CJN TECHNOLOGIES LIMITED

RAMM Forward Work Programme

V3, 16-5-2005

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Document Release

To check that you are reading the most recent release of this document, please see our website (http://www.cjntech.co.nz).

Release Date	Change
May 2005	Second release (first release as separate publication)

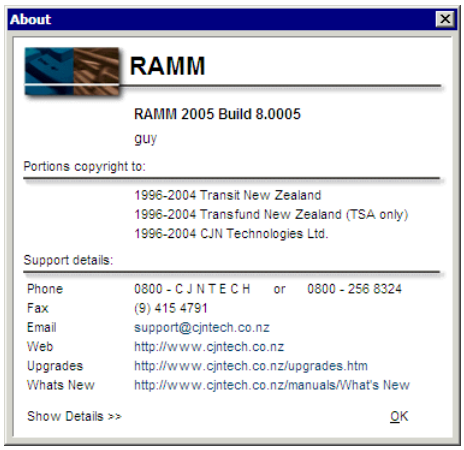
Finding the Software Version

When you contact us for help, we'll need to know which version of the RAMM software you are using.

TIP: Problems are sometimes fixed by simply upgrading your software to a later build. To find out which problems have been fixed in later builds than the one you're using, see our website Upgrades page (http://www.cjntech.co.nz/upgrades.htm). If you're running RAMM for UNIX, you may also need to upgrade your version of UNIX at the same time. If you have any questions about upgrading, feel free to contact us (see "Contacting CJN Technologies Ltd" on page 19).

To Find the Software Build Number

Go to the menu at the top of the RAMM main window, then choose **Help > About**. A small window shows details about the software. You'll find the Build Number at the top - in the image below it is *8.0005*.



Contents

CHAPTER 1

About This Guide

Forward Work Programming in RAMM was originally funded by Transit New Zealand. This guide has been reproduced with their kind permission.

This guide is specifically intended to help you use and understand the functions of the Forward Work Programme module in the RAMM software from CJN Technologies.

You may also need to refer the *Using RAMM* Guide. If you're not sure whether you're reading the right guide, see RAMM Guides (on page 17).

This section tells you how to get the most out of using the rest of the document- if you're familiar with Forward Work Planning you can use the links to go directly to the section you need. If you're new to Forward Work Planning, we recommend that you read the entire guide.

CHAPTER 2

Getting Help

This section describes the many ways you can get help when you have problems or questions about using our software.

IN THIS CHAPTER

Finding the Answers You Need Quickly

To Find Out How to Use Help

For descriptions of the different types of help we have, formatting conventions and contact information - that's right here in the section you're reading now.

To Find Out How to Work with a Particular Function

Go directly to the section about that particular function - refer to the *Contents*.

Answers Elsewhere

If the task is not listed in the *Contents*, you may find it in another of the RAMM Guides. Check our list of RAMM Guides (on page 17) to make sure you've got the right one.

To Find Out what a Particular Term Means

Read the *Glossary* at the end of this Guide.

To Find where a Particular Term Appears in this Guide

Read the *Index* at the end of this Guide.

Talk to Us

Feel free to contact us (see "Contacting CJN Technologies Ltd" on page 19) directly.

What You Should Already Know

The Microsoft Windows Environment

Before you read this guide, you need to be comfortable working with the Windows environment and its applications. We assume you already know how to use standard Microsoft Windows applications. For more information about using Windows applications, please refer to the Windows user documentation - including the online Help which you can open by clicking on a blank part of your Windows desktop, then pressing the **F1** key at the top of your keyboard.

Security and Passwords

Safeguarding passwords and security information is important. It's best never to write down a password, but if you must, keep it under lock and key.

Data Backup

Back up your data regularly. At the very least, you should back up your database in a location other than the computer you usually work on. Ideally, your entire computer's hard disk will be mirrored in another location such as a server or a network drive. Another cost-effective and secure backup solution is to use the RAMM Hosting Service. For more information, see our website (http://www.cjntech.co.nz).

Conventions We Have Used

This document uses certain ways of formatting text to identify special information.

Formatting Convention	Type of Information
▶ (printed document) or **Brown heading** (online/web)	Step-by-step procedures. Follow these instructions to complete a specific task.
Bold	Items you must select, such as buttons, menu options or items in a list. Menu options are separated by the > symbol. For example: **View > Refresh**.
KEYS	Keys on the keyboard. For example: SHIFT or CTRL.
KEY+KEY	Key combinations where you must hold down one key while you press another. For example: CTRL+P, or ALT+F4.

[Implied] Field Name	Part of a field name not actually shown on the screen.
> Menu Path > **[Variable]**	A menu option that can have several values - usually Asset Types.

Throughout this guide, when we refer to *RAMM* or a related application like *RAMM Asset Valuation, RAMM Assessment, SLIM, Signs,* or *RAMM Traffic Signals* we mean the Windows versions of our software.

Help Yourself

You can help yourself with *integrated help*, your *printed help guide*, or with *web help*.

Many people like to be able to find their own answers. It's often quicker than other ways, and it's usually more satisfying. If you can't find the answer quickly, don't hesitate to ask us for help directly (see "Contacting CJN Technologies Ltd" on page 19).

Using Integrated Help

Press **F1** on your keyboard in any window to access context sensitive help

-OR-

Click on the **Help** menu at the top of the window you're in and choose a relevant topic

-OR-

If you choose any of the **Help > CJN Website** options, your browser will be activated and take you to a page on our website (see *Using Web Help* below).

Using the Printed Help Guide

Printed help is useful especially when you don't have access to a computer.

Using Web Help

Our website (http://www.cjntech.co.nz) has number of resources that you'll find useful. Our Support page (http://www.cjntech.co.nz/support/index.htm) has links to documentation, reference, training and troubleshooting pages. If you're using an installed version of the application you can also download the latest version of the software from our website Upgrades page (http://www.cjntech.co.nz/upgrades.htm).

Help from Other Users

Contacting Other Users

When you have a problem or question about different ways of doing something, or you'd like to share ideas with those who have hands-on experience, you can ask other users. We'll be happy to put you in touch with them - just contact us (see "Contacting CJN Technologies Ltd" on page 19).

CJN Forum

You can also ask questions and participate in ongoing discussions in the CJN Forum (http://forums.cjntech.co.nz).

Help from CJN Technologies

We pride ourselves on our friendly, responsive support. If you need a helping hand, feel free to contact us (see "Contacting CJN Technologies Ltd" on page 19).

RAMM Guides

We publish a number of guides. Here's a brief overview of them and what they cover.

With every major release of RAMM, we publish a brief description of what's new in the release:

- *What's New in RAMM*.

Main functions and basic tasks in RAMM are described in:

- *Using RAMM*.

Advanced functions in RAMM are in a separate guide:

- *Working with RAMM*, including:
  - RAMM Network Manager.
  - Transaction Logging.
  - Surfaces.

- RAMM SQL.
- Bridges.
- Maintenance Activity.
- Pavement Structure.
- Pavement Strength.
- RAMM Security.

We have some other specific RAMM guides:

- *Managing RAMM*.
- *Street Light Inventory Management (SLIM)*.
- *RAMM Asset Valuation*.
- *RAMM Assessment*.
- *RAMM Forward Work Planning*.
- *RAMM Traffic Signals*.

We have two reference guides for advanced database details:

- *Working with Treatment Lengths*.
- *RAMM Database Reference*.

RAMM Database Details

Occasionally you'll need to know where specific details are stored in the RAMM database for more complex tasks. There are a number of ways to find out which tables and columns contain the information you need:

- Read the separate *RAMM Database Reference* guide.
- For the most up-to-date listing of the details you require, go to the RAMM Manager main menu and choose **Reports > Database Structure**. Choose the tables you wish to view and then **Preview** or **Print** them.
- For a general overview, read *Understanding RAMM Toolbar Controls* in the *Using RAMM* Guide.
- Ask workmates and associates who have used RAMM for longer.
- Contact CJN (see "Contacting CJN Technologies Ltd" on page 19).

Comments and Suggestions

If you have any feedback about this document or about the software itself, please contact us (see below). We welcome your observations and suggestions, as they help us to improve what we offer you.

Contacting CJN Technologies Ltd

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CHAPTER 3

Introduction

Transit New Zealand retains control of their RAMM master databases. They provide, to their Consultants, extracts of the database that are divided by Carriageway Area, referred to by Transit New Zealand as a Network Management Area.

Your use of the RAMM Forward Work Programme and its facilities varies, depending on whether you are at Transit New Zealand and wish to work with the master database, or you are a Consultant and wish to work with a Network Management Area extract.

For this reason throughout this document we refer to **Nationally** and **Locally** controlled information. Nationally controlled data and functionality means that it is available to Transit New Zealand. Locally controlled data and functionality is available to the Consultant.

The type of database you have is determined by a flag, held within the database, that tells the RAMM Forward Work Programme whether you are working with a Road Controlling Authority (RCA) master database or a Consultant copy.

If you are using the RAMM Forward Work Programme in a Local Authority situation you have two choices. You can either operate in a similar fashion to Transit New Zealand, working with the master database and generating one or more Consultant copies of the database to pass on. Alternatively you can operate with a single copy of the database that the RAMM Forward Work Programme recognises as being for a Local Authority and which allows access to both the RCA and Consultant data and functionality. This is achieved by setting the flag to Local Authority. Local Authority users can access all the functions described, whether national or local.

While using this document, please keep in mind the type of environment you're working in (see "Forward Work Planning Environments" on page 179).

CHAPTER 4

Overview

IN THIS CHAPTER

This guide is an introduction to the RAMM Forward Work Planning tool, and is written from the perspective of Transit New Zealand (see Transit New Zealand - http://www.transit.govt.nz) and their Consultants.

The RAMM Forward Work Programme is designed to store pavement treatment information at project level for a period of up to 20 years.

For example, you could plan to carry out a grade 3/5 two coat reseal on SH 3 RS 269 RP 0.100 - 2.540 in six years' time.

Theory

This document is to be used in conjunction with the State Highway Asset Management Manual (SHAMM, SM020). The SHAMM contains Transit New Zealand's philosophies and expectations for the management of State Highway Assets.

The manual is also available online (http://www.transit.govt.nz/technical_information/content_files/ManualSection13_FileName.pdf) at the Transit New Zealand website in Adobe Acrobat PDF format.

Objective

The primary purpose of this document is to help Asset Engineers use the RAMM Forward Work Planning software to meet the expectations of Transit New Zealand as described in the SHAMM.

However Road Controlling Authorities will also find Forward Work Planning useful for effective road asset management.

Overview Process

Below is an overview of the process for development of a robust Forward Work Programme (FWP):

1. Read SHAMM
2. Manage Treatment Lengths
3. Update Treatments
4. Update Maintenance Intervention Strategy (MIS) codes
5. Perform FWP Analysis and Reporting
6. Review steps 1 to 4 as necessary.

