **Print Preview** screen.

Running the Bridge Detail Report

The Bridge Detail report includes all the details of the Bridge and its Components. You can produce this report for many Bridges at once from the Grid screen.

▶ **To Run the Bridge Detail Report**

1 Set the Grid screen with the Bridges on whose Details you want to report.
2 Follow the menu path **Actions > Report > Detail** to open the **Bridge Detail Report** component selection screen.

3 Select the components you want to include in the report.
4 Select from the **Order by** field, the value by which to order the report.

5   Press Preview to open the **Bridge Detail Report** screen.

Bylaws

City Councils and other civic or regional authorities pass Bylaws. These local laws cover local speed limits, parking restrictions and other minor areas.

The main difference between a Bylaw and a law passed by the State is that a Bylaw is a regulation passed by a body which has received the authority to do this from another governing body. That is why entities which pass Bylaws are sometimes called Local Governments. The government specifies what things a Local Government may regulate through Bylaws.

Bylaws are enacted either directly or through a Resolution which references the Bylaw.

In **RAMM**, the terms Bylaw and Resolution are interchangeable since they both serve the same purpose of being the document that legally supports a Road use restriction. In practice, Resolution is likely to be more commonly used, but it makes no difference to the data.

New Bylaws are set up in **RAMM Manager**.

In This Chapter

Introduction to Bylaws

Bylaws are enacted to legally implement a restriction such as a Speed Limit, either directly or through a Resolution which references the Bylaw.

The Bylaw or Resolution will have some form of identification, such as a file reference, and a date.

Actual Resolution

Typically, the actual Resolution passed by the Council, or authorised Committee, will be prefaced by a phrase similar to the following:

'That pursuant to the Whangarei District Council Parking and Traffic Bylaw 1999, clause 15 it is hereby resolved that the parking of vehicles be restricted as described in the schedule below:...'

A list of Bylaw Locations will follow.

Bylaw and Resolution

In **RAMM**, the terms Bylaw and Resolution are interchangeable since they both serve the same purpose of being the document that legally supports a Road use restriction. In practice, Resolution is likely to be more commonly used, but it makes no difference to the data.

Set Up Bylaws

New Bylaws are set up in **RAMM Manager**.

Bylaws are uniquely identified by a text code that will ordinarily contain the council File Reference number. A short Description, used only within **RAMM**, can also be entered.

Bylaws are linked to a Register and one or more Locations.

Bylaws in RAMM

You record Bylaws in **RAMM**. For example, you can record Speed Zones, No Stopping Zones, Parking Restrictions and One Way Streets.

Bylaws in RAMM

To view Bylaws attached to a Road or Carriageway section in **RAMM**, press the Show Bylaw button on the main **RAMM** screen tool bar.

Bylaws in RAMM Manager

Bylaws and related Registers are maintained in **RAMM Manager** with the Bylaws **Navigator**. Follow the menu path Projects > Bylaws > Navigator to launch it. See Bylaw and Register Maintenance (on page 394).

Map

Some Bylaw related actions use **RAMM** Mapping.

Reports

A number of reports are also available. See Bylaws Reports (on page 405).

Speed Limit Maintenance

Bylaws in **RAMM** was initially developed to record and manage speed limits for all Roads as a result of the New Zealand Transport Agency Rule Setting of Speed Limits coming into force. **Navigators** are available to guide you through the Speed Limit Register setup process. See Speed Limits (on page 381).

Bylaws, Locations and Registers

You configure and manage Bylaws to suit your needs. You have options for:

- the use of the Bylaw
- the Registers linked to that Bylaw
- the Locations linked to either the Registers or the Bylaw, or both.

Example

The Speed Limits Register is initially linked to the **RAMM** Bylaw. This need not be so, and the Bylaw itself can be called Speed Limits. You might think that the name for the Bylaw should be more meaningful such as the actual Bylaw File Reference used by the Council. Whatever you choose, it must be unique.

Registers

The way Registers are used can also vary. The Speed Limits Register has been set up with different Register sections for each speed limit. When you create speed limit Bylaws, you may have one Bylaw to cover the entire Register or you may create one Bylaw for each speed limit or one for each zone.

If you go to the **Register** maintenance screen, you will see other Registers. See Register Maintenance (on page 404). There is a Controls Register to help you deal with Stop, Give Way, No Entry, Turn and One Way traffic controls. There is a Parking, Stopping Restrictions Register for static traffic zones such as No Stopping, Parking Restriction, Bus Stop, Taxi Stand and Loading Zone areas. See Registers (on page 376).

Locations

Locations are the Road Locations to which the Bylaws are applied. In the Speed Limits Register, the **Navigator** generates the Register, attaching Locations automatically according to predefined criteria, principally, the signs available. If you set up a new Bylaw, you will have to create the Locations manually. See Bylaw Locations (on page 374).

Bylaw Locations

The Council Bylaw or Resolution will define the Road Locations that the Bylaw covers. There will be a Start Point and End Point and it may apply to a single side of the Road. These descriptions commonly use the closest intersecting Roads as references for the Start Points and End Points, so Intersections are also important when working with Bylaws.

Bylaw Locations are generally defined in **RAMM Manager**, though they can be set up and maintained in both **RAMM** and **RAMM Manager**. For Speed Limits, using the **Navigator** will generate the Locations automatically. The Bylaw Location record links the Bylaw with a Register section.

Bylaw Location Descriptions

When a Register is printed as a report, it prints the Road Name for each Bylaw Location record. Details of the length covered will be described in a second Description column.

Entered Descriptions and Generated Descriptions

If a description has been entered for the Bylaw Location, this will be printed. If nothing has been entered, RAMM will generate its own description. See How Bylaw Descriptions Are Generated in RAMM (on page 375). It is important to keep in mind that the generated description is always calculated at the time of printing or display on the screen. This means that it always uses the current data such as Road name.

The advantage of printing the generated description by leaving the entered description field blank, is that if a Road changes name, the generated description will automatically reflect that change.

The disadvantage of printing the generated description is that it introduces a reliance on the Carriageway Start and End descriptions. These were originally only intended to serve as descriptions for the Road Engineers, and may not be suitable for a public document.

> The best solution is to copy the generated description into the Entered field by pressing on the green double-arrow button ⇈ in the Bylaw and Register maintenance screen and edit any unsuitable text.

How Bylaw Descriptions Are Generated in RAMM

Bylaw descriptions are generated according to the following rules.

- If the Bylaw Location exactly covers the entire Road, no further detail is necessary, so the generated description is blank.
- If the Bylaw Location does not exactly cover the entire Road, the description is comprised of a commencing... phrase and an ending... phrase. For example: commencing at a point 40 metres after Hobson Road and ending at Merewhira Road.

RAMM performs the following actions to generate descriptions:

1   Find the Carriageway that begins nearest to the start of the Bylaw Location. The commencing... phrase refers to the start name of this Carriageway.

2   Find the Carriageway that ends nearest the end of the Bylaw Location. The ending... phrase refers to the end name of this Carriageway.

3   However, if the start of the Bylaw is closer to the Carriageway at its end, both the commencing... and ending... phrases refer to the end name of that Carriageway.

4   If the end of the Bylaw is closer to the Carriageway at its start, both the commencing... and ending... phrases refer to the start name of that Carriageway.

5   For example: commencing at a point 17 metres after Smith Street and ending 117 metres after Smith Street.

6   Calculate the distance from the Bylaw Location Start and End to the Carriageway Start/End   Locations, and insert these distances into the commencing... and ending... phrases.

7   Combine both the commencing... and ending... phrases into a single description.

Registers

Every Bylaw is linked to a Register section. Register sections make up a Register. In the real world, Registers may refer to a:

- listing of all individual Bylaw limits or restrictions
- map
- combination of the above.

In **RAMM**, Register refers only to the first - a listing of all individual Bylaw limits.

In general, RCAs (Road Controlling Authorities) have a responsibility to set speed limits for the Roads under their jurisdiction, and maintain a public Register of those speed limits. They may also set restrictions on Road usage, such as Bus Stops and Parking Bays.

Registers are created for these purposes, and they can be used to generate a number of reports. Three Registers are included in **RAMM**:

- Speed Limits Register
- Parking, Stopping Restrictions Register
- Controls Register.

You may create additional Registers. See Register Maintenance (on page 404).

Register Sections

A Register is comprised of one or more sections. This is purely to simplify the administration of a Register. For example, the Speed Limits Register has a section for each speed limit. The Parking, Stopping Restrictions Register has sections for Parking, Bus Stops and Taxi Stands.

Links Between Register Sections and Asset Types

Markings, Traffic Facilities, and Signs may be linked to Register sections. It is possible for a Register section to be linked to more than one type. For example, 100 km/h is linked to two sign types, Speed Limit 100 km/h and Derestriction. Other asset types cannot be linked to Register sections.

Only Asset Types that have a link to a Register section can be selected for processing reports. Examples of these are the Speed Limit Register reports that help check for errors. If you are using any Asset Types that are not on the list of Register Section - Asset Type links such as a School Zone - you will need to add the link yourself.

You can do so by pressing the Register to Asset Link button in the Bylaws Navigator. See Maintaining Register Section/Asset Type Links (on page 400).

Working with Bylaws

Working with Registers and Bylaws is a matter of performing a number of steps in sequence.

The quickest way of setting up your Registers and Bylaws is to use the Wizard. See Bylaws Navigator (on page 377).

If you need to edit settings for existing Registers and Bylaws, you can do this in **RAMM** or in **RAMM Manager**. See Bylaw and Register Maintenance (on page 394).

Bylaws Navigator

You set up and maintain Bylaws and Registers using the Bylaws **Navigator**. You launch this in **RAMM Manager** by following the menu path Projects > Bylaws > Navigator.

Context Sensitive Help Panel

The information panel at the top right hand of the screen will show you context sensitive information on any Bylaw **Navigator** button. Just hover your mouse arrow over any button to read a description of what it does before you press it.

Bylaws Navigator Registers

The Bylaws **Navigator** shows the Speed Limits Register by default.

You can select a different one from the Register drop-down list.

If you need to set up a new Register you can do so by pressing the Register Section button in the Maintain Register section.

Adding Bylaw Locations to a Map

Displaying Bylaw Locations on the **Map** is an excellent real world indication of where Bylaw Locations are.

This involves configuring a **RAMM** Database Filter to sort the relevant Register sections individually in the Bylaws Grid screen, and then adding each Register section to the **Map** as a different Map Layer.

▶ **To Add and Show Speed Limit Bylaw Locations on the Map**

1   Launch **RAMM**.

2   Press ⬚ to open the **Bylaw Location** Grid screen.

3   Press ⬚ to launch the **Map**.

4   Press ⬚ on the **Bylaw** Grid screen tool bar to launch the **Filter Road Details - Bylaw** screen.

5   Select Register Section in the Fields panel and select, on the In List tab, the particular Bylaw you want to display on the **Map**. This could be Roads with a 100 km/h Speed Limit or No Stopping areas as in the graphic above.

6   Press [OK] to open the **Confirm Filter Option** dialog.

7   Select the All roads in Entire Network option and press [Continue].

8   The **Bylaw** Grid screen will default all Roads with No Stopping restrictions.

9   Follow the Grid screen menu path Actions > Add to Map > Add to Map Now to open the **Add to Map - Bylaw** dialog.

10   Change the default Layer Name value from Bylaw to Bylaw - No Stopping.

11   If you wish to visually distinguish the No Stopping Locations from other parking Locations, press the ellipsis [...] adjacent to the Settings drop-down list to open the **Map Settings - Untitled.msf** screen. You can then edit the Map Layer settings. For example you can change the line colour and the width. You must then save the settings as a .msf file.

12   Press [OK] to close the **Add to Map - Bylaw** dialog. A **Progress** screen will open and show the progress of adding the Map Layer to the **Map**.

> ! **NOTE**
> You may be informed that some Roads were unable to be added to the map because the Road Id was not found.

13 Repeat steps 9 through 12 for each Parking, Stopping Restrictions Register section, giving each layer a different name such as Bylaw P 30 Standard Hours and Bylaw - Bus Stop.

14 After each parking or stopping restriction is added to the **Map**, you may wish to export the Map Layer. When you want to display their Locations in future sessions it is quicker to import a Map Layer than to rerun the filter and add to the **Map** again. This would be required only if the data has changed.

15 If you are adding Speed Limits to the **Map**, you can also use the **Map** to view speed limit signs in the context of the speed limit Locations. By giving the signs a different colour, symbol style and layer name you will be able to visually confirm that there are no anomalies. Make sure you have recorded Location data for the signs if you wish to use the **Map** this way.

Speed Limits

You set up Speed Limits in **RAMM Manager** and manage them in conjunction with **RAMM** Bylaws.

The quickest way to set up your Speed Limits is to use the Bylaws **Navigator**.

Launching the Speed Limits Register Navigator

You use the Bylaws **Navigator** to set up your Speed Limits Register. You do this in **RAMM Manager**.

▶ **To Launch the Speed Limits Register Navigator**

1   Launch **RAMM Manager**.
2   Follow the menu path Projects > Bylaws > Navigator to open the **Speed Limits Register Navigator** screen.

3   The **Navigator** ensures that you go through the correct sequence of steps to generate a Speed Limits Register.
4   If you hover the mouse over any of the buttons, Context Sensitive Help will appear in the (unnamed) Help panel at the top right of the screen.

Prepare for the Speed Limits Register

The Prepare section of the **Speed Limits Register Navigator** is the first section which you use.

It offers four processes to prepare for the building of the Speed Limits Register.

The first two buttons in the Prepare section are Generate Speed Limit Signs and Generate Intersections Using the Map. Use of these buttons is described below. See:

- Generate Speed Limit Signs (on page 383)
- Generate Intersections Using the Map (on page 384).

The other buttons refer to exception reports which you can generate to help with the checking process. See:

- Identify Roads without Intersections (on page 421)
- Identify Intersections with Invalid Location (on page 422).

Generate Speed Limit Signs

You launch the **Navigator** and press the Generate Speed Limit Signs button in the Prepare section to generate Speed Limit Signs.

This Grid automatically generates appropriate sign types with the full RG1- AAA sign definitions rather than the generic RG1 definition for all signs.

You have the option to select and deselect individual signs in the Update/Insert column.

The reason for this is to avoid inadvertently converting the wrong type of sign to a Speed Limit Sign.

For example, you would not want to insert a School Sign, which may have similar legend text to a Speed Limit Sign, as a Speed Limit Sign.

Ensure the Signs selected are correct, and press Insert Ticked Signs. You will be returned to the **Navigator** when the process is finished.

Generate Intersections Using the Map

Road Locations, as defined in Council Bylaws or Resolutions, will have a Start Point and End Point and may apply to a single side of the Road. The descriptions often use the closest intersecting Roads as Start Point and End Point references.

You use Mapping to generate Intersection data. You do this in the **Navigator** Prepare section, by pressing Generate Intersections Using the Map.

However, there are some occasions on which an Intersection will not be generated, such as when a Road on the **Map** can not be matched to a Road in the database. An exact Intersection Location can be determined when the intersecting Roads start or end where a Carriageway starts or ends.

If an Intersection occurs within a Carriageway instead of at its beginning or end, **RAMM** Mapping may not be able to determine its exact Location. It uses the available data to generate an Intersection record, but with no Location. **RAMM** puts this into the Notes field as Approximate Location ....m. You can correct this later.

Build the Speed Limit Register

After you have prepared your database, you build the Speed Limit Register and set its scope, Maintain One-way Carriageways and then Generate the Register. This process has its own **Navigator.**

Set Up the Speed Limit Register Scope and Owner

A Register is a grouping of Bylaws of similar types. Each Register is comprised of one or more sections. This simplifies administration. For example, the Speed Limits Register has a section for each Speed Limit. The Parking, Stopping Restrictions Register has sections for Parking, Bus Stops and Taxi Stands.

Every Bylaw is linked to a Register section. There are default Registers and Register sections for Speed Limits in **RAMM**. So you do not need to set them up as you would normally have to with a new Bylaw.

Speed Limit Register Scope

Before generating a Speed Limit Register, you should set the scope of the Register. In the Build the Register section of the **Navigator**, press the Setup button to open the **Setup Speed Limit Register** screen.

By default, the Speed Limit Scope will include All Roads. Alternatively, you may change this to include only those Roads which are:

- **Exceptions to the Urban limit (50 km/h)**
  you would do this if your council were using a map to define Urban Traffic Areas
- **Exceptions to the Rural Limit (100 km/h)**
  you would do this if your council were using a map to define Rural Traffic Areas.

You also need to specify how you identify those Carriageways which are to form the basis of the Speed Limits Register. The standard condition is that Carriageway Owner Type = Local Authority.

Maintain One-way Carriageways

Before building the Speed Limits Register, you should check all Carriageways for travel direction. You identify and maintain those that are one-way because they should have speed limit signs in a single travel direction instead of both.

You do this in the **Navigator**. In the Build the Register section, press the Maintain One-way Carriageways button to open the **Maintain one-way carriageways** screen. You may change Carriageway Travel Direction in the One-way or Two-way section.

Generate Speed Limit Bylaw Locations Navigator

You use a second **Navigator** to generate Speed Limit Bylaw Locations. You launch it by pressing the Generate Speed Limit Bylaw Locations button.

Before Generating Speed Limit Bylaw Locations

Since this is a complex process, there are a number of things you should check on before you commit yourself to it.

This is especially true if you see some warning messages in the information panel at the top, as in the image above.

Any buttons that are active (not dimmed) in the Use Sign Data section will relate directly to errors that the Bylaws system has identified, and therefore those reports should be run before you proceed to generate Speed Limit Bylaw Locations.

If no errors are anticipated, all report buttons will be dimmed. The Multiple Speed Limit Signs Report button on the **Generate Speed Limit Bylaw Locations Navigator** above is an example of a dimmed button. See Generate Speed Limit Bylaw Locations Navigator (on page 386).

- **Using Sign Data to Generate Speed Limit Locations**
  If your speed limit sign data is reliable and if your signs at least have a Location, you can use it to assist in determining the Bylaw Locations by selecting the Use Sign Data option.
- **Generating Speed Limit Locations from the Carriageway Urban/rural Indicator**
  If you choose not to use sign data, the speed limit will be calculated on the basis of the Carriageway urban/rural indicator. See Set Up the Speed Limit Register Scope and Owner (on page 385).
- **Accurate Intersection Data is Important**
  When using signs, the accuracy of the generated Bylaw Locations depends on the accuracy of your Intersection data. This is why the **Navigator** will prompt you to generate Intersections as a preparatory step, before you get to this point. See Generate Intersections Using the Map (on page 384).
- **You can Delete and Regenerate Speed Limit Register Locations**
  If your database already has some Speed Limit Register Location records, new records will be generated only for those Road sections without records. You can, if necessary, generate a Register and, if it is not what you expected, delete it. See Deleting the Speed Limit Register (on page 389).

Generating Speed Limit Bylaw Locations

The steps below assume that you have checked all the necessary reports in the **Generate Speed Limit Bylaw Locations Navigator** and you are satisfied that you can go ahead with generating Speed Limit Bylaw Locations.

This topic describes the procedure for Adding Speed Limit Signs to the **Map**, generating Speed Limit Bylaw Locations and then checking the Locations on a **Map**. While you are still experimenting with Bylaw Locations, remember that you can delete all or some of the Speed Limit records and start again.

> For the steps below, you will need to have a fairly good knowledge of Mapping. You will also need to have **RAMM** and **RAMM Manager** both open on your screen. See the Mapping section of the *Using RAMM* guide for more information.

Speed Limit Bylaw Locations are generated for a single zone at a time. This way you can generate a zone, then add the Bylaw Locations to the map and quickly verify that the result is correct. If there are any errors, this is an indication that either there are missing or conflicting speed limit signs in the database, or they are not at the correct Location, or the intersection data is not correct. All of these cases need to be corrected before proceeding with the next zone.

Each zone will have its own Bylaw. The Bylaw description will be generated as the Road and Location of the start point, and you can change this later if you wish. To generate a zone, you need to provide a starting Location, and the speed limit at that Location. All Roads connected to the start Location will be navigated until a sign is encountered that indicates a different speed limit.

When there is nowhere left to navigate the process stops. For example, if you know that a point 10 metres from the start of Queen Street is in the middle of a shopping centre, use this as a start Location, with speed limit 50 km/h.

A panel on the screen displays repeater signs, which are also good candidates for starting Locations. If you already have some speed limit Bylaw Location records, new ones will only be generated for sections of Road which do not have any.

