

Skid Resistance, Treatment Selection and Status Check

*Version 3
28th March 2011*

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Document Release

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About This Guide

This guide is specifically intended to help you use and understand the functions of the **RAMM Manager** software from [RAMM Software Limited](#).

RAMM Manager is intended for high-level maintenance and setup of **RAMM** functions and processes. For help on the more basic functions of **RAMM**, you should refer the *Using RAMM* guide.

If you're not sure whether you're reading the right guide, see [RAMM Guides and Manuals](#) (on page 30).

If you're new to **RAMM Manager**, we recommend that you read the entire guide.

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.



excellence in asset management

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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**, **Hosting Administration**, **RAMM CAR Manager**, **RAMM Network Manager** and **RAMM SQL**.

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 **RAMM CAR Manager** has been added to enable Corridor Managers to manage access to their Network. **Hosting Administration** has been added to give users greater control over the users who access their Network data.

So that is why sometimes **RAMM** refers to the one application and other times to the entire application suite.



Your RAMM Applications

The full **RAMM** suite includes the following applications including **RAMM** (for Windows). 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 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 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.

 **Hosting Administration**

The **Hosting Administration** is an online application which enables users to manage access to their Network. It enables Network Administrators to create logins for individual users and allows those individuals to maintain their own passwords.

 **RAMM CAR Manager**

RAMM 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.



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 33).

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

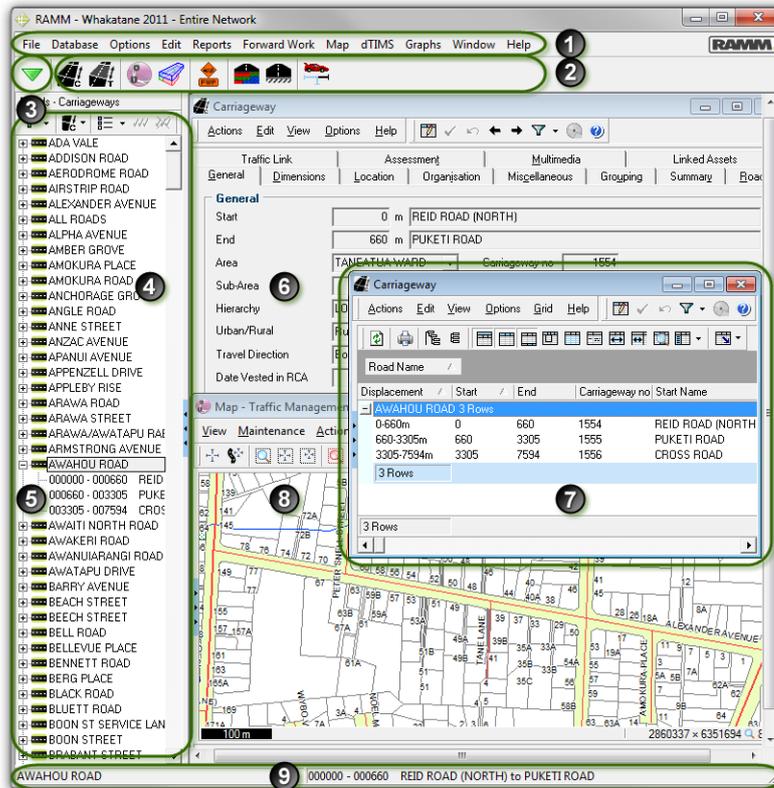
Deighton Total Infrastructure Management System (dTIMS) is a software tool used to model Pavement Deterioration. **RAMM** provides a method of extracting Treatment Length, Maintenance Cost and related data from the Road Network in a format that can be imported into dTIMS. You export information from **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 can set up a User Defined Table (UDT) to manage the Assets.

Nonasset

These are items which have no monetary value and for which screens exist in **RAMM**. They are generally not something physically present on the Road Network. Examples of Nonassets are 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 all of your **RAMM** database records including real items such as a Bridges, Footpaths and Street Lights as well as your Survey data such as Crashes and 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.

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.

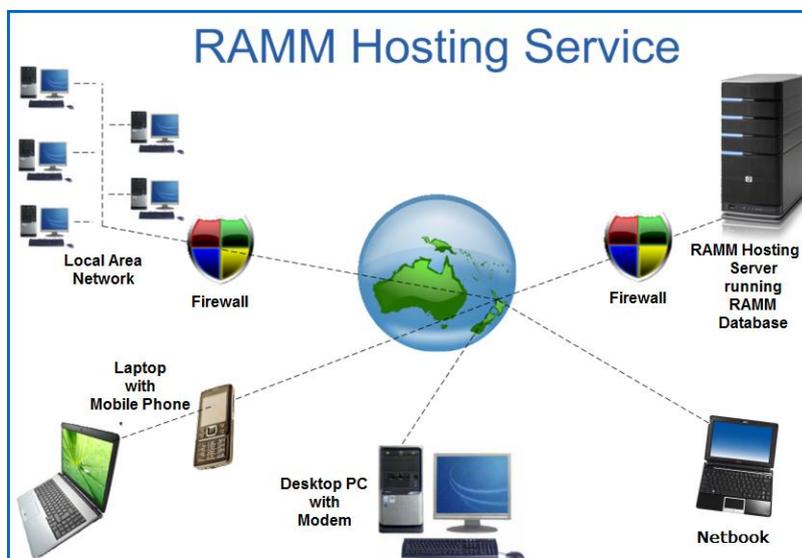
You log in to **RAMM** using the **RAMM Hosting Service**.

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 Hosting Service

Introduction

You log in to the [RAMM Hosting Service](#) to access the [RAMM](#) applications.

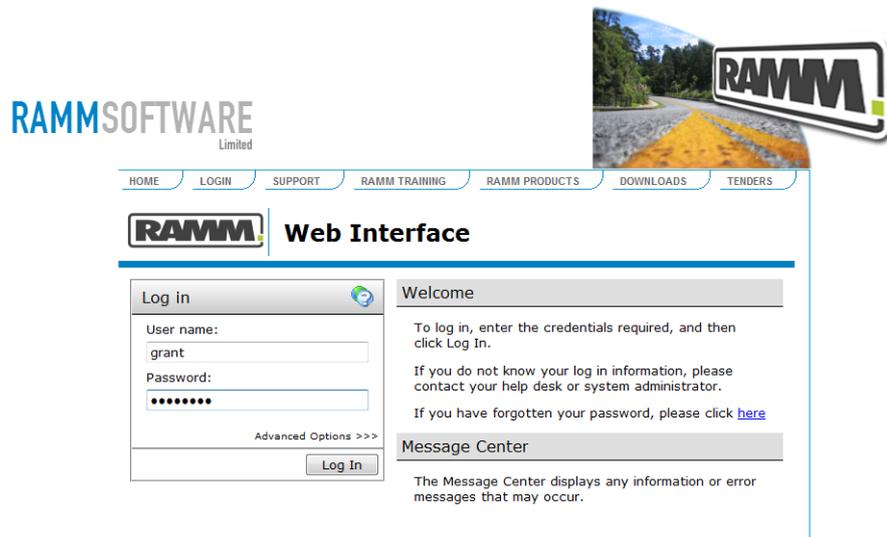
Before you do this you need to have:

- 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 33).
- 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/](https://login.ramm.co.nz/) to open the **Log in** page.

► To Log in to the Hosting Service



RAMMSOFTWARE
Limited

HOME LOGIN SUPPORT RAMM TRAINING RAMM PRODUCTS DOWNLOADS TENDERS

RAMM Web Interface

Log in

User name:
grant

Password:
●●●●●●

Advanced Options >>>

Log In

Welcome

To log in, enter the credentials required, and then click Log In.

If you do not know your log in information, please contact your help desk or system administrator.

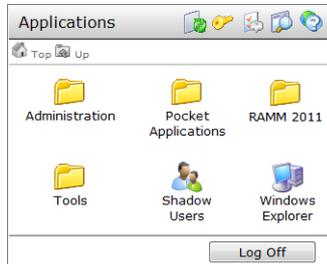
If you have forgotten your password, please click [here](#)

Message Center

The Message Center displays any information or error messages that may occur.

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.



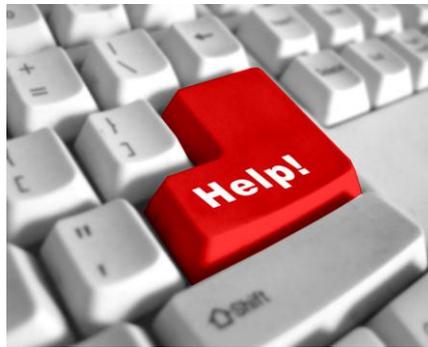
NOTE

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 27).
- use internet-based Help. See **RAMM** Help on the Internet (on page 29).
- read the **RAMM** documentation. See **RAMM** Guides and Manuals (on page 30).
- discover the **RAMM** tables and columns. See **RAMM** Database Details (on page 32).
- talk to other **RAMM** users. See Help from Other Users (on page 32).
- seek professional help. See Contact **RAMM Software Limited** (on page 33).



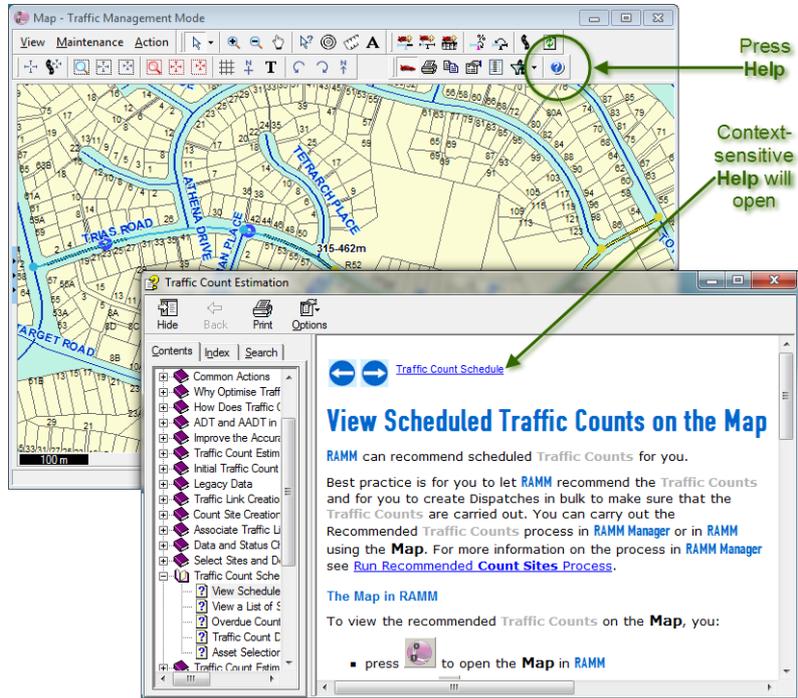
Context-sensitive Help

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

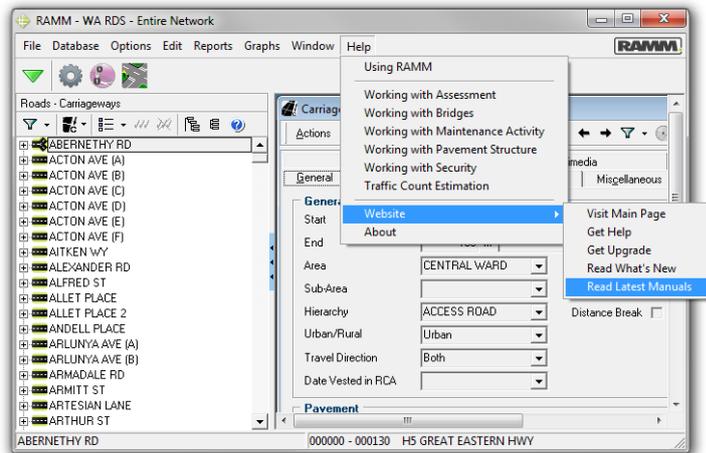
Most screens in **RAMM** have a Help  menu option. You press F1 on your keyboard or press Help  at the top of the screen to open the context-sensitive Help.