Lookup Codes

In addition to the above, the Forward Work Programme also requires the management and maintenance of several lookup codes, these being:

- Funding Groups
- Treatment Groups
- Cost Sets
- Reasons
- Primary Motivators
- MIS Codes

As with all software applications, it's essential for these lookup codes to be initially populated to various degrees before preparing a Forward Work Programme.

High Level Processes

This document also describes a number of processes that will not involve the Asset Engineer but will nevertheless be useful.

- Unloading and Loading the Forward Work Programme
- Maintenance Allocation Review Group (MARG) Priority Calculation
- End of Year Rollovers

CHAPTER 5

Understanding Forward Work Planning

A detailed discussion of the reasons behind Forward Work Planning and the processes you should follow both within and external to its implementation in RAMM can be found in the SHAMM (http://www.transit.govt.nz/technical_information/content_files/ManualSection13_FileName.pdf).

IN THIS CHAPTER

Philosophy of Pavement Maintenance Management

Typically, Transit New Zealand allocates 56% of its annual budget for general maintenance, reseal, and pavement reconstruction works. This is required to maintain an acceptable level of service and to counter the normal deterioration rate.

The amount of expenditure on maintenance works is significant and any small improvement in the way the network is maintained, without detriment to the long term integrity of the pavement, can lead to significant cost savings.

Please see *Chapter 1 - Section 1* of the *SHAMM* for a detailed discussion of the philosophy of pavement maintenance management.

Business Systems Process Overview

Please see *Chapter 1 - Section 2* of the *SHAMM* for an overview of the business systems designed to achieve coordinated and systematic pavement maintenance management at the project level.

The adoption of standardised business systems is important to ensure consistency of output across the network. The business systems establish a uniform framework without constraining the input of suppliers in developing maintenance strategies.

This section of the SHAMM covers Investment Levels, the Management Cycle, the Roles of Participants, and Business Practices.

Information Requirements

The key to successful asset maintenance management is the collection of sufficient, reliable data about the asset, collating this data into information, and interpreting this information to obtain intelligence. To be valid and appropriate the data must be:

- Relevant to the management decisions being made.
- Affordable and cost-effective so that regular collection and updating can be sustained.
- Reliable and adequately accurate for the intended purpose.
- Readily accessible and in a format suitable for those who need to manage and evaluate maintenance practices.

Chapter 1 - Section 7 of the *SHAMM* discusses this in detail, covering the following topics:

- Use of Data in the Management Process.
- Maintenance Costs.
- Crash Data.
- Traffic Data.
- Pavement Condition.
- Pavement Strength.
- Skidding Resistance.

- Road Geometry.
- Environmental Factors.
- Future Developments on Data Collection.
- RAMM Inventory Data and RAMM Outputs.
- Presentation of a Multi-Year Works Programme.
- Trends and Exceptions.

The Intellectual Process

The intellectual process describes the process of applying intelligence to decision support information in order to determine future treatments.

The process includes:

- The collation and interpretation of all available data.
- The application of intelligent decision support systems.
- Field verification.
- Consideration of all resulting information to resolve the application of the right treatments at the right time in compiling the Forward Work Programme.

See *Chapter 1 – Section 8* of the *SHAMM* which covers the following topics in more detail:

- The Process.
- Collation and Interpretation of Data.
- Intelligent Decision Support Systems.
- Field Assessment and Verification.
- Programme Preparation.

CHAPTER 6

Treatment Length Segmentation

IN THIS CHAPTER

Initial Selection

The initial assessment of Treatment Length should be based on the top surface layer and the changes in chip type or other surfacing treatment.

Refinement

When it becomes obvious that a seal length is not performing in a uniform manner, the Treatment Length shall be redefined to restore uniformity within the Treatment Length. Some maintenance treatments may extend beyond a single Treatment Length and provide a greater length of uniformly performing pavement. Treatment Lengths should be extended or deleted under such circumstances. See Maintaining the Programme (on page 37) for more information.

Prerequisites for Generation

Before generating Treatment Lengths, the RAMM database must contain:

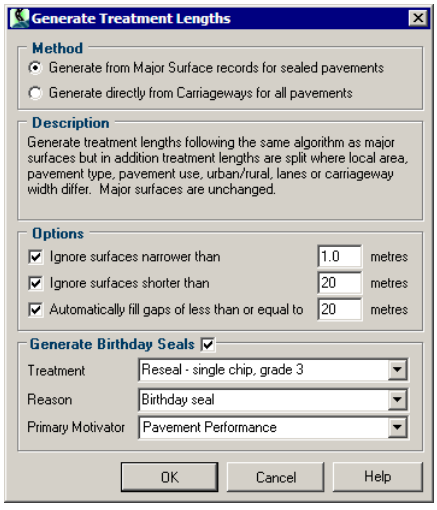
- A Treatment Group that includes a check for all reseals.
- At least one Treatment which you're happy to set as the Birthday Seal for all generated Treatment Lengths.
- At least one Reason which you are happy to set as the default Reason for the Birthday Seal.
- For the chosen Reason, select one Primary Motivator from those available to use as the default Primary Motivator for the Birthday Seal.

If you do not choose to Generate Birthday Seals, the Treatment Length Generation process will not create a Forward Work Programme for you.

Generating Treatment Lengths

In order to make use of the RAMM Forward Work Planning tool you need to have defined Treatment Lengths for your network. Whilst a full discussion of Treatment Length generation is outside the scope of this document it is useful to know the basics in order to create Treatment Lengths from the Top Surface data.

Access to the Treatment Length Generation process is in RAMM Manager from the **Processes > Treatment Lengths > Generate** menu.



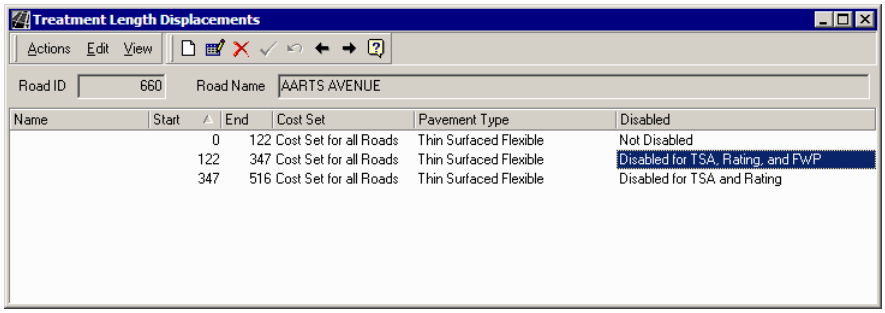
As indicated in the previous sections your Treatment Lengths should be generated based on the Top Surface information rather than from Carriageways. However, Forward Work Planning will work with the Treatment Lengths whichever method you choose. If you choose to generate from Top Surface data then you can also choose to ignore seal records if they are too narrow or too short and have RAMM "stretch" other seals to make them join.

Finally, you can also have RAMM create a default Forward Work Programme for you as it creates Treatment Lengths. If you choose the option to "Generate Birthday Seals", RAMM will set up a Current Programme for you and place into it the Treatment, Reason, and Primary Motivator that you indicate apply to the Birthday Seal. The Planning Year in which the Birthday Seal takes place is determined from the Age and the Expected Life of the surfaces.

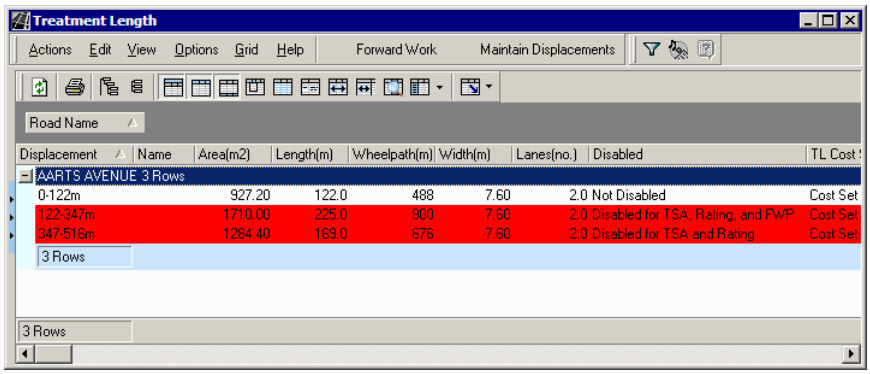
Disabled Treatment Lengths

As a consequence of the way RAMM generates Treatment Lengths there are often cases where one Treatment Length is actually a duplicate of another one. This situation most commonly arises when you have common State Highways or Intersections. Alternatively, there may simply be a section of road that you don't want to do any Forward Work Planning on, possibly because of its material (for example cobblestones).

Using the Treatment Length Maintenance window available in RAMM (click on the **Maintain Displacements** button on the Treatment Length Grid/Detail window) you can set any Treatment Length to be disabled.



Disabled Treatment Lengths can be viewed and are kept up to date by Treatment Length Summarise, but are not available in the Forward Work Programme. By default a filter is set for the Treatment Length Grid/Detail to remove Disabled Treatment Lengths. Switch the filter off and you will see something like this:

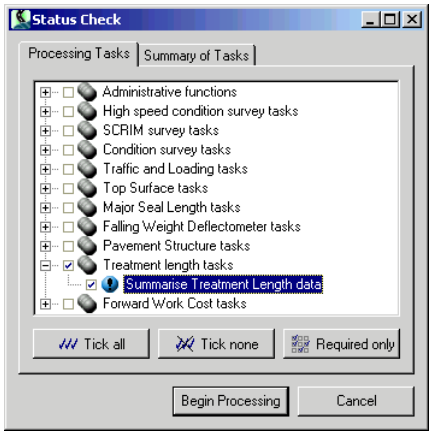


The two Treatment Lengths highlighted in *red* are those that are disabled.

Status Check Flags

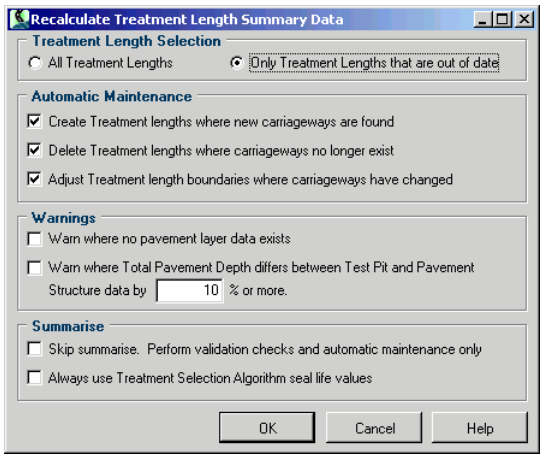
Following any change to the start or end location of Treatment Lengths, the status flag of the road name is set to "changed". This implies that summary data is now invalid. Summary data held against the Treatment Length includes a summary of all rating and condition data, traffic data etc.