► To Generate the Speed Limits Locations

1   In **RAMM**, filter speed limit signs by Sign Type and Side of the Road, add them to the **Map** and then export the Layer. Name the Layer with something readily identifiable such as 50 km/h, Left. See Adding Bylaw Locations to a Map (on page 379).

At the conclusion of this exercise you will have 8 or 10 Layers which you can quickly import at any time.

> When filtering on side of the Road, choose Left for one set. Then select the Exclude Selected Items check box for the other set.

> When adding signs to the **Map**, press the ellipsis ⋯ on the Add to Map dialog to edit the Settings and pick different symbols for each speed limit.

> Set a value such as 10 on the Other tab, for Offset Direction (Left or Right) and Offset Amount. **Save** Save each speed limit as a separate **Map** Layer. The signs will then be clearly visible and correctly located on the **Map**.

2   Launch **RAMM Manager** and follow the menu path Projects > Bylaws > Navigator to open the **Bylaws Navigator**.

3   Press Generate Speed Limit Bylaw Locations in the Build the Register section to open the **Generate Speed Limit Bylaw Locations Navigator**.

4   Press Generate Speed Limit Bylaw Locations to open a **Confirmation** dialog describing how many Roads meet the filtering criteria, telling you how many Bylaw Locations will be generated and asking if you want to continue.

5   Press ⎣ Yes ⎦ to open a **Progress** screen which will show the progress as the records are created. When the process is finished an **Information** screen will open telling you that the Speed Limit Register has been successfully generated.

6   Press ⎣ OK ⎦ to return to the **Speed Limits Register Navigator**.

Deleting the Speed Limit Register

If the Speed Limit Bylaw Locations you have generated for your database are unsatisfactory, you can clear the Register and regenerate them.

This is done from the **Generate Speed Limit Bylaw Locations Navigator** in **RAMM Manager**.

▶ **To Delete the Speed Limits Register**

1   Open the **Generate Speed Limits Bylaw Locations Navigator**.

2   Press **Delete Existing Speed Limit Bylaw Locations** in the Existing Speed Limit Bylaw **Locations** section.

3   The **Delete Bylaw Location Records** Grid will open. It will be empty.

4   Press **Show Records** to populate the screen.

5   The **Do not delete records that have been modified** and **Do not delete records that were created manually** options in the **Selection Options** section will be selected by default. Accept these unless you have a good reason to clear them.

6   Select or clear individual records in the **Delete this record** column as appropriate.

7   Press **Delete Selected** or **Delete All** as required.

> When the records are deleted **RAMM** will bring up a dialog box indicating No Matching Records Found. This is simply because the Show Records process continues to run until you close this screen. Press OK to close the dialog and close this screen to return to the **Generate Speed Limits Bylaw Locations Navigator.**

Checking for Errors

Once you have generated Bylaw Locations and returned to the **Navigator**, it is advisable to run the reports in the Check For Errors section.

Use the links below to go to the relevant Report topic. Since you are currently working with Speed Limits, all screens launched by these buttons will be filtered to show the Speed Limits Register by default.

- **Road Sections without a Speed Limit** (on page 407).
- **Bylaw Locations Exceeding Road Limits** (on page 408).
- **Overlapping Restrictions** (on page 409).
- **Conflicting Assets** (on page 411).

Maintaining the Speed Limits Register

The **Navigator** also contains links to Bylaw maintenance screens for your convenience.

These screens can be launched individually from **RAMM Manager** as well, from the Projects > Bylaws menu path or the Maintenance > Lookups > Bylaws menu path.

Use the links below for more information. Since you are currently working with Speed Limits, all screens launched by these buttons will be filtered to show the Speed Limits Register by default.

- **Register Section**
  You use this Grid to set up or change Register sections. See Register Maintenance (on page 404).

- **Register to Asset Link**
  You use this Grid to control how Registers are linked to **RAMM** Assets. See Maintaining Register Section/Asset Type Links (on page 400).
- **Bylaw Location**
  This is the **Bylaw** maintenance screen. A special button on the tool bar, **Include Unassigned Bylaw**, removes the default filtering so that you can view and assign them, if necessary, to the Register sections you are working on. See Bylaw Maintenance (on page 397).

Register and Audit Reports

A number of Register and Audit reports are available from the **Navigator**. See Launching the Speed Limits Register Navigator (on page 381).

Use the links below to read more about them. Since you are currently working with Speed Limits, all screens launched by these buttons will be filtered to show the **Speed Limits Register** by default.

- **Register Asset**
  This report lists Signs, Markings or Traffic Facilities and any corresponding Bylaw Locations. See Register Asset (on page 418).
- **Bylaw Location Asset**
  This report lists Bylaw Locations and any Signs, Markings or Traffic Facilities that may be contained within them. See Bylaw Location Assets (on page 419).
- **Review Listing**
  This is an informal listing of the Register for a quick review of the generated Locations. See Review Listing (on page 414).
- **Today's Changes**
  All Bylaw Locations that have been inserted or modified today. See Today's Changes (on page 412).
- **Audit Report**
  This report allows you to specify a date range and query all Bylaw Locations inserted or modified within that range. See Audit Report (on page 412).

Publish Register

Once your Registers and Bylaw Locations are in order and you have checked them for errors and run the necessary reports, the **Navigator** allows you to generate formal reports suitable for publication.

Use the links below for more information. Since you are currently working with Speed Limits, all screens launched by these buttons will be filtered to show the Speed Limits Register by default.

- **Formal Listing**
  You use the Formal Listing report to generate the official Register that will be available to the public. It shows only Enacted Bylaws. See Formal Listing (on page 415).
- **Bylaw Title**
  This report shows Bylaw titles. See Bylaw Title (on page 417).

Check Boundary and Repeater Sign Compliance

Once you have published the Register you should check for Boundary exceptions and Repeater Sign compliance. You do this at the Check Boundary and Repeater Sign Compliance section of the **Speed Limits Register Navigator.**

Use the links below for more information. Since you are currently working with Speed Limits, all screens launched by these buttons will be filtered to show the Speed Limits Register by default.

- **Boundary 20m Exceptions**
  You use this report to list any Speed Limit Boundaries which do not have a corresponding Speed Limit Sign within 20m. See Boundary 20m Compliance (on page 425).
- **Repeater Sign Compliance**
  You use this report to list any routes taken that do not comply with Repeater Sign requirements. See Bylaw Title (on page 417).

Bylaw and Register Maintenance

This section describes how to set up and maintain Bylaws and Registers. You do this in a number of ways.

In **RAMM**:

- press to open the **Bylaws** Grid, launch the Detail screen for a particular Road section and then press to update the record.

In **RAMM Manager**:

- follow the menu path Projects > Bylaws > Navigator > Bylaw Maintenance to open the **Bylaw** maintenance screen filtered for the specific Register you are working with or
- follow the menu path **Projects > Bylaws** > [Bylaw/Register Maintenance] or
- follow the menu path Maintenance > Lookups > Bylaws.

Default Register Selection (Navigator)

When launched from the **Navigator**, most screens are filtered to show data directly related to the Register you are working with.

For example, if you are working on speed limits and you press any of the buttons in the Maintenance section of the **Navigator**, you will see maintenance screens that are filtered to show speed limits data.

Occasionally you may need to bypass this filtering. For example, when you launch **Bylaws Location** maintenance from the **Navigator**, you may need to view all unassigned Bylaws in the screen so that you may assign them to the Register section you are working on. A button is available to bypass the filter and include unassigned Bylaws in the current view.

This is applicable only to Bylaws that are Not Enabled.

Setting Up Bylaws

This topic covers setting up a new Bylaw. If you wish to set up Bylaws for speed limits, it is quicker to use our **Bylaws Navigator** instead.

> Before setting up a new Bylaw, you should ensure that you have appropriate Registers to which to link it. Set them up if necessary. Use the **Bylaws Navigator**.

▶ To Set Up a New Bylaw

1 Launch **RAMM Manager**.

2 Follow the menu path Projects > Bylaws > Navigator > (select Register) > (press Bylaw Location) to open the **Bylaw Location** maintenance screen.

3 Press ⬜ to add a new record.

4 Type, in the Bylaw field, the unique identifier for this Bylaw. The File Reference of the Bylaw is a good choice.

5 Type, in the Description field, the name by which the Bylaw will be recognised within **RAMM**.

6 Type, in the Title/Summary field, a summary description of the Bylaw.

7 Select, from the Enforced drop-down calendar the date on which this Bylaw came into force. This can be a date in the past or in the future.

> When the Enforced date is set, the status of the Bylaw is set to Enacted. This is a useful report filter option. See Review Listing (on page 414).

You can leave this field blank.

> ⚠ **NOTE**
>
> Bylaws can be merged only when the Enforced date is Null.
>
> Changes to critical fields in the Bylaw Location records are audited when the Enforced date is set. You can view them in the Audit Reports. The critical fields are: Bylaw, Road Name, Start_m, End_m, Side, Register Section.

8 Type, in the **Notes** field, any useful notes. Notes which are added at the time of creation or editing can be very useful at a later date. Notes can help if you have forgotten why you did something or if another user needs to understand your reasoning and purpose. The information in the **Notes** field is not printed by default. It is for your own reference.

9 Press ✓ to save the record.

10 Press the **Bylaw Location** tab to specify the Locations to which the restrictions will apply.

11 Press 🔲 in the **Bylaw Location** panel to add Bylaw Location details.

12 Specify Location information. The minimum requirements are a **Road Name, Start** (Displacement), **End** (Displacement) and **Register Section**.

13 Press ✓ to save the detail record and to generate a description in the **Generated** field.

14 Press ⬆⬆ to transfer the automatically generated description to the **Entered** field. If you prefer the description to be updated automatically by **RAMM**, leave it where it is.

15 Repeat steps 11 through 14 for as many Locations as you need for the particular Bylaw.
16 Close the screen when you are done.

Bylaw Maintenance

You use the **Bylaw Location** Detail screen in **RAMM** to maintain existing Bylaw data for a particular Road section.

Bylaw Location Detail Screen

You press the Bylaws button to open the **Bylaw Location** Grid screen and navigate to the Road you wish to work with. The Grid will show any Bylaw Registers corresponding to the Road selected in the Road Selection panel. You may find it useful to change the grouping column from Road Name to Register. To do this you drag the Road Name cell down beside Register and then drag Register up to the Grouping panel.

Double-click a record in the Grid to bring up the **Bylaw Location** Detail screen for that Road section. If there are any Location records for existing Bylaws, the Bylaw Location tab will be displayed first.

You can edit the record by pressing the Update button or the Add Record button to enter a new Bylaw. The Actions menu on both the Grid and Detail screens links directly to the maintenance screens for Bylaws and Register Section.

The **Bylaw Location** Detail screen above has tabs for Sign, Marking and Traffic Facility. They list Assets that belong to the Register and which are located within the length of the Bylaw Location.

Merging Bylaws

You can merge Bylaws. You would do this to simplify Bylaws maintenance and to avoid unnecessary clutter in the Bylaws system. You do this in **RAMM Manager** at the **Bylaw Location** maintenance screen or by pressing the **Bylaw Location** button in the Maintain Register section of the **Bylaws Navigator**. If you work with the **Navigator**, you will see only the Bylaws assigned to the current Register.

> You can not merge Bylaws unless their Status is Not Enacted and they have Locations attached.

In the example below, there are two Bylaws restricting the speed on both Carriageways in Wyndham St to 30 km/h. It makes sense to merge these Bylaws so that the one Bylaw covers the whole Road.

▶ **To Merge Bylaws**

1   Launch **RAMM Manager**.
2   Follow the menu path Projects > Bylaws > Maintain Register > Bylaw Location to open the **Bylaw Location** screen.

3   Select the Bylaw you wish to merge with another Bylaw. So you are selecting the
Bylaw that will disappear. In the example below, the Bylaw for the second Carriageway
in Wyndham St has been selected.

4   Follow the menu path Edit > Merge to open the **Select row which will remain after the
Merge** dialog.

5   Select the Bylaw with which the previous Bylaw will be merged. In the graphic above,
this is 98/4/1.

6   Press Merge Rows to close the **Select row which will remain after the Merge** dialog and
return to the **Bylaw Location** screen. The first Bylaw you selected will have been
merged with the second. So only the second Bylaw will remain in the **Bylaw** list panel.

7   Select the remaining Bylaw and press the **Location** tab. You will see the results of the
merge.

8   Close the screen.

Maintaining Register Section/Asset Type Links

You need to maintain links between Register Sections and Asset tables so that the Asset reports match Asset Types with Bylaw Locations. You do this in **RAMM Manager**. You follow the menu path Projects > Bylaws > Maintain Register > Register to Asset Link to open the **Register to Asset link** screen.

Default Values

The tables below are a detailed reference of all Register Sections and corresponding Asset Types provided automatically by **RAMM**.

Controls – Markings

Register Section	Marking Type	Description
Stop	M30	Stop
Give Way	M31	Give Way
No Entry	M32	No Left Turn
No Entry	M33	No Right Turn
No Entry	M35	No Entry
One Way	M34	One Way

Controls – Signs

Register Section	Sign Type	Description
Stop	RG5	Stop
Give Way	RG6	Give Way
Give Way	RG6.1	Traffic (RG6 Supplementary)
Give Way	RG6.2	Straight Ahead Traffic (RG6 Supplementary)
Give Way	RG6.3	Right Turning Traffic (RG6 Supplementary)
No Entry	RG7	No Right Turn
No Entry	RG8	No Left Turn
No Entry	RG9	No Entry
No Entry	RG10	No Turns
Turn	RG11	Turn
Turn	RG12	Turn Left
Turn	RG13	Turn Right
One Way	RG14	One Way

Parking, Stopping Restrictions – Markings

Register Section	Marking Type	Description
No Stopping	M46	Keep Clear
No Stopping	M48	No Parking
No Stopping	M60	No Stopping Line (yellow) 100mm 1 x 1
Loading Zone	M61	Loading Zone
Bus Stop	M62	Bus Stop
Taxi Stand	M63	Taxi Stand
Parking Restriction	M47	Disabled Parking
Parking Restriction	M65	Park Limit Lines parallel
Parking Restriction	M66	Park meter bays
Parking Restriction	M67	Park bays angle

Parking, Stopping Restrictions – Signs

Register Section	Sign Type	Description
No Stopping	RP1	No Stopping
No Stopping	RP1.1	No Stopping At All Times
No Stopping	RP1.2	No Stopping For _ km
No Stopping	RP1.3	No Stopping Ends (RP1 Supplementary)
No Stopping	RP2	No Stopping - Specified Period
No Stopping	RP2.1	Late Night Extension - (RP2 Supplementary)
No Stopping	RP3	Clearway - Single Peak Period
No Stopping	RP3.1	Clearway - Two Peak Period
No Stopping	RP3.2	Begins (RP3, RP3.1 Supplementary)
No Stopping	RP3.3	Ends (RP3, RP3.1 Supplementary)
No Stopping	RP3.4	Mon-Fri (RP3, RP3.1 Supplementary)

Register Section	Sign Type	Description
No Stopping	RP3.5	Clearway with Parking Restriction
Bus Stop	RP5	Bus Stop
Bus Stop	RP5.1	Bus Stop - With Arrow
Taxi Stand	RP6	Taxi Stand
Taxi Stand	RP6.1	Taxi Stand - With Arrow
Loading Zone	RP7	Loading Zone
Loading Zone	RP7.1	Loading Zone - With Arrow
Loading Zone	RP7.2	Loading Zone - Goods Vehicle Only (Supplementary)
Parking Restriction	RP4	Restricted Parking - Standard Hours
Parking Restriction	RP4.1	Restricted Parking - Non Standard Hours
Parking Restriction	RP4.2	Restricted Parking - Other Times
Parking Restriction	RP4.3	Restricted Parking - Late Night Extension
Parking Restriction	RP8	Motorcycle Parking
Parking Restriction	RP8.1	Motorcycle Parking - With Arrow
Parking Restriction	RP9	Cycle Stand
Parking Restriction	RP9.1	Cycle Stand - With Arrow
Parking Restriction	RP10	Disabled Parking

Speed Limits – Markings

Register Section	Marking Type	Description
50 km/h	M3850	Speed Circle 50 km/h
70 km/h	M3870	Speed Circle 70 km/h

Speed Limits – Signs

Register Section	Sign Type	Description
20 km/h	RG1-20	Speed Limit 20 km/h
30 km/h	RG1-30	Speed Limit 30 km/h
40 km/h	RG1-40	Speed Limit 40 km/h
50 km/h	RG1-50	Speed Limit 50 km/h
60 km/h	RG1-60	Speed Limit 60 km/h
70 km/h	RG1-70	Speed Limit 70 km/h
80 km/h	RG1-80	Speed Limit 80 km/h
100 km/h	RG2	Speed Limit 100 km/h
100 km/h	RG2.1	Derestriction

Register Maintenance

You create new Registers or add Register Sections to existing Registers at the **Register Section** maintenance screen. You launch this screen in a number of ways.

Register Maintenance in the Navigator

If you are working with a specific Register within the **Navigator**, press the Register Section button in the Maintain Register section. This will launch the **Register Section** maintenance screen filtered to correspond with the selected Register.

Register Maintenance in RAMM Manager

To view all Registers set up in **RAMM**, you need to launch the Register from **RAMM Manager**. You follow the menu path Projects > Bylaws > Maintain Register > Register Section, or Maintenance > Lookups > Bylaws > Register Section.

Select the Register in the Register list panel on the left and the Register Section detail panel on the right will display the corresponding Register sections. The example above shows the Speed Limits Register and its Register Sections. You edit the Registers and Register Sections or press Add Record ⊞ to add new ones.

> ⚠ **NOTE**
> If you add a Register Section, you will need to link it to the corresponding Sign Type/Marking Type/Traffic Facility Type. In the **Navigator,** press the Register to Asset Link button in the Maintenance section. In **RAMM Manager,** follow the menu path Projects > Bylaws > Register to Asset Link Maintenance or Maintenance > Lookups > Bylaws > Register to Asset Link.

Bylaws Reports

The Bylaws reports are available in **RAMM Manager**.

Some reports are general to all Bylaws, and some are specific to the Speed Limits Register.

Most reports are presented in a standard **RAMM** Grid screen, which can be exported or printed. See the Use Your RAMM Data chapter of the *Using RAMM* guide for more information.

> ⚠ **NOTE**
> Bylaw Locations with a status of Deleted or Replaced will not be shown or printed in any report.

The reports are also available from the **Navigator**. See Bylaws Navigator (on page 377).

> **Tip** If you are accessing a report from the **Navigator**, the Register you are working with will be chosen by default, and cannot be changed.

There are three sections of reports available by following the menu path Projects > Bylaws. You have Exception, Audit and Register reports. There are also other reports available only from the **Navigator.**

Exception Reports

You can access the following Exception reports from the menu in **RAMM Manager**:

- Road Sections Without a Speed Limit (on page 407)
- Bylaw Locations Exceeding Road Limits (on page 408)
- Overlapping Restrictions (on page 409)
- Missing Assets (on page 410)
- Conflicting Assets (on page 411).

Audit Reports

You can access the following Audit reports from the menu in **RAMM Manager**:

- Today's Changes (on page 412)
- Audit Report (on page 412).

Register Reports

You can access the following Register reports from the menu in **RAMM Manager**:

- Review Listing (on page 414)
- Formal Listing (on page 415)
- Bylaw Title (on page 417)
- Register Asset (on page 418)
- Bylaw Location Assets (on page 419).

Navigator Reports

You can access the following reports from the **Navigator** in **RAMM Manager**:

- Identify Roads Without Intersections (on page 421)
- Identify Intersections With Invalid Location (on page 422)
- Single Speed Limit Signs (on page 422)

- Speed Limit Signs at Road End (on page 424)
- Boundary 20m Compliance (on page 425)
- Repeater Sign Compliance (on page 426).

Exception Reports

You can access the following Exception reports from the menu in **RAMM Manager**:

- **Road Sections Without a Speed Limit** (on page 407)
  This report lists sections of Carriageways that meet the criteria defined in the **Speed Limits Setup** screen, but do not have a Bylaw Location record.
- **Bylaw Locations Exceeding Road Limits** (on page 408)
  This report lists Bylaw Locations where there is no Carriageway that covers either the start or the end of the Bylaw Location.
- **Overlapping Restrictions** (on page 409)
  This report lists Bylaw Location records that overlap. If any are shown, they will need to be corrected because it is not possible to have more than one Speed Limit applying at a single Location.
- **Missing Assets** (on page 410)
  This report lists Locations in the Register that do not have a corresponding Sign, Marking or Traffic Facility.
- **Conflicting Assets** (on page 411)
  This report lists conflicts between Bylaw Locations that have Signs, Markings or Traffic Facilities that belong to a different section of the Register. An example could be a Taxi Stand sign in a Bus Stop Location.