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](http://www.ramm.co.nz) web site (<http://www.ramm.co.nz>). They are generally available in both downloadable .pdf versions and in online Web Help versions.

The screenshot shows a list of three user guides on the RAMM website. Each guide has a small icon representing its format: a document for PDF and a browser window for Web Help. Green circles and arrows highlight these icons with explanatory text:

- Traffic Count Estimation Guide:** A green circle highlights the Web Help icon (browser window) with the text: "Use this link to open a Web Help version of the manual".
- RAMM 2008 Best Practice Guide:** A green circle highlights the PDF icon (document) with the text: "Use this link to download a .pdf file which is easily shared and printed".
- Best Practice for Assessment in Pocket RAMM:** A green circle highlights the Web Help icon (browser window) with the text: "Web Help opens in your browser, is pretty and searchable, but prints only one page at a time".

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.
- **What's New in RAMM 2011 (Printed Manual)**
This is an overview 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. For full details of the changes you should read the online Web Help version of the document.

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 .html 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.

The screenshot shows a window titled "Database Structure Report" with a toolbar and a table of database information. The table has four columns: Table, Description, System, and Page. The data is as follows:

Table	Description	System	Page
address	Road address based on land parcel locations	Core	4
asset_owner	Definition of the Asset Owners which can be applied to an asset	Core	4
asset_owner_type	Type Definition for the Asset Owner	Core	5
can_away	Carriageway Table - Dimensional & General info. for each section	Core	5
change_log	Log table added to whenever core table details are changed	Core	9
column_default	User Defined Default Values for the columns in a table	Core	9
oway_area	Lookup Table for Local Areas	Core	10
oway_area_office	Transit NZ Operating office	Core	10
oway_est_mmp	Definition for Estimated Rainfall for the Carriageway	Core	11
oway_group_1	Optional Carriageway Group 1 lookup table	Core	11
oway_group_2	Optional Carriageway Group 2 lookup table	Core	11
oway_group_3	Optional Carriageway Group 3 lookup table	Core	12
rdi_values	The RAMM Construction index etc. for B/C calculation during T/S	Core	17
rom_action	Actions for a Road Names Carriageway session	Core	18
rom_session	Header for a Road Names Carriageway session	Core	18
road_council	Lookup table for Local Authority names	Core	18
road_dimension	Width of the Road at a given Location and Date	Core	19
road_region	Lookup table for description of road regions	Core	19
road_type	Road Type Indicator	Core	20

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Contact RAMM Software Limited

Internet

This is the link to open the **RAMM** web site (<http://www.ramm.co.nz>).

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This is the link to send an email to **RAMM** Support (<mailto:support@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.



Working With Skid Resistance

This section of the *Managing RAMM* guide describes working with SCRIM (Sideway-force Coefficient Routine Investigation Machine) survey data. SCRIM surveys were developed in the UK and are now used in many parts of the world to measure skid resistance continuously over a length of road.

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The SCRIM Exceptions Report

The data collected from SCRIM surveys is analysed in **RAMM** to generate the SCRIM Exceptions Report (on page 55).

This report lists sites, based on chosen threshold values, that have problems relating to a lack of macro texture (for example, flushing or bleeding) or poor micro texture (for example, polished stone) with a consequent relevance to skid resistance.

Background

Since the first annual high speed data surveys in 1995, the management of state highways and the data collection methods for SCRIM surveys has changed considerably.

This update implemented in **RAMM** 2003 addresses the need to present the SCRIM Exception Report data.

The data is presented in formats that are useful for different target audiences, including:

- Transit New Zealand managers (at a network level).
- Contractors.
- Network Consultants.

Links to other software and documentation

Follow these links to access further information relevant to the SCRIM Exceptions report.

- *Transit New Zealand T10 documentation.*
This chapter should be read in conjunction with the following Transit New Zealand documents, available at the following web locations in Adobe Acrobat PDF format.

TNZ T10
(<http://www.nzta.govt.nz/resources/skid-resistance-investigation-treatment-selection/>)
TNZ T10 notes
(<http://www.nzta.govt.nz/resources/skid-resistance-investigation-treatment-selection/>)
- *NOMAD Forward Work Programme*
SCRIM treatments need to be aligned with treatments planned under NOMAD. See the Forward Work Programme chapter in the *Working with RAMM* guide.

Enhancements to the SCRIM Process in RAMM 2003

<i>Enhancement</i>	<i>Purpose</i>
Exception Reporting by Treatment Length	<p>Reports are now generated by Treatment Length and not by Major Seal.</p> <p>This is for tighter integration with the NOMAD Forward Work Programme, and to provide a better location reference to the Treatment Length name. The current trend is also to adjust Treatment Lengths to correspond with seal lengths for greater consistency and accuracy in forward planning.</p>
Highlighting Site Category changes downwards	<p>Lengths that change the site category downwards are now highlighted with a downward change comment for the respective site.</p> <p>This is particularly relevant to curves at the 250m cutoff, which can show a site category change from 2 to 4 within a single year. This has been identified as a significant issue in SCRIM trending, and the identification of these sites makes the consultant's task much easier.</p>
Forward Work Planning for Y1 and Y2 included in report	<p>The SCRIM Exceptions Report now displays all Forward Work Planning treatments planned for Year 1 and 2.</p> <p>This enables a desktop review to be performed to ensure whether the planned treatments may affect decisions stemming from the SCRIM site identification process.</p>
Existing NOMAD treatments will be unaffected by low skid resistance flags	<p>Existing NOMAD treatments will be unaffected by low skid resistance flags generated from the SCRIM Exceptions Report.</p>
Details of Level 3 sites are now included	<p>This addresses the need for more detail with regard to Level 3 sites to save time and resources on field investigations.</p>

Texture threshold options	<p>Texture threshold options can now be set alongside SCRIM threshold options in keeping with new Transit New Zealand requirements.</p> <p>The options include SCRIM Threshold Only, Texture Threshold Only, Use Either or Use Both.</p>
More flexibility to generate summaries and/or details	<p>The SCRIM Exceptions Report can be configured in a number of ways to suit the needs of differing users such as Transit New Zealand Engineers, Consultants and Contractors. See Preliminary considerations (on page 39) in our our section on Types of Reports for more information.</p>
Removal of unused data fields	<p>Data fields not directly relevant to the SCRIM review process have been removed to reduce clutter.</p> <p>These include the fields showing AADT, HCV, width and offset.</p>
Level notes now included in footer of report.	<p>Notes are now included in the footer of the report instead of within the body. The notes are linked to the text by a code, and Treatment Lengths are not included.</p>
Lanes are now linked within the Treatment Length	<p>Left and right lanes are now linked together within the same Treatment Length, in route position order, for easy field reference.</p>

Preliminary considerations

A number of factors need to be considered prior to generating the SCRIM Exception data in RAMM. The exact methodology for review of skid resistance at sites is described in detail the Transit New Zealand TNZ T10 (<http://www.nzta.govt.nz/resources/skid-resistance-investigation-treatment-selection/>) and TNZ T10 notes (<http://www.nzta.govt.nz/resources/skid-resistance-investigation-treatment-selection/>).

Investigatory levels

The optimum skid resistance level for any road surface depends on factors such as the road geometry and the level of manoeuvrability required by the vehicles at that location. These factors are taken into account when setting skid resistance requirements. International practice is to specify the skid resistance requirements in terms of investigatory levels. If a section of road is found to be below an investigatory level, this would indicate that an investigation is warranted to establish whether maintenance work should be undertaken and, if required, what treatment should be selected.

Some sites require higher investigatory levels than that recorded in the database. This may be due to site factors such as inadequate superelevation, poor curve geometry, roughness etc. The TNZ T10 documentation provides guidance on modifying investigatory levels if such a need arises.

Types of reports

SCRIM Exceptions can now be reported at three levels. Each level can be configured by SCRIM Exception level or Texture, and reported in lane km, percentages or by category.

- *Treatment Length Detailed.* This level would be of most value to consultants and contractors.
- *Treatment Length Summary.* At this level the report summarises the information to a single line per Treatment Length, and is of use to Transit New Zealand engineers and consultants.
- *Network Management Summary.* This level would be used most by Transit New Zealand area managers and engineers.

Frequency and type of survey

RAMM analyses the most recent survey and surfacing data to exclude lengths which have been treated since the survey and if the option **Exclude NOMAD reseal in Year 1** is chosen, will exclude sites programmed for surface treatment in the forthcoming year.

- For a single lane State Highway the most recent data would be the most recent survey.
- For a multilane State Highway or motorway, the most recent surveys for the outside lane (excluding ramps) and the through lane including ramps would apply. The SCRIM Exceptions Report shows the lane where the threshold site exists (each lane has a unique number). For more information, see Multilane Pavement Transverse Position Description (on page 47).

Transit New Zealand resurveys alternate directions each year for single lane State Highways. For multilane motorways or highways all lanes in both directions are surveyed. Readings are currently taken at 10m intervals by lane.

Method of calculation

The calculation of the SCRIM exception involves averaging the individual left and right wheelpath values, corrected as per the Mean Summer SCRIM Coefficient (MSSC), and subtracting the investigatory level value. We examine the calculation process in more detail in the topic SCRIM Calculate (on page 51).

Desktop analysis

The SCRIM Exceptions Report should not be used in isolation, and needs to be combined with the local knowledge of a contractor or consultant and other software tools such as the NOMAD Forward Work programme.

Before committing field resources to a site investigation, a desktop analysis of a relevant SCRIM report is highly recommended. This analysis would take into account both what you expect and what you don't expect to see in the report. For example, wet road accidents linked to a length of highway identified as below the reporting threshold would need to be investigated further. Likewise, if the length under investigation is flagged as having a NOMAD treatment planned for Year 1 or Year 2 further field investigations would not be necessary.

The desktop analysis will in essence balance the need for investigation against treatments currently in progress or planned for the near future.

Field analysis

As a complementary step to the desktop analysis, field visits and checks on sites having a skid reporting value below the reporting threshold are also essential to determine all contributing factors to the exception and its cause so that engineering judgment may be applied to the decisions about the appropriateness of the data and the selection of the correct treatment option.

A network drive-over near the end of the current summer reseal programme (this would typically be in February/March each year) involving the Transit New Zealand area engineer, the consultant and the contractor is advisable to foster alignment of maintenance strategies and to confirm a draft reseal programme. This drive-over would review any new flushing and bleeding of the surface and check the binder/chip condition of older seals, which can be done only when ambient temperatures are still reasonable.