To correct this status, run the Treatment Length Summarise process. You can access this process from the **Processes > Status Check** option in RAMM Manager.



Open the Treatment Length Tasks and select the Summarise Treatment Length data option. To run the process, click the **Begin Processing** button.

This displays the following options dialog:



Unless, you have reason to do so, don't change the defaults on this window. Click the **OK** button to begin the summarise process.

CHAPTER 7

Maintaining the Programme

RAMM Forward Work Planning requires that there be at least one Forward Work Programme defined for your database. This programme will have a Format of Current Programme. The Current Programme is the one defined as the one that you are using in the field.

You can create as many Alternative Scenarios as you require by taking a copy of either the Current Programme or one of your other definitions. However, only one Programme can be Current in your database.

At any time you can select one of your Alternative Scenarios and set it to be the Current Programme. It will then replace your original Current Programme. Any Alternative Scenario that was generated by loading an Analysis from dTIMS cannot be set as the Current Programme. dTIMS Analyses do not use Forward Work Planning Treatments and are not specific enough to be used as the Current Programme.

All programmes in the Forward Work Plan that are derived from dTIMS Analyses will be given a Format of *dTIMS Recommendation*. These Programmes are available to be used for comparison and reporting but cannot be used as the Current Programme.

IN THIS CHAPTER

Maintaining Treatments in the Programme

Maintaining Treatments in the Forward Work Programme involves the review of Treatments attached to each of the twenty-year planning periods for each

Treatment Length. This also affects the attachment of Reasons, MIS, SIS, Notes and Priorities.

Operation

There are two methods for maintaining the Programme. Both are available in RAMM. You can access the information from the **Treatment Length** Grid by clicking on the **Forward Work** button. This method gives you access to the **Planning window**. Alternatively you can access the **Planning Grid** from the menu **Forward Work > Planning Grid** or by clicking on the **Forward Work Programme Planning Grid** icon  on the toolbar.

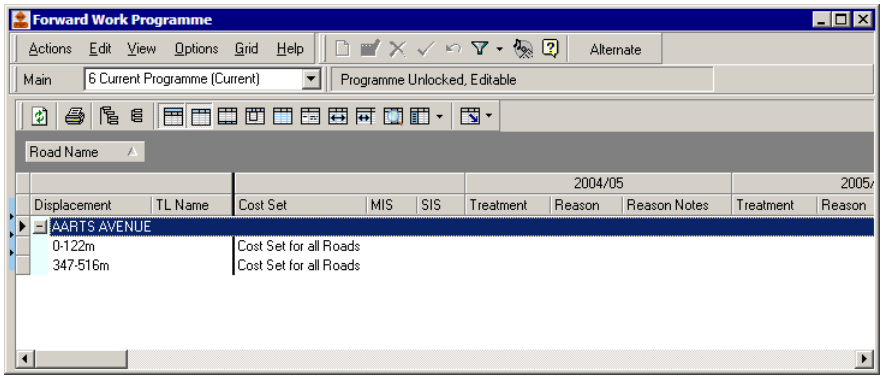
Maintenance Rules

- The default blank cell attached to any of the twenty years for a Treatment Length signifies routine maintenance.
- All treatments must have a reason assigned.
- All Treatment Lengths must have a **Maintenance Intervention Strategy** assigned.
- Any change to treatments assigned to Years 1, 2 or 3 will default the MIS to blank. A new MIS must be attached before the change can be saved.

The Planning Grid

The Forward Work Planning Grid is an environment much like Microsoft Excel, which allows you to maintain the Forward Work Programme. Access to the Planning Grid is via the Forward Work Programme Planning Grid icon  on the main RAMM Toolbar or from the menu **Forward work > Planning Grid**.

Unlike the Planning Screen the Grid is linked directly to the Road Selection panel. Therefore, when you open the Planning Grid you will see the Forward Work Programme that applies for the portion of the network currently selected in the Road Selection panel.



As you enter this window you will be in edit mode. As soon as you make any change the **Save** and **Cancel** buttons on the toolbar will activate.

NOTE: To avoid losing a significant amount of work in the event of a system or hardware crash, it's recommended that you should save at frequent intervals.

Selecting a Programme

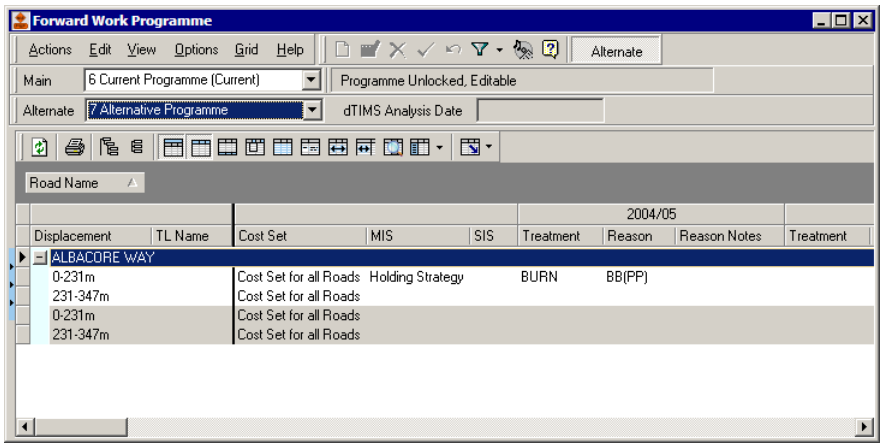
As a default, the Current Programme will be displayed on this window. However, you can select any scenario to work with by clicking on the Main Programme combo and choosing one from the list.

The status message next to the Main Programme combo will tell you whether you are able to maintain the selected Programme.

Selecting an Alternative Scenario

You can choose to display a second, alternative, Programme in the Planning Grid at the same time. To do this, first click on the **Alternate** button in the toolbar.

This will display the Alternate Programme combo box for you to select the Programme you wish to see.



You will notice that the Planning Grid displays the information from the Alternate Programme, row by row, underneath the Main Programme data. As you can also see this information is greyed out indicating that you cannot maintain it.

The Alternate Programme is there to provide you with additional information. If you wish to maintain a Programme you need to select it as the Main Programme.

A Forward Work Programme that has been loaded from a dTIMS Analysis can be displayed using the Alternate Programme. If the currently displayed Alternate was from dTIMS then the Analysis Date will be displayed next to the combo box.

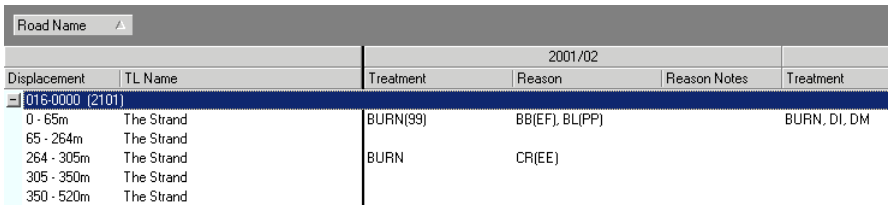
Remember that dTIMS data cannot be maintained using RAMM so you cannot select a dTIMS Recommendation as the Main Programme.

The Planning Area

The Planning Area of this window is divided into two areas, divided by a vertical bar. To the left of the bar is information that identifies the Treatment Lengths. That is the Road, Start and End Displacements and the Treatment Length Name. Of these, only the Treatment Length Name can be edited.

To the right of the divider is the Forward Work Plan for the Treatment Length. This are is divided into three columns for each Planning Year. Up to 20 Planning Years can be displayed, however, you can use the Layout options to reduce that if

you require. To the left of the Planning Years are columns for the Cost Set, the Maintenance Intervention Strategy and the Safety Intervention Strategies. At the extreme right hand side of the Planning Years is one further column that holds the Treatment Length Notes.



You have three choices when entering data in this Planning Grid. You can open up the expansion for each cell and select your Treatments, Reasons, etc. from the lists presented to you (a text area is displayed in the case of Notes). Alternatively you can type directly in the cell. The cell will accept a valid Treatment or Reason code along with the associated information such as Coverage or Primary Motivator. Be careful if you type directly in the cells. Strict formatting rules need to be followed, otherwise you will be presented with a series of error messages when RAMM assumes that you have entered invalid codes.

Enter one or more Treatments by typing in the codes, separated by a comma and space. For example: *BURN, DI, DM.* If you wish to enter a Coverage or Priority, put them in brackets after the Treatment, separated by a comma. For example: *BURN(50,H).* If you do not enter the Coverage or Priority, RAMM will assume 100% and Medium respectively.

A similar structure is used for the Reasons and Primary Motivator. For example: *BB(EF), BL(PP).*

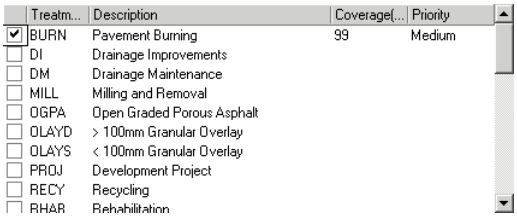
Reason Notes can be typed directly in the cell or you can click on the expansion button (on the right of the cell) and a text box will open.

Treatment Length Notes are more complex to deal with as they are associated with a length of Road that does not necessarily correspond to the Treatment Length. Therefore, the only way to enter a Treatment Length Note is via the expansion dialog (see "Treatment Length Notes" on page 58). The most recent note, applicable to the Treatment Length is displayed. For this reason, Treatment Length Notes are also excluded from the Copy/Paste functions detailed below.

The third method for maintaining the Programme is to make use of the copy and paste functions to either copy information between cells or Treatment Lengths. You could also copy to Excel, maintain the information there, and copy it back in to the Planning Grid later.

Selecting a Treatment

When you open the Treatment expansion you will see a list of all the Treatments that are valid for the Planning Year you are working with.

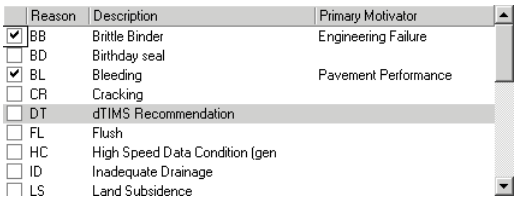


	Treatm...	Description	Coverage(...	Priority
☑	BURN	Pavement Burning	99	Medium
☐	DI	Drainage Improvements		
☐	DM	Drainage Maintenance		
☐	MILL	Milling and Removal		
☐	OGPA	Open Graded Porous Asphalt		
☐	OLAYD	> 100mm Granular Overlay		
☐	OLAYS	< 100mm Granular Overlay		
☐	PROJ	Development Project		
☐	RECY	Recycling		
☐	RHAR	Rehabilitation		

Select one or more Treatments by clicking in the tick box. Coverage can be entered by clicking in the Coverage column next to the selected Treatment. Similarly, you can choose to set the Priority for the Treatment.

Selecting a Reason

Opening the Reason expansion displays a list of the Reasons that are associated with the Treatments. You can select one or more Reasons from the list by clicking on the tick box.