Road Sections without a Speed Limit

This report lists sections of Carriageways that meet the criteria defined in the **Speed Limits Setup** screen, but do not have a Bylaw Location record.

▶ To View Road Sections without a Speed Limit

1 Launch **RAMM Manager**.
2 Follow the menu path Projects > Bylaws > Exception Reports > Road Sections Without a Speed Limit or open the **Bylaws Navigator**, select the Speed Limits Register and press the Road Sections without a Speed Limit button in the Check For Errors section. The **Road Sections Without a Speed Limit** dialog will open.

3   Very short sections of Carriageways with no Speed Limit are for practical purposes irrelevant. So you will not want the report to list these minor values. Set a value in the **Ignore sections less than** field to define the section length below which will not be listed in the report. The default value is 50 metres.

4   Press OK to generate the report.

5   You can print or save the report, or press Close to return to the **Selection Options** dialog.

6   You can alter the selection options and run the report again. When you are finished, close the screen.

Bylaw Locations Exceeding Road Limits

This report lists Bylaw Locations where there is no Carriageway that covers either the start or the end of the Bylaw Location.

▶ **To Run the Bylaw Locations Exceeding Road Limits Report**

1 Launch **RAMM Manager**.

2 Follow the menu path Projects > Bylaws > Exception Reports > Bylaw Locations Exceeding Road Limits or open the **Bylaws Navigator**, select the Speed Limits Register and press the Bylaw Locations Exceeding Road Limits button in the Check For Errors section. The **Bylaw Locations Exceeding Road Limits** screen will open.

3 Select, from the Register drop-down list, the Register on which you want to report.

4 Press **Generate** to run the report. The **Generate** button becomes **Refresh** when the process is finished. If **RAMM** finds no Bylaws that match the search, a dialog box will inform you that there are No Matching Records.

5 You can print or save the report. When you are finished, close the screen.

Overlapping Restrictions

This report lists Bylaw Location records that overlap. If any are shown, they will need to be corrected because it is not possible, for instance, to have more than one Speed Limit applying at a single Location.

▶ **To Run the Overlapping Restrictions Report**

1 Launch **RAMM Manager**.

2 Follow the menu path Projects > Bylaws > Exception Reports > Overlapping Restrictions or open the **Bylaws Navigator**, select the Speed Limits Register and press the Overlapping Restrictions button in the Check For Errors section. The **Overlapping Restrictions Report** screen will open.

3 Select the relevant Register from the Register drop-down list in the Selection Options section. If you used the **Navigator** this selection will already be made for you.

4 Press **Generate** to run the report. The **Generate** button becomes **Refresh** when the process is finished. The report will display.

5 The report is a Grid, which can be exported or printed. Close the screen when you are finished.

Missing Assets

This report lists Locations in the Register that do not have a corresponding sign, marking or traffic facility.

▶ **To Run the Missing Assets Report**

1 Launch **RAMM Manager**.
2 Follow the menu path Projects > Bylaws > Exception Reports > Missing Assets to open the **Missing Assets Report** screen.
3 Select the relevant Register from the Register drop-down list in the Selection Options section.
4 Press Generate to run the report. The Generate button becomes Refresh when the process is finished. The report will display.

5 The report is a Grid, which can be exported or printed. Close the screen when you are finished.

Conflicting Assets

This report lists conflicts between Bylaw Locations with Signs, Markings or Traffic Facilities belonging to a different section of the Register. An example is a Taxi Stand sign in a Bus Stop Location. Another example is Speed Limit Locations where the Register Sections of 50 km/h and 100 km/h do not match the actual Assets (Speed Limit Signs) in place which are 70 km/h signs, as in the image below.

▶ **To Run the Conflicting Assets Report**

1   Launch **RAMM Manager**.
2   Follow the menu path Projects > Bylaws > Exception Reports > Conflicting Assets or open the **Bylaws Navigator**, select the Speed Limits Register and press the Conflicting Assets button in the Check For Errors section. The **Conflicting Assets Report** screen will open.
3   Select the relevant Register from the Register drop-down list in the Selection Options section. If you used the **Navigator** this selection will already be made for you.
4   You should ignore conflicting Assets close to the beginning or end of the Bylaw location. So type a value in the Ignore conflicting Assets within ?? metres of the beginning or end of the bylaw location field or accept the default 20.
5   Press Generate to display the report. The Generate button becomes Refresh when the process is finished. The report will display.

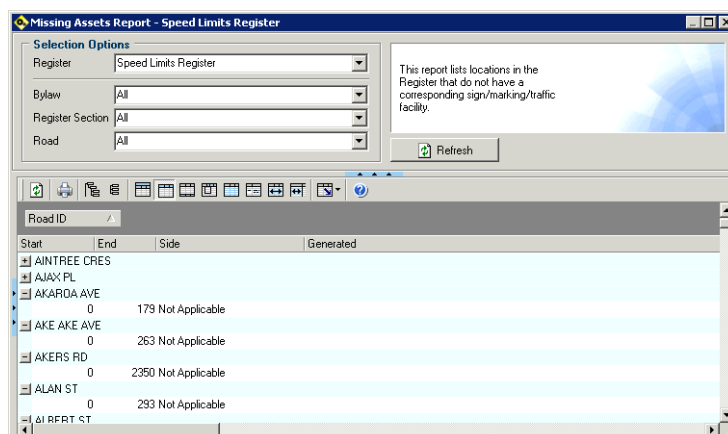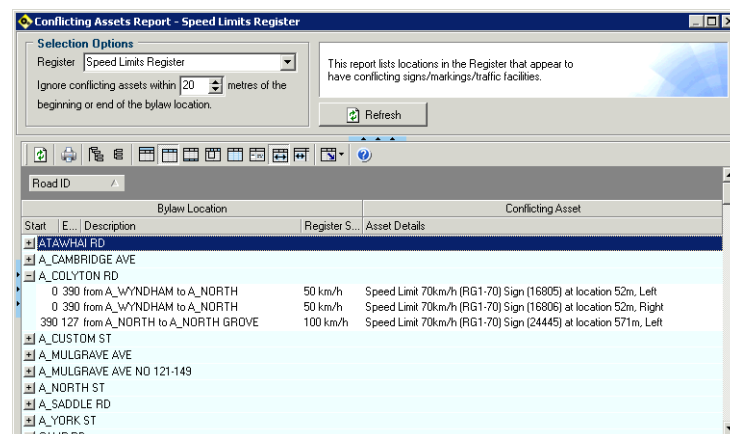**6**   The report is a Grid, which can be exported or printed. Close the screen when you are finished.

Audit Reports

You can access the following Audit reports from the menu in **RAMM Manager**:

- **Today's Changes** (on page 412)
  This report lists all Bylaw Location records that have been modified on the date the report is run (today).
- **Audit Report** (on page 412)
  This Audit Report lists all Bylaw Location records that have been modified for the Register within a given date range.

Today's Changes

This report lists all Bylaw Location records that have been modified on the date the report is run (today).

▶ To Run the Today's Changes Report

1   Launch **RAMM Manager**.

2   Follow the menu path Projects > Bylaws > Audit Reports > Today's Changes or open the **Bylaws Navigator**, select any of the Registers and press the Today's Changes button in the Register and Audit Reports section. The **Bylaw Audit Report** screen will open.

3   The report is a Grid, which can be exported or printed. Close the screen when you are finished.

Audit Report

This Audit Report lists all Bylaw Location records that have been modified for a Register within a given date range.

▶ To Run the Audit Report

1   Launch **RAMM Manager**.

2   Follow the menu path Projects > Bylaws > Audit Reports > Audit Report or open the **Bylaws Navigator**, select the Register and press Audit Report in the Register and Audit Reports section. The **Bylaw Audit Report** dialog will open.

3   Select the Register for the report from the Register drop-down list in the Selection
Options section of the screen.

4   Select the date range for the report. The default Start Date value is the date on which
the report was most recently run. The default End Date is the current date (today).

5   Press to run the report. The **Bylaw Audit Report** screen will open.

6   The report is a Grid, which can be exported or printed. Close the screen when you are
finished.

Register Reports

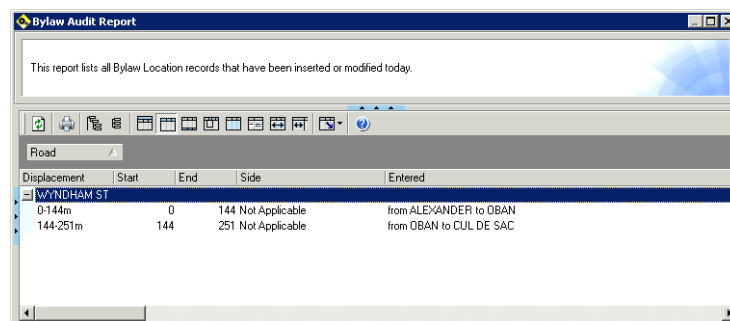You can access the following Register reports from the menu in **RAMM Manager**:

- **Review Listing** (on page 414)
  The Review Listing report lists Bylaw Location records in the Register for review. It is
  an informal listing of the Register which you use for review after changes have been
  made. You can select a particular range of values to review.

- **Formal Listing** (on page 415)
  This report lists the full Register of current and revoked records for Enacted Bylaws
  only. It is the official Register. You should run the Exception reports prior to running
  this report.

- **Bylaw Title** (on page 417)
  This report lists all Bylaws that are linked to Bylaw Location records within the Register. It may be used as an appendix to a Register, providing an explanation of the Bylaw file references.
- **Register Asset** (on page 418)
  This report lists all Assets for a Register. For each Asset, the corresponding Bylaw Location is displayed. This report is a good checklist for in situ verification of Signs and relevant Locations.
- **Bylaw Location Assets** (on page 419)
  This report lists Signs, Markings and Traffic Facilities that are enclosed within a particular Bylaw Location.

Review Listing

The Review Listing report lists Bylaw Location records in the Register for review. It is an informal listing of the Register which you use for review after changes have been made. You can select a particular range of values to review.

You use this to review Start and End Locations, and Descriptions.

▶ **To Run the Review Listing Report**

1   Launch **RAMM Manager**.
2   Follow the menu path Projects > Bylaws > Register Reports > Review Listing or open the **Bylaws Navigator**, select the required Register and press the Review Listing button in the Register and Audit Reports section. The **Register Review Listing** screen will open.
3   Select the relevant Register from the Register drop-down list in the Selection Options section. If you used the **Navigator** this selection will already be made for you.
4   Select the Bylaw, Register Section, Bylaw Status, Bylaw Location Status and superseded years parameters to match your review requirements.
5   Press Generate to run the report. The Generate button becomes Refresh when the process is finished. The report will display.

6   The report is a Grid, which can be exported or printed. Close the screen when you are
finished.

Formal Listing

This report lists the full Register of current and revoked records for Enacted
Bylaws only.

It is the official Register.

You should run the Exception reports prior to running this report.

If this is not the first time you have run the report, you should also run the Audit
Report.

> ## To Run the Register Formal Listing Report

1   Launch **RAMM Manager**.
2   Follow the menu path Projects > Bylaws > Register Reports > Formal Listing or open the
Bylaws Navigator, select the Register and press Formal Listing in the Publish Register
section. The **Register Formal Listing** screen will open.
3   Select the Register from the Register drop-down list in the Selection Options section. If
you used the **Navigator** this selection will already be made for you.

4   If the Register drop-down list value is not Speed Limits Register, the Generate button is enabled. Go to step 9.

Otherwise, if it is Speed Limits Register, the Generate button is not enabled. You must run the Exception reports before it will be enabled.

5   Press Exception Reports to open the **Exception Reports** dialog.

6   Set a value in the Ignore sections less than XXX metres field to define the length below which sections will not be listed in the Road Sections Without a Speed Limit report or accept the default 50 metres. Very short sections of Carriageways with no Speed Limit are for practical purposes irrelevant. So you will not want the report to list minor values.

7   Press OK to generate the three reports in turn. See: Road Sections Without a Speed Limit (on page 407), Overlapping Restrictions (on page 409) and Conflicting Assets (on page 411).

8   Fix any faults identified by the reports.

9   Press Generate to run the report. The Generate button becomes Refresh when the process is finished.

10 The report is a Grid, which can be exported or printed. Close the screen when you are finished.

Bylaw Title

This report lists all Bylaws that are linked to Bylaw Location records within the Register. It displays Bylaw code and Title/Summary details.

The Parking, Stopping Restrictions Register may extend to a considerable number of Bylaw Resolutions. This report may be used as an appendix to a Register, providing an explanation of the Bylaw file references.
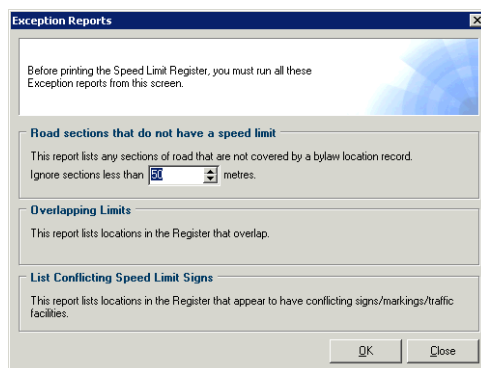
▶ **To Run the Bylaw Title Report**

1 Launch **RAMM Manager**.
2 Follow the menu path Projects > Bylaws > Register Reports > Bylaw Title or open the **Bylaws Navigator**, select the required Register and press the Bylaw Title button in the Publish Register section. The **Bylaw Title Report** screen will open.
3 Select the relevant Register from the Register drop-down list in the Selection Options section. If you used the **Navigator** this selection will already be made for you.
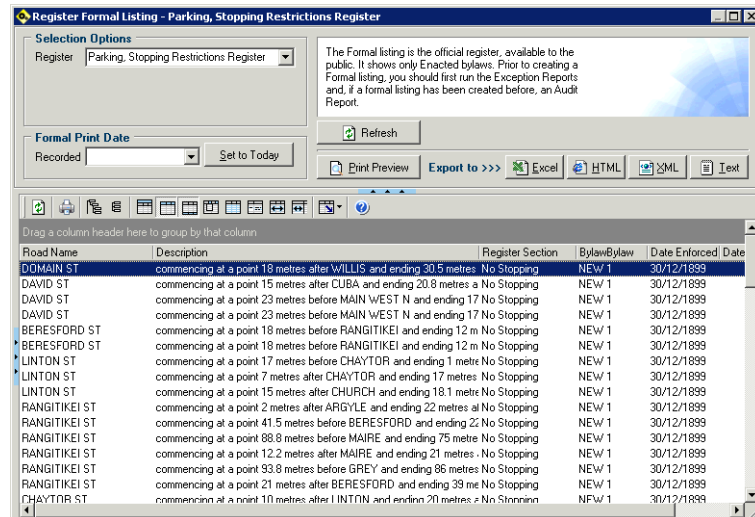**4** If you wish to report only on a particular Register Section, select it from the Register Section drop-down list. Otherwise accept the default All.
5 Press Generate to run the report. The Generate button becomes Refresh when the process is finished. The report will display.

6   The report is a Grid, which can be exported or printed. Close the screen when you are finished.

Register Asset

This report lists all Assets for a Register. For each Asset, the corresponding Bylaw Location is displayed. This report is a good checklist for in situ verification of Signs and relevant Locations.

▶ **To Run the Register Asset Report**

1   Launch **RAMM Manager**.
2   Follow the menu path Projects > Bylaws > Register Reports > Register Assets or open the **Bylaws Navigator**, select the required Register and press the Register Asset button in the Register and Audit Reports section. The **Register Asset Report** screen will open.
3   Select the relevant Register from the Register drop-down list in the Selection Options section. If you used the **Navigator** this selection will already be made for you.
4   Select the Bylaw, Register Section, Road Name, Asset Name, Asset Type and Bylaw Location parameters to match your review requirements.
5   Press Generate to run the report. The Generate button becomes Refresh when the process is finished. The report will display.

6   The report is a Grid, which can be exported or printed. Close the screen when you are finished.

Bylaw Location Assets

This report lists Signs, Markings and Traffic Facilities that are enclosed within a particular Bylaw Location.

▶ **To Run the Bylaw Location Asset Report**

1   Launch **RAMM Manager**.
2   Follow the menu path Projects > Bylaws > Register Reports > Bylaw Location Assets or open the **Bylaws Navigator**, select the required Register and press the Bylaw Location Asset button in the Register and Audit Reports section. The **Bylaw Location Asset Report** screen will open.
3   Select the relevant Register from the Register drop-down list in the Selection Options section. If you used the **Navigator** this selection will already be made for you.
4   Select the Bylaw, Register Section, Road Name, Asset Name, Asset Type and Bylaw Location parameters to match your review requirements.
5   Press Generate to run the report. The Generate button becomes Refresh when the process is finished. The report will display.

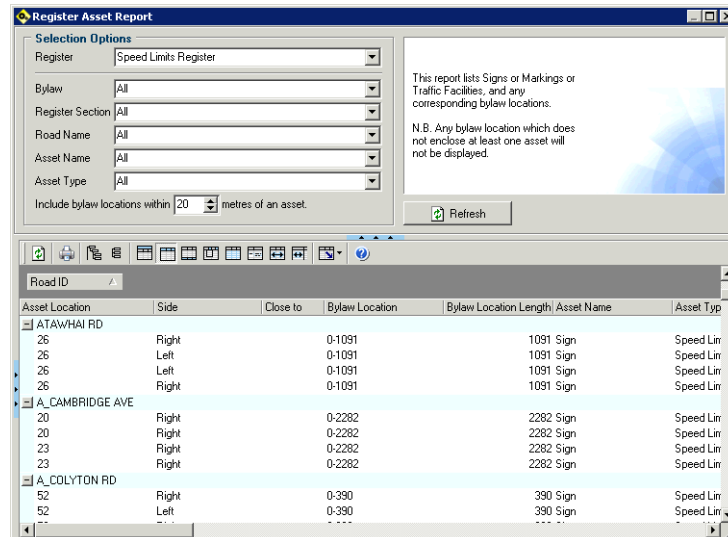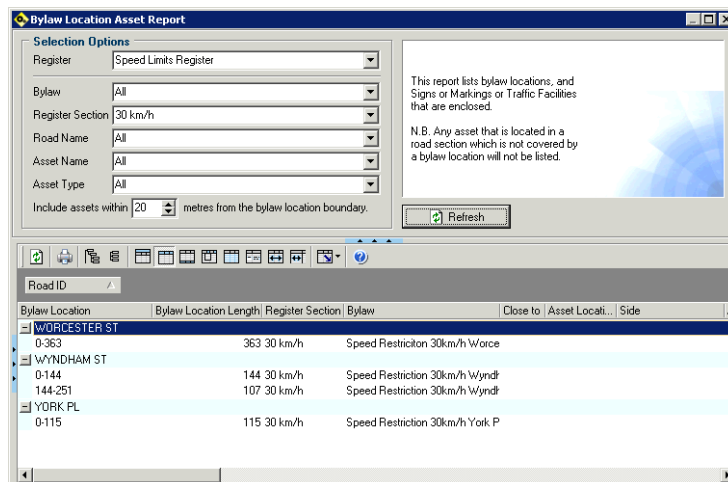**6**   The report is a Grid, which can be exported or printed. Close the screen when you are finished.

Navigator Reports

You can access the following reports from the **Navigator** in **RAMM Manager**:

- **Identify Roads without Intersections** (on page 421)
  This report identifies all Roads in your database without an Intersection. You can then generate Intersections using the **Map** before going on to check or maintain your Speed Limit Signs.
- **Identify Intersections with Invalid Location** (on page 422)
  This report identifies all Intersections on your Network that are not within a Carriageway and are therefore unsuitable for navigating through the Network. This also means that the **Generate Speed Limit Bylaw Location** process may not be able to reach these Roads.
- **Single Speed Limit Signs** (on page 422)
  This report lists all single Speed Limit Signs that may have a missing accompanying Sign. If there is a missing Sign, you need to go to **Sign** Maintenance and add one. Otherwise, these signs will be ignored in the **Generate Speed Limit Bylaw Locations** process.
- **Speed Limit Signs at Road End** (on page 424)
  This report lists Speed Limit Signs that are located between the last Intersection and the Road end. It is likely that either the Intersection Location or the Sign Location is incorrect. You need to fix the Intersection or Sign Location before generating Bylaw Locations.
- **Boundary 20m Compliance** (on page 425)
  This report is intended to ensure that there is a Sign within 20m of every Speed Limit boundary. It lists all Speed Limit boundaries for which there is not a Speed Limit Sign that matches the Speed Limit and whose location is within 20 metres of the boundary.