Ideally the drive-over would take place after the SCRIM data from the January/February period of the same year has been received, but the data generally does not arrive in time. Accordingly a separate drive-over is generally necessary in April/May of the year that focuses on the treatment of polished treatment lengths with a reseal, or the treatment of flushed treatment lengths with either a reseal (for example, a sandwich seal) or by maintenance (for example, diluent and chip).

High risk sites

Sites identified as high risk (for example, sites where you feel there is a high risk of a crash and a high probability of the crash being serious) need to be treated within 30 days, even if the solution is a temporary one. A permanent solution to the problem should be implemented as soon as possible.

Signing off

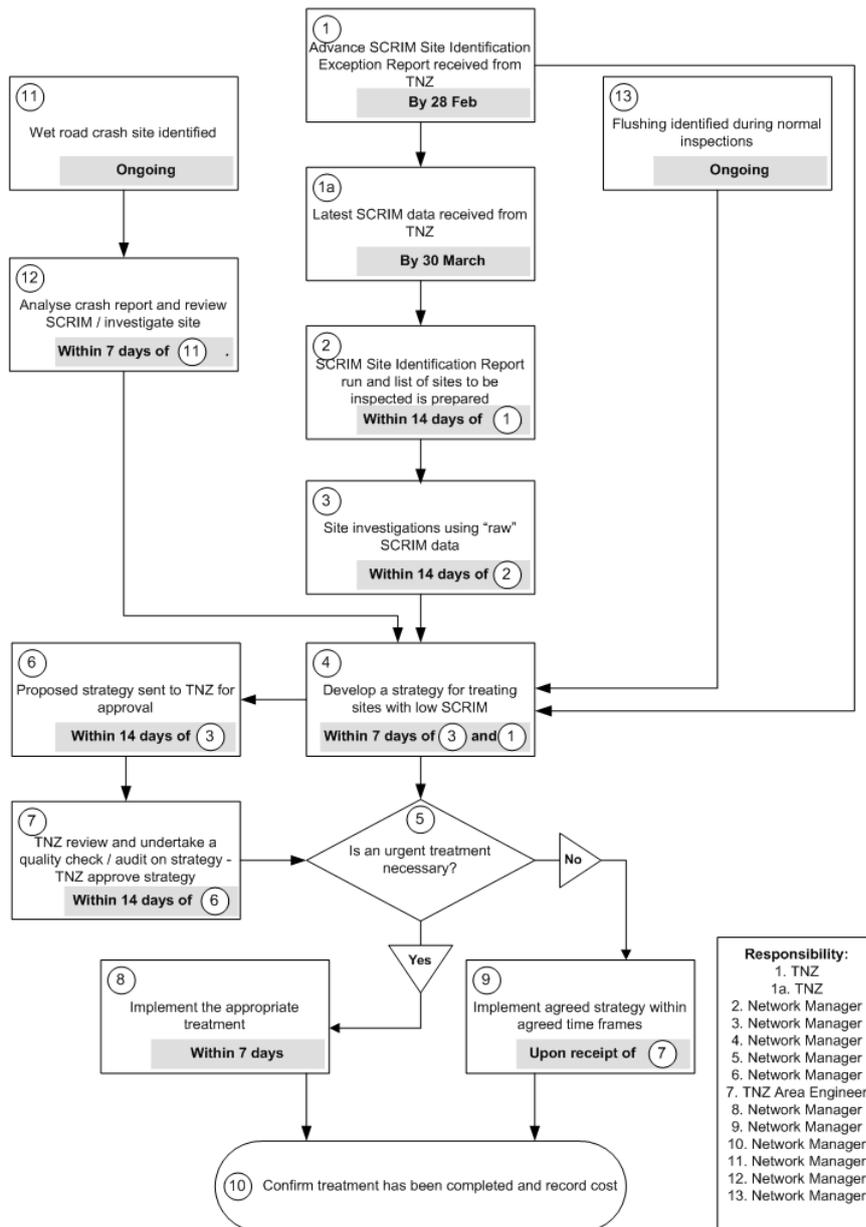
"Closing the loop" and concluding the process is as important as the investigation, planning or implementation of the treatment. Regular monthly reports to Transit New Zealand will help you achieve this.

More information

For more information on definitions of the 5 skid site categories, see SCRIM Site Categories (on page 44). Our section on SCRIM Data Summarisation (on page 47) expands on the 3 investigatory levels. For an example of a SCRIM Exceptions Report and an analysis thereof, see Sample SCRIM Exceptions Report (on page 57).

SCRIM Process

This diagram shows an overview of the SCRIM process.



Notes:

1, 1a The updated SCRIM data is received from Transit New Zealand and loaded into **RAMM**.

2 The SCRIM Exceptions Report is generated, and sites identified. Existing surface types and their age should also be recorded to identify trends in SCRIM specific to those types.

3 *Desktop Analysis:* the sites are first analysed for SCRIM adequacy. These sites may be listed in the Safety Management Strategy. As stated in Preliminary Considerations (on page 39) above, some sites may require a higher Investigatory Level than that recorded in the SCRIM report due to specific site conditions.

Field Analysis: all sites identified in the SCRIM report must be inspected to be able to arrive at an informed assessment of risk from an engineering perspective. Low skid resistance readings may be temporary, stemming from bleeding in hot weather, fuel spills or other factors.

The network drive-over will be part of the field analysis procedure. NOMAD data will be available for this purpose, but ideally the SCRIM data should be available to perform SCRIM checks as well. If this isn't possible, a separate SCRIM specific drive-over and inspection will need to be performed in April/May of the year.

After each drive-over, the NOMAD programme will need to be revised to establish a reseal programme.

4 When developing the strategy for treating sites, the following should be recorded:

- Actual length/area to be treated
- Cause of low SCRIM value, ie: flushing, polishing or both
- Recommended treatment (if any)
- Cost
- Priority, ie: high risk, medium risk or low risk

The strategy will also discount sites that the analyses in 3 above identify as not needing treatment. Conversely it will also extend site lengths or areas if site inspections have shown this to be

necessary.

Recommended treatments may include diluent and chip, mill and replace or Area Wide Treatment (for flush sites) or resealing (for polishing problems), etc.

- 5 High Risk sites should be treated within 30 days of identification. Temporary solutions such as Slippery When Wet signs may be required until more permanent solutions can be implemented.

It may be possible to include some maintenance activities such as diluent and chip repairs and resealing into the current budget.

Any requests for additional funding should be forwarded to Transit New Zealand for inclusion in the next review.

- 10 Signing off and properly concluding the treatment process for each site, including the date completed and the cost incurred, is a necessity.

Depending on the cause/treatment, some sites may require additional monitoring to ensure that skid resistance is maintained at the appropriate level. For example, if a site was flushed and was treated using diluent and chip, the problem may develop again the next summer and require further treatment.

SCRIM Site Categories

Site categories are used to indicate skid resistance Investigatory Levels. Each site category has a SCRIM Investigatory Level. The site category for a reading is determined by the events occurring within the reading length. If the SCRIM value (MSSC) of the skid resistance reading is found to be below the SCRIM Investigatory level an investigation is required.

The SCRIM Calculate program re-orders the events 1-5 based on the SCRIM Investigatory level of their site categories. To do this two lookups are performed. Firstly it looks up the event code table to find the site category code for the event. The second lookup finds the SCRIM Investigatory level for that site category from the site category table. The SCRIM Calculate program orders the event codes in the skid resistance reading with the highest SCRIM Investigatory level in the first event code. It also sets the site category for the reading to be the site category of the first event code.

For example, say a skid resistance reading is taken 40m before a pedestrian crossing on a steep down gradient. Two event codes apply:

Event Code	Description	Skid site
C	Pedestrian crossing	1
H	Down gradient >10°	2

The skid site table rows to lookup are:

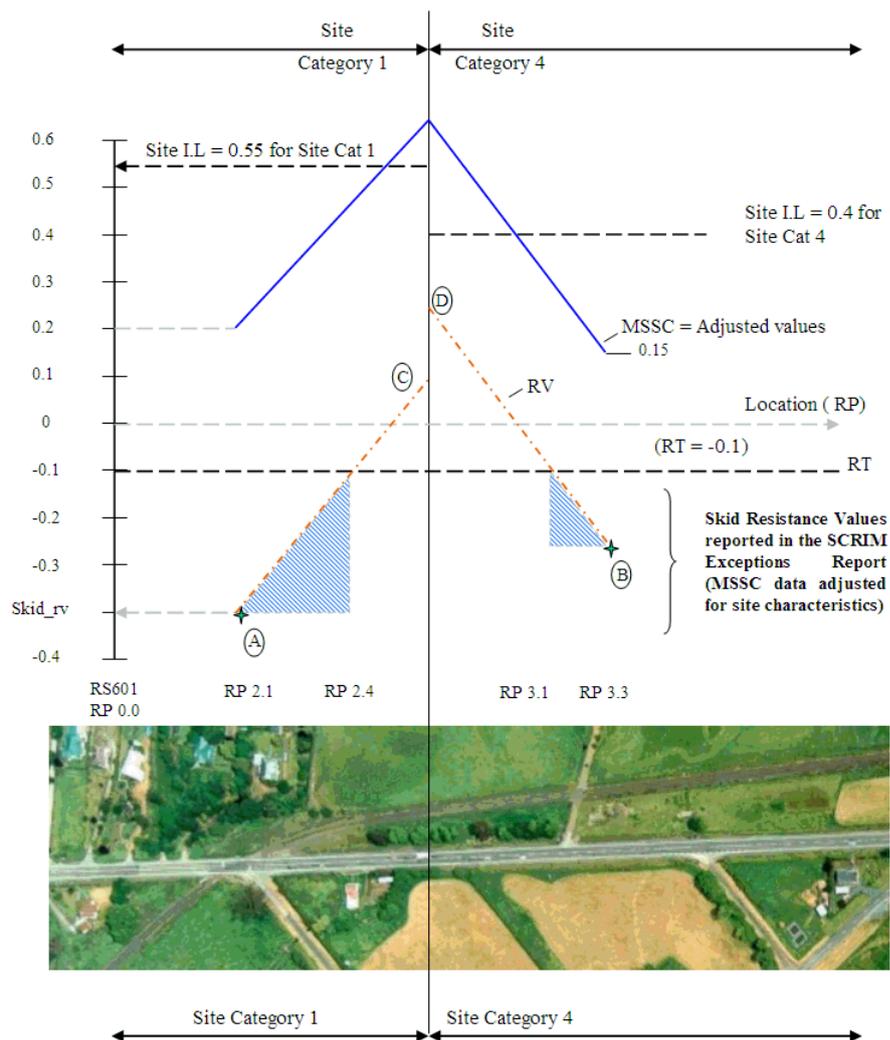
Site Code	Description	SCRIM Investigatory Level
1	Highest priority sites	0.55
2	Gradient >10° Curve <250m radius	0.50

Event code C has a skid site of 1 which in turn has a SCRIM Investigatory level of 0.55.

This is higher than the level for skid site 2 which applies to event code H. In this case the SCRIM Calculate program sets event 1 to C and event 2 to H. The skid site code for the reading is set to 1 and 0.55 is used as the SCRIM Investigatory level.

Site Category Diagram

This diagram clarifies how values are reported in the SCRIM Exceptions Report.