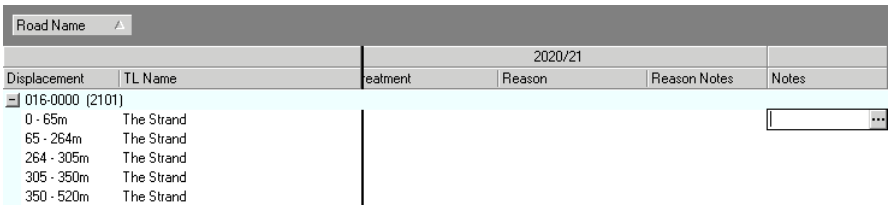


	Reason	Description	Primary Motivator
☑	BB	Brittle Binder	Engineering Failure
☐	BD	Birthday seal	
☑	BL	Bleeding	Pavement Performance
☐	CR	Cracking	
☐	DT	dTIMS Recommendation	
☐	FL	Flush	
☐	HC	High Speed Data Condition (gen	
☐	ID	Inadequate Drainage	
☐	LS	Land Subsidence	

Choose the Primary Motivator for your Reason by clicking in the Primary Motivator column next to the selected Reason.

Reason Notes

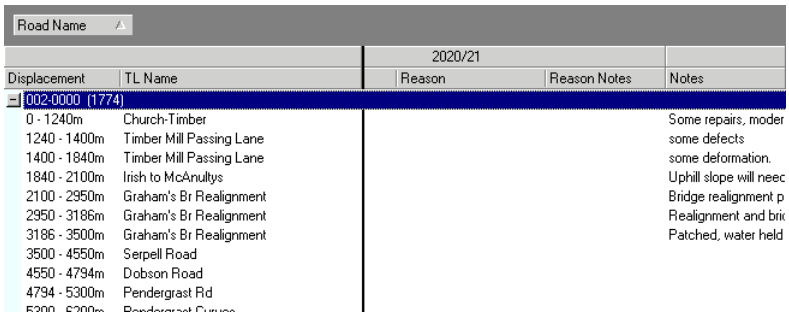
You can choose to type a Reason Note directly into the cell. If you prefer to work with a larger text area then click on the expansion icon that appears on the right of the cell when you click on it.



Road Name		2020/21			
Displacement	TL Name	eatment	Reason	Reason Notes	Notes
⊟ 016-0000 (2101)					
0 - 65m	The Strand				
65 - 264m	The Strand				
264 - 305m	The Strand				
305 - 350m	The Strand				
350 - 520m	The Strand				

Treatment Length Notes

Treatment Length Notes are displayed in the column at the right hand side of the Planning Grid. If you wish to see more details, then click on the expansion button that is visible when you click on the cell to display the Treatment Length Note (see "Treatment Length Notes" on page 58) dialog.



Copy Functions

You can use the Windows Clipboard and standard Copy and Paste functions to transfer information into the Planning Grid. Due to the complex way information is recorded for a Forward Work Programme and the relationships between the component parts, we advise caution. Here are some of the copy functions you can perform:

- Copy the *Treatment, Reason,* and *Reason Note* from one Planning Year and paste it into one or more others.
- Copy all the displayed information (everything to the *right* of the black bar in the image below) for a single Treatment Length and paste it into one or more other Treatment Lengths.
- Copy the highlighted row (or partial row) and paste it into a Microsoft Excel spreadsheet.
- Copy an entire Reference Station or Road ID and paste it into a Microsoft Excel spreadsheet.

  NOTE: To copy an entire Reference Station you need to click the **Toggle multi-select mode** button and enable multi-select mode. See our example below.

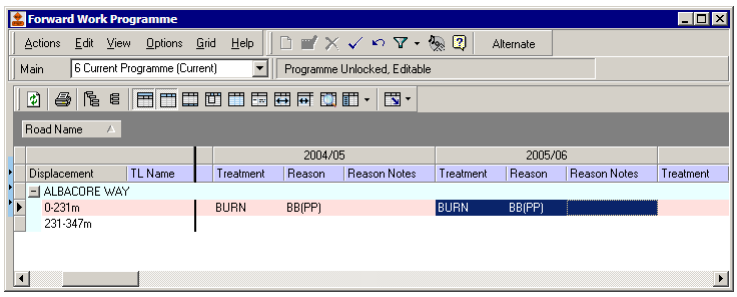
- Copy the highlighted information from MS Excel and paste it into the highlighted row in the Planning Grid.

To Copy Planned Treatments, Reasons and Reason Notes from One Year to Another

To copy the Planned Treatments, Reasons, and Reason Notes from a given Year simply click on any one of the three cells that make up that Planning Year and use the CTRL + C key combination.

To paste this information into another Planning Year, you click on any one of the Cells within that Year and use the CTRL + V key combination to paste it in.

The row will be highlighted in a colour as in the image below.



To Copy and Paste a Row

Copying and Pasting a *row* works in a similar way to that for a Planning Year. Click anywhere on the Treatment Length row that you wish to copy and press CTRL + C.

Then click on the destination Treatment Length and press CTRL +V.

Copying To and Pasting From Excel

You can copy to and paste information from Microsoft Excel in the Planning Grid using standard Windows Clipboard commands.

To copy, first highlight all the cells that you require and press CTRL + C on your keyboard. Paste the information inside Excel in the normal way with CTRL + V.

To paste information from MS Excel into the Forward Work Plan you simply highlight and copy the cells from Excel in the normal way. Click on the first cell (the *topmost cell immediately to the right of the black line of the paste area*) and press CTRL + V.

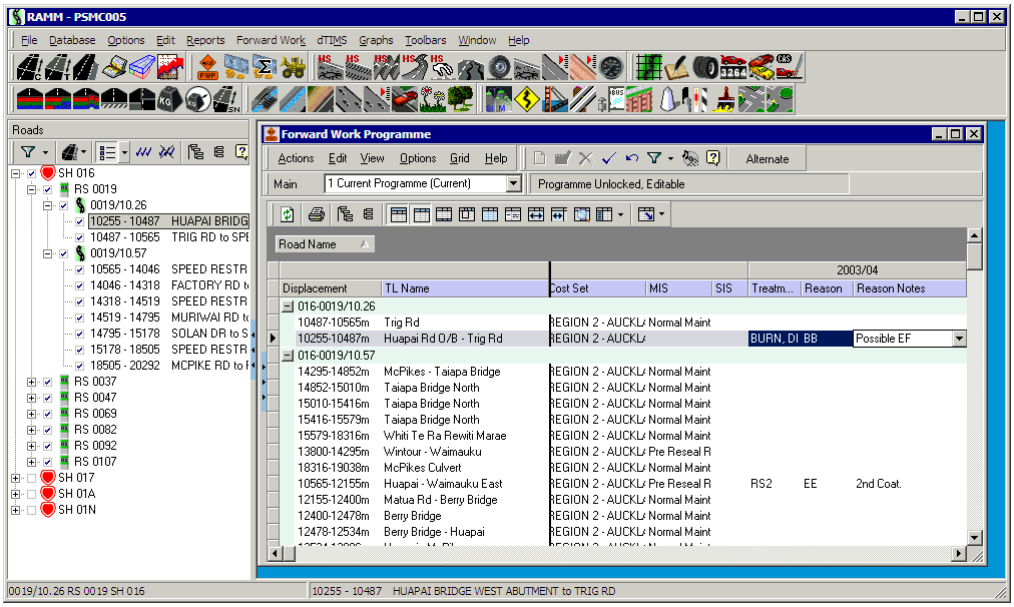
WARNING: Take care that you choose the correct starting position for your paste when bringing in data from Excel. The Planning Grid does not validate the information as you paste it in and will not care if you put Treatments in Reasons, or Reasons in Reason Notes, etc. It will, however, validate the data when you hit the **Save** button, resulting in a large number of errors if you haven't pasted the data correctly.

Copying and Pasting To Microsoft Excel

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

NOTE: To copy an entire Reference Station, click the **Toggle Multi-Select Mode** button to enable multi-select mode.

2 Highlight the information you want to copy and press CTRL + C.

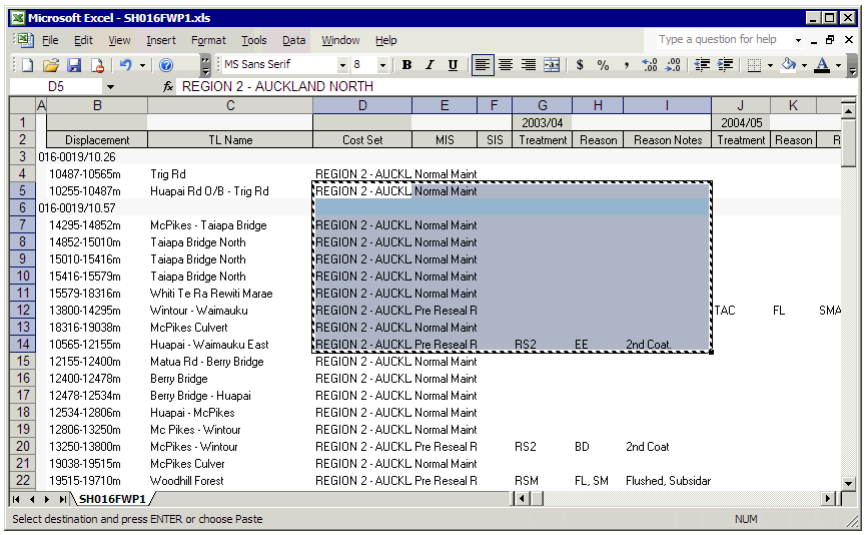


3 Open Microsoft Excel and press CTRL + V to paste the information into a file or cells of your choice.

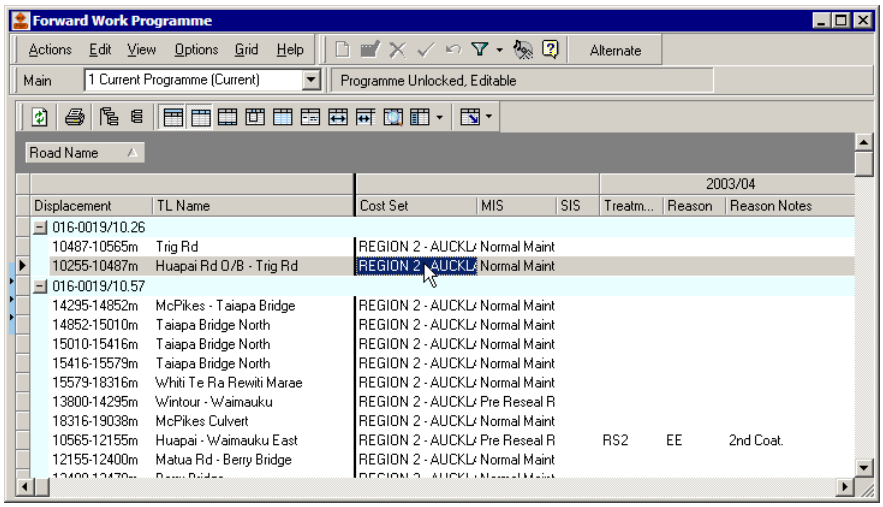
> **NOTE:** To export the entire Reference Station as an Excel spreadsheet, click the **Export File** button from the Grid toolbar, select **Excel**, and choose a file name and location to save to.