- **Repeater Sign Compliance** (on page 426)
  This report is useful as a final check in the process of building your Speed Limit
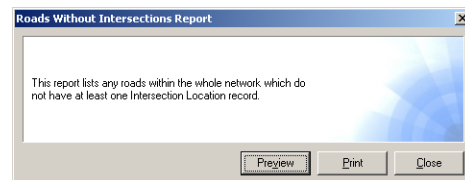 Register to ensure that Repeater Sign Locations on your Road Network comply with it.

Identify Roads without Intersections

This report identifies all Roads in your database without an Intersection.

You can then generate Intersections using the **Map** before going on to check or
maintain your Speed Limit Signs.

▶ **To Check for Roads without an Intersection**

1 Launch **RAMM Manager**.

2 Follow the menu path Projects Bylaws > Navigator to open the **Bylaws Navigator**.

3 Press the Identify Roads Without Intersections button in the Prepare section to open the
Roads Without Intersections Report dialog.

4 Press Preview to see what the report will look like before you print it.

5 Close the screen and the dialog box when you are done to return to the **Navigator**.

Identify Intersections with Invalid Location

If the intersection occurs within a Carriageway Section instead of at its beginning or end, RAMM Mapping will find it difficult to determine the Location accurately from the Map. In these cases an Intersection record will still be generated, but it will not have a Location. RAMM will calculate the Location from the data available, and put this into the **Notes** field as Approximate Location ....m. When you have the opportunity, the correct Location should be entered.

This report identifies all Intersections on your Network that are not within a Carriageway Section and are therefore unsuitable for navigating through the Network.

This also means that the Generate Speed Limit Bylaw Location process may not be able to reach these Roads.

▶ **To Identify Intersections with Invalid Locations**

1   Launch **RAMM Manager**.
2   Follow the menu path Projects Bylaws > Navigator to open the **Bylaws Navigator**.
3   Press the Identify Intersections With Invalid Locations button in the Prepare section to open the **Intersections With Invalid Location** report screen.

4   The report is a Grid, which can be exported or printed. Close the screen when you are finished.

Single Speed Limit Signs

This report lists all single Speed Limit Signs that may have a missing accompanying Sign.

If there is a missing Sign, you need to go to **Sign** Maintenance and add one.

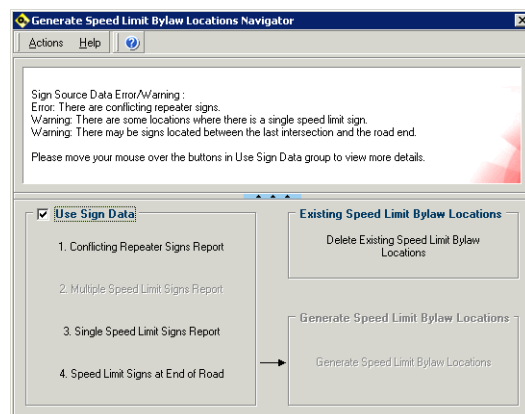Single Speed Limit Signs will be ignored in the Generate Speed Limit Bylaw Locations process.

Speed Limit Signs are usually installed in pairs. The Sign will either be a Repeater, in which case it will have the same Speed Limit Sign on each side, or a Boundary sign, which will have two Speed Limit Signs to indicate the boundary of a speed zone.

This report is available only for the Speed Limits Register.

You identify single Speed Limit Signs as a part of the Generate Speed Limit Bylaw Locations process. See Generate Speed Limit Bylaw Locations Navigator (on page 386).

▶ To Identify Single Speed Limit Signs

1   Launch **RAMM Manager**.
2   Follow the menu path Projects Bylaws > Navigator to open the **Bylaws Navigator**.
3   Press the Generate Speed Limit Bylaw Locations button in the Build the Register section to open the **Generate Speed Limits Bylaw Locations Navigator** screen. See Generating Speed Limit Bylaw Locations (on page 387).

4   Press the Single Speed Limit Signs Report button to open the **Single Speed Limit Signs Report** screen

5   The report is a Grid, which can be exported or printed. Close the screen when you are finished.

Speed Limit Signs at Road End

This report lists Speed Limit Signs that are located between the last Intersection and the Road end.

It is likely that either the Intersection Location or the Sign Location is incorrect.

You need to fix the Intersection or Sign Location before generating Bylaw Locations.

Speed Limit Signs are not normally located at the end of a Road. This report helps check whether there are Signs located between the end of a Road and the last intersection.

You can then correct either the Sign Location or the Intersection Location as required.

This report is available only for the Speed Limits Register.

You identify Speed Limit Signs at the end of the Road as a part of the Generate Speed Limit Bylaw Locations process. See Generate Speed Limit Bylaw Locations Navigator (on page 386).

   ►   **To Identify Speed Limit Signs at the End of the Road**

1   Launch **RAMM Manager**.
2   Follow the menu path Projects Bylaws > Navigator to open the **Bylaws Navigator**.

3 Press the Generate Speed Limit Bylaw Locations button in the Build the Register section to open the **Generate Speed Limits Bylaw Locations Navigator** screen. See Generating Speed Limit Bylaw Locations (on page 387).

4 Press the Speed Limit Signs at End of Road button to open the **Speed Limit Signs At Road End Report** screen

5 The report is a Grid, which can be exported or printed. Close the screen when you are finished.

Boundary 20m Compliance

This report is intended to ensure that there is a Sign within 20m of every Speed Limit boundary.

It lists all Speed Limit boundaries for which there is not a Speed Limit Sign that matches the Speed Limit and whose location is within 20 metres of the boundary.

If the AADT (Annual Average Daily Traffic) estimate for a Road does not exceed 500 vehicles per day, a Sign is required on the left hand side. If it is greater than 500, a Sign on the right hand side or in the centre is also required.

The report is specific to the Speed Limits Register and can be run only from the **Navigator**.
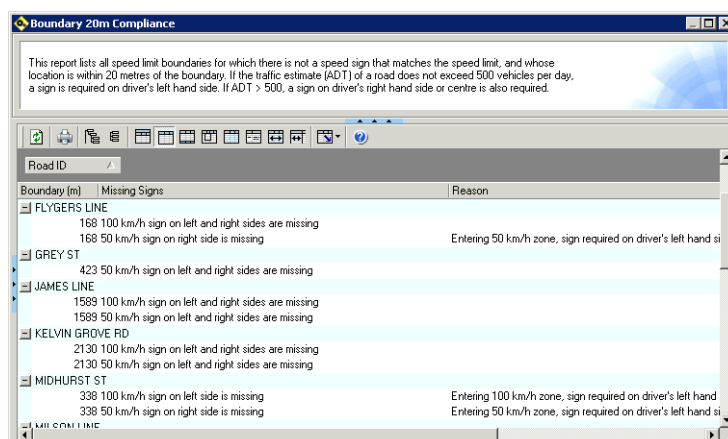
► **To Check Boundary 20m Compliance for Speed Limit Sign Locations**

1 Launch **RAMM Manager**.

2 Follow the menu path Projects Bylaws > Navigator to open the **Bylaws Navigator**.

3 Press the Boundary 20m Exceptions button in the Check Boundary and Repeater Sign Compliance section to open the **Boundary 20m Compliance** report screen.

4 The report is a Grid, which can be exported or printed. Close the screen when you are finished.

Repeater Sign Compliance

This report is useful as a final check in the process of building your Speed Limit Register to ensure that Repeater Sign Locations on your Road Network comply with it.

The report is specific to the Speed Limits Register and can be run only from the **Navigator**.

► **To Check Repeater Speed Limit Sign Compliance**

1 Launch **RAMM Manager**.

2 Follow the menu path Projects Bylaws > Navigator to open the **Bylaws Navigator**.

3 Press the Repeater Sign Compliance button in the Check Boundary and Repeater Sign Compliance section to open the **Repeater Sign Compliance** report screen. If there are no compliance issues, the screen will not open.

4 The report is a Grid, which can be exported or printed. Close the screen when you are finished.

User Defined Tables (UDTs)

RAMM enables you to create and maintain your own User Defined Tables (UDTs). You use them to manage those of your Assets which are not in the default RAMM Asset set.

Once set up, Assets in a UDT behave exactly like standard RAMM Assets. They are managed in their own Grid and Detail screens. They can be made available for other RAMM modules such as RAMM Asset Valuation and Pocket RAMM. You can set them up so that dispatches can be entered for work to be done on them. They can be viewed on Maps if required.

Naturally, your ability create, modify and to use UDTs is subject to RAMM Security Permissions.

In This Chapter

Introduction

Standard Assets such as Footpaths, Berms, Railings and Surface Water Channels have always been present in **RAMM**.

Each Asset Has a RAMM Table

Each Asset has its own table. It is maintained in its own **RAMM** Grid screen or Detail screen.

Minor Structures and Features

The configuration of a standard **RAMM** Asset table and its Lookups is already defined.

Some Assets, not present in the **RAMM** Asset list, may be handled in the Minor Structures Asset table or in the Features Asset table.

However, these two tables are limited in their application and you may require a table which exactly matches your specifications to manage your nonstandard Assets in **RAMM**.

Define Tables to Your Requirements

User Defined Tables (UDTs) are a powerful, flexible and comprehensive tool to describe and represent an item not currently available in **RAMM**.

You can use a UDT to set up a table to maintain an item on the Road Network to suit your requirements.

You will not then have to wait for RAMM Software Limited to set up an Asset table which matches your unique situation.

Reasons to Use a UDT

You can set up a UDT to:

- record information and data about something which is not currently in **RAMM** but which needs to be maintained on the Road Network
- report on matters not already reported on in **RAMM**
- enable **Pocket RAMM** operators to add, update and delete items not currently in **RAMM**.

Assets Not In RAMM

You set up UDTs for your Assets not currently in **RAMM**.

A council may set up UDTs for rubbish bins or bus shelters. These are not currently present in **RAMM**.

Nonassets Not In RAMM

At a more complex level, a UDT can be set up for Nonassets.

These are features of the Road Network which, although they have no realisable value, still need to be managed at some level.

An example of Nonassets is slips.

You may want to keep track of their locations, manage and report on resources allocated to their repair.

Interoperability with RAMM Components

The Slip UDT above could be made available to **RAMM** Assessment.

It would then be able to be inspected regularly to measure risk to Road users.

The bus shelter UDT could be made available to the **RAMM** Asset Valuation as all councils are required by law to depreciate Assets. Its condition, remaining useful life and depreciated replacement value could all be analysed.

Record Work Done

A UDT for an Asset/Nonasset maintained under a contract, can be made available in **RAMM Contractor**.

Dispatches and Jobs can then be raised against them. This function could be most useful to a manager in a contractor organisation.

Link a Job to an Asset

Currently in **RAMM Contractor**, you can add a Job to a position on the **Map**. So you could add a Job to clean up after a slip by associating it with GPS coordinates.

With a Slip UDT you could associate the Job with the Nonasset (slip) itself rather than just a point on the **Map**.

You could then perform analysis and reporting on all slips. Then it is also immediately obvious to the person assigned to the job that they are dealing with a slip, not just a position on the **Map** which needs attention.

Analyse and Report

An engineer working for an RCA (Road Controlling Authority) will periodically need to analyse the Road Network and plan for maintenance.

A UDT can be set up to represent a particular aspect of the Road Network. For example, the Slip UDT above may be loaded or imported into a **Map**, so that all the slips on the Network may be viewed and analysed in the context of Roads with a particular surface or treatment.

UDT Set Up

Typically, a UDT would be set up by the database administrator.

This person is responsible for the type of data and the attributes of the data stored in the **RAMM** database.

> The UDT function works with **RAMM** metadata.
>
> So you configure and define the parameters of the tables and columns that contain your data, not the data itself.
>
> You must, therefore, have a good working knowledge of the database structure and **RAMM** system linkages before you work with UDTs.

Types of UDT

There are two categories of UDT available in **RAMM**. Those for:

- single-component Assets
- Nonassets.

Single-component Assets

These are Assets of yours which have only one component. So unlike a Streetlight they do not have a variety of component parts to be recorded in **RAMM**. Otherwise, they are very much like those Assets already available in **RAMM**.

They are generally regarded as objects with some monetary value. Examples of these Assets could be:

- bus shelters

- rubbish bins
- park benches.

Nonassets

These are Assets which generally have no monetary value. They, unlike the single-component Assets, may be defined in a very flexible way. They are not restricted to referring to something physically present on the Road Network. Examples of Nonassets could be:

- hazard
- slip
- condition.

Definitions

A hazard could be on the Road itself such as a steep camber on a curve. It could be a fixed object posing a hazard like an overhanging branch of a tree.

Assets Unsuitable for UDTs

Most of your Assets are already available in **RAMM**. So they will not need their own UDT.

Multiple Component Assets

A Streetlight is an Asset with multiple linked components such as the pole, the bracket and the light. This sort of Asset which is not defined as a single component is not suitable for management using a UDT.

Internal Relationships

There is a great deal of internal logic already set up in **RAMM**. It governs the manner in which existing Assets, such as Street Lights, are defined and used in **RAMM**. For instance, a Street Light can have one Pole but one or more Brackets. There are also many possible combinations of Gear, Lamp and Light.

UDTs have none of this internal logic. So Assets which require some form of relationships between parts are not suitable for UDTs.

RAMM Assets

The Tree table is already present in **RAMM**. So there is no need to set up a UDT to manage Assets such as Trees in **RAMM**. To do so would be unnecessary duplication.

Minor Structures and Features

Historically, bus shelters have been maintained in either the Minor Structures or Features table in **RAMM**. Setting up a UDT for bus shelters is probably a better way to maintain them.

However, having bus shelter Asset data in two areas of **RAMM** would be an unnecessary duplication that would cause confusion to users. So, unless the legacy bus shelter Asset data is transferred into the new UDT before its use, the UDT would be an unsuitable management tool.
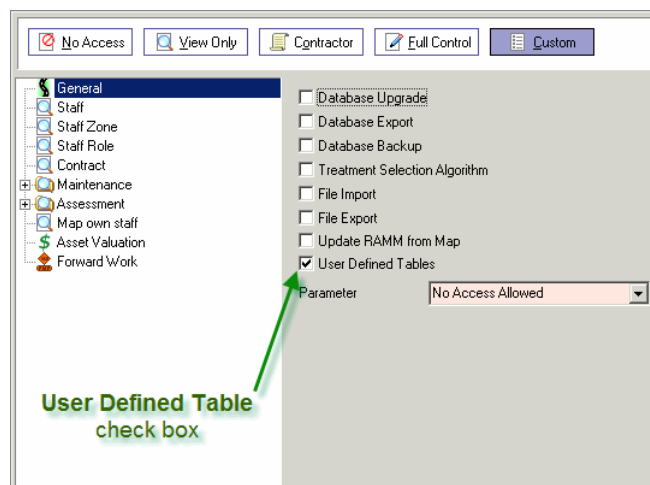
UDTs and RAMM Manager

User defined tables are set up in **RAMM Manager**. The table then becomes available for use in the main **RAMM** application and in the other **RAMM** modules which you select. See Selecting **RAMM** Modules for a UDT (on page 457).

Security Permissions

You need to have the correct Security Permissions to be able to create your own UDT. You do not need high level access to the Lookup tables to allow them to be used with the UDT custom columns. However, you do need the high level access if you want to update the lookups.

Permissions are set at the **Staff Permissions** screen. If your permission is set to ![Full Control], this gives you permission to create UDTs. Otherwise you need to have ![Custom] permission with the User Defined Tables option selected.
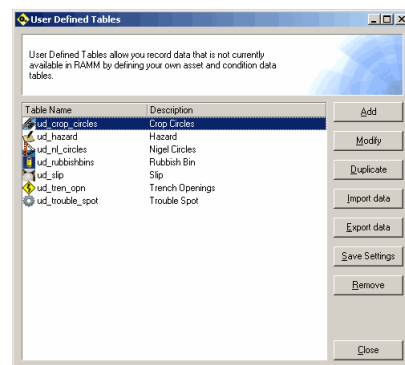

User Defined Table check box

Menu Path

To set up a user defined table, launch **RAMM Manager** and follow the menu path
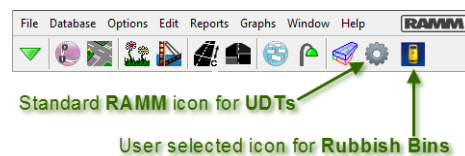Projects > User Defined Tables.

This opens a screen to view existing user defined tables, modify them if necessary,
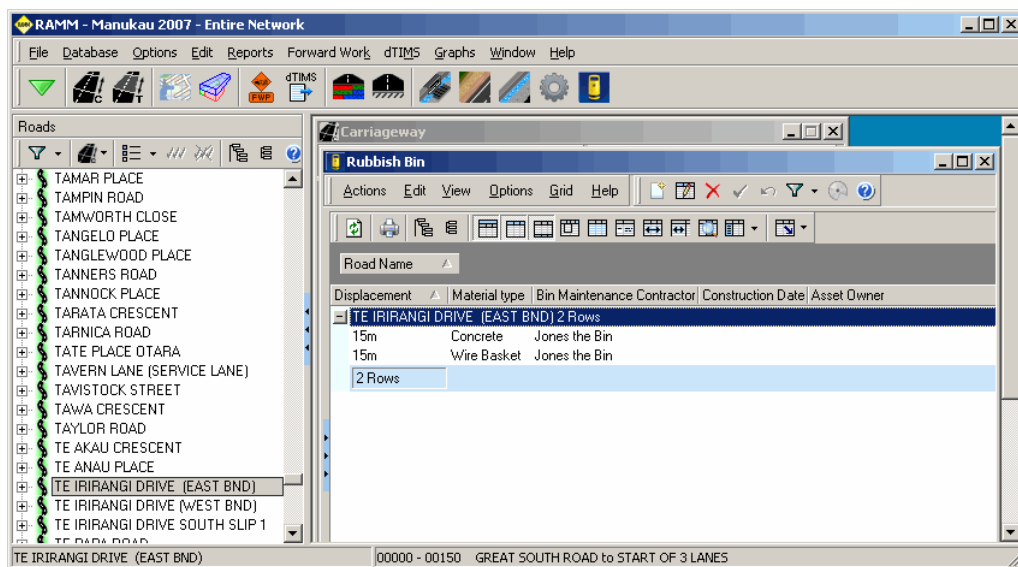add new tables or import data from a saved file.

UDTs and RAMM

You access a UDT by pressing its icon. This could be the standard **RAMM** UDT
icon or your own icon as displayed on the toolbar Favourites as below.

You press the icon to open the Grid for the UDT. In the graphic below, there are
two rubbish bins sited on Te Irirangi Drive.

UDTs and Toolbar Favourites

You can add a UDT to your toolbar Favourites. You would only do this if you were going to view and work in **RAMM** with the Grid and Detail screens for the UDT. The most likely time for this would be once you have created your UDT and were adding the initial data.

If you launch **RAMM** and press [icon] or **F2**, you can select the UDT from the list. It will be in alphabetical order. Right-click the item in the list and select **Add To Favourites**. When you are finished with the data entry you should probably remove the icon from Favourites.

Icons

The standard UDT icon is a cog wheel [icon].   You can define your own icon. Throughout this guide the rubbish bin icon [icon] has been used.

UDT Maintenance

You add and maintain UDTs in **RAMM Manager**. During the creation process you determine the **RAMM** modules in which the UDT will be available.

There is a Wizard to assist you in the creation process. This makes the creation process easier and more robust.

When maintaining UDTs you have some flexibility in the display for both the Grid and Detail screens.

UDT Maintenance Overview

You create and maintain your UDTs in **RAMM Manager**. You can then use them in the other **RAMM** applications to manage your assets.

Add a UDT

You add and maintain User Defined Tables (UDTs) in **RAMM Manager**. Once created, you use them to manage your particular Assets and Nonassets in the other **RAMM** applications.