Note:
 $A = 0.2 - 0.55 = -0.35$
 $B = 0.15 - 0.4 = -0.25$
 $C = 0.65 - 0.55 = 0.1$
 $D = 0.65 - 0.4 = 0.25$

The shaded areas below the Reporting Threshold (RT) represent typical values that will show on the report. In this case, from RP 2.1 to 2.4 and from RP3.1 to 3.3 .

Multilane Pavement Transverse Position Description

This diagram shows a transverse view of the pavement of a multilane highway.

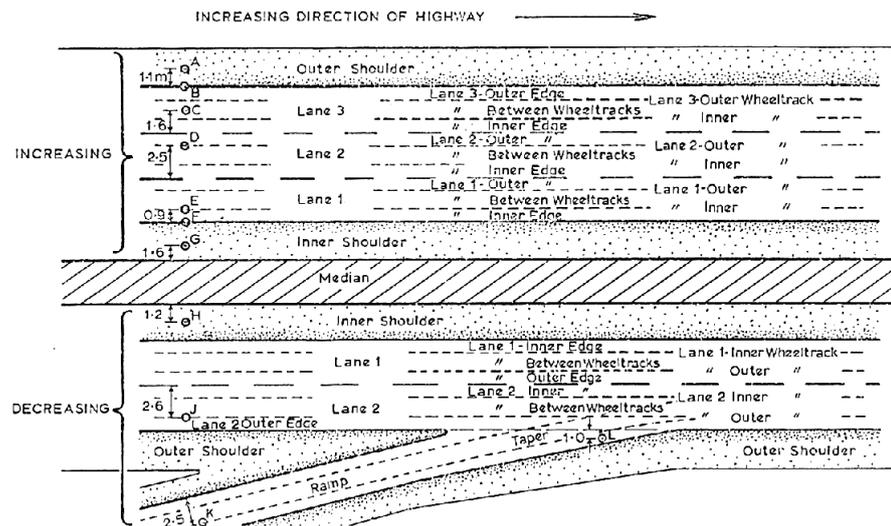


FIG. 2 MULTILANE PAVEMENT TRANSVERSE POSITION DESCRIPTION

SCRIM Data Summarisation

The SCRIM data is summarised at three levels:

- 1 Skid Sites.
- 2 Rolling Average.
- 3 Miscellaneous Unreported Areas.

If a section of carriageway fails the test at a given level the lower level summaries are not performed. In all cases the summaries are performed for each treatment length. No analysis is required of those lengths that have been resurfaced since the latest survey, as these will not appear on the SCRIM Exceptions Report.

SCRIM Level 1 Summarisation – Skid Sites

Level 1 provides analysis at the skid site level within each treatment length. Only those sites where the average Skid Reporting Value of the entire site is below the Skid Reporting Threshold will be identified.

For each skid site in each direction the figures below are calculated. Each skid site within a seal length is identified individually.

Level of summarisation

- Each individual skid site per direction or lane.

Figures calculated

- Average Skid Reporting Value of the entire site.
- Length in metres & average of those readings below the Skid Reporting Threshold.
- Texture statistics for the entire site.

Details displayed

- Start and end displacements in meters of the skid site.

Example

With 2 major intersections within a seal length there will be four site category 1 summary records. Each intersection will be linked to 2 sites, one of which will be in the increasing direction and the other in the decreasing direction.

SCRIM Level 2 Summarisation – Rolling Average

The level 2 rolling average calculations are performed on all of the skid sites within each seal length where the average Skid Reporting Value from the level 1 calculation is above the Skid Reporting Threshold currently being used.

The length of the rolling average is determined by the skid site category as follows:

Skid Site Category	Site Description	Investigatory Level (SFC)	Demand Level	Rolling Average Length
1	Approaches to railway level crossings, traffic lights, pedestrian crossings or roundabouts	0.55	High	50m
2	Curves < 250 m radius or gradients	0.50	High	50m

	> -10%			
3	Approaches to road junctions, motorway junction areas or gradients 5 - 10%	0.45	High	50m
4	Event free undivided carriageways	0.40	Low	100m
5	Event free divided carriageways	0.35	Low	100m

Notes:

Demand Level	Criteria
High	>= 5 consecutive 10 metre lengths (a length of 50 metres or greater that has an average reporting value below the reporting threshold).
Low	>= 10 consecutive 10 metre lengths (a length of 100 metres or greater that has an average reporting value below the reporting threshold).

The rolling average is calculated by computing an average Skid Reporting Value for each 50 or 100 metre section of the skid site as determined by the above table. Any section where this average is less than or equal to the Skid Reporting Threshold is recorded. After completing this process on the entire skid site you would need to join all records that overlap (where the start is less than or equal to the end of the previous record within the site).

If the skid site length is less than or equal to the rolling average length skip this summary as the results will be the same as the level 1 summary.

Example

Say a length extends from 0 - 1000m on a road and the first 130m is a skid site category 2.

50m averages are calculated, starting at 0-50m and moving through 10-60m, 20-70m and so on through to 80-130m.

The rolling average summary records will be joined into continuous lengths and one set of figures calculated and stored for each length. The lengths in this case will be 0-70m and 80-130m.

Level of summarisation

- Concatenated sections where the rolling average (Skid RV) is \leq Skid Reporting Threshold.
- Per skid site per direction or lane.

Figures calculated

- Section length.
- Average Skid Reporting Value (of section length).
- Texture statistics for the section length.

Details displayed

- Start and end displacements in meters of the skid site.

SCRIM Level 3 Summarisation – Miscellaneous Unreported Areas

This is performed to report on those areas not highlighted in the level 1 or 2 summaries.

To perform this summarisation, first find all readings where the Skid Reporting Value is less than or equal to the Skid Reporting Threshold and the reading is not within areas reported in level 1 or 2. Sum the total length of these across all skid sites within the seal length.

Level of summarisation

- All readings within the seal length where Skid Reporting Value is \leq Skid Reporting Threshold.
- Per direction or lane.

Figures calculated

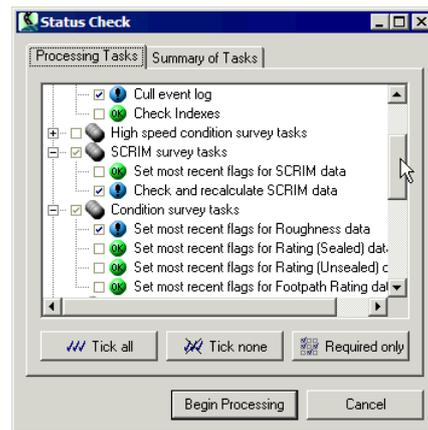
- Total length.
- Average Skid Reporting Value (of the matching readings only).
- Texture statistics (minimum, maximum and average of the matching readings only).

Details displayed

- Start and end displacements in meters of the skid site.

SCRIM Calculate

In **RAMM Manager**, select **Processes > Status Check**. Scroll to **SCRIM Survey Tasks** if necessary as below.



The tasks requiring processing are identified by the blue icon with the exclamation mark. The tasks that are not required, but which you can manually include in the status check are identified by the green icon marked OK.

The **Check and recalculate SCRIM data** process calculates the Skid Reporting Value and stores this against each `skid_resistance` row for the current survey. The formula used is:

$$\left(\left(\text{skid_resistance.scrim_mssc_left} + \text{skid_resistance.scrim_mssc_right} \right) / 2 \right) - \text{skid_site.scrim_site_il}$$

where:

scrime_mssc_left	Left wheelpath scrim coefficient adjusted for seasonal factors.
scrime_mssc_right	Right wheelpath scrim coefficient adjusted for seasonal factors.
scrime_site_il	Minimum SCRIM level for this site. Investigate readings below this.

When the calculation is complete the status of the task is changed to OK as above.

SCRIM Vehicle Types

The codes and descriptions of survey vehicles used for skid resistance surveys can be accessed from [RAMM Manager](#), by selecting **Maintenance > Lookups > SCRIM > Vehicle Type**.

You're able to add new vehicle types and descriptions as well as notes.

SCRIM Event Codes

In [RAMM Manager](#), select **Maintenance > Lookups > SCRIM > Event codes** to maintain codes and descriptions of skid events used in skid resistance surveys.

- **Skid Event** - The code the event will be known as, maximum 2 characters.
 - **Description** - Description of the event, maximum 30 characters.
 - **Site Category**- The skid site that applies to any readings with this event code. There is a lookup from this column to the skid site table.
 - **Point** - Some event codes occur at a point in the road section - for example, a pedestrian crossing. Others occur over a length of road - for example, a curve with less than 250m radius. This field is set to Point when the event code is a point type event. It's set to Not Point when the event code is *not* a point type event, such as a length.
 - **Notes** - General comments.
-

SCRIM Seasonal Factors and ESC factors

Each skid resistance survey is loaded with skid seasonal correction factors set by the survey contractor. This window allows you to update the seasonal factors for a selection of skid_resistance rows after loading a survey. This should only be used if new correction factors have been advised.

The **Equilibrium SCRIM Coefficient (ESC)** factor is a recent complement to the seasonal correction process. The ESC factor is a moderated seasonal factor that reports the average of the past 3 years instead of the peaks and troughs of the seasonal data, giving you a macro view of the seasonal correction factors.

The important values used for reporting on skid resistance are **Mean Summer SCRIM Coefficient (MSSC)** values. MSSC is calculated as follows:

MSSC = SCRIM coefficient x Skid Seasonal Correction Factor

where

MSSC	NZ Mean Summer SCRIM Coefficient
SCRIM Coefficient	SCRIM Coefficient survey reading
Skid Seasonal Correction Factor	Adjustment factor between 0 and 2

The seasonal factor varies for different locations and different times of the year. For example, these are the seasonal factors for the Wellington area for the 1995 survey:

Month	Seasonal Factor
April	0.973
May	0.968
June	0.964

There are five fields from the skid_resistance table that are relevant. These are stored for each skid resistance reading:

- **scrim_coeff_left, scrim_coeff_right** - the SCRIM Coefficient readings for the left and right wheelpaths.
- **seasonal_factor** - the skid seasonal correction factor used to calculate MSSC.
- **scrim_mssc_left, scrim_mssc_right** - the calculated MSSC values.

Maintaining SCRIM Seasonal Factors

You can enter and view SCRIM seasonal factors and ESC factors in **RAMM Manager** by selecting **Projects > SCRIM > Seasonal Factor**.

The seasonal factor is likely to be the same for a number of readings. They can be applied either by Area, Area and Sub-Area, Road, or by an optional group (seasonal zones). The optional group will be available only if it has been pre-defined and already exists within the carriageway table.

Season

- **Start month** - Enter the start of the period you wish to update seasonal factors for. The summary period must start at the beginning of a month and finish on the end of a month. Only skid resistance readings taken between the months you enter will be summarised.
- **End month** - Enter the end of the period you wish to update seasonal factors for.

Selection

In the **Selection** section of the screen, the options available will depend on the **Summary Level** you choose. It's advisable to choose these options in sequence, as options change depending on what you select as in the menu tree below.