Copying and Pasting From Microsoft Excel

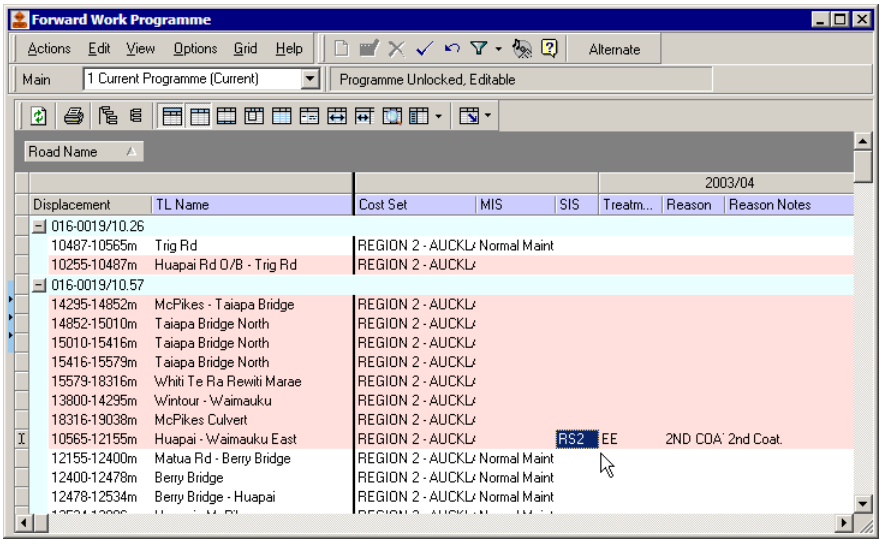
1 In Microsoft Excel, highlight the section you want to paste back into the Forward Work Programme, and copy it to the Windows clipboard (CTRL + C).



2 Carefully select the *start point* to paste the clipboard contents into the Forward Work Programme (for example, the cell indicated by the mouse arrow below) and press CTRL + V.

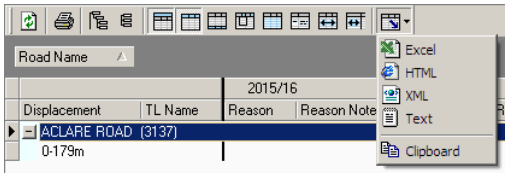


RAMM now pastes the data you copied in Excel at the selected point, and shows the new data highlighted in a different colour.



Grid Toolbar

The Planning Grid makes use of the standard Grid tool in RAMM. For more information on using the Grid toolbar please see the *Using RAMM* Manual.



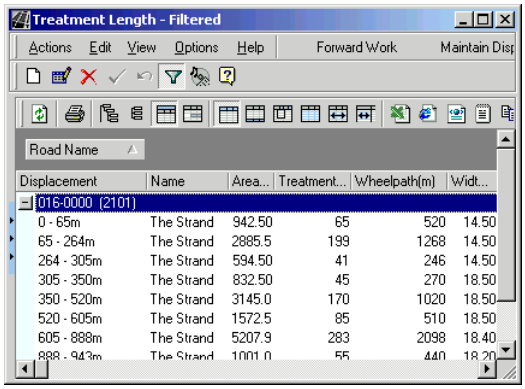
Validation Rules

The rules for validation of Treatments, Reasons, Primary Motivators, and Maintenance Intervention Strategies are the same for the Planning Grid as they are for the Planning window (described below).

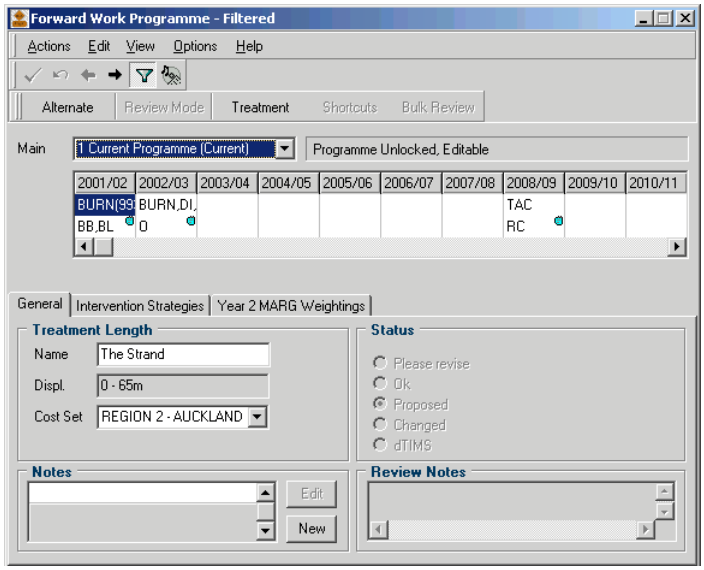
Using the Planning Window

The Planning window allows you to access the Forward Work Programme for a preselected range of Treatment Lengths.

To access this window, first open the Treatment Length Grid (or Detail) from the main RAMM Toolbar.



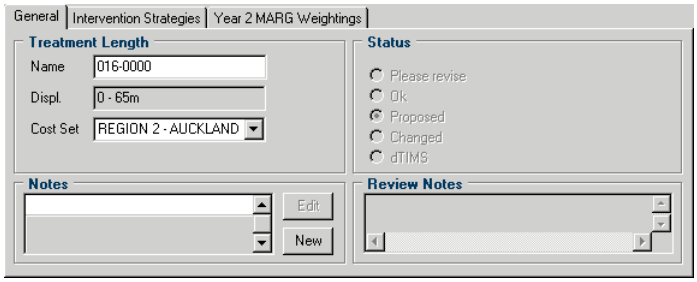
Once you have selected which Treatment Lengths you wish to maintain click on the **Forward Work** button. This will then display the Planning window.



All the Treatment Lengths that are currently available in the Grid are maintainable from this window whether or not you have called it from the Treatment Length Grid or Detail.

We look at the main part of the window in more detail in Planning Area (on page 53) below. First, let's have a look at the contents of each of the tabs at the bottom of the window.

General



This tab allows you access to the general information about the Treatment Length and the Programme as it relates to that Treatment Length.

Treatment Length

The Treatment Length Group displays the Name, Displacements, and Cost Set that apply to the currently selected Treatment Length. You can change the Name of the Treatment Length or select a new Cost Set for it (from those available. However, you cannot maintain Treatment Length Displacements from this window. Treatment Length displacements can only be maintained by clicking on the **Maintain Displacements** button from the Treatment Length Grid or Detail.

Status

The Status displayed on this window gives you information on where in the Planning Cycle the Treatments for this Treatment Length are.

A Status of **Please revise** has come from the Review Process and indicates that Transit New Zealand would like the Consultant to look at this proposed work again and come up with a new recommendation.

A Status of **Ok** indicates that the Planned Treatments for this Treatment Length have been reviewed by Transit New Zealand and approved.

A Status of **Proposed** indicates that this is the recommendation for this Treatment Length, but that it has not yet been approved by Transit New Zealand.

A Status of **Changed** indicates that the Consultant has made a change to the Treatments, Reasons, Primary Motivators, MIS, or SIS for this Treatment Length.

A Status of **dTIMS** indicates that the Plan you are looking at has been loaded into a Forward Work Programme from a dTIMS Analysis.

Notes

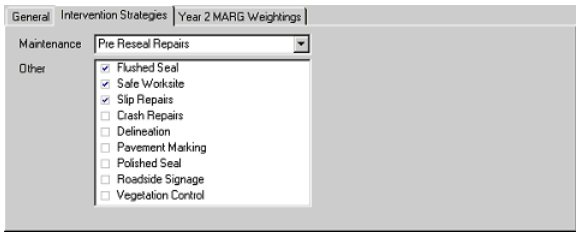
This area of the window displays the Treatment Length level notes that are associated with the selected Forward Work Programme.

See the section on Treatment Length Notes (on page 58) for more information.

Review Notes

Review Notes are entered by Transit New Zealand during the Review process. See the section on Reviewing the Forward Work Programme (on page 95) for more information.

Intervention Strategies



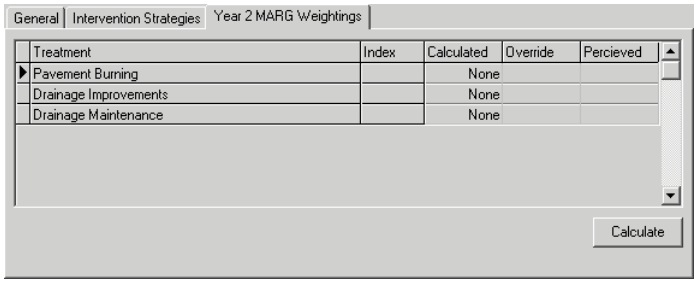
All Treatment Lengths must have a Maintenance Intervention Strategy selected. Select one from those defined for the Network Management Area appropriate for the current Treatment Length.

If you make any change to the Treatments in Years 1, 2 or 3, then RAMM will automatically remove the MIS associated with the Treatment Length. This is intended to ensure that you consider which strategy is most appropriate. You *must* select a new MIS for the Treatment Length before you can save the changes.

See the section on Maintaining Maintenance Intervention Strategies (on page 64) for more information on adding and updating these codes.

Other strategies are defined as Safety Intervention Strategy codes. You can choose one or more from the list of Safety Intervention Strategies. You are not required to choose one, so you may leave them deselected if you wish.

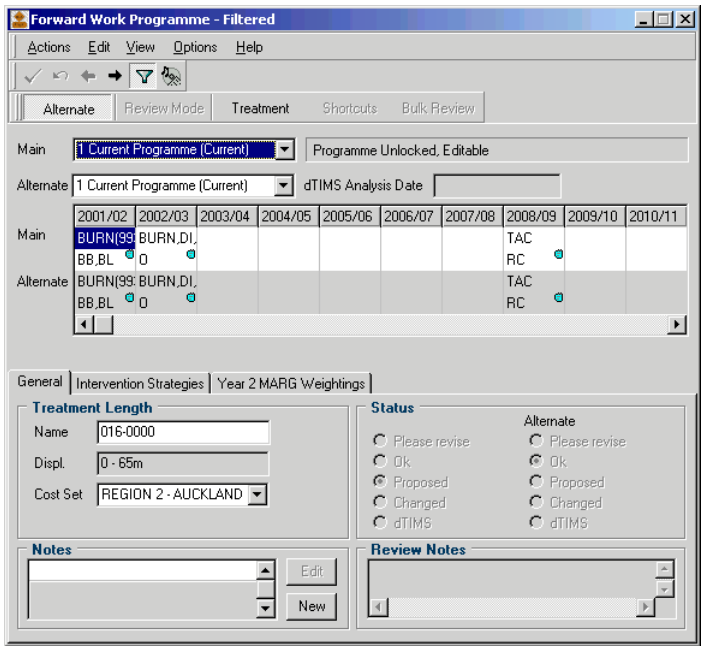
Year 2 MARG Weightings



This is one of the places where you can see and calculate MARG values for the Treatments in Year 2 of the Programme.