You add a UDT using the User Defined Table Wizard. See UDT Creation Overview (on page 443).

Modify a UDT

After you have created your User Defined Table (UDT) you may find that you need to modify it. Editing a UDT is very similar to creating a UDT. As a precaution, you should save your UDT settings and export a copy of your UDT data prior to UDT modification.

You edit a UDT using the User Defined Table Wizard. See Editing a UDT (on page 473).

Duplicate a UDT

You can duplicate a User Defined Table (UDT) to save time in the creation of another UDT which requires very similar characteristics.

You copy a UDT using the User Defined Table Wizard. See Copying a UDT (on page 476).

Import Data into a UDT

You may want to bring in data to load into a UDT. Similarly, you may want to load UDT Asset data from one database to another.

You import data for use in a UDT using the Import File Wizard. See Import UDT Data (on page 478).

Export Data from a UDT

You may need to export UDT Asset data from a database. This could be to analyse or manipulate the data in another programme. It could be in order to import it into another database.

You export data from a UDT using the **Unload Dialog**. See Export UDT Data (on page 479).

Save Settings of a UDT

You can save UDT settings as an XML file. This file can be used as the basis of a new UDT. The file also enables you to revert to these saved settings if you make a future change to the UDT settings which is not successful.

You save UDT settings using the standard Windows **Save** dialog. See Saving UDT Settings (on page 480).

Remove a UDT

You can delete a UDT which is no longer required. Before you remove a UDT it is strongly recommended that you save its settings and its data in case you have to reconstruct the table at a later date.

You delete a UDT at the **User Defined Tables** screen. See Deleting a UDT (on page 481).

User Defined Table Wizard

When you add or maintain a UDT, you use the User Defined Table Wizard. This simplifies the processes involved in UDT Maintenance. You will be taken through the required steps and the **RAMM** resources which you need will be made available by the Wizard. The Wizard ensures that your UDT will integrate with the rest of **RAMM**.

UDT Columns

Database tables are, essentially, a number of related columns. When you add a User Defined Table (UDT) you are grouping standard **RAMM** database columns and adding custom columns if necessary to create a new database table to hold data for your own purposes.

Column Groups

When you add a UDT, the wizard will automatically group some columns. You can move columns to new groups or place them in their own groups.
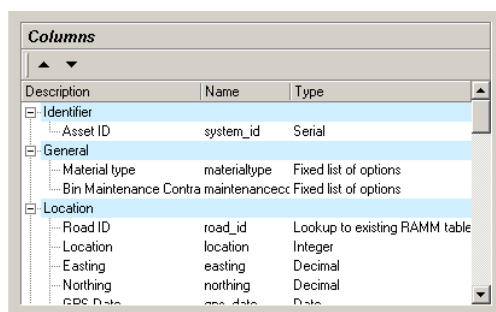
Move Columns

Once you have columns loaded in the Columns panel, you can move them up and down by highlighting them and using the Up and Down arrows. You select them and press the ▲ and ▼ buttons until you have the columns positioned where you want them.

You can also drag and drop the columns.

Columns Panel Order

The order in which the columns appear in the Columns panel is the order that they will appear in the Grid header.

> **Tip**
>
> When you create a UDT you will want to ensure that a user generating a Route Data Sheet for the UDT items, will find the items in the report are recognisable and verifiable. They will need Location and item identification data.
>
> The item Location values will default in the Route Data Sheet. The item identification values will be Custom Column values you have created.
>
> If you position Custom Columns in the General group, they will be included in a Route Data Sheet.

Detail Screens

You can move the standard **RAMM** database columns in a UDT into different groups for your convenience in viewing them in the Columns panel. This makes no difference to how they will appear in the detail screens. They will appear in their standard layout.

Your custom columns in the General group will appear at the top of the General tab. Custom columns in other groups will appear on the Custom tab in their groups.

Audit Group

If you add the Audit group of columns to the UDT, these will always default to the bottom of the list. This is because they are assumed to be the last columns you would need to see on the grid.

Route Data Sheet and UDTs

When you create a Route Data Sheet for **RAMM** items in a User Defined Table (UDT) you will want useful information relating to the items in the report to be displayed. The Location data will display in the report by default. You determine the other data to display by creating Custom Fields which you place in the General Group.

Default Location Fields will Display in Route Data Sheet

Location data will display by default. Otherwise it would not be possible to position the items on the Road in the report.

In the graphic below the Location panel from the **UDT Wizard** for a UDT item named Environment, has been placed with the Route Data Sheet to identify the Location information which displays by default.

The Displacement and Side information (if available) displays by default to positively Locate the items. In the example below the item is Length-based and the Include Length columns option has been selected. So the Length information for the items displays by default in the report.

This positively Locates the items on the Route Data Sheet.

Set UDT Fields to Display in the Route Data Sheet

Custom Columns in a UDT will display by default in the Route Data Sheet if they are placed in the General Group. Columns in the General Group are the ones which display in the General section of the General tab on Detail screens.

In the graphic below the Custom Columns and the Columns panels from the **UDT Wizard** for an item named Environment have been placed with the Route Data Sheet to show the item identification information which has been set to display in the report by default.

The Terrain and Soil Type columns have been placed in the General Columns Group as is evident from the Columns panel below. This is achieved by selecting General (Show on General Tab) at the Group drop-down list on the Custom Columns panel as displayed below.

The Terrain and Soil Type data is then displayed for each Environment record on the Route Data Sheet.

UDT Creation

You use the UDT Wizard to create UDTs. You have the option to start with no settings or to use settings from a saved file. These settings could be from one of your previous UDTs or they could be from another person who has created a UDT and given the setting file to you.

In the UDT creation process in this chapter, the UDT created is based on imported settings. This is to be sure that you understand how to use the Introduction panel which would otherwise be skipped.

UDT Creation Overview

You add and maintain User Defined Tables (UDTs) in **RAMM Manager**. Once created, you use them to manage your particular Assets and Nonassets in the other **RAMM** applications.

Introduction

When you add a User Defined Table (UDT) you have two options. Firstly, you can start from scratch, in which case you ignore the Introduction panel. Secondly, you can base your UDT structure on settings which you have saved from a UDT which has been previously defined.

You load predefined UDT settings at the Introduction panel. See Loading Settings for a UDT (on page 445).

Table Description

You give a UDT its own unique table name and a description. You also define its Security Permissions and **RAMM** toolbar and screen images.

You add UDT details at the Table Description panel. See Adding UDT Details (on page 448).

Location

All Assets/Nonassets need to be positioned in relation to a Road in the **RAMM** database. You have the option of including the Street Address, and Map Coordinates in the UDT. You may also need to define the dimensions of the Asset/Nonasset using point, length or area coordinates.

You define UDT location details at the Location panel. See Defining UDT Location Details (on page 452).

Offset and Side

An Asset/Nonasset can be more accurately positioned by defining how far it is offset from the centre line of the Carriageway. One option is to specify its side of the Road only. You can also use its lane, from Left Lane 1 - 5 and Right Lane 1 - 5, to position the item.

You define UDT offset and side details at the Offset and Side panel. See Defining UDT Offset and Side Details (on page 454).

RAMM Modules

UDT Assets/Nonassets created in **RAMM Manager** are available in **RAMM** and **Pocket RAMM**. You specify whether they are available in the other **RAMM** modules.

You select the modules in which data from a UDT will available at the RAMM Modules panel. See Selecting RAMM Modules for a UDT (on page 457).

Optional Columns

You can add optional columns to the UDT. They relate to external IDs, free-form notes, financial year and audit trail information.

You select optional columns for a UDT at the Optional Columns panel. See Selecting Optional Columns for a UDT (on page 460).

Custom Columns

You can create your own custom columns for a UDT. You can define them to be Currency, Decimal, Boolean (Yes, No) and the other standard **RAMM** column types.

You define custom columns for a UDT at the Custom Columns panel. See Defining UDT Custom Columns (on page 467).

Description Column

You can select the **RAMM** database column which describes the UDT. This becomes the column which will be used to label items in **RAMM** and **Pocket RAMM**.

You select the column name by which the UDT will be labelled in the map in **Pocket RAMM** at the Description Column panel. See Selecting the UDT Description Column (on page 469).

Finish

Having defined your UDT you can save the settings to a file for later use, press the Back button to check your settings or press the Finish button to create your UDT.

You save your UDT settings at the Finish panel. See Saving UDT Settings (on page 471).

Introduction

When you add a User Defined Table (UDT) you have two options. Firstly, you can start from scratch, in which case you ignore the Introduction panel. Secondly, you can base your UDT structure on settings which you have saved from a UDT which has been previously defined.

Starting from Scratch

If you want to create a UDT without basing it on previously saved settings, then the Introduction panel serves no purpose as its only option is to load settings.

So you would press Next to advance to the next panel.

UDT Settings

If you want to create a UDT based on previously saved settings, then you need to have saved the settings before you begin.

You save UDT settings using standard functions. See Saving UDT Settings (on page 480).

Loading Settings for a UDT

Introduction

You may have created a UDT which is very similar to the one you are about to add. In this case you can save yourself time when you create a UDT if you base it on one which you have previously defined. Otherwise you would start from scratch.

Before you do this you need to have:

- saved the settings if you want to base the UDT on an existing one. See Saving UDT Settings (on page 480).

Menu Path

From the **RAMM Manager** main menu, follow the menu path Projects > User Defined Tables to open the **User Defined Tables** list screen. Any UDTs you have previously added will be listed. If you have added no UDTs, the screen will be empty.

▶ **Loading Settings for a UDT**

To do this you follow these steps:

1   Press [Add] to open the **User Defined Table Wizard** at the Introduction panel.

2   If you are creating the UDT starting from scratch, rather than importing settings which you have previously saved, you now go to step 5. Otherwise, press [Load Settings] to open a standard Windows **Open** dialog.

3   Navigate to your XML file with the saved settings which you wish to load.

4   Press [Open ▼] to default the settings into the **Columns** panel.

5   Press   Next   to move to the Table Description panel.

Table Description

You give a UDT its own unique table name and a description. You also define its Security Permissions and **RAMM** toolbar and screen images.

Table Name and Description

Each UDT name must be unique within **RAMM** and consist of no more than eighteen (18) lower case characters. The description does not have to be unique.

When you load settings from an existing UDT, the name and descriptions default at the Table Description panel. You can overwrite them. The capitalised name of the table defaults into the Description and Plural Desc. fields. You can overwrite these. The Description field value becomes the Grid and Detail screen names. The values in the the Description and Plural Desc. fields are used in Message dialogs.

Database Structure Report

The description appears in the Database Structure Report. This assists anybody running the report to understand of the purpose of the UDT data collection.

Permissions

You have the option of selecting any existing **RAMM** table from the Permissions drop-down list. This will set the Security Permissions for the UDT.

If you leave the Permissions field blank, all users can access the UDT subject to their Security Permissions. A global View Only restriction enables a user to view and select but not change, the UDT. Otherwise, they have full control.

Notes

You can add UDT notes. Notes which are added at the time of creation or editing can be very useful at a later date. Notes can help if you have forgotten why you did something or if another user needs to understand your reasoning and purpose.

Icons

The standard **RAMM** UDT icon is used for all UDTs by default. This identifies UDTs throughout the **RAMM** suite of programmes. You can associate bitmap images with a UDT. A 26x26 pixel bitmap is used in the **RAMM** for Windows toolbar. A 16x16 pixel bitmap is used in the top left hand corner of screens. Use the colour fuchsia (#FF00FF) to render areas of the image transparent.

Adding UDT Details

Introduction

You give a UDT its own unique table name and a description. You also define its Security Permissions and **RAMM** toolbar and screen images.

Before you do this you need to have:

- loaded the UDT settings if using them. See Loading Settings for a UDT (on page 445).
- created two bitmaps, one 16x16 and one 26x26 pixels, if you want to associate images with the UDT throughout **RAMM**.

> If you have loaded settings, those settings will appear in the Columns panel. Otherwise it will be empty as in the graphic below.

Menu Path

From the **RAMM Manager** main menu, follow the menu path Projects > User Defined Tables > (load UDT Settings) > (press Next) to open the Table Description panel.

▶ **Adding UDT Details**
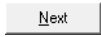

To do this you follow these steps:

1   Type your UDT table name in the Name field. You must use lower case characters only.

2   Type the table descriptions in the Description and Plural Desc. fields with the singular and plural descriptions for your UDT. Remember to make the second description a plural.

3   If you want to define Security Permissions for this UDT, select from the Permissions drop-down list, the table which most accurately matches the required Permissions.

4   Type any relevant notes in the Notes field. Notes which are added at the time of creation or editing can be very useful at a later date. Notes can help if you have forgotten why you did something or if another user needs to understand your reasoning and purpose.

5   If you want to associate a graphic with the UDT, go to step 6. Otherwise, go to step 8.

6   Double-click on the folder icon adjacent to the Icon 26x26 field. Navigate to and select the .bmp file. Press Open ▼ to default the selected icon.

7   Follow the same steps for the 16x16 icon. If you have not created a 16x16 .bmp you can press the Copy icon adjacent to the Folder icon and **RAMM** will create a 16x16 .bmp by copying the 26x26 .bmp.

8   When you have the appropriate descriptions and bitmap images, press [Next] to move to the Location panel.

Location

All Assets/Nonassets need to be positioned in relation to a Road in the **RAMM** database. You have the option of including the Street Address, and Map Coordinates in the UDT. You may also need to define the dimensions of the Asset/Nonasset using point, length or area coordinates.

Point

Most UDTs will be for Point Assets/Nonassets. The Point option defaults the Location column into the UDT so you can pinpoint the Asset/Nonasset on or near a Carriageway. This is suitable for signs, rubbish bins, slips and others.

> **Tip**
>
> Mostly, you will not need to know Asset/Nonasset dimensions, only the point where it exists, not its size. So you would choose the Point option.

Length

You select the Length option to pinpoint start and end points of an Asset/Nonasset on or near a Road. The Start, End and Location columns are included in the UDT. This is suitable for a railing or retaining wall which has length but not breadth.

The Length option has limitations. Curved items may not be properly represented as **RAMM** presumes the item length will be parallel to the centre line of the road.

Area

You select the Area option to pinpoint the start point, end point and width of an Asset/Nonasset on or near a Road. The Area option defaults the Width, Start, End and Location columns into the UDT. So the information to pinpoint the start and end points and width of an Asset/Nonasset on or near a Road can be included. This may be suitable for a parking space which has length and breadth.

The Area option has limitations. **RAMM** presumes that the item length will be parallel to the centre line of the road. So a curved, irregular or organically shaped item may not be properly represented.

Include Carriageway Link

Selecting the Carriageway Link option is not recommended for length and areas. An item length exceeding the Carriageway length or adjacent to two Carriageways can not be accommodated.

You would include the Carriageway Link information if you want to associate an actual position with a point Asset/Nonasset. It could be useful for point analysis with data from the Carriageway table. An example of this would be finding out how many Assets of type Rubbish Bins were on Carriageways of type Highway.

Include Street Address

You have the option to include the Street Address information. You would do this if you did not use **Pocket RAMM** and so did not have the option of pinpointing the item using GPS.

You would also use this if you use **Pocket RAMM** and want to positively identify the position by street address. The street address information is useful for printed reports where the GPS coordinates may not be as meaningful.

Include Map Coordinates

You have the option to include the map coordinates. You would do this if you wanted to view the Asset/Nonasset on a Map. It is strongly recommended that you select this option unless your Asset/Nonasset is something such as condition data which is not related to a specific spot on the map.

Include Start Name and End Name

You have the option to include the Start Name and End Name information. Start Name and End Name information is useful for printed reports where the GPS coordinates may not be as meaningful. They can also be useful if you have to send the information to others who do not use **Pocket RAMM**.

If you operate without **Pocket RAMM** you would identify items as being positioned between physical objects such as the bridge and the school.

Include Length Columns

You have the option to include the Length, Adjustment and Adjustment Reason columns. You would do this if you have selected the Length option and your item does not conform to the **RAMM** standard. This allows you to override the default length and to add an explanation.

Include Area Columns

You have the option to include the Area, Adjustment and Adjustment Reason columns. You would do this if you have selected the Area option and your item does not conform to the **RAMM** standard. This allows you to override the default area and to add an explanation.

> When you create a UDT you will want to ensure that a user generating a Route Data Sheet for the UDT items, will find the items in the report are recognisable and verifiable. They will need Location and item identification data.
>
> The item Location values will default in the Route Data Sheet. The item identification values will be Custom Column values you have created.
>
> If you position Custom Columns in the General group, they will be included in a Route Data Sheet.

Defining UDT Location Details

Introduction

All Assets/Nonassets need to be positioned in relation to a Road in the **RAMM** database. You have the option of including the Street Address, and Map Coordinates in the UDT. You may also need to define the dimensions of the Asset/Nonasset using point, length or area coordinates.

Before you do this you need to have:

• added the Table Description panel details. See Adding UDT Details .

Menu Path

From the **RAMM Manager** main menu, follow the menu path Projects > User Defined Tables > (add UDT Details) > (press Next) to open the Location panel.

▶ **Defining UDT Location Details**

To do this you follow these steps:

1   If you have a requirement for the Length option, go to step 6. If you have a requirement for the Area options, go to step 8. Otherwise, select the Point option to default the appropriate columns related in the adjacent Columns panel. See Location (on page 450).

2   Select the Include Carriageway link check box.

3   Select the Include Street Address check box if you want to positively identify the item position by street address.

4   Select the Include Map Coordinates check box. If you clear it you will not be able to view the Asset/Nonasset on the Map.

5   Go to step 9.

6   Select the Include Start Name and End Name and the Include Length columns options if you require them for reporting purposes or if GPS is not available. Do not select the Include Carriageway link check box.

7   Go to step 9.

8   Select the Include Start Name and End Name, the Include Length columns and Include Area columns if you require them for reporting purposes or if GPS is not available. Do not select the Include Carriageway link check box.

9   When you have selected the appropriate options, press ⬚Next⬚ to move to the Offset and Side panel.

Offset and Side

An Asset/Nonasset can be more accurately positioned by defining how far it is offset from the centre line of the Carriageway. One option is to specify its side of the Road only. You can also use its lane, from Left Lane 1 - 5 and Right Lane 1 - 5, to position the item.

Offset

The offset is measured from the Road centre line. It is always a positive measurement. If you select the Include Offset option at the Offset and Side panel, the Offset and the Side columns will automatically be added to the UDT.

If you accept the Do not include Offset option, you then have the further option of selecting whether or not to include the Side column or the Lane column.

Side

The direction of the offset is indicated by the Side column. Valid values are Centre, Left, Right and Both. If you select the Side option you may not select the Lane option.

Lane

If the Road has more than one lane it may be appropriate to select the Lane option. Valid values in the Lane column are Left Lane from 1–5 and Right Lane from 1–5. If you select the Lane option you may not select the Side option.

Defining UDT Offset and Side Details

Introduction

An Asset/Nonasset can be more accurately positioned by defining how far it is offset from the centre line of the Carriageway. One option is to specify its side of the Road only. You can also use its lane, from Left Lane 1 - 5 and Right Lane 1 - 5, to position the item.

Before you do this you need to have:

- defined the UDT location details. You do this at the Location panel. See Defining UDT Location Details (on page 452).

Menu Path

From the **RAMM Manager** main menu, follow the menu path Projects > User Defined Tables > (add UDT Details) > (add UDT Location Details) > (press Next) to open the Offset and Side panel.

▶ **Defining UDT Offset and Side Details**

To do this you follow these steps:

1   Either select the Include Offset option or the Do not include Offset option to default the appropriate columns into the adjacent Columns panel. See Offset and Side (on page 454).

2   If you select the Do not include Offset option you should select one of the three options beneath it. You have the option of selecting whether or not to include the Side column or the Lane column

3   When you have selected the appropriate Offset and Side options, press ⬛Next⬛ to move to the RAMM Modules panel.

RAMM Modules

UDT Assets/Nonassets created in **RAMM Manager** are available in **RAMM** and **Pocket RAMM**. You specify whether they are available in the other **RAMM** modules.
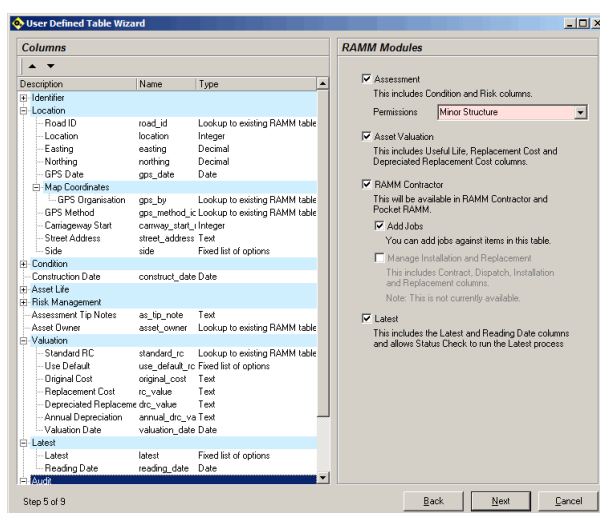
RAMM Assessment

If you select the Assessment check box, the Condition and Risk columns will be added to the UDT. You would do this if you wanted to define you own condition and risk criteria.