Summary Level drop-down Menu	Summary Level drop-down Submenu	Area selection drop-down menu
Area	All Areas	<i>(menu inactive)</i>
	Specific Area	[Select Specific Area]
Area / Sub Area	All Area / Sub Areas	<i>(menu inactive)</i>
	Specific Area / Sub Area	[Select Specific Area and Sub Area]
Road	All Roads	<i>(menu inactive)</i>
	Specific Road	[Select Specific Roadname]
Carriageway Group	Specific Seasonal Zone	[Select pre-defined Seasonal Zone]

Click **Enter Factors** to summarise all skid resistance readings for the area and dates specified. The summary screen shows one line for each seasonal factor within the readings selected.

You can now update the seasonal factors for each summary row. If more than one seasonal factor exists for the same Area or Sub-area you must choose a finer level of summary before the program allows you to update the seasonal factor.

After accepting the Seasonal Correction Screen the program selects all skid resistance readings that match the Area, Sub-area and period specified. These are summarised to the level selected. For example, if a summary level of Area is chosen on the **RAMM 1** data for 01 Nov 2002 - 31 Mar 2003, the summary screen will show 5 lines, one for each unique seasonal factor used within the readings selected.

Area	Month	Roads	Readings	Current Factor	ESC Factor
AUCKLAND-NMMC	Feb2003	17	937	0.988	1.035
AUCKLAND-NMMC	Dec2002	227	66552	0.983	1.035
NORTHLAND	Dec2002	1	596	0.983	1.035
NORTHLAND	Dec2002	58	142045	1.022	1.068
PSMC 005	Dec2002	46	38217	0.983	1.035

Seasonal Factor
 New Value: Last Surveyed Factor

ESC Factor
 New Value: Last Surveyed Factor

Change Factors Close

Click **Close** to return to the previous screen, and **Close** again to exit the seasonal correction process.

SCRIM Exceptions Report

This report lists all the sites where the Skid Reporting Value and/or the Texture is less than or equal to the entered threshold. Prior to the production of the report the SCRIM data is summarised into Skid Sites within each treatment length. See SCRIM Data Summarisation (on page 47). This allows the report to determine whether a seal length has been resurfaced since the SCRIM survey and also allows for surface data to be included in the report. Any lengths that have been resurfaced since the most recent survey will not appear on this report.

SCRIM Exceptions Report Options

Configuring the SCRIM Exceptions Report requires two basic steps:

- Ensure that the SCRIM Data Summarisation (on page 47) has been done.

- In **RAMM Manager**, select **Reports > Condition > SCRIM Site Identification** to set the Report Type and Options as below.

Report Type

This drop-down list allows you to choose between three types of report.

- **Treatment Length Detailed.**
- **Treatment Length Summary.**
- **Network Management Summary.**

You can also choose to have the results reported as a NOMAD Treatment Length Note by ticking the option to **Report Outcomes as NOMAD Treatment Length Note**.

Skid Reporting Threshold

The Skid Reporting Threshold standard default for the database is -0.1 below the Investigatory Level for each site, which is based on Transit New Zealand's current policy. If a value other than the default is chosen the data will be resummarised.

Region

A pull down list of the regions available in the current database. Two further options are included in the list:

- **All Regions.**
- **Roadnames in two or more regions.**

Network Management Contract Area

A pull down list of the Contract Areas within the current database. There is also an **All Areas** option.

State Highway

A pull down list of the State Highways in the current database. There is also an **All State Highways** option.

Road ID

You can enter either a specific Road ID or select the roadname from the pull down list. **All Roadnames** is also available.

Lanes / Direction

This option is restricted to the values: Both, Left (L1-L5) or Right (R1-R5).

Clicking the **Print** or **Preview** button will first display a warning that the process may take some time, and you'll have the option to confirm that you wish to continue. If you've modified the Skid Reporting or Texture threshold you'll next be asked whether you want the changed value saved back into the parameter table (causing the Treatment Lengths to require summarising again).

After this is complete the SCRIM data is summarised according to the selected options. A progress bar with an **Abort** button will be displayed. Once the data is summarised the report can either be previewed or printed.

Sample SCRIM Exceptions Report

Below is an example of a SCRIM Exceptions Report.

Salient points of a SCRIM Exception Report:

- Location: SH X Between ____ and _____. Rural State Highway, mostly 2 lane with some passing lanes.
- Skid Site Category 2: for all of the records either tight curves or steep grades
- Total Exception Length: 5041m both directions and lanes
- Total Length of Road: Chainage 0 - 14,219 or 28 km
- Main Source for Chips: Belmont Quarry
- Total length of Level 3: 771m these isolated exceptions could be programmed under Maintenance Treatment.

- The majority of seals from chainage 0 - 10830 show that they were laid in the 1980s.
- The accuracy of surfacing table records in **RAMM** may need to be checked on the basis of the following concerns:
 - Coat 1 seals exist that are 9 years old.
 - Incorrect seal widths may be creating minor seal lengths.

- A reseal length exists that is 18 years old.
- From chainage 0 - 3910 most deficiencies are in the left lane, there may not be a need to treat the right lane.
- Maximum average exceptions occur at the following locations:
 - -0.15: 8100, 11900 - 12988
 - -0.14: 3810, 864 - 1200

TSA SCRIM

The SCRIM data if available will have already been Summarised using the options specified in the parameter table.

If SCRIM results are available the **Include SCRIM** checkbox will be ticked. You can untick this box and the SCRIM data will not be included in the TSA Calculation. The following fields are only available if the **Include SCRIM** box is ticked.

SCRIM data for seal that has been resurfaced since the survey is excluded from these tests. When a test is found to be true the remaining tests are NOT performed. A treatment reason will be generated clearly indicating the reason for failure. Where available accident information will also be given.

Reseal Entire Treatment Length when the percentage of treatment length falling below the SCRIM investigatory level is above nn %

Used when the Percentage of seal falling below the SCRIM Investigatory Level for the entire treatment length is above or equal to the entered percentage AND the Average Skid Reporting Value is below or equal to the Skid Reporting Threshold.

Reseal Site Categories when the percentage of the site category length falling below the SCRIM investigatory level is above nn %

Used when the Percentage of Deficient seal below the SCRIM Investigatory Level within a site category is above or equal to the entered percentage AND the Average Skid Reporting Value for the site category is below or equal to the Skid Reporting Threshold.

Reseal Part of the treatment length when a continuous length falling below the SCRIM Investigatory Level exceeds nn m

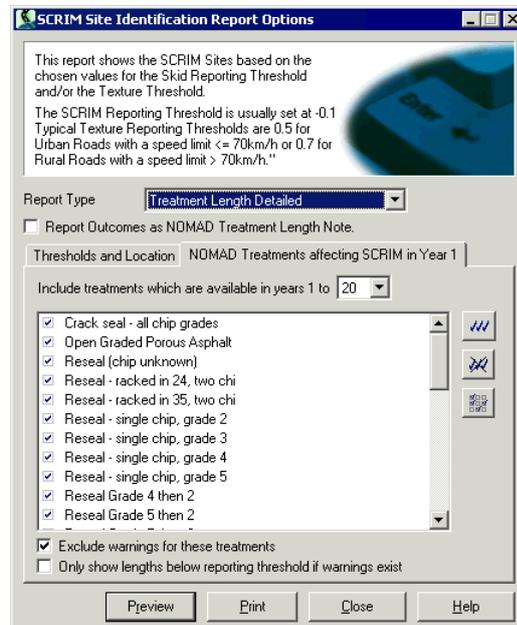
Used when a continuous length of seal (either wheelpath, either direction) has an average Skid Reporting Value below zero and is longer or equal to the Continuous Failed Length Threshold.

Reseal Part when any Skid Reporting Value is below -n.nn

Used when Skid Reporting Value (on either wheelpath, either direction) is below or equal to the value entered.

SCRIM – NOMAD

Listed in this window are all the Treatments available in NOMAD. By default the treatments for Reseals and Pavements are automatically checked. You can add to or remove this list. Buttons are available that select all treatments or deselect all.



Include treatments that are available in years 1 to [20]: This drop-down list allows you to select a range for the report.

Exclude warnings for these treatments: If you tick this option, all sites identified that have surface treatment works from the list above programmed in NOMAD for the following year will be excluded from the SCRIM Exceptions Report.

Only show lengths below reporting threshold if warnings exist: Ticking this option allows the reporting of warnings below the threshold that may otherwise be excluded, providing that such warnings exist.

Working With 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).

The Treatment Selection Algorithm (TSA) is the formula used to calculate optimal Forward Work. The TSA analyses information about your network and recommends treatments for each section.

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TSA About

The outputs from the TSA are lists of road sections (treatment lengths) with an indication of the road maintenance treatments required on each section and the financial costs and user benefits of carrying out the maintenance treatment indicated.

The TSA allows you to set a financial performance level in terms of Benefit/Cost (B/C) ratio above which a shape correction treatment (SCT) is selected. The B/C ratio represents the ratio of benefits (ie road user benefits obtained from roughness reduction) to construction costs (ie the SCT cost less maintenance savings). If all the SCT selected were actioned by the road controlling authority (RCA) this would limit the roughness of all roads in the network categorized by traffic volume. The B/C ratio chosen is therefore also a de-facto functional performance level for the road network.

History

The TSA underwent a major overhaul in July 1997. The algorithm was enhanced to run in a Windows environment keeping pace with the introduction of the RAMM for Windows tool and user demand. Logic changes were also incorporated in a number of areas.

- Division of the network into treatment lengths.
- Treatment Calculation headers allowing you the flexibility of comparing results and keeping past calculations.
- The introduction of treatment reasons giving you more information on treatment recommendations.
- Refinements in the calculation of user benefits.
- Incorporating new condition information loading, SCRIM and High Speed data.
- Enhancements in the areas of pavement use and pavement life estimations.

TSA General

The General window displays information about the treatment selection header currently on display. There is a short title which will be used to identify the treatment header run and a long description of 255 characters allowing you to be more descriptive. The greyed box below displays information about the status of the treatment header, the date last run and by whom and the total cost of the recommended treatments if the TSA has run to completion. If this information is displayed in red this indicates that a problem occurred during the TSA process and the run DID NOT complete.

Getting Started

When the treatment selection window opens, the latest treatment header details are displayed. If the treatment header is titled Conversion this was created at the time of the upgrade to the new software using the Decision Factors and Unit Costs setup for the previous TSA run. Insert a new treatment header. Enter heading and description details. Decision factors and Unit Costs will be automatically created using the values from the Treatment Header previously on display. Save the treatment header.

TSA Decision Factors

Decision Factors are unique to each Treatment Header. They are used in deciding the recommended treatments. The Annual Traffic Growth % held in the parameter table can also be altered and will affect the outcome. This figure is held separately as it will change infrequently where as the following Decision Factors can change from calculation to calculation.

Design Life Expectancy %

This value is used for a new treatment reason to highlight those surfaces where the life of the seal is greater than the life expectancy of the seal type. The value entered will be the percentage over which these seals must fall before a Treatment is recommended i.e. The seal life expectancy is 8 years on a surface that was laid 11 years ago, an entered percentage of 50% would not pick this surface up but a 10% value would create a treatment reason of Design Life Exceeded against a recommend treatment of Reseal Next Time.

RAMM Construction Index

A date to which all costs are adjusted and reported. You can select a date from a pull down list. The dates and RCI values can be accessed under the RD Unix Fanfare menus. The data is updated at regular intervals with information received from Transit New Zealand.