See Project Ranking (on page 169) for more information.

Planning Area



Main Programme

The Main Programme is the one that you wish to maintain. Typically this will be the Current Programme and the selection combo box will default to this one. Any Programmes that have been loaded into RAMM from dTIMS cannot be selected as the Main Programme. This is to ensure that you cannot edit the information loaded from dTIMS. Should you wish to view the dTIMS recommendation click on the **Alternate** button and select it there.

Main Programme Lock/Edit Status

This field, which is next to the Main Programme combo, tells you whether you can edit the Main Programme that you selected. There are two pieces of information here. The first tells you if the Programme is Locked or not. The second says whether you have the authority to edit the Programme even if it is unlocked.

A Programme may be locked because someone has made a decision to protect it from change. If the Programme has been unloaded it will also be locked to stop you from changing it until it is returned.

Whether you can edit unlocked Programmes depends on what security permissions you have and on whether you are looking at the Programme in the Transit New Zealand main database or a Consultant's database for the Network Management Area. Transit New Zealand may not modify the Current Programme, although they may create a copy and edit it.

Alternate Programme

Click on the **Alternate** button to expand the Planning window in order to display an Alternative Scenario.

The Alternative Programme is displayed for reference only. You cannot make any changes to this Programme. If you wish to update an Alternative Scenario you must select it as the Main Programme.

dTIMS Analysis Date

If you have chosen to display a Programme derived from dTIMS data loaded into Forward Work Planning, then this field will show you the date when the original dTIMS Analysis was carried out. This might have a bearing on the relevance of this data today.

Main Programme Planning Year Cells

There are cells in the Main Programme part of the window for each year of the 20-year Planning Period. The first ten years are shown when the window is displayed. You can scroll to the right hand side to see the rest. The first year (on the left hand side) is considered to be Year 1, the current year.

Each cell consists of two rows. The top row is used to display the code for those Treatments that you have selected for that year. You select Treatments by displaying the Treatment Toolbar (see "The Treatment Toolbar" on page 56) and ticking the ones that you require. Within the cell the codes are displayed separated

by a comma. If you have specified coverage for the Treatment, this is also displayed, in brackets, next to the Treatment code. You can choose as many Treatments as you require. Typically, this would be one or two. Display the Treatment Toolbar to clearly see which Treatments have been applied in that year.

For each Treatment that you tick you also have the ability to define the coverage that you require and to indicate your estimate of the Priority that should be accorded to the Treatment.

The second row of the Programme Cell is used to display the Reason and Primary Motivator for the Treatment(s). Once again the Reasons are displayed as codes with commas separating them. The Primary Motivator for a Reason is displayed in brackets next to the Reason to which it applies. Reasons are selected by displaying the Reason tab on the Treatment Toolbar and ticking the Reason(s) that you require. For each Reason you select you need to choose the Primary Motivator which best fits with the circumstances.

In the Forward Work Planning window shown above you can see that some cells have a small icon next to the Reason. This indicates that a Reason Note has been entered for that Planning Year. These notes can only be seen by displaying the Treatment Toolbar. You can enter Reason Notes at any time. However, some Reasons require you to enter an explanatory note.

If a cell is empty, that is you have not expressly assigned a Treatment to that Year, RAMM takes this to mean that Routine Maintenance will be taking place on that Treatment Length in that Year.

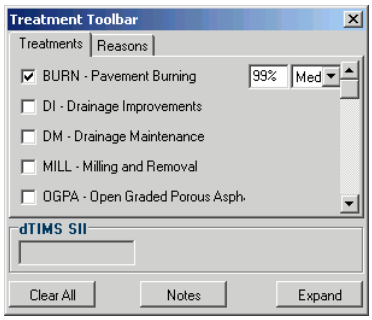
Alternate Programme Planning Year Cells

The Planning Years for the Alternate Programme are kept in alignment with those from the Main Programme. At no time can you edit the information displayed and this portion of the window is grey to indicate that it is read only.

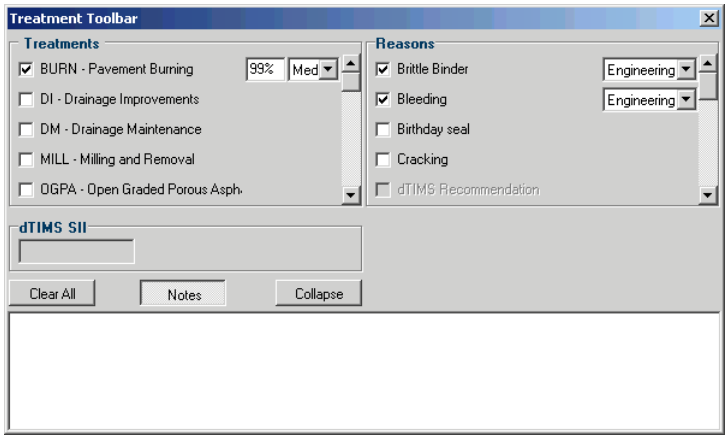
The Treatment Toolbar

Click on the **Treatment** button or double click on any treatment cell in the Twenty-Year Programme to open the Treatment Toolbar. Once displayed this toolbar will remain visible and float above the other windows until closed.

The toolbar will initially open up to be displayed as follows:



If you want to see the Notes you can click on the **Notes** button. If you wish to see all the information at once, also click on the **Expand** button.



The Treatment Toolbar keeps track of which cell on the Planning window you are currently in and displays the Treatments, Reasons, and Reason Notes that you have entered. Treatments and Reasons will be listed alphabetically unless they were already selected for the cell before you clicked on it. Pre-selected Treatments and Reasons will always appear at the top of the window.

Programme Period

All Treatments are assigned to a Programme Period. That is they are only available for entry into pre-defined years of the Forward Work Programme. The Treatment

Toolbar takes this into account. Treatments that are not available for the highlighted Planning Year **do not** appear on the Toolbar.

The End of Year Rollover process advances all information from each Planning Year forward one year. This often causes a Treatment that was valid for one Year to be moved into a Year where it is not allowed. Forward Work Planning does not remove this Treatment, it is up to the Consultant to review the Plan and propose a valid alternative. Therefore, until it is removed, it will appear in the cell and on the Toolbar.

Invalid Treatments that appear on the Treatment Toolbar can be unticked and ticked only so long as the Toolbar remains open and you do not move from the highlighted Planning Year. Once you untick the invalid Treatment and either close the Toolbar or move to work with another Planning Year, the invalid Treatment will disappear and you will not be able to add it again to that Year.

Treatment Coverage and Priority

On the Treatment tab of the Toolbar you can see two additional pieces of information that are displayed to the right of any selected Treatment. They are the Percentage Coverage and the Treatment Priority.

As a default the Percentage Coverage is set to 100%. This indicates the Treatment you have selected is to be applied to the full **length** of the Treatment Length. If you do not wish to apply the Treatment to the full Treatment Length then you can enter a value here.

The Treatment Priority can be used to indicate how important it is that the selected Treatment be carried out. This flag allows you to give your considered opinion independently of any automatic calculation of Treatment Priority, such as MARG. By default, the Priority is set to Medium, but you can change this to either High or Low.

Reason Primary Motivator

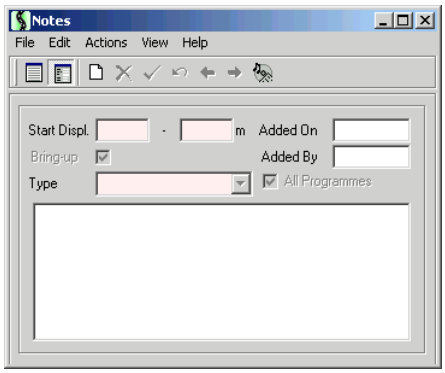
On the Reason tab of the Treatment Toolbar you can see an additional column of information for each of the selected Reasons. This is the Primary Motivator for the Reason. Not all Reasons require a Primary Motivator, but for those that do you will see a combo box here listing the Primary Motivators that are available to you.

All Reasons that are assigned to Treatments in the first **five** Planning Years **must** have a Primary Motivator assigned to them (if they have been defined).

Treatment Length Notes

Treatment Length Notes are accessible from both the Forward Work Planning window and Grid. They are intended as a way of associating general or review information with a length of the network rather than with a specific Treatment/Reason combination.

Clicking on the **Edit** or **New** button in the Notes area on the Planning window displays the following dialog. A similar dialog is launched by clicking the ... button in the **Notes** cell on the Planning Grid.



The reason for entering and maintaining these notes in a separate window is because they are associated with a length of the network. You can associate the note with any start and end displacement without recourse to the start and end of the Treatment Length.

Multiple notes can be entered for a single Treatment Length.

When displayed on the Planning window or grid, the notes will be visible against the Treatment Length they apply to.

In addition to defining the Start and End Displacement for the note you need to select one of the Note Types that you have defined.

Enter the note in the text box at the bottom of the window. The *Added On* and *Added By* information will be automatically populated for you.

In addition you can choose to have this note available for all the Forward Work Programmes in your database by ticking the All Programmes check box. Should you either ignore or deliberately untick this tickbox then this note will only be displayed for the Programme you were working on when you entered it.

Finally, you can also choose to have this note displayed prominently when you move onto the Treatment Length. Do this by clicking on the Bring-up tick box.

Programme Status Flags

Any change to the Treatments assigned to a Treatment Length, the reasons, MIS, or SIS will alter the status of the Treatment Length to *Changed*. This status change is used in the approval process of the programme. The following rules apply:

- A consultant does not have access to the Approve/Reject status change.
- Transit New Zealand staff have no access to change treatments (thus effecting a status change to *Changed*).

CHAPTER 8

Maintenance Interventions

Maintenance works should normally be considered for implementation once the maintenance intervention level has been reached or exceeded.

For a full discussion on the application of maintenance interventions, the highway environment, and intervention levels see *Chapter 1 – Section 5* of the *SHAMM*.

CHAPTER 9

Maintenance Intervention Strategies

A Maintenance Intervention Strategy is a detailed statement of the type of maintenance activity that should be targeted to the Treatment Lengths identified in the Forward Work Programme. It is the principle method of conveying the appropriate activities to all parties involved in the maintenance of an asset.