The Permissions drop-down list will also become available and mandatory. You must use this to select a **RAMM** database table whose Permissions most closely match the appropriate access level to the assessment data required for those with access to the UDT.

RAMM Asset Valuation

If you select the Asset Valuation check box, the Useful Life, Replacement Cost and Depreciated Cost columns will be added to the UDT. You should leave this option cleared if you are creating a UDT for a Nonasset as this will have no value to depreciate.

RAMM Contractor

If you select the RAMM Contractor check box, the Assets/Nonassets in the UDT will be available in **RAMM Contractor** as well as in **Pocket RAMM**.

Add Jobs

You have the secondary option to select the Add Jobs check box to enable users to add Jobs against this Asset/Nonasset.

If this UDT is for an Asset/Nonasset against which you are not likely to assign Jobs, you should leave the Add Jobs check box cleared. Otherwise when **Pocket RAMM** users want to add a Job, this item will appear unnecessarily on the list, wasting space on the small screen.

Asset Audit History Logs

You have the option to set **RAMM** to keep complete Audit records for UDT Inventory Assets. You do this by selecting the Asset Audit History Logs. When you select the above option, very detailed Audit records are kept for the Assets. In particular, the State of an Asset and its Replacement Audit records are retained.

You can keep an Audit History of the Locations of your Inventory Assets.

When you create an Inventory Asset Type record at the Asset screen in **RAMM**, the Location of the Asset must be recorded. In particular, the Asset must be on a Road.

When you shift the Asset from one Road to another, an Audit record is created. You view these records at the Audit tab. The Road and Location data is captured as well as any relevant Site, State, Period, Contract, Dispatch and Reason data.

Manage Installation and Replacement

You have the option of including Installation and Replacement information for your UDT Asset Types. You do this by selecting the Manage Installation and Replacement option at the RAMM Modules panel when setting up the UDT.

You are then able to use your own Maintenance Reasons codes which you have set up in **RAMM Manager**. You use these to identify the reason for the Installation or Replacement of your UDT Asset Types. Maintenance Reasons codes can be set up for all Asset Types or for only the UDT Asset Types which you define.

When you are adding records for your User Defined Asset Types, you can define Installation and Replacement information. This includes Date, Reason, Contract and Dispatch ID details.

Latest

If you select the Latest check box the Latest and the Reading Date columns will be added to the UDT. This allows Status Check to run the Latest process.

You would normally select this option if the UDT you were creating was an Inventory UDT and you had selected the above two options. This way reports such as the Route Data Sheet will, by default, display only those Assets which are the Latest. Replaced Assets will not be listed. For instance Signs are replaced quite often and if you are performing an Asset Audit you only want to look for the Signs currently used in your Network, not all the signs that used to exist but have been replaced.

Normally you would not select this option. If you select this option in error for Assets for which you will not be running Status Check then when you want to report on the Assets using a report such as the Route Data Sheet the Latest check box in the Layout panel will be selected by default. Your Assets will then not display unless you have cleared the option.

Selecting RAMM Modules for a UDT

Introduction

UDT Assets/Nonassets created in **RAMM Manager** are available in **RAMM** and **Pocket RAMM**. You specify whether they are available in the other **RAMM** modules.

Before you do this you need to have:

- defined the UDT offset and side details. You do this at the **Offset and Side** panel. See Defining UDT Offset and Side Details (on page 454).

Menu Path

From the **RAMM Manager** main menu, follow the menu path Projects > User Defined Tables > (add UDT Details) > (add UDT Location Details) > (add UDT Offset and Side Details) > (press Next) to open the RAMM Modules panel.

▶ **Selecting RAMM Modules for a UDT**

To do this you follow these steps:

1 Select the **Assessment** check box if you want the **Condition** and **Risk** columns to be added to the UDT. If not, leave it clear. If you select it, the **Permissions** drop-down list will also become available and mandatory. You must use this to select a **RAMM** database table whose Permissions most closely match the appropriate access level to the assessment data required for those with access to the UDT.

2 Select the **Asset Valuation** check box if you require the **Useful Life**, **Replacement Cost** and **Depreciated Cost** columns in the UDT. Leave it cleared if the UDT you are creating is for a Nonasset.

3 Select the RAMM Contractor check box if you want the Assets/Nonassets in this UDT to be available in **RAMM Contractor** as well as **Pocket RAMM**. You then also have the option to select the **Add Jobs** check box. This will enable users to add Jobs against the Assets/Nonassets from within **Pocket RAMM**.

4 Leave the **Latest** check box cleared unless you require the **Latest** and the **Reading Date** columns in the UDT and need Status Check to run the Latest process. If you are unsure, just leave it cleared.

5 When you have selected the appropriate **RAMM** module options, press ⎡ Next ⎤ to move to the **Optional Columns** panel.

Optional Columns

You can add optional columns to the UDT. They relate to external IDs, free-form notes, financial year and audit trail information.

External ID

If you select the External ID check box, the External ID column defaults into the UDT. You use this when you need to associate a code or reference from outside **RAMM** such as a unique Network Owner reference code for bus shelters.

Financial Year

You have the option to select the Financial Year check box. This includes the Financial Year column.

Data Collection

You have the option to select the Data Collection check box. This includes the Date Collected and the Collected By columns in the Data Collection section.

You use this for audit trail purposes.

Audit

You have the option of selecting the Audit check box. This adds its own Audit section which includes the Date added, Added by, Date changed and the Changed By columns to the UDT.

You use these for audit trail purposes.

If you have selected any of the Assessment, Asset Valuation or RAMM Contractor at the RAMM Modules panel, the Audit check box will be selected by default. You will not be able to clear the check box if you want the UDT Assets/Nonassets to be available in any of these modules.

Notes

You have the option of selecting the Notes check box. This creates a Notes section and adds the notes column.

You use this to have the option to add text notes for your own business purposes. Notes which are added at the time of creation or editing can be very useful at a later date. Notes can help if you have forgotten why you did something or if another user needs to understand your reasoning and purpose.

Selecting Optional Columns for a UDT

Introduction

You can add optional columns to the UDT. They relate to external IDs, free-form notes, financial year and audit trail information.

Before you do this you need to have:

- selected the **RAMM** modules for the UDT. You do this at the RAMM Modules panel. See Selecting RAMM Modules for a UDT (on page 457).

Menu Path

From the **RAMM Manager** main menu, follow the menu path Projects > User Defined Tables > (load UDT Settings) > (add UDT Details) > (add UDT Location Details) > (add UDT Offset and Side Details) > (select RAMM Modules) > (press Next) to open the Optional Columns panel.

▶ **Selecting Optional Columns for a UDT**

To do this you follow these steps:

1 Select the External ID check box if you require the External ID column in the UDT.
2 Select the Financial Year check box if you require the Financial Year column to be available in its own section of the UDT.
3 Select the Data Collection check box if you require the Data Collection section which includes the Date Collected and the Collected By columns. You use these for audit trail purposes.

4   The Audit check box is selected by default if you have selected any of the Assessment, Asset Valuation or RAMM Contractor check boxes at the RAMM Modules panel. You can not clear it while any of these modules remain selected. It adds the Date added, Added by, Date changed and the Changed by columns to the UDT. You use these for audit trail purposes.

5   Select the Notes check box if you require a Notes section with the Notes column. You use this to have the option to add text notes for your own business purposes.

6   When you have selected the appropriate optional columns, press ⬚Next⬚ to move to the Custom Columns panel.

Custom Columns

You can create your own custom columns for a UDT. You can define them to be Currency, Decimal, Boolean (Yes, No) and the other standard **RAMM** column types.

Name and Field Label

The custom column name must be unique within the UDT and use eighteen (18) or fewer lower case alphanumeric characters. This becomes the actual name of the column within the table. The Field Label value is the name of the column which is the standard field name that will appear in **RAMM** to identify this column.

Control Layout Screen

You monitor the appearance of the Field Label, Short Label, Grid Label and Suffix field names at the **Control Layout** screen. You access this by clicking the ellipsis (...) adjacent to the Field Label field. You should check these if you are creating a UDT by copying settings from another UDT. See Control Layout (on page 462).

Purpose and Hint

You can add freeform text to describe the purpose of the custom column. You should do this to help **RAMM** users. This appears in the Database Structure Report. You can add freeform text to add a hint to assist users. When the mouse hovers over the field, what you have written in the Hint field appears to the user.

Unit Suffix

You can select a unit suffix which will appear to the right of the field. This will indicate to the user, the measurement units used. The unit suffix will also display on the Grid header in brackets.

Nulls

You define a custom column as mandatory if you select Do not Allow Nulls at the Nulls drop-down list. If you select Allow Nulls, the user can leave the column blank.

Type

You can define the column as any of the standard **RAMM** column types. See Custom Column Types (on page 464).

> When you create a UDT you will want to ensure that a user generating a Route Data Sheet for the UDT items, will find the items in the report are recognisable and verifiable. They will need Location and item identification data.
>
> The item Location values will default in the Route Data Sheet. The item identification values will be Custom Column values you have created.
>
> If you position Custom Columns in the General group, they will be included in a Route Data Sheet.

Control Layout

You monitor the appearance of the Field Label, Short Label, Grid Label and Suffix field names at the **Control Layout** screen. You access this by clicking the ellipsis (...) adjacent to the Field Label field. You should check these if you are creating a UDT by copying settings from another UDT. You type in the upper Options section and view in the lower Example section, how your changes will look in **RAMM**.

Field Label

This value is the field name that will appear in **RAMM** to identify this column.

Short Label

You use the Short Label field for the field name to be used on the Detail screen. You can check its appearance in the Example section of the screen. Use a short label which both fits the screen and is sufficiently informative.

Grid Header

If the Grid label is too long for the Grid header, you should abbreviate it. This changes dynamically so that you can see straight away the effect of your changes.

Suffix

If the custom column is to hold measured data such as m, km, m^2 and m^3, you select a unit suffix. This will appear to the right of the field. It will also display on the Grid in brackets. See the graphic below where the unit is m^3.

Custom Column Types

There are eight (8) types of custom column which you can add. You must choose one of them from the Type drop-down list. They are:

- Currency (on page 464)
- Date and Time (on page 464)
- Decimal (on page 465)
- Fixed list of options (on page 465)
- Integer (on page 466)
- Lookup to an existing RAMM table (on page 466)
- Text (on page 466)
- Yes/No (on page 467).

Currency

If you need the custom column to store financial values then you define it as type Currency. Then you:

- may set a default value
- may set minimum and maximum values.

Date and Time

If you need the custom column to store calendar information then you define it as type Date and Time. Then you:

- must decide whether you want to collect the date and time, just the date, just the time, the month or the year
- may decide to allow or to disallow future dates
- may set a default value of the data entry date.

Decimal

If you need the custom column to store a number which includes one or more decimal places then you define it as type Decimal. Then you:

- must choose a size to define the number of digits and decimal places
- may set Default, Minimum and Maximum values.

Fixed List of Options

If you need the custom column to store a range of values which you want to define yourself, you define it as type Fixed list of options. Then you:

- must add the user-defined code and description values using standard RAMM functions
- may set a Default value.

Integer

If you need the custom column to store a whole number then you define it as type **Integer**. Then you:

• may set Default, Minimum and Maximum values.

Lookup to an Existing RAMM Table

If you need the custom column to be a lookup to an existing RAMM table, you define it as a Lookup to an existing RAMM table. Then you:

• must select the existing RAMM table
• must set a Default value.

Text

If you need the custom column to allow a user to type random values into a field on a screen you define it as a Text column. Then you:

• must set the Size of the column in characters
• may set a Default value
• may set the Case allowed to be used.

Yes/No

If you need the custom column to be a boolean field on a screen you define it as a Yes/No column. Then you:

- must select Yes/No at the Type field.

Type	Yes/No ▼

Defining UDT Custom Columns

Introduction

You can create your own custom columns for a UDT. You can define them to be Currency, Decimal, Boolean (Yes, No) and the other standard **RAMM** column types.
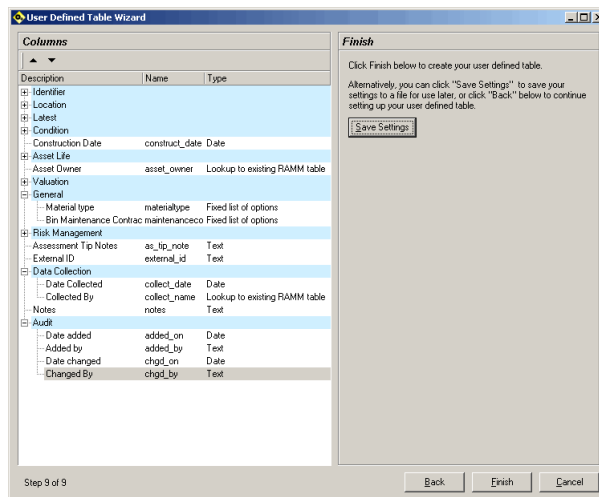
Before you do this you need to have:

- selected the optional columns for the UDT. You do this at the Optional Columns panel. See Selecting Optional Columns for a UDT (on page 460).

Menu Path

From the **RAMM Manager** main menu, follow the menu path Projects > User Defined Tables > (add UDT Details) > (add UDT Location Details) > (add UDT Offset and Side Details) > (select RAMM Modules) > (select Optional Columns) > (press Next) to open the Custom Columns panel.

► **Defining UDT Custom Columns**

To do this you follow these steps:

1 Type in the Name field, the name for your custom column. You must use lower case characters only. You are limited to eighteen (18) alphanumeric characters.

2 Type in the Field Label field the label you want to appear adjacent to the field as it appears within **RAMM**. If the name is quite long, press ⬚ to open the **Control Layout** screen. There you can adjust the labels so they fit in the Detail and Grid screens in **RAMM**. See Control Layout (on page 462).

3 Type in the Purpose field, the text to describe the purpose of the custom column. You should do this to help **RAMM** users. The explanation you type here appears in the Database Structure Report.

4 Type in the Hint field, the text to assist a user to know what to do with this custom column. When the user hovers their mouse over the resulting field, this is the helpful hint which will appear.

5 Custom columns appear by default at the General tab on the Details screen. If you need the custom column to appear under a different tab, select the group with which it is to be associated from the Group drop-down list. If necessary, you can create your own group or subgroup to contain the custom column. To do this you press ⬚ to open the **New Group** dialog and type the name of the new group in the Group field and press ⬚OK⬚.

6 Select, from the Suffix drop-down list, the unit type for the custom column if one is required. Otherwise leave it blank.

7 If you want the user to be able to leave the custom column blank when adding an item to the UDT at the Details screen, select Allow Nulls from the Nulls drop-down list. Otherwise, select Do not Allow Nulls.

8 Select the kind of column you want from the Type drop-down list. The steps you must take next will depend on the value you choose. For further details see Custom Column Types (on page 464).

9   Press ✓ to save the record.

10 If you want to create another custom column, go to step 1. If not, go to step 11.

11 When you have defined the custom column(s) to your specifications, press [Next] to move to the Description panel.

Description Column

You can select the **RAMM** database column which describes the UDT. This becomes the column which will be used to label items in **RAMM** and **Pocket RAMM**.

Background

The screens on the devices used to display **Pocket RAMM** are limited in size. So you do not want to overwhelm a **Pocket RAMM** user with too much information.

You need to consider what a **Pocket RAMM** user needs to see when they zoom in to a UDT item. It could be the type, the condition or some other information.

Example

If you create a Slip UDT you might have a custom column to describe the nature of the slip. This could have values such as Mud, Boulders, Trees/Shrubs and Undefined. It may be that your slip teams, when they are looking at slips in **Pocket RAMM** need to see what sort of slip it is so that they can bring the correct equipment to deal with the slip and to plan the disposal of any wastes.

In this case you would choose Slip Constitution (nature) (or whatever you had named the custom column) at the Description Column drop-down list.

Selecting the UDT Description Column

Introduction

You can select the **RAMM** database column which describes the UDT. This becomes the column which will be used to label items in **RAMM** and **Pocket RAMM**.

Before you do this you need to have:

- defined the custom columns. See Defining UDT Custom Columns (on page 467).

Menu Path

From the **RAMM Manager** main menu, follow the menu path Projects > User Defined Tables > (add UDT Details) > (add UDT Location Details) > (add UDT Offset and Side Details) > (select RAMM Modules) > (select Optional Columns) > (define Custom Columns) > (press Next) to open the Description Column panel.

▶ **Selecting the UDT Description Column**

To do this you follow these steps:

1   Select, from the Description Column field, the **RAMM** database column or custom column which you have created, which describes what a **Pocket RAMM** user needs to see. This becomes the column which will be used to label items in **Pocket RAMM**.

2   Press ⌊ Next ⌋ to move to the Finish panel.

Finish

Having defined your UDT you can save the settings to a file for later use, press the Back button to check your settings or press the Finish button to create your UDT.

Save Settings

If you need to stop creating your UDT, you can save your settings and cancel out of the UDT Wizard. You can finish the UDT creation later when you have more time or information.

Whether or not you are going to create a new UDT, you may wish to save your settings. This will save time if you need to create another UDT with very similar characteristics.

You simply press the Save Settings button. **RAMM** then creates an XML file named after the original name you gave the UDT but with ud_ prefixed. This file can then be imported when creating a new table. See Loading Settings for a UDT (on page 445).

Go Back and Check Settings

Before you press the Finish button and create your UDT you have the option to check all the settings. You do this by pressing the Back button as many times as required to reach the panel with the settings you want to check.

Once you have checked the settings and made any changes necessary, you can press the Next button to reach the Finish panel again.

Commit Changes

Once you are satisfied with the changes you can press the Finish button to commit the changes.

Saving UDT Settings

Introduction

Having defined your UDT you can save the settings to a file for later use, press the Back button to check your settings or press the Finish button to create your UDT.

Before you do this you need to have:

* selected the column which describes the UDT. You do this at the Description Column panel. See Selecting the UDT Description Column (on page 469).

Menu Path

From the **RAMM Manager** main menu, follow the menu path Projects > User Defined Tables > (add UDT Details) > (add UDT Location Details) > (add UDT Offset and Side Details) > (select RAMM Modules) > (select Optional Columns) > (define Custom Columns) > (select Description Column) > (press Next) to open the Finish panel.

▶ **Saving UDT Settings**

To do this you follow these steps:

1   If you want to save the current settings in an XML file press [Save Settings] to open a standard Windows **Save As** dialog. You can then save the file in the folder of your choice.

2   If you want to review the settings prior to committing the changes you can press [Back] as many times as required to reach the required panel. You have the option of changing the settings. When you are satisfied with the settings you can press [Next] until you are back at the **Finish** panel.

3   Press [Finish] to open a **Confirmation** dialog asking you to confirm that you really do want to create the table and close the Wizard.

4   Press [Yes] at the Confirmation dialog to close the **User Defined Table Wizard** screen and create your UDT.

UDT Modification

After you have created your User Defined Table (UDT) you may find that you need to modify it. Editing a UDT is very similar to creating a UDT. As a precaution, you should save your UDT settings and export a copy of your UDT data prior to UDT modification.

Introduction and Warning Panels

Introduction Panel

You define the name of the UDT at the Introduction panel of the **User Defined Table Wizard** screen. Once you have created the UDT you can not change its name. So there is no need to access the Introduction panel.

So when you press the Modify button to start editing a UDT, the Introduction panel is not available. The **User Defined Table Wizard** screen opens at the Table Description panel.

Editing a UDT is very similar to creating a UDT. See UDT Creation Overview (on page 443).

Warning Panel

If you make changes to a UDT which has already been used to hold data, there is a chance that a change you make could cause the loss of data. So when you are modifying a table the following warning remains at the top of all panels on the right.