Benefit Cost Ratio

This is the ratio above which the TSA will report viable Shape Correction Treatments. The program calculates a B/C ratio for carrying out shape correction treatments (SCT), both smoothing and strengthening, for all treatment lengths. The B/C ratio set determines the minimum ratio high enough for the treatment length to be reported for SCT.

It would be appropriate to set this reasonably low initially (say 1.0) to ascertain how much SCT may be required over the road network. It can be changed later to give a listing more consistent with expectations or budget restraints as appropriate.

Global SCT Roughness

These are the average values that can be expected after SCT work has been carried out in the rural and urban situations. They should accurately reflect the actual values obtained from roughness testing of the last seasons SCT work. Urban and Rural values are required for both TSF and SAC pavements.

TSA SCRIM

The SCRIM data if available will have already been Summarised using the options specified in the parameter table.

If SCRIM results are available the **Include SCRIM** checkbox will be ticked. You can untick this box and the SCRIM data will not be included in the TSA Calculation. The following fields are only available if the **Include SCRIM** box is ticked.

SCRIM data for seal that has been resurfaced since the survey is excluded from these tests. When a test is found to be true the remaining tests are NOT performed. A treatment reason will be generated clearly indicating the reason for failure. Where available accident information will also be given.

Reseal Entire Treatment Length when the percentage of treatment length falling below the SCRIM investigatory level is above nn %

Used when the Percentage of seal falling below the SCRIM Investigatory Level for the entire treatment length is above or equal to the entered percentage AND the Average Skid Reporting Value is below or equal to the Skid Reporting Threshold.

Reseal Site Categories when the percentage of the site category length falling below the SCRIM investigatory level is above nn %

Used when the Percentage of Deficient seal below the SCRIM Investigatory Level within a site category is above or equal to the entered percentage AND the Average Skid Reporting Value for the site category is below or equal to the Skid Reporting Threshold.

Reseal Part of the treatment length when a continuous length falling below the SCRIM Investigatory Level exceeds nn m

Used when a continuous length of seal (either wheelpath, either direction) has an average Skid Reporting Value below zero and is longer or equal to the Continuous Failed Length Threshold.

Reseal Part when any Skid Reporting Value is below -n.nn

Used when Skid Reporting Value (on either wheelpath, either direction) is below or equal to the value entered.

TSA Unit Costs

Each Treatment length is linked to a valid cost set. See Maintaining Cost Sets (on page 87). Each cost set is associated with a set of unit costs for TSF and SAC which represent the estimated cost of maintenance work carried out over the road network or in each area of the road network. Unit cost values are entered as the cost per metre of defect, not per metre of road.

These unit costs are also unique within a treatment header thus allowing the dollar values to be manually adjusted whilst retaining a history of previous values. When a new treatment header is created a new set of unit costs will be created with the values from the unit costs of the previous treatment header.

Using the Copy All and Paste All buttons a complete set of unit costs can be copied between cost sets. To change individual amounts use the Save and Abort options on the Task bar.

TSA Calculation

Once all the Decision Factors and Unit Costs have been set up to reflect your requirements it is time to start the Treatment Selection process. Click the Calculate Button. A confirmation window is displayed, once OK is checked the main processing will begin.

First the program checks the Summarise flags to ensure that all available information has been summarised and that all treatment lengths are correct. If there are discrepancies, you are informed and the TSA run is halted. You should run the Summarise process.

Ensure that this process completes successfully before returning to the Treatment Selection module. Select the Treatment Header to process and click the Calculate Button.

Each TSA run calculates the treatment for **every sealed treatment length in the network** (TSF and SAC pavements). The theory behind the program design and the technical notes explaining the analyses and calculations carried out are contained in the treatment selection workshop material. With the majority of the data required for the TSA process already summarised the time taken to perform the Treatment Selection calculation will be shorter.

A progress bar will show you the headway the TSA is making. When 100% is reached the calculation is complete. The calculated results will be automatically condensed into a summary table. This window must be closed before the results can be viewed.

TSA Altering Intermediate values

Where the field inspection shows the TSA recommended treatment to be inappropriate it may be because the site is unusual in some way. The costs and target SCT roughness specific to the site should be substituted for the **RAMM** calculated costs for that particular treatment length. If necessary the seal need indicator may also be changed.

To make these changes you must exit the TSA module and go to the main **RAMM** window. Select the road where the treatment length is situated, then click the Treatment icon. The Treatment grid shows the recommended treatments for the current road. Ensure you select the treatment with the same Treatment Header description as the calculation that is currently being worked on. Double click on the highlighted line to see details of the Treatment.

You can access the generated intermediate values from the bottom of the Detail screen. Change the values by clicking the box where the new value is to be entered. Enter the new amount. Save your changes, and **RAMM** recalculates the recommended treatment using the altered intermediate values.

You can also view additional information. This is a complete inventory of the information used by the Treatment Selection process in arriving at the recommended treatment. The information is grouped under separate tabs for

- General
- Intermediate Values
- Repair Cost
- Surface
- Rating

- SWC/Shoulder

Clicking again on the additional information button will collapse the Additional Information window.

TSA Summary

Once a calculation has completed successfully, a summary of the recommended treatments is created. If this option is available (not greyed out) then the summary table has been created and is available. This window allows you to access these summary results and if required compare these results against another calculation.

The results will be summed according to the database type.

- **S** - State highways by Region and Area
- **L** - Local Authority by Area and Sub area

Irrespective of the database type the full descriptions for both fields will be given. These definitions will not change if changes occur within the road network. The summary data reflects the state of the network at the time of the calculation.

The results of the recommended treatments are totalled by:

- Treatment Length
- Treatment Cost
- Drainage Cost
- Maintenance Cost

You can view the results either in the form of a report displayed on the screen or as a graph, either of which you can print.

The treatment header details displayed at the top of the window are for the current treatment header (selected in the previous screen).

TSA Reports

The available reports are:

- **Warnings** - this replaces the Treatment Selection Warning Messages reports.
- **Recommended Treatments** - this replaces the Recommended Treatment reports ordered by treatment type or treatment length.
- **Summary** - this replaces the Summary of Treatment Selection report.

Warnings

You can filter the warnings by Area or Sub Area. All Warning is the default and this box is checked. Unchecking will allow for one or many Warning types to be selected from the available list.

Recommended Treatments

The default order of the report is Treatment Type but you can alter this to Treatment Length (road_id, start_m). Further details can be included in the report Reasons and Warnings can both be checked if required. Reasons will give specific details relating to why a treatment was recommend, warnings will highlight any anomalies. All Treatments is the default and this box is checked. Unchecking will allow for one or many Treatments to be selected from the available list.

TSA Delete

Results of a Treatment Selection run will remain available until you delete them. Keeping past results for comparison purposes is one of the new design features. However, where a number of test calculations have been run before the final result was achieved, these test calculations can be deleted. You have two options:

- All Details
- Treatments Only.

All Details

This is only available if the current Header has a status of Calculated or Error. Confirm that this action is correct and all details for the current treatment header will be deleted. Data in the following tables will be deleted where the treatment header number matches the current treatment header: treatment, treatment_msg, treatment_reason, treatment_summary)

Treatments Only

This is only available if the current Header has a status of Calculated or Error. Confirm that this action is correct and data from the treatment, treatment_msg and treatment_reason tables will be deleted where the treatment header number matches the current treatment header. The summary details will still be available for comparison purposes. Refer to Summary for more details.

Auditing Survey Data

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.

Roughness is a Condition parameter. It characterises deviations from the intended longitudinal profile of a Road Surface. It has characteristic dimensions that affect vehicle dynamics and hence Road user costs, ride quality and dynamic loading on pavements and Bridges. It is a measure of surface irregularities with wavelengths between 0.5 m and 50 m in the longitudinal profile of one or two wheel tracks in a traffic lane reported in dimensionless units as either IRI m/km or as NAASRA Roughness Meter counts for the lane.

Skid Resistance is a Condition parameter to characterise the contribution a Road makes to the friction between a Road surface and a vehicle tyre. Skid Resistance is usually measured on a wet surface.

When you're working with Survey data, you can audit it for completeness.

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Survey Audit

This report identifies whether there are missing portions for a selected survey. Audit reports are currently available for:

- High speed roughness
- High speed texture
- High speed rutting
- Deformation
- Geometry
- SCRIM
- Rating
- Unsealed rating
- Roughness

Each of the tables have start and end displacements in them. These are used to check that the readings are contiguous and there are no duplicates or overlapping data. If you mark the Report data outside of the survey area then any readings for the survey outside of the network portion surveyed should be printed.

As data for a Survey has been audited the date run and by whom are written to the Survey Header row. This data is available under the Audit tab of the appropriate Survey Header.

Survey Header

Survey Headers group together survey data. The information for each header is divided into four tabs:

Detail

Survey specific information, the description of the survey, the date, the Consultant and the Contract number.

Notes

Any general notes about the survey.

Network

The areas of the network covered with the survey. The text displayed here is a summary of the options selected. The Edit button gives entry into the Survey Portion (on page 71) window.

Audit

Details of the last Audit run on the survey. The Audit Report Inclusion flag can be altered under this tab.

You can add, change or delete rows. You are prompted to confirm a deletion, as this deletes the survey data as well as the survey header row.

The SCRIM Survey Header also records the SCRIM Vehicle used in the survey. A pull down list is available. Located under File is an extra option Calculate which will run the SCRIM Calculate process for the current survey header.

From the maintenance screen you can access the File Import process. A Survey Header must be created before loading data through the Import process. The Summary option under **View** gives a breakdown of the number of rows in the Survey.

Survey Portion

This lets you describe the portion of the network which was surveyed. The Network can be broken down by:

- Area
- Hierarchy
- Urban/Rural
- Lane
- Pavement Use
- Pavement Type
- Dual Carriageways
- Ramps

or a combination of these. The Dual carriageway and Ramps options are only available on a State Highway database and then only if you have chosen Left or Right lanes. When the Entire Network option is checked all other options will be set to the All default value.

Choose the options that best describe the area covered in the survey. This is not designed to give a road by road description of the surveyed area but a global description of the parameters used in letting the contract.

A summary of the values in this table are shown on the Network tab of the Survey Header maintenance screen of each survey.

Optional Carriageway Groups

The optional group columns let you group carriageway sections according to individual RCA requirements. You can create up to five optional grouping columns. The heading for each optional group should be entered first, through **Actions > Modify Group Name**. The new Group heading will then show in list.

Status Check

You run Status Check to process tasks. Normally this is to update **RAMM** data to take into account of new information entered into **RAMM**. You can configure Status Check to run all tasks or just the tasks in which you are interested.

The tasks range from administrative tasks to those for High Speed Surveys, SCRIM surveys, Condition surveys, Traffic, Major Seal Lengths, Falling Weight Deflectometer, Pavement Structure, Treatment Length, Forward Works Cost and Top Surface tasks.

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Run Status Check

Running the Status Check process allows you to make sure that a variety of information is up-to-date. Status Check starts:

- Automatically, when you login to **RAMM Manager** or **RAMM**.

-OR-

- When you run it manually, at any time.

► To Start Status Check Automatically

- 1 When you login to **RAMM**, if any processing tasks are required to get your database up to date you'll see a message.