Maintenance Intervention Strategies are designed to ensure the optimum use of maintenance funding by ensuring that routine activities are appropriate given the programmed treatments.

A more detailed discussion of Maintenance Intervention Strategies, covering objectives, alignment with policy, and typical strategies is found in *Chapter 1 – Section 6* of the *SHAMM*.

IN THIS CHAPTER

Maintenance Intervention Strategy Codes

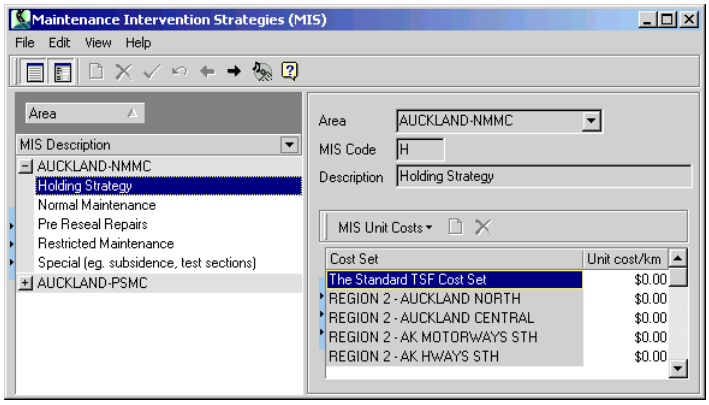
Maintenance Intervention Strategies may vary between Network Management Areas. In some cases this difference may simply be using the same code for different descriptions (or vice versa). However, the maintenance of these codes is done nationally. Please contact Transit New Zealand to arrange for new codes to be added. These codes will then be delivered to Consultants via the National Table Export/Import (see "National Tables Export" on page 165).

MIS Costs

All Maintenance Intervention Strategies have costs associated with them. Even if the MIS Codes are common between the Network Management Areas, it is unlikely that the costs will be common. It is the responsibility of the Consultant, therefore, to define the MIS costs for their region.

Maintaining Maintenance Intervention Strategies

MIS Codes are maintained in RAMM Manager from the menu **Projects > Forward Work > Maintenance Intervention Strategies**.



Maintenance Intervention Strategy definitions are maintained nationally by Transit New Zealand. However, because there is a danger of codes having different meanings between Consultants, they are recorded separately by Network Management Area (NMA).

When inserting a new MIS Code you first need to select the Network Management Area to which it is applicable. Within the NMA the Code that you use must be unique. However, it does not matter if you use the same code to mean different things in different NMAs.

New and updated MIS definitions can be supplied to Consultants by using the National Table Export/Import.

Transit New Zealand cannot update the Unit Cost / km for the MIS in each of the Cost Sets. This can only be done by a Consultant, using their copy of the database. This information will not be lost as it is included in the data transferred back to Transit New Zealand in the Forward Work Unload and Load processes.

MIS can be used the year prior to or the year of a treatment as a special maintenance cost which overrides the routine maintenance cost interpolated from the Routine Maintenance Cost Estimation (RMCE) curve. They may have different values for each cost set.

There are default MIS in the database, but the Consultant should develop their own and apply their own costs to these. They should also supply these MIS to Transit New Zealand so that the cost balancing can be run successfully.

CHAPTER 10

Safety Management Strategies

See *Chapter 2 – Sections 1 to 5* of the *SHAMM* for a discussion of the processes necessary to ensure the safety of the State Highway network. The process is determined by the preparation, implementation, and review of the Safety Management Strategy.

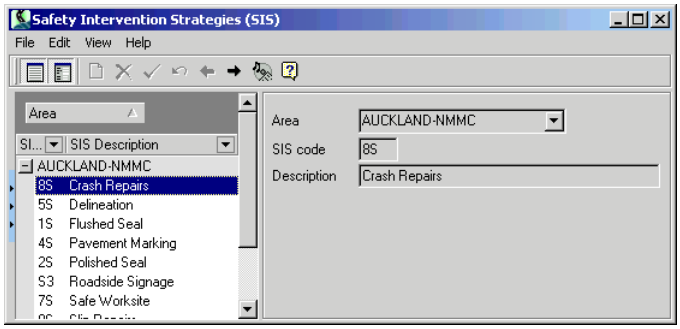
IN THIS CHAPTER

Safety Intervention Strategies

A Safety Intervention Strategy (SIS) forms part of the Safety Management Strategy. *Chapter 2 – Section 6* of the *SHAMM* discusses the definition and purpose of a SIS, intervention levels, considerations, and a hazard register.

Maintaining Safety Intervention Strategies

Safety Intervention Strategies can be maintained in RAMM Manager from the menu **Projects > Forward Work > Safety Intervention Strategies**.



SIS codes are defined and maintained nationally by Transit New Zealand. Codes are defined separately for the different Network Management Areas so that there is

no clash between those used by the different Consultants. If you require a new code to be added then contact Transit New Zealand and they can add it for you.

New and updated SIS codes can then be delivered to the Consultant using the National Table Export/Import (see "National Tables Export" on page 165).

When inserting a new SIS code you will first have to select a Network Management Area. Within each area the SIS Code must be unique, but the same code can be used in different NMAs to mean the same or different things.

CHAPTER 11

Forward Work Planning Analysis and Reporting

IN THIS CHAPTER

After an End of Year Rollover

If you have just set up a Forward Work Programme or it is not the beginning of a new Financial Year and you have not run the End of Year Rollover process you can ignore the rest of this section and continue on.

However, if you have just performed an End of Year Rollover or have received a new copy of the database following a Rollover you will need to check your Programme for Treatments and Primary Motivators which are no longer valid or missing.

Fortunately, RAMM Forward Work Planning provides you with two Reports to help you. They are:

- Out of Date FWP Treatments Report.
- Missing Primary Motivators Report.

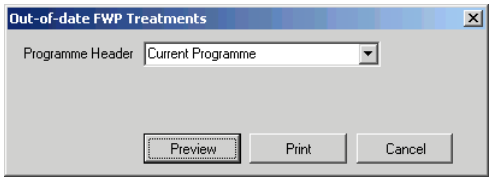
See End of Year Rollover (on page 156) for a more complete discussion on this process.

Out of Date FWP Treatments Report

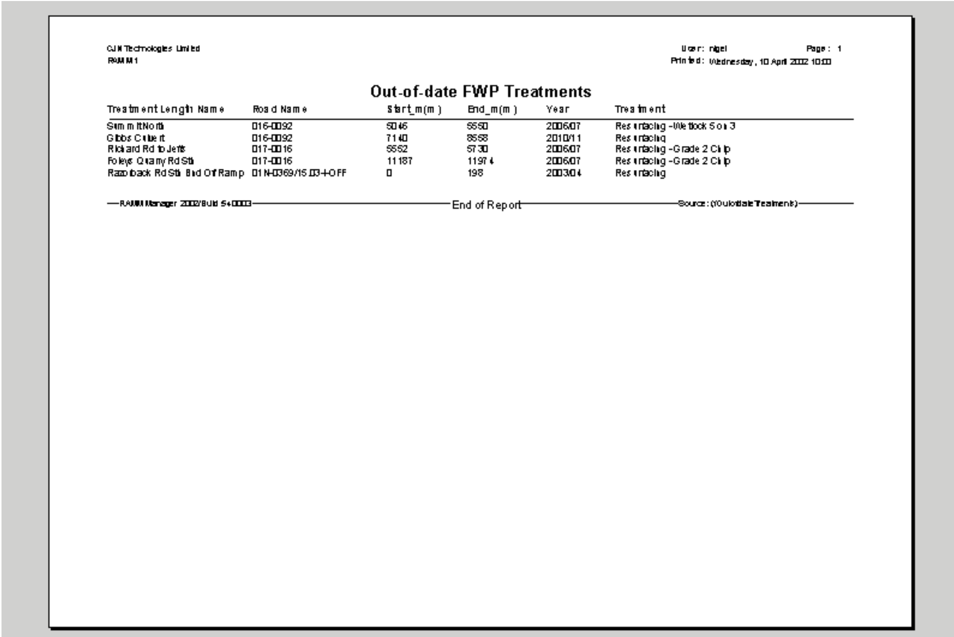
As detailed earlier, treatments are defined as being valid for given periods within the Forward Work Plan. When the End of Year Rollover takes place Treatments that were previously in Year 4 are now in Year 3. However, it may be that some of them are not valid for use in Year 3.

RAMM Forward Work Planning provides you with a report to quickly allow you to find the Treatments are not valid for the Year in which they now find themselves.

You can access this report in RAMM Manager from the menu **Reports > Forward Work > Out of Date FWP Treatments**.



Choose the Programme that you are concerned about (the Current Programme is displayed by default) and click on the Preview or Print button.


CJN Technologies Limited
RAMM1

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Printed: Wednesday, 10 April 2002 10:00

Out-of-date FWP Treatments

Treatment Length Name	Road Name	Start_m(m)	End_m(m)	Year	Treatment
Summit North	016-0092	5046	5550	2006/07	Resurfacing - Wetlock Son 3
Gibbs Culvert	016-0092	7140	8558	2010/11	Resurfacing
Rickard Rd to Jeffs	017-0016	5552	5730	2006/07	Resurfacing - Grade 2 Chip
Foleys Quarry Rd Sth	017-0016	11187	11974	2006/07	Resurfacing - Grade 2 Chip
Razorback Rd Sth Bnd Off Ramp	01N-0369/15.03-I-OFF	0	198	2003/04	Resurfacing

RAMM Manager 2002/Build 5.4.0003 — End of Report — Source: (YOutofdateTreatments)

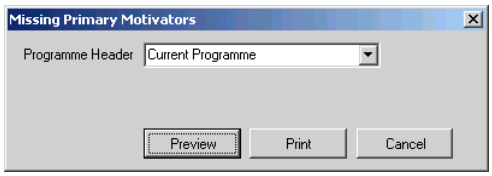
Using the report you can find and correct those Treatments that are now out of date.

Missing Primary Motivators Report

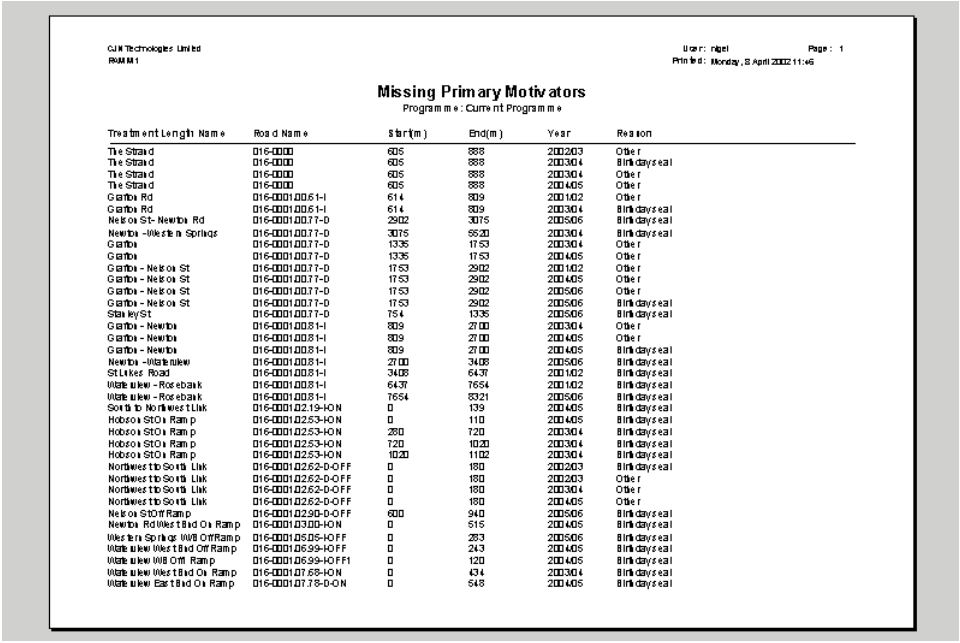
Many Treatment Reasons have one or more Primary Motivators associated with them. Whilst you do not need to assign a Primary Motivator to a Reason in Years 6 to 20, you do need to assign one (where they are applicable) to the Reasons in Years 1 to 5.

After the End of Year Rollover, the Treatments and Reasons from Year 6 will now be in Year 5. Therefore, RAMM Forward Work Planning provides you with a Report that allows you to quickly locate any Reasons that now need Primary Motivators.

You can find this Report in RAMM Manager under the menu **Reports > Forward Work > Missing Primary Motivators**.



Choose the Programme that you are concerned about (the Current Programme is displayed by default) and click on the Preview or Print button.



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RAMM1

User: nigel Page: 1
Printed: Monday, 8 April 2002 11:46

Missing Primary Motivators
Programme: Current Programme

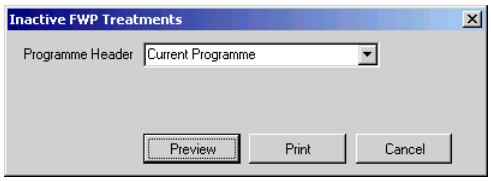
Treatment Length Name	Road Name	Start(m)	End(m)	Year	Reason
The Strand	016-0000	605	888	2002/03	Other
The Strand	016-0000	605	888	2003/04	Blinkdaysseal
The Strand	016-0000	605	888	2003/04	Other
The Strand	016-0000	605	888	2004/05	Other
Gianfoa Rd	016-0001.0061-I	614	809	2001/02	Other
Gianfoa Rd	016-0001.0061-I	614	809	2003/04	Blinkdaysseal
Nelson St- Newtoa Rd	016-0001.0077-D	2902	3075	2005/06	Blinkdaysseal
Newtoa -Western Springs	016-0001.0077-D	3075	5520	2003/04	Blinkdaysseal
Gianfoa	016-0001.0077-D	1335	1753	2003/04	Other
Gianfoa	016-0001.0077-D	1335	1753	2004/05	Other
Gianfoa - Nelson St	016-0001.0077-D	1753	2902	2001/02	Other
Gianfoa - Nelson St	016-0001.0077-D	1753	2902	2004/05	Other
Gianfoa - Nelson St	016-0001.0077-D	1753	2902	2005/06	Other
Gianfoa - Nelson St	016-0001.0077-D	1753	2902	2005/06	Blinkdaysseal
Stanley St	016-0001.0077-D	754	1335	2005/06	Blinkdaysseal
Gianfoa - Newtoa	016-0001.0081-I	809	2700	2003/04	Other
Gianfoa - Newtoa	016-0001.0081-I	809	2700	2004/05	Other
Gianfoa - Newtoa	016-0001.0081-I	809	2700	2004/05	Blinkdaysseal
Newtoa -Watteaiew	016-0001.0081-I	2700	3408	2005/06	Blinkdaysseal
St Lukes Road	016-0001.0081-I	3408	6437	2001/02	Blinkdaysseal
Watteaiew - Rosebank	016-0001.0081-I	6437	7654	2001/02	Blinkdaysseal
Watteaiew - Rosebank	016-0001.0081-I	7654	8321	2005/06	Blinkdaysseal
South to Northwest Link	016-0001.02.19-HON	0	139	2004/05	Blinkdaysseal
Hobson St On Ramp	016-0001.02.53-HON	0	110	2004/05	Blinkdaysseal
Hobson St On Ramp	016-0001.02.53-HON	280	720	2003/04	Blinkdaysseal
Hobson St On Ramp	016-0001.02.53-HON	720	1020	2003/04	Blinkdaysseal
Hobson St On Ramp	016-0001.02.53-HON	1020	1102	2003/04	Blinkdaysseal
Northwest to South Link	016-0001.02.62-D-OFF	0	180	2002/03	Blinkdaysseal
Northwest to South Link	016-0001.02.62-D-OFF	0	180	2002/03	Other
Northwest to South Link	016-0001.02.62-D-OFF	0	180	2003/04	Other
Northwest to South Link	016-0001.02.62-D-OFF	0	180	2004/05	Other
Nelson St Off Ramp	016-0001.02.98-D-OFF	600	940	2005/06	Blinkdaysseal
Newtoa Rd West Bnd On Ramp	016-0001.03.DD-HON	0	515	2004/05	Blinkdaysseal
Western Springs WB Off Ramp	016-0001.05.D5-HOFF	0	283	2005/06	Blinkdaysseal
Watteaiew West Bnd Off Ramp	016-0001.06.99-HOFF	0	243	2004/05	Blinkdaysseal
Watteaiew WB Off Ramp	016-0001.06.99-HOFF1	0	120	2004/05	Blinkdaysseal
Watteaiew West Bnd On Ramp	016-0001.07.68-HON	0	434	2003/04	Blinkdaysseal
Watteaiew East Bnd On Ramp	016-0001.07.78-D-ON	0	548	2004/05	Blinkdaysseal

Using the report you can find and correct those Reasons where Primary Motivators are now required.

Inactive Forward Work Programme Treatments

Forward Work Programme Treatments are defined and maintained by Transit New Zealand. It may be that Transit New Zealand has decided that some of these Treatments are now Inactive. Therefore, when you receive a new Consultant copy of the database, it is a wise precaution to check your Forward Work Programme to see if you are applying any Treatments that are now Inactive.

To help you a report is available in RAMM Manager from the menu **Reports > Forward Work > Inactive FWP Treatments**.



Select the Programme that you are interested in analysing (the dialog defaults to the Current Programme). Click on the Preview or Print button to see the results of the analysis.

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Inactive FWP Treatments

Treatment Length Name	Road Name	Start_m(m)	End_m(m)	Year	Treatment
Matira Rd - Berry Bridge	016-0019/10.45	12155	12478	2003/04	Second Coat Seal, grade 3
Whitburn - Waimauku	016-0019/10.45	13783	14295	2003/04	Reseal - racked in 35, two chip sizes
Rimmers - Sth of Parkhurst	016-0037	7607	9150	2002/03	Second Coat Seal, grade 3
West St - Saleyard Rd	016-0047	2350	2770	2004/05	Second Coat Seal, grade 3
Henly Rd	016-0047	10418	10721	2001/02	Second Coat Seal, grade 3
Kahikatea Flat Rd	016-0047	10938	11075	2002/03	Second Coat Seal, grade 3
North Cres (Sth)	016-0047	12400	13050	2002/03	Second Coat Seal, grade 3
McLachlan Rd - Quail Rd	016-0047	15141	16150	2002/03	Void Filling
North of Basil Orr Rd	016-0047	19297	19542	2002/03	Second Coat Seal, grade 3
South of Waitangi Stream Bridge	016-0047	19542	19660	2002/03	Second Coat Seal, grade 3
Kakanui Bridge Sth	016-0069	1637	2468	2001/02	Second Coat Seal, grade 3
Kakanui Bridge Nth - Tuhirangi	016-0069	2611	2880	2003/04	Second Coat Seal, grade 3
Ogle Rd	016-0082	4081	4498	2002/03	Second Coat Seal, grade 3
Ryburns	016-0082	5630	6081	2002/03	Second Coat Seal, grade 3
J. Farmer Rd - Litten Rd	016-0082	7427	7780	2002/03	Second Coat Seal, grade 3
Litten Rd	016-0082	7780	8675	2002/03	Second Coat Seal, grade 3
Tauhoa Rd	016-0082	8675	9486	2002/03	Second Coat Seal, grade 3
Summit - Ingleton	016-0092	5550	6184	2003/04	Second Coat Seal, grade 3
Tauhoa - Wharehine	016-0092	745	1490	2004/05	Second Coat Seal, grade 3
Wharehine Rd	016-0092	2068	2700	2002/03	Second Coat Seal, grade 3
Ingleton Rd	016-0092	6184	7140	2003/04	Second Coat Seal, grade 3
Kahikatea Rd Sth	017-0016	3153	3320	2002/03	Second Coat Seal, grade 3
Horseshoe Bush Road	017-0016	3320	3715	2004/05	Second Coat Seal, grade 3
Richards Rd - Greens Hill	017-0016	5730	6388	2002/03	Second Coat Seal, grade 3
Pine Acres - Maeneene	01N-0237	1362	1902	2002/03	Second Coat Seal, grade 3
Te Hana Bridges Nth	01N-0237	4281	4555	2003/04	Second Coat Seal, grade 3
Te Hana Rail ERP 4.818	01N-0237	4555	4818	2001/02	Second Coat Seal, grade 3
ERP 4.818 Bridges	01N-0237/04.81	4818	5034	2001/02	Second Coat Seal, grade 3
Sth of Golf Course	01N-0248/01.27	2360	3214	2003/04	Second Coat Seal, grade 3
Waitaraire Stream	01N-0248/01.27	8081	8348	2003/04	Second Coat Seal, grade 3
Old Depot	01N-0264	1302	1380	2002/03	Reseal - racked in 24, two chip sizes
Old Depot	01N-0264	1380	1705	2002/03	Second Coat Seal, grade 3
Mangere Bridge	020-0010/02.54-D	2540	3197	2004/05	Structural asphaltic concrete
Paerata North Curves	022-0000/03.70	9294	10053	2002/03	Second Coat Seal, grade 3

RAMM Manager 2002/Build 5+0002 — End of Report — Source: (InactiveFWPTreatments.Rpt)

This is an example of a Forward Work Programme which still has Inactive Treatments assigned to Treatment Lengths within the Twenty-Year Programme.

Trends and Exceptions

The collation of data does not itself provide the means of identifying problem sites.

The interpretation of the data is important, as this is the process which identifies the trends and exceptions essential for the early identification of faults and the subsequent selection of treatments for each Treatment Length.

Chapter 1 - Section 7.13 of the *SHAMM* discussed the types of indicators, interventions, and customised indicators for trends and exceptions.

Exception Maintenance