Editing a UDT

Introduction

After you have created your User Defined Table (UDT) you may find that you need to modify it. Editing a UDT is very similar to creating a UDT. As a precaution, you should save your UDT settings and export a copy of your UDT data prior to UDT modification.

Before you do this you need to have:

- created the UDT which you wish to modify. You do this using the User Defined Table Wizard. See UDT Creation Overview (on page 443).
- exported the table data. Then, if by error you make a change which causes loss of data, you can restore it. You do this at the **Unload Dialog**. See Export UDT Data (on page 479).
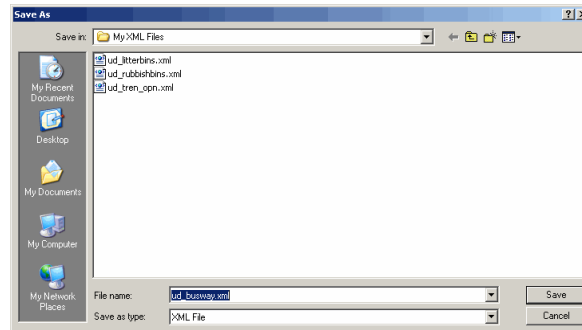
Menu Path

From the **RAMM Manager** main menu, follow the menu path Projects > User Defined Tables to open the **User Defined Tables** list screen. Any UDTs you have previously added will be listed.

► Editing a UDT

To do this you follow these steps:

1   Select the UDT you wish to edit by clicking on it.

2   Press [Modify] to open the User Defined Table Wizard at the Table Description panel with default field values. The Name field will be unable to be entered or edited. You can edit the other field values.

3   What you do next depends on the changes you want to make. If you want to:

•   edit the Table Description details, see Adding UDT Details (on page 448)

- edit the Location details, see Defining UDT Location Details (on page 452)
- edit Offset and Side details, see Defining UDT Offset and Side Details (on page 454)
- change the **RAMM** modules in which the UDT will be available, see Selecting **RAMM** Modules for a UDT (on page 457)
- edit Optional Columns, see Selecting Optional Columns for a UDT (on page 460)
- add Custom Columns to the UDT, see Defining UDT Custom Columns (on page 467)
- edit the UDT Description column, see Selecting the UDT Description Column (on page 469).

4   When you have made the changes you want you can save them. See Saving UDT Settings (on page 471).

UDT Duplication

You can duplicate a User Defined Table (UDT) to save time in the creation of another UDT which requires very similar characteristics.

UDT Copies

An Exact Copy

When you select a UDT and press the Duplicate button, an exact copy of the UDT is made. You can not save this immediately as the name of the table is still the same as the name of the UDT which was duplicated. UDT names must be unique in **RAMM**.

So the first action you will take is to give the table its own unique name and description. It probably makes sense to change its display icons as well.

Other Changes

The other changes you make will depend on the reason you have duplicated the UDT. For instance, you may want to:

- edit the Table Description details, see Adding UDT Details (on page 448)
- edit the Location details, see Defining UDT Location Details (on page 452)
- edit the Offset and Side details, see Defining UDT Offset and Side Details (on page 454)
- change the **RAMM** modules in which the UDT will be available, see Selecting **RAMM** Modules for a UDT (on page 457)
- edit the UDT Optional Columns, see Selecting Optional Columns for a UDT (on page 460)
- add Custom Columns to the UDT, see Defining UDT Custom Columns (on page 467)

- edit the UDT Description column, see Selecting the UDT Description Column (on page 469).

Copying a UDT

Introduction

You can duplicate a User Defined Table (UDT) to save time in the creation of another UDT which requires very similar characteristics.

Before you do this you need to have:

- created the UDT which you wish to duplicate. You do this using the User Defined Table Wizard. See UDT Creation Overview (on page 443).

Menu Path

From the **RAMM Manager** main menu, follow the menu path Projects > User Defined Tables to open the User Defined Tables list screen. Any UDTs you have previously added will be listed.

▶   Copying a UDT

To do this you follow these steps:

1   Select the UDT you wish to duplicate by clicking on it.
2   Press [Duplicate] to open the User Defined Table Wizard at the Table Description panel with default field values.

3   The **Name** field will contain the name of the UDT which has been copied. Type over it with the name for your UDT. You must use lower case characters only. Each UDT name must be unique in **RAMM**.

4   What you do next depends on the changes you want to make. If you want to:

- edit the **Table Description** details, see Adding UDT Details (on page 448)
- edit the **Location** details, see Defining UDT Location Details (on page 452)
- edit the **Offset and Side** details, see Defining UDT Offset and Side Details (on page 454)
- change the **RAMM** modules in which the UDT will be available, see Selecting **RAMM** Modules for a UDT (on page 457)
- edit the UDT **Optional Columns**, see Selecting Optional Columns for a UDT (on page 460)
- add **Custom Columns** to the UDT, see Defining UDT Custom Columns (on page 467)
- edit the UDT **Description** column, see Selecting the UDT Description Column (on page 469).

5   When you have made the changes you want you can save them. See Saving UDT Settings (on page 471).

UDT Import

You may want to bring in data to load into a UDT. Similarly, you may want to load UDT Asset data from one database to another.

Import UDT Data

Associate RAMM Data

One reason to import external data into a UDT could be to associate the standard **RAMM** data with the data from an external program. This can be exported back to the external program if required.

Temporary Table

RAMM will automatically create a copy of the table into which you want to import the UDT Asset data. This temporary table is then moved into **RAMM** when you are satisfied that you have the data you want and that it is in the correct format.

If you do not move the data into **RAMM** within thirty days of the creation of the temporary table, the table and the data will be removed automatically.

Import File Screen

When you press the Import button, the **Import File** screen will open. This is the same screen as is available from the **RAMM Manager** File menu.

For further information see the **RAMM Manager** guides.

UDT Export

You may need to export UDT Asset data from a database. This could be to analyse or manipulate the data in another programme. It could be in order to import it into another database.

Export UDT Data

Associate RAMM Data

One reason to export data from a UDT could be to use the associated standard **RAMM** data with the data, previously imported from an external program.

Unload Dialog Screen

When you press the Export button, the **Unload Dialog** screen will open. This is the same screen as is available from the **RAMM Manager** File menu.

For further information see the **RAMM Manager** guides.

UDT Settings

If you are editing a UDT it is a sensible precaution to save the UDT settings in case you need to revert to them at a later stage.

You use the standard Windows method to save the UDT settings to a folder of your choice.

Saving UDT Settings

Introduction

You can save UDT settings as an XML file. This file can be used as the basis of a new UDT. The file also enables you to revert to these saved settings if you make a future change to the UDT settings which is not successful.

Before you do this you need to have:

• You must have created the UDT whose settings you want to save. You do this using the User Defined Table Wizard. See UDT Creation Overview (on page 443).

Menu Path

From the **RAMM Manager** main menu, follow the menu path Projects > User Defined Tables to open the **User Defined Tables** list screen. Any UDTs you have previously added will be listed.

▶ Saving UDT Settings

To save the settings of a particular UDT, follow these steps:

1 Select the UDT whose settings you wish to save.
2 Press ⎣ Save Settings ⎦ to open a standard Windows **Save As** dialog. Any previously saved XML settings files will display.

3 Navigate to the folder in which you want to save the settings file or accept the default folder.

4 Type the name for the file in the **File name** field or accept the default.

5 Press ⬚ Save ⬚ to close the Windows **Save As** dialog and to save your XML settings file.

6 If you want to save the settings for another UDT, go to step 1. Otherwise, press ⬚ Close ⬚. The **User Defined Tables** screen will close and you will be returned to the Main Menu.

UDT Removal

You can delete a UDT which is no longer required. Before you remove a UDT it is strongly recommended that you save its settings and its data in case you have to reconstruct the table at a later date. You may want to remove a UDT because the Asset for which the UDT was set up, has been moved into **RAMM**. You may have other reasons for deleting a UDT.

If you save the settings, you can easily reproduce the UDT if required. If you save the data then you can easily populate the UDT as well.

You delete a UDT using the User Defined Tables Wizard.

Deleting a UDT

Introduction

You can delete a UDT which is no longer required. Before you remove a UDT it is strongly recommended that you save its settings and its data in case you have to reconstruct the table at a later date.

Before you do this you need to have:

- saved the UDT settings. See Saving UDT Settings (on page 480).
- exported any UDT data. See Export UDT Data (on page 479).

Menu Path

From the **RAMM Manager** main menu, follow the menu path Projects > User Defined Tables to open the **User Defined Tables** list screen. Any UDTs you have previously added will be listed.

▶ Deleting a UDT

To do this you follow these steps:

1 Select the UDT you wish to delete.
2 Press [Remove] to open a **Confirmation** dialog asking you to confirm that you really want to remove the UDT.
3 Press [Yes] to remove the UDT.
4 Press [Close]. The **User Defined Tables** screen will close and you will be returned to the Main Menu.

Inventory UDTs

You can now set up User Defined Tables (UDTs) as Inventory Assets.

So you can not only create a new Asset Type, but you can set up Sites where the Assets are kept, create States for the Assets and Reasons for actions taken with the Assets. As with Signs, Street Lights and Traffic Signals, you can keep Inventory records including extensive Audit records so that you can check, for instance, where Assets have been moved, when and by whom.

When to Use the New Features?

Static Assets such as rubbish bins and bus shelters can be managed using the existing UDT functions. However, if you have Assets such as movable road signs for traffic management, transportable cameras and trailers for carrying the same, you can use the new features to keep track of:

- where the Assets are
- whether they are in usable condition or being maintained in the workshop
- which Roads they have been used on
- who shifted the Assets
- why the Assets were moved.

What are the New Features?

There are the following new functions to make these UDT Assets very flexible in their usage:

- **Asset Site Locations** (on page 484)
  You can now define your own Site Locations to associate with your UDT Asset Types.
- **Asset Audit History Logs** (on page 485)
  You can now keep complete Audit History records for UDT Assets.
- **Asset Movement Records** (on page 486)
  You can now keep an Audit History of the Locations of your Inventory Assets.
- **Asset States** (on page 487)
  You can now define State codes to associate with Inventory Assets.
- **Asset Installation and Replacement Management** (on page 488)
  You can now maintain Inventory Installation and Replacement information for your UDT Asset Types.
- **Asset Dispatches** (on page 491)
  You can set up your Asset Type so that Dispatches and Jobs can be created for them. This has the usual advantages that the person required to perform the task has a record of what they are required to do and the Asset manager has a record of what has been done.
- **Maintenance Reasons** (on page 492)
  You can now set up your own Maintenance Reasons codes to describe the purpose for a User Defined Asset being shifted or replaced.
- **Associated Assets** (on page 495)
  You can link your UDT Asset with other RAMM Assets, for instance you could link a traffic camera with the Bridge on which it is sited.

The new features will particularly suit movable Asset Types.

Tip

Asset Site Locations

You now have the option of defining your own Site codes for your UDT Asset Types. This is in addition to the usual Location, Street Address, Side, Offset and Map Coordinates information. You do this by selecting the Include Asset Site option at the Location panel when setting up the UDT.

You are then able to use your own Site codes which you have set up in **RAMM Manager**. You follow the menu path Maintenance > Lookups > User Defined > Asset Maintenance > Site Codes to open the **Site Codes** maintenance screen.

You can use these to identify your Depots or other properties related to the use and maintenance of your Assets.

When you are adding records for your User Defined Asset Types, you can positively Locate them at a Site of your choice as well as using the standard **RAMM** Location, Street Address, Side, Offset and Map Coordinates information.

> The Site codes are for your information only and are not linked to the Map in **RAMM**.

Asset Audit History Logs

You have the option to set **RAMM** to keep complete Audit records for UDT Inventory Assets. You do this by selecting the Asset Audit History Logs option on the RAMM Modules panel when setting up the UDT.

When you select the above option, very detailed Audit records are kept for the Assets. In particular, the State of an Asset and its Replacement Audit records are retained.

> You will always be able to check on the Location and current State of your UDT Inventory Assets.

Asset Movement Records

You can now keep an Audit History of the Locations of your Inventory Assets.

When you create an Inventory Asset Type record at the Asset screen in **RAMM**, the Location of the Asset must be recorded. In particular, the Asset must be on a Road.

When you shift the Asset from one Road to another, an Audit record is created. You view these records at the Audit tab. The Road and Location data is captured as well as any relevant Site, State, Period, Contract, Dispatch and Reason data.

A record is kept of each time an Asset is shifted

The old and the new **Road** and **Location** data is available

Site, **State**, **Period**, **Contract**, **Dispatch** and **Reason** details are kept for each shift

Asset States

You can now set up User Defined Asset States. You would normally use Asset States to keep track of the usability of the Assets.

You define your Asset States in **RAMM Manager** at the Asset State maintenance screen. This is available from the menu path Maintenance > Lookups > Asset Maintenance > Asset State.

① Maintenance > Lookups > Asset Maintenance > Asset State

② Opens the Asset State maintenance screen

The default **RAMM** States are:

- In service
- Disposed of
- Unavailable for use
- Available for use.

Asset State Screen

If the default State codes do not meet your requirements you can define your own State codes at the **Asset State** screen. This is a standard **RAMM Manager** Lookup screen and you add the codes in the normal manner.

Values Available at the   Drop-down List

The default values and any values you define at the **Asset State** screen in **RAMM Manager** become available in **RAMM** at the State Code drop-down list in the Asset State section of the Maintenance tab on the UDT Asset Type screen.

Asset Installation and Replacement Management

You now have the option of including Installation and Replacement information for your UDT Asset Types. You do this by selecting the Manage Installation and Replacement option at the RAMM Modules panel when setting up the UDT.

You are then able to use your own Maintenance Reasons codes which you have set up in **RAMM Manager**. You use these to identify the reason for the Installation or Replacement of your UDT Asset Types. Maintenance Reasons codes can be set up for all Asset Types or for only the UDT Asset Types which you define.

When you are adding records for your User Defined Asset Types, you can define Installation and Replacement information. This includes Date, Reason, Contract and Dispatch ID details.

Asset Installation

You can install Inventory UDT Assets in the same way that Signs, Street Lights and Traffic Signals can be installed.

You do this at the Maintenance tab of the Asset screen. In the example below, it is the **Camera** screen.

If you install an Inventory UDT Asset while working on a Dispatch in **RAMM Contractor** or a Job in **Pocket RAMM**, the Install Date, Contract ID and Dispatch ID values will default when the Dispatch or Job is saved.

Asset Replacement

You can replace Inventory UDT Assets in the same way that Signs, Street Lights and Traffic Signals can be replaced.

You do this at the Maintenance tab of the Asset screen. In the example below, it is the **Camera** screen.

Dispatch Values

If you replace an Inventory UDT Asset while working on a Dispatch in **RAMM Contractor** or a Job in **Pocket RAMM**, the Install Date, Contract ID and Dispatch ID values will default when the Dispatch or Job is saved.

In the example below, a Red Light Camera which has been installed at an Intersection is being replaced.

When you press Replace this Asset 🔄 , a **Replace Asset** dialog opens for you to specify the Date the Asset was replaced and the Reason for the replacement. If the Reason is not available from the Reason drop-down list you can press ⋯ to open the **Maintenance Reasons** maintenance screen. You can use this to add the correct Reason code. See Maintenance Reasons (on page 492).

The values then default. They are unable to be entered or edited.

Asset Dispatches

You can set up your Asset Type so that Dispatches and Jobs can be created for them. This has the usual advantages that the person required to perform the task has a record of what they are required to do and the Asset manager has a record of what has been done.

When you set up your User Defined Tables (UDTs) you have always had the option to make the Asset Type available in **RAMM Contractor** and **Pocket RAMM** so that you can add Jobs and Dispatches against the Assets. You do this at the RAMM Modules panel of the **User Defined Table Wizard.**

Then when you are in the screen for the Asset Type, you can follow the menu path **Actions > Create Dispatches** to start the Dispatch creation process. In the example below, this is the **Camera** screen.

This opens the **Create Dispatches** Wizard. This assists you to add the Dispatch and ensures that you do not leave out necessary information. You can also add Jobs against the Assets in **Pocket RAMM** and **RAMM Contractor** in the normal fashion.

Maintenance Reasons

You can now set up Maintenance Reasons codes for use with Inventory User Defined Asset Types. You would do this only if you had selected the the Manage Installation and Replacement option at the RAMM Modules panel when setting up the UDT. See Asset Installation and Replacement Management (on page 488).

Maintenance Reasons codes are used to describe the reason for a User Defined Asset being shifted or replaced.

RAMM Manager Menu Path

You define your Maintenance Reasons codes in **RAMM Manager** at the **Maintenance Reasons** maintenance screen. This is available from the menu path Maintenance > Lookups > Asset Maintenance > Maintenance Reasons.

When you first open this screen you will notice two default **RAMM** Maintenance Reasons codes:

- Bylaw Update
- Removed.

These are system codes and can not be deleted.

> Bylaw Update and Removed are system codes used in **Pocket RAMM** only. They will not be available to you in **RAMM** or in **RAMM Contractor**. You must define your own Maintenance Reasons codes.

Define Your Codes

If you were managing movable Asset Types which required maintenance, you would probably want to add your own Maintenance Reasons codes such as:

- Maintenance
- Awaiting Deployment
- Failed
- Accident.

Maintenance Reasons Screen

The **Maintenance Reasons** screen is a standard **RAMM Manager** Lookup maintenance screen.

If you want a Maintenance Reasons code to be available to all Inventory User Defined Assets, you do not need to associate it with any Asset Types at the (unnamed) Associate Asset Type panel. If the Maintenance Reasons code is for one or more specific Asset Types only, you associate the codes with those Asset Types at the (unnamed) Associate Asset Type panel.

The two default codes are for use in **Pocket RAMM** only

If you want a **Maintenance Reasons** code to be available only to particular Inventory Asset Types

You associate the code with the **Asset Types** at this panel

You define your own **Maintenance Reasons** codes for use with Inventory Asset Types only

> ⚠️ **NOTE**
>
> Only Inventory User Defined Asset Types will be available for association at the (unnamed) Associate Asset Type panel.

Values Available at the Reason Drop-down List

When you replace an Asset, **RAMM** opens a dialog so that you must record why the Asset is being replaced. The values you define at the **Maintenance Reasons** screen in **RAMM Manager** become available at the Reason drop-down list on the **Replace Asset** dialog. In the example below, the dialog is named **Replace Camera**.

View the Replacement Reason at the Maintenance Tab

When an Asset has been replaced, the Maintenance Reasons code for the replacement may be viewed in the Replace Reason field in the Replacement section on the Maintenance tab of the screen for the Asset Type.

This value will be unable to be entered or edited.

The **Maintenance Reasons** code in the **Replace Reason** field is unable to be entered or edited

Associated Assets

You can now associate a UDT Asset with another **RAMM** Asset.

You might use this feature if you had a traffic camera which was positioned on a Street Light Pole and you wanted to positively identify the exact Pole. You do this at the Associated Assets tab on the screen for the Asset Type. In the example below, it is the **Camera** screen.

Associate an Asset

To associate a UDT Asset with another **RAMM** Asset , you press Link Assets on the Associated Assets tab. The **Associate Assets** dialog will open.

Associated Assets

Press **Link Assets**

Select Asset Type

First you select, from the Asset Type drop-down list the Description of the Asset Type for the Asset you want to Associate with your UDT Asset. In the example below the Camera UDT Asset is going to be associated with the Street Light on which it is mounted.

> The Asset Types available at the Asset Type drop-down list are the standard logical **RAMM** Asset Types as well as any UDT Asset Types you have created.

Filter the List

Once you have selected the Asset Type, all Assets of that type which are on the same Carriageway Section as the UDT Asset will be listed in the Available Assets Grid section.

If you wish to further filter the list you press Show Filtered Assets to open the **Filter** dialog. You can then make your selections to further refine the Assets in the list.

Select the Asset

You select the Asset in the list. Its Asset ID will default into the ID field. In the example it is a Street Light pole. So the field is named Pole ID. You then press Link to associate the Assets.

Jump to Associated Asset

Once you have associated the Assets you may want to open the Detail screen of the Associated Asset to check things. If so you press Jump to Associated Asset [icon]. The Detail screen will open at the Associated Assets tab. The details of the Association will have defaulted. In the example below the Detail screen for the Street Light supporting the Camera has opened.

> You can also link Assets which are not UDT Assets. See Linked Assets.

Addendum 1

This addendum is useful only to those **RAMM** users who do not use the **RAMM** Hosting Service. If you use the **RAMM** Hosting Service you should ignore this addendum.