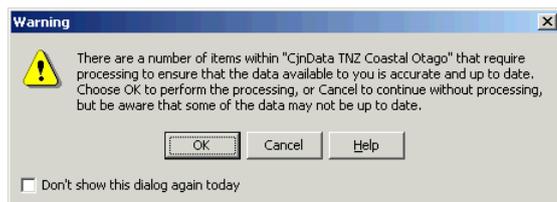
- If you do **not** have security permissions to administer **RAMM**, you'll see a message like this, with two buttons:



Click the **OK** button to continue using **RAMM**, and contact your **RAMM** Administrator to have your database updated - this should only take a short time. To prevent this prompt window from appearing if you login again today, tick **Don't show this dialog again today**, then choose either of the options described above.

You do not need to read this topic any further.

- If you have the correct security permissions to administer **RAMM**, you'll see a message like this, with three buttons:



- 2 Respond to the warning message:

- Click the **Cancel** button to work with the existing information, knowing that it may not be up to date. You do not need to read this topic any further.

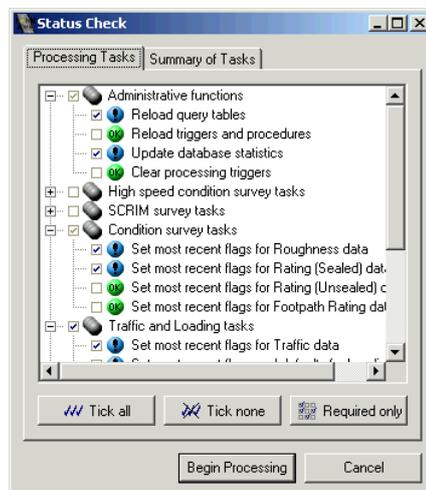
- Click the **OK** button to perform the processing first. Read on.
 - To prevent this prompt window from appearing if you login again today, tick **Don't show this dialog again today**, then choose either of the options described above.
- 3 Read about running Status Check, below.

► To Start Status Check Manually

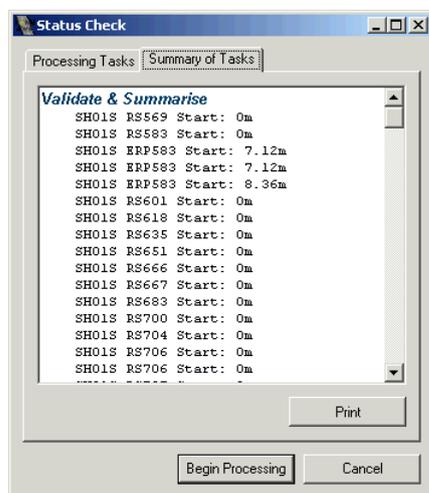
- 1 Go to main menu of the **RAMM Manager** program and choose **Processes > Status Check**.
- 2 Read about running Status Check, below.

► To Run Status Check

- 1 When the Status Check window opens, tasks that **RAMM** knows are required are already ticked.



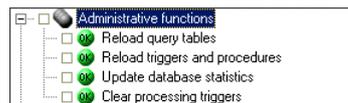
- 2 To see which roads are affected by particular tasks, switch to the **Summary of Tasks** tab. You'll notice that you can **print** the Summary, if you like.



- 3 Most of the time, you'll just run the required tasks. If this sounds like you, go directly to Step 5 now.
- 4 You may want to run only a particular processing task right now, without running all the required tasks. For example, if you're working only with Traffic data, you'll run just the Traffic update. See Traffic and Loading Tasks (on page 80). After your data entry and corrections are complete you would then summarise Treatment Lengths. See Treatment Length Tasks (on page 82).
 - To see the individual tasks under a heading, click the button at the left of the heading's name. Read the other topics in this section for more details about particular task headings.
 - To run only a particular task, click the **Tick none** button to clear all selections, then find and tick the specific task you require. If you select a heading, all the tasks it contains are ticked.
 - If you want to go back to selecting all the required tasks again, click the **Required only** button.
- 5 Click the **Begin Processing** button.
 - Tasks are processed in the order in which they are listed in the Status Check window.
 - Other windows may pop up to ask for further information. Read the other topics in this section for more details about particular task headings.
- 6 Most tasks will show you a progress indicator while they're running. How long it all takes depends on:
 - How many tasks you selected.
 - How large and up-to-date your database is.
 - The performance of the server.

Administrative Functions

When you're working with the Status Check process, this heading contains tasks that maintain your **RAMM** database. See Run Status Check (on page 74).



Using a Transit NZ Database

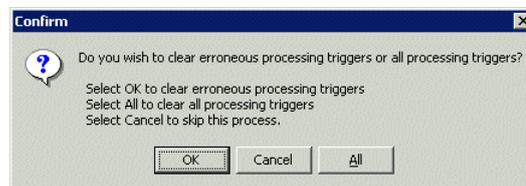
When you are given a Transit New Zealand database to work with (through the SH_Unload process), you'll first need to update the **RAMM** internal database relationships. You'll be prompted to run the **Reload Query Tables** and **Reload Triggers and Procedures** tasks.

Before Sending a Database Copy To Someone

If you're about to send a copy of your **RAMM** database to someone else, first run the **Update Database Statistics** task. This gives you a baseline, so you'll know later what they have changed.

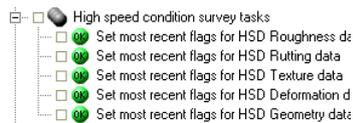
Clear Processing Triggers

Only select this task if you have been advised to do so by **RAMM Software Limited**. A window appears when you begin processing, to ask which processing triggers you want to clear.



High Speed Condition Survey Tasks

When you're working with the Status Check process, this heading contains tasks that update the High Speed Condition data in your database. You'll need to run these processes after a new survey has been loaded. See Run Status Check (on page 74).



Set Latest Flags

For State Highway **RAMM** databases, Latest calculation is based on the 150-day rule. For all other databases, the 60-day rule applies.

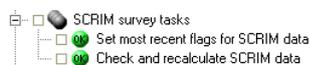
NOTE: You can now change these default values, in the Parameter screen in **RAMM Manager**. See SCRIM Exceptions Report Options (on page 55).

For each task, a window appears when you begin processing, to ask how widely you want to run Latest processing. When you first load a new survey, you'll probably need to click the **Yes** button.



SCRIM Survey Tasks

When you're working with the Status Check process, this heading contains tasks that update the SCRIM survey data in your database. See Run Status Check (on page 74). You'll need to run these processes after a new survey has been loaded. SCRIM calculation is handled separately from the Treatment Length Summarise process.



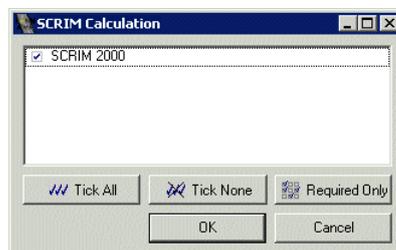
Set Latest Flags

For State Highway RAMM databases, Latest calculation is based on the 150-day rule. For all other databases, the 60-day rule applies.

NOTE: You can now change these default values, in the Parameter screen in **RAMM Manager**. See SCRIM Exceptions Report Options (on page 55).

Check and Recalculate

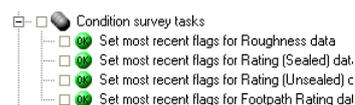
A window appears when you begin processing, to confirm which SCRIM survey to process.



Usually, you'll just accept the survey or surveys that are already ticked, and then click the **OK** button to continue. If you need to, you can manually select surveys instead - this works the same way as the Status Check window does.

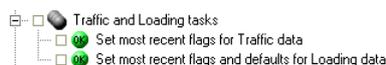
Condition Survey Tasks

When you're working with the Status Check process, this heading contains tasks that update the Condition survey data in your database. See Run Status Check (on page 74). You'll need to run these processes after a new survey has been loaded. Roughness Survey data is updated in the **carriageway** table.



Traffic and Loading Tasks

When you're working with the Status Check process, this heading contains tasks that update the Traffic and Loading data in your database. See Run Status Check (on page 74). Data is updated in the **carriageway** table.



Traffic Errors

If **RAMM** finds any errors or discrepancies while updating Traffic data, an error report is generated. The report lists Carriageway sections:

- With no Estimates.
- With multiple Estimates.
- Where the Pavement Use conflicts with the estimated ADT.

You can preview or print the report, and then continue other processing.

Loading Errors

If **RAMM** finds any errors or discrepancies while updating Loading data, an error report is generated. The report lists Carriageway sections with:

- More than one Estimate.
- Duplicate Counts (same date, location and direction).

You can preview or print the report, and then continue other processing.

Top Surface Tasks

When you're working with the Status Check process, this heading contains tasks that update the Top Surface data in your database. See Run Status Check (on page 74).



Recreate Top Surfaces

RAMM recreates the top surface data stored in the top surface tables from the c_surf pavement layer information.

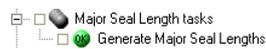
Create New Footpath Top Surface

When **RAMM** creates new Footpath Top Surfaces, any rating data held against older Footpath Top Surfaces is lost. You'll need to process any outstanding ratings first, before you run this task.

Major Seal Length Tasks

When you're working with the Status Check process, this heading contains a single task that updates the Major Seal Length data in your database. See Run Status Check (on page 74).

When processing starts, a window appears so you can tell **RAMM** how to determine Major Seal Lengths.



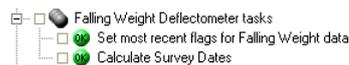
Major Seal Errors

If **RAMM** finds any errors or discrepancies while updating Major Seal Lengths, an error report is generated. The report lists Carriageway sections where there are:

- Gaps outside the parameters you specified.
- Consecutive short lengths.

Falling Weight Deflectometer Tasks

When you're working with the Status Check process, this heading contains tasks that update the Falling Weight Deflectometer data in your database. See Run Status Check (on page 74). You'll need to run these processes after a new survey has been loaded.



Set Latest Flag

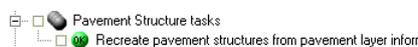
Because of the way that Falling Weight Deflectometer data is gathered, the **Latest** flag is only reset if the Pavement structure has changed since the last survey.

Calculate Survey Dates

This task calculates the start and end dates for each Survey, from all the individual survey records.

Pavement Structure Tasks

When you're working with the Status Check process, this heading contains a single task that updates the Pavement Structure data in your database. See Run Status Check (on page 74). You'll need to run this task when new pavement layer data has been entered.



Pavement Structure Errors

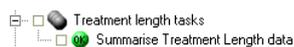
If **RAMM** finds any errors or discrepancies while updating Pavement Structure data, an error report is generated. The report lists Carriageway sections with:

- Invalid data - for example, where end_m is less than start_m.
- Dimension clashes for Pavement Layers with the same date.

You can preview or print the report, and then continue other processing. You'll need to correct the errors.

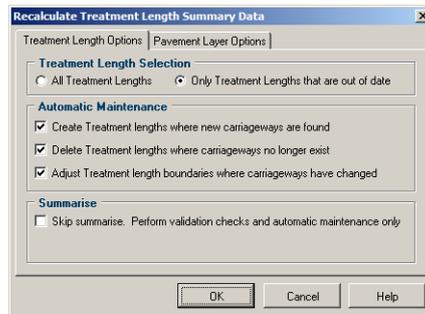
Treatment Length Tasks

When you're working with the Status Check process, this heading contains a single task that updates the Treatment Length data in your database. See Run Status Check (on page 74).