Backing up and Recovering Databases

If you use a local version of **RAMM** rather than the **RAMM** Hosting Service, then backing up your **RAMM** database is very important. Your database backup is your only hope of recovering the database in the event of a hardware failure.

Backing up your database is a simple process that is accessed from the File Menu of **RAMM Manager** and **RAMM Network Manager**.

Backup Database

> If your backup fails, an error message to this effect will appear. You need to contact ROMAN II immediately if this happens.
>
> See Contact ROMAN II (see "Contact RAMM Software Limited" on page 26).

▶ **To Backup Your Database**

1   Select File > Backup Database from the **RAMM Manager** or **RAMM Network Manager** main screen menu to open the **Backup Database** screen.

The database to which you are connected is selected by default, and you can also specify a location for the backup file and add Notes.

2   Press OK to continue. The **Non-RAMM Tables** dialog will open listing those tables unable to be exported in the database backup.

3   Press OK to open the **Backup Database** progress screen which shows the progress as **RAMM** performs the backup. Please be patient as this takes a while.

4   The screen will close when the backup is complete and the **Database Backup Report** dialog will open.

5   The report is a listing of the tables that have been exported and the number of rows of data. If you are interested in such a report you have the option to Preview and Print report. Otherwise press Close to return to the original main screen.

Recover Database

▶ **To Recover Your Database**

1   Select File > Recover Database from **RAMM Manager** or **RAMM Network Manager** menu to open the **Database backup to file to open** screen.

2 Browse to and select the file that contains your backup. This is typically a **.cjb** file. Press **Open** to open the **Recover Database** screen.

3 You have the option in the **Load Options** section to create a new database or replace an existing database. If you choose to create a new database, you are taken directly to the database setup screen to specify a path, host and database name. Contact us if you are not familiar with the process for setting up a new database to work with. You may need to talk to your Systems Administrator as well.

> The Replace option destroys the replaced database. Please be very careful as there is no going back once you confirm this action.

4 If you choose the replace option, you next see a list of installed databases you can overwrite. Select the database you wish to replace and press **OK**.

5   The replacement process takes a few minutes. You can connect to your database as soon as it is done.

Glossary

Asset

An Asset is an item in a Network which has a value. It could be a physical component of a Road, such as its Surface. It could be something real such as a Bridge, a Footpath or a Street Light. Where no table exists in **RAMM** for one of your Asset Types, you set up a User Defined Table (UDT) to manage the Assets.

Asset Owner

User defined Asset Owner codes describe the owner of a particular Asset such as a Traffic Signal set. They are used to differentiate the Network Assets which are to be maintained from those which are either not to be maintained or which are to be maintained, but on a different pricing structure.

Asset Type

An Asset is something real which exists in your Network such as a suspension bridge, an oak tree or a neon street light. You group these Assets by Asset Type such as Bridges, Footpaths and Street Lights. It is likely that all the Asset Types you require will exist by default in **RAMM**. If not, you define a UDT to accommodate the Asset Type.

Austroads

Austroads exists to contribute to the achievement of improved Australian and New Zealand transport related outcomes. It is the association of Australian and New Zealand road transport and traffic authorities. Austroads members are the six Australian state and two territory road transport and traffic authorities, the Department for Infrastructure, Transport, Regional Development and Local Government, the Australian Local Government Association (ALGA), and the New Zealand Transport Agency (NZTA).

Bylaw

This is a city or municipal law or ordinance, passed under the authority of a charter or law specifying what things may be regulated by the Municipality or Territorial Authority.

The main difference between a bylaw and a law passed by the State is that a bylaw is a regulation passed by a body which is not a sovereign body. It is one which derives its authority from another governing body. A city council is empowered to pass laws through a charter or a law of the government which specifies what things the city may regulate through bylaws.

Similarly, a business or corporate body also gets its ability to pass bylaws relevant to its operation from some law or act passed by some

public body for the purpose of regulating corporate activities.

CAR Manager

CAR Manager is the online application used by corridor managers to manage requests by utility operators, or their contractors, to access the Road corridor. Access to the corridor is required to make changes to electricity, gas, telecommunications, water, wastewater and postal infrastructure.

Carriageway

Roads in **RAMM** are divided into logical sections named Carriageways. These start and end at easily identifiable Locations such as Intersections and Bridges. You can define your Carriageway Sections to suit your own purposes. For instance you may define them to start and end when the number of Lanes in the Road changes or if the Road changes between Sealed and Unsealed sections.

Component

Components are specific elements which are physically or functionally independent and which make up an Asset. For instance a Traffic Signals set will include components such as a Controller, Detector Loops, Poles and Lanterns. Each component will have its own specific attributes, such as Total Useful Life. In **RAMM Contractor** components are sometimes referred to as Assets.

Condition

In **RAMM** Assessment the Condition of an Asset describes its fitness or readiness for use. Typical **RAMM** and NAMS Conditions are Excellent, Good, Average, Poor and Very Poor. Assessment Condition Weighting is used to determine Risk of Failure and the Consequences of Failure.

Controlled Intersection

An Intersection which is associated with a Traffic Signal set in **RAMM** is defined as Controlled. The Intersections at which RCAs moderate or control traffic with Stop signs, Give Way signs or roundabouts are all, in a sense, controlled. However, in **RAMM**, Signs are Located on the Carriageway of the Road, not on the Intersection record itself. So these Intersections are not defined as Controlled in **RAMM**.

Custom Security Switch

Custom is one of the settings of the Global Security Switch. When you individualise the Permissions for a user, the Global Security Switch is automatically set to Custom.

You manage access to **RAMM Contractor** by setting Staff Permissions. You do this to limit the actions of users to those areas of **RAMM Contractor** to which they need access in order to be able to perform their normal work tasks.

Where the Global and preset Security Groups do not match the

Staff Permission Set required for a particular staff member, you define an individual Security Profile for the user.

To do this you use a range of switches covering different aspects of the data and **RAMM Contractor** functions. Each of these switches, such as the one used to enable a user to maintain Claim Headers, has a hierarchical series of preset levels defined. For instance, this allows you to give a user View Only access so they can see but not touch, or to give them View and Update access. The latter case would allow a user to make changes to the Claim Headers.

Database

This is a structured collection of data that is stored in a computer so that an application can consult it to answer queries. In **RAMM**, this is a particular Road Network. It is possible that you will use more than one **RAMM** database, especially if you work with more than one Road Controlling Authority.

Database Administrator

Client Organisations who use the **RAMM** Hosting Service to maintain user access to their **RAMM** databases require one or more persons in the Organisation to manage database access Permissions. This person is the Database Administrator. This person grants users access to databases and determines their level of access.

Decision Cube

This is a context-sensitive **RAMM** pivot table that allows you to view your data in various ways. It also enables you to create reports.

Detail Screen

Detail screens in **RAMM** are used for working with Road Inventory, Condition and other items one at a time. You use them to view and maintain details for one item only at a time.

Dispatch

A Dispatch is a defined activity generated from within **RAMM Contractor** so that Contractor field crew can repair a Network Fault. In **Pocket RAMM** it is referred to as a Job.

Displacement

Displacement is the distance along a Road measured from the start of the first Carriageway Section of the Road. It is stated in metres.

dTIMS

Deighton Total Infrastructure Management System (dTIMS) is a software tool used to model Pavement Deterioration. **RAMM** provides a method of extracting Treatment Length, Maintenance Cost and related data from the Road Network in a format that can be imported into dTIMS.

Export

When you have data in **RAMM** which you would like to use in another application, you export the data. To export data is to save the data from the **RAMM** database. This may involve converting the data into a particular file format. Once exported, the data can be used by an application that recognizes the exported format.

Field

One detail about a particular item.

Filter (Database Filter, Grid Filter)

Filters are the screens which you use to sort the data in Detail or Grid screens according to selected criteria. You use these to streamline the information you see in **RAMM** such as in the Roads list panel.

Full Control Security Switch

Full Control is one of the settings of the Global Security Switch. It allows the user Permission to access, add, update or delete any record and to run any process. You manage access to **RAMM** by setting Staff Permissions. You do this to limit the actions of users to those areas of **RAMM** to which they need access in order to be able to perform their normal work tasks. If you set a user to Full Control it means that all the individual Permission switches for that user are set to Full Control.

Global Security Switch

RAMM Security uses a Global Switch to grant preset levels of database access. This sits on top of the individual switches and allows you to set a specific range of values across all the individual switches in one go. This switch has four settings:

- No Access
- View Only
- Full Control
- Custom Settings.

You manage access to **RAMM** by setting Staff Permissions. You do this to limit the actions of users to those areas of **RAMM** to which they need access in order to be able to perform their normal work tasks.

Grid Screen

The Grid screen in **RAMM** is a visual report writer. You use Grid screens to work with multiple Road Inventory, Condition and other items. You adjust the Grid Layout so that is looks right and it suits your purposes.   You can then view, export or print the displayed details.

Hosting

The ROMAN II Hosting Service is a service run by ROMAN II. It enables you to run **RAMM** across the Internet. It hosts your database and the software on a server at a centralised location. You use your standard internet browser to access the software and work with your data, so you do not need any specialised software. It is very secure.

Import

When you have data existing in a file which you would like to use in **RAMM**, you import the data. To import data is to enable the **RAMM** database to load it. Once successfully imported, the data can be used by **RAMM**.

Intersection

An Intersection is a Road Junction where two or more Roads meet or cross. In **RAMM**, Intersections are used for Traffic Signals and Bylaws. **RAMM** Intersections can be created on a single Road, to indicate a Pedestrian Crossing or the Traffic Signals at a Fire Station.

Intersection Type

User-defined Intersection Type codes may be created to enable users to differentiate different types of Intersections. For instance you can use the codes to separate T Junctions from Y Junctions. You could also use them to highlight State Highway Interchanges or Intersections which are Not a Real Intersection such as a Pedestrian Crossing.

IRIS

The Integrated Road Information System (IRIS) is the system Main Roads Western Australia (MRWA) uses to store and manage Road Assets. IRIS links Road data with a spatial Network. IRIS users can map data using built-in (GIS) mapping tools. The geographic coordinate system used to store spatial data in IRIS is the Geocentric Datum of Australia.

Job

A Job is a defined activity generated from within **Pocket RAMM** so that Contractor field crew can repair a Network Fault. In **RAMM Contractor** it is referred to as a Dispatch.

Locality

A Locality is a group of associated Road records which constitute a named Road. You use Localities in situations where a single **RAMM** Road ID is not sufficient to describe an entire Road configuration. For instance, a Slip Road parallel to its associated parent Road or an extension which branches off the parent Road are really one item with the parent Road but are two Road records in the Roads list panel in **RAMM**. You create a Locality to associate branch, extension and other Road records with the parent Road record.

Location

Location refers to the collection of details used to position an Asset or Inventory item within a database. The most basic Location information is a combination of Road and Displacement. Location information can also include helpful notes such as nearby landmarks. Point Assets such as Signs have a Location field whose value is the Displacement of the Sign from the start of the Road.

Maintenance Cost

See Maintenance Activity

Metadata

This is a term used to define objects and processes that describe or control data. It is used in association with user defined tables.

The simplest definition of metadata is that it is data about data. It is information (data) about a particular content (data). It is used to facilitate the understanding, use and management of data.

MRWA

Main Roads Western Australia (MRWA) is responsible for Western Australia's highways and main Roads. They are one of the largest geographically spread Road Agencies in the world, covering 2.5 million square kilometres. They are responsible for almost 18,000 km of Western Australia's 150,000 km Road Network. This represents some 12% of the Network which carries around 60% of the road traffic.

NAASRA

National Association of Australian State Road Authority (NAASRA) is the body that devised the common roughness meter. It is now known as Austroads.

NAMS

National Asset Management Steering Group.

Network

A Network is a collection of Roads managed by a particular Road Controlling Authority (RCA). Each **RAMM** database usually contains all the information for one Network.

Network Management Consultant

This is the person or group that represents the Network Owner in dealings with the Contractor if the Network Owner prefers a third party to be responsible for a Network Management Area.

No Access Security Switch

No Access is one of the settings of the Global Security Switch. It denies a user any access at all to a **RAMM** database.

You manage access to **RAMM Contractor** by setting Staff Permissions. You do this to limit the actions of users to those areas of **RAMM Contractor** to which they need access in order to be able to perform their normal work tasks.

If you set a user to No Access it means that all the individual Permission switches for that user are set to No Access.

Nonasset

Nonassets are items for which screens exist in **RAMM** but which

have no monetary value. They are generally something not physically present on the Road Network such as Roughness, Maintenance Cost and Crash. You can set up User Defined Tables (UDTs) to manage Nonassets which do not have their own screens in **RAMM**. Examples could be slips, hazards and certain Condition data.

Null

This means blank or having no value. Some **RAMM** fields must have a value. These fields are highlighted with a coloured background.

NZTA

The New Zealand Transport Agency (NZTA) is the Crown Entity responsible for State Highways. These are the strategic Roads and motorways that are about 12% (10,894 km) of all New Zealand Roads, but account for about half of the 36 billion vehicle kilometres travelled every year. It promotes land transport sustainability and safety and allocates government funding for land transport.

Permissions

Staff Permissions are access rights granted to specific users and groups of users. They are authorisations for users to view or make changes to the contents of aspects of **RAMM**.

You manage access to **RAMM** by setting Staff Permissions. You do this to limit the actions of users to those areas of **RAMM** to which they need access in order to be able to perform their normal work tasks.

RAMM

Road Assessment and Maintenance Management (**RAMM**) is software developed and supported by RAMM Software Limited. This software is used by Road Controlling Authorities (RCAs) to manage Road Inventory Assets and Condition for their Network.

RAMM Applications

Hosting Administration is the portal through which you access the **RAMM** suite of software products. You log in to **Hosting Administration** through the RAMM Software Limited web site.

RAMM Assessment

RAMM Assessment is a feature to used to manage and record Inspections of Roading Assets. You use **RAMM** Assessment to manage the overall Condition of your Network.

RAMM Condition Items

RAMM Condition items generally measure the fitness or readiness for use of **RAMM** Inventory items. They have their own **RAMM** screens . Typical Condition items are Roughness, High Speed Rutting and Skid Resistance. These are used to describe the Condition of your Roads.

RAMM Contractor

RAMM Contractor is the module of the **RAMM** suite of products which enables Contractors, Network Owners and Consultants to manage Road Asset Maintenance Contracts. In particular, it has been optimised to facilitate the Programming of Network maintenance and the Estimation and Claims process which is integral to Programmed Maintenance Contracts. It also includes the special features for the managing of Contracts for Signs, Street Lights and Traffic Signals maintenance.

RAMM Graphs

RAMM Graphs is the application for displaying your **RAMM** data in graphical form. You can display Inventory, Condition and other details in a variety of formats.

RAMM Inventory Items

The **RAMM** Inventory is all of your **RAMM** database records including real items such as a Bridges, Footpaths and Street Lights as well as your other data such as Bylaws. Your Condition data such as Roughness and your report data such as **RAMM** 3D do not form part of your Network Inventory.

RAMM Manager

RAMM Manager is the module in the **RAMM** suite of products which you use to set up Lookups, to maintain Staff Permissions, to run processes such as Status Check, and to run reports.

RAMM Network Manager

RAMM Network Manager is the module in the **RAMM** suite of products which you use to manage the details of your Network and in particular, the Road centre lines. **RAMM Network Manager** is a powerful, flexible and comprehensive Road Network maintenance tool that helps you automate tasks and perform complex Network management actions. For example, you can reverse a Road with a single press of your mouse. When you apply this change **RAMM Network Manager** will update all relevant tables within the database. It also has a graphical display which displays current and historical views of the changes you are making.

RAMM Software Ltd

This is the company which specialises in the development of software for the roading industry. Its core product, **RAMM** (Road Assessment and Maintenance Management) has been the benchmark in road asset management software in New Zealand for over 20 years. **RAMM** is now a suite of software products including **RAMM Contractor**, **Pocket RAMM**, **RAMM SQL**, **RAMM Manager**, **RAMM Network Manager** and the **RAMM** CAR Manager.

RAMM SQL

RAMM SQL is the module of the **RAMM** suite of products which enables a power user to manipulate **RAMM** data using SQL (Structured Query Language). It is a very powerful tool and should be used only by advanced users who have a detailed knowledge of the **RAMM** database.

RAMM Web Service

A web service is software application designed to support one software product to talk to another. You use the **RAMM** Web service to enable your CSRs (Customer Service Representatives) to use their customer service software to add a Job into **RAMM Contractor** for, say, a Street Light out or graffiti on a wall, and to monitor the Job progress. Configuring access to the RAMM Contractor Web Service is performed by Local Government (LG) software developers and is the responsibility of the Network Owner. They create their own tool to extract Job information from their customer service software and send it to the **RAMM** Web Service which sends it to the **RAMM** database. They also create software to poll the **RAMM** Web Server at regular intervals to obtain a list of changes to the Jobs. These changes then become available from within the customer service software.

RCA

A Road Controlling Authority (RCA) is the organisation responsible for a particular Road Network. An example of an RCA could be the New Zealand Transport Agency (NZTA) or a TLA (Territorial Local Authority).

Record

This is a collection of information about a single object. In **RAMM** it is a grouping of all the details about a particular item such as a Berm or Street Light. You maintain single record details in a Detail screen.

Road

For Local Authorities, a Road denotes a single named Road that is part of their Network. For State Highways, a Road is a segment of the State Highway.

Road Asset

A Road Asset is a detail about a particular aspect of a Road. It could be the Pavement layers, Condition or other aspect.

Route Data Sheet Report

The **RAMM** Route Data Sheet report is a listing of your Assets for a Road, in the order in which you would see them if you started at one end of the Road and travelled to the other.

Security Role

A Security Role is an item you create with Staff Permissions, as if it were a User Profile. Then, where there is a group of users who perform the same tasks as each other, rather than define individual Staff Permissions for each User Profile, you associate the User Profiles with one Security Role. This makes it faster grant a new user the appropriate Staff Permissions. You can also change the Staff Permissions for a whole group of people by changing the Permissions associated with their Security Role.

Security Zone

User access to **RAMM** is managed by a combination of Permissions, global security parameters, individual Security Profiles, Security Roles and Security Zones. A Security Zone is a portion of the Network. It is defined as a collection of Roads. This could be all Roads in a geographical area. Alternatively, it could be a group of Roads with a common characteristic such as Rural.

Staff Permissions

Staff Permissions are access rights granted to specific users and groups of users. They are authorisations for users to view or maintain specific aspects of **RAMM**. You set Staff Permissions for users, firstly, to manage their access to **RAMM** and, secondly, once they have accessed **RAMM**, to limit their actions to those which they need in order to perform their normal work activities.

Stock Asset Types

In **RAMM** the three Asset Types, Signs, Street Lights and Traffic Signals are referred to as Stock Asset Types. This is because, unlike the other Asset Types, when Signs, Street Lights and Traffic Signals Assets or components are replaced, a detailed record is kept of the replacements including the Replacement Reason. So you have an itemised list of the current and past Assets. You create Stock UDTs to manage those of your Assets (if any) which do not already exist in **RAMM** and for which you need to keep replacement records.

Table

This is a container in the **RAMM** database that holds all the records about an aspect of all Roads in the database. This could be their Berm or Shoulder details for example. Each table holds all the information about only one aspect of all the Roads.

Traffic Count Estimation

RAMM Traffic Count Estimation enables you to combine historical traffic data with intelligent Carriageway Section linking to produce a traffic counting and estimation programme which delivers the most Network coverage, the most accurate and up to date ADT Estimates for the minimum number of counts.

Treatment Length

A Treatment Length is a section of a Road with consistent performance and purpose. For example, it could have the same Top Surface material and Annual Average Daily Traffic (AADT) count along its length. A Treatment Length may have had similar Treatments applied along its length and is often different from its adjoining sections.

UDT

A User Defined Table (UDT) is a **RAMM** table defined by a **RAMM** user to manage their Assets not in the default **RAMM** Asset set. This can include both Assets with a monetary value such as bus stops and Assets with no monetary value, which may still require management, such as slips.

Once set up, Assets in a UDT behave exactly like standard **RAMM** Assets. They are managed in their own Grid and Detail screens. They are available for other **RAMM** applications such as **RAMM** Asset Valuation and **RAMM Contractor**. Dispatches can be entered for work to be done on them. They can be viewed on **Maps**.

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