You can also start this process on its own, without the rest of the Status Check processes. Go to main menu of the **RAMM Manager** program and choose **Processes > Treatment Length Summarise**.

A window appears when you begin processing, to ask how you want to process Treatment Length data. You'll usually accept the default settings, then click the **OK** button to continue.



Treatment Length Selection

By default, **RAMM** will recalculate details for only the Treatment Lengths which it knows are out of date. If you suspect that Treatment Length data is incorrect, you can choose to recalculate all Treatment Lengths. This will probably take a long time.

Automatic Maintenance

If you want to perform Treatment Length maintenance tasks manually, you can switch off these automatic processes.

Warnings

RAMM can now warn you if Pavement Layer data is either missing or if it conflicts with Test Pit data for the same Treatment Length.

Summarise

If you're correcting existing data, but not adding new data, you may want to skip the Summarise process.

Error Report

If **RAMM** finds any errors or discrepancies while summarising Treatment Length data, a report is generated. The report lists Treatment Lengths:

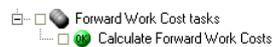
- Whose length was changed to match changes in the network.
- Which overlap with other Treatment Lengths.
- Which are not consistent with Treatment Length rules - for example, which cross Carriageway Area boundaries.

You can preview or print the report, and then continue other processing. You'll need to correct the errors.

TIP: At any time you can find all Treatment Lengths identified as invalid by opening the Treatment Length grid window and using a filter to show records where the **TL_Valid_OK** column is set to N.

Forward Work Cost Tasks

When you're working with the Status Check process, this heading contains a single task that updates the Forward Work Cost data in your database. See Run Status Check (on page 74). This data is used in NOMAD Forward Work Planning, and particularly on the Forward Work Balancing Report.



The data is calculated for the Current Programme or any Alternative Scenarios which are out of date. The process works out:

- The length of the network affected, and the costs of Treatments applied to the network in the plan.
- The Routine Maintenance Cost Estimate for the network.

Administering RAMM

When you're managing **RAMM**, there are a few administrative functions that you'll encounter. You may have to deal with Parameters, Treatment Lengths, Cost Sets and the export of **RAMM** data.

Parameters are the independent variables whose values determine the characteristics or behavior of a process or system such as **Traffic Count Estimation**. They have measurable or quantifiable characteristics.

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.

Cost Sets are the collection of prices for Treatments.

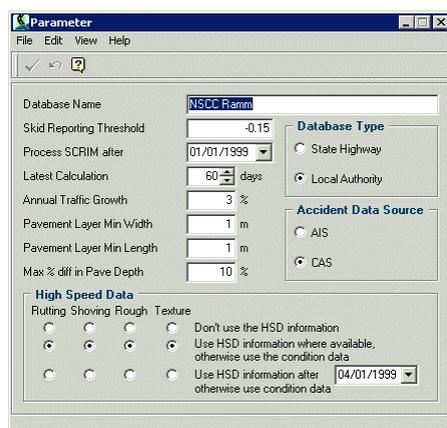
When you have data existing in a file which you would like to use in **RAMM**, you import the data. To import data is to enable the **RAMM** database to load it. Once successfully imported, the data can be used by **RAMM**.

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Parameters

Information about the current database is stored in the parameter table. This is also the location of variables which you'll only change infrequently.



Database Name

This name describes the database. It is not used within the **RAMM** software but is retained to identify the database.

Database Type

Whether this a Local Authority database or a State Highways database. This is used when displaying roadname information and by the Treatment Selection Summary process and the NOMAD Forward Work Planning module.

The following options are used in the Summarise process. The High Speed and SCRIM data are totalled according to the options checked here.

Skid Reporting Threshold (-n.nn)

The Skid Reporting Threshold. This value is used in the summarise process with the results being used in the treatment selection algorithm and in SCRIM reporting, to find seal lengths performing below this threshold.

Latest Calculation (days)

Number of days to use when calculating Latest values for survey data.

Process SCRIM after (dd/mm/yy)

The date which SCRIM data should be used after.

Annual Traffic Growth (nn%)

Annual arithmetic traffic growth rates are available from Transfund New Zealand's Project Evaluation Manual. Enter the average traffic growth rate for the road network as a percentage. A number between 0 and 10 will be valid with a default of 1. This value will be used in calculating the final user benefit costs. As the traffic growth figure is stored as a percentage it must be divided by 100 when being used in the calculation. The figure 75.714 has been taken from the Project Evaluation Manual as the fixed value to be used when calculating traffic growth rates.

High Speed Data

These fields are only available if there is data in high speed tables. As the collecting of the High Speed data is not mandatory you get a choice about which information to use. The choices apply to all High Speed tables: Rutting, Roughness and Texture.

- Don't use the HSD information.
- Use HSD information where available otherwise use the condition data.
- Use HSD data after dd/mm/yy otherwise use condition data.

If any of these flags change then the Summarise flag will be set and the Summarise process will have to run again. This prevents having half the data summarised on rough and the other on hsd_rough. The resulting values from this selection will be used in the treatment selection calculation.

Maintaining Cost Sets

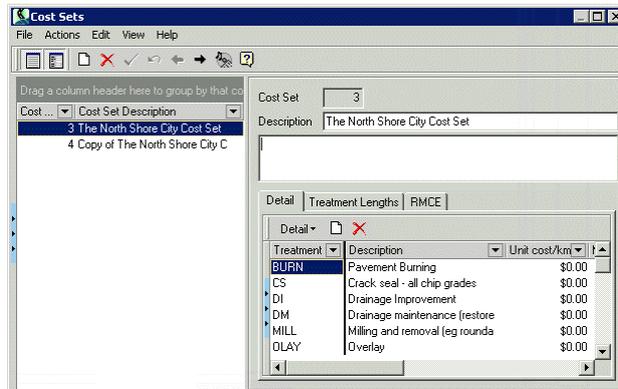
The Cost Set attached to a Treatment Length determines which costs will be assigned to that seal length when you're working with:

- Treatment Selection.
- Forward Work Planning.

The Cost Sets window is quite standard in its behaviour - for general details about working with standard windows, read the *Using RAMM* guide.

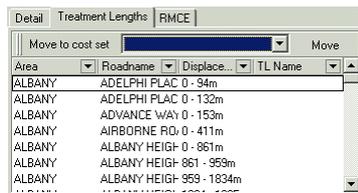
To open the Cost Sets window, go to the main **RAMM Manager** menu and choose **Maintenance > Cost Sets**.

General Cost Set Details



Treatment Length Details

To assign a Treatment Length to a different Cost Set: select the Treatment Length, select the name of the Cost Set, then click the **Move** button.

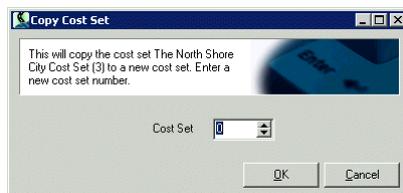


RMCE Curve Details



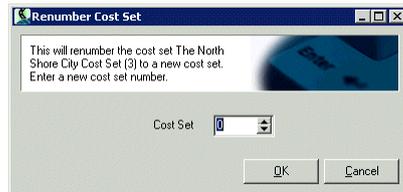
Copying Cost Sets

To copy the details of a Cost Set, go to the menu at the top of the Cost Sets window and choose **Actions > Copy**. Enter the number for your new Cost Set, then click the **OK** button.



Renumbering Cost Sets

To renumber a Cost Set, go to the menu at the top of the Cost Sets window and choose **Actions > Renumber**.



Enter the new number for your Cost Set, then click the **OK** button.

Generating Treatment Lengths

When you first set up **RAMM**, you'll need to generate all the Treatment Lengths in your network. This can be based either upon Carriageway Sections or upon a breakdown of major surfaces, roughness figures and other information.

After you have generated Treatment Lengths, you'll maintain them either manually or by running the Summarise Treatment Length process.

Importing Files

For a description of the File Import process, read the chapter about working with Maintenance Activity in the updated *Working with RAMM* guide.

Glossary

Average Exception

The average of all SCRIM exception values within the location summarised.

Below Reporting Threshold

Summation of the length (usually 10m) of readings within the location summarised where SCRIM reporting value is \leq reporting threshold.

ESC (Equilibrium SCRIM Coefficient)

ESC is MSSC (see below) data smoothed for year-to-year variations. ESC values are defined as falling within three ranges:

- *High*. ESC values above the Investigatory Level (see below).
- *Medium*. ESC values between Investigatory Level and Threshold Level.
- *Low*. ESC values below the Threshold Level.

IL (Investigatory Level)

The level of skid resistance at or below which a site investigation is to be undertaken and the information used as a priority indicator for programming treatment. The Threshold Level (TL- see below) for skid resistance is currently set at 0.1 below IL.

MSSC (NZMSSC)

Mean Summer SCRIM Coefficient - the mean SCRIM coefficient over the summer period (when skid resistance is generally at its lowest). MSSC was previously known as NZMSSC (New Zealand Mean Summer SCRIM Coefficient).

NOMAD

The National Optimisation of Maintenance Allocation by Decade (NOMAD) is the software component providing Pavement maintenance and treatment information at a project level for up to 20 years on behalf of the NZTA. It is also known as **RAMM** Forward Work Programme and is interlinked with dTIMS, the decision tool for future works and the Annual Plan process.

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.

SCRIM

Sideway-force Coefficient Routine Investigation Machine. This device measures the skid resistance of Roads under wet conditions. It is capable of testing both wheelpaths of long lengths of Road at a speed of approximately 50km/h. The raw data

from SCRIM is the ratio of the vertical force to the induced side force on the test wheel. Its measurement scale is effectively 0.0 to 1.0. This raw data is adjusted to account for SCRIM travel speed, temperature and other variables and then processed into MSSC and ESC values.

SCRIM Exceptions Report

A report designed to identify skid sites within the road network that are below threshold investigatory levels for SCRIM.

SCRIM Reporting Value

Average value (left and right wheelpath MSSC values) minus the IL (see above) for the particular skid site category.

Sections of Road

The individual lanes within a road.

Site Category

Divisions of the State Highway network are assigned a Site Category based on the demands and risks associated with the location (such as the required level of friction) and other geographic characteristics.

Skid Reporting Threshold (RT)

The current RT default is -0.1. This value is based on a nationwide risk analysis and has the effect of moving the total amount reported up or down across all site categories, depending on its value.

Skid Reporting Value (Skid RV)

The values presented in the SCRIM Exceptions Report. These values are MSSC values adjusted for site category characteristics.

Skid Resistance

Skid Resistance is a Condition parameter to characterise the contribution a Road makes to the friction between a Road surface and a vehicle tyre. Skid Resistance is usually measured on a wet surface.

Texture (microtexture, macrotexture, megatexture)

Microtexture refers to the texture 0.5mm below the surface of individual sealing chips. Macrotexture refers to water drainage paths between individual chips. Megatexture refers to pavement longitudinal profile or roughness, and relates to the tyre/road surface on a large scale.

Threshold Reporting Value

The threshold used to highlight areas with a SCRIM reporting value $< =$ threshold.

TL (Threshold Level)

The level functioning as a trigger for determining priority for SCRIM treatment. TL is currently set at 0.1 below the IL (see above).

Treatment

A general term to describe an action planned or implemented to make the Road safer in the context of a response to low skid resistance.

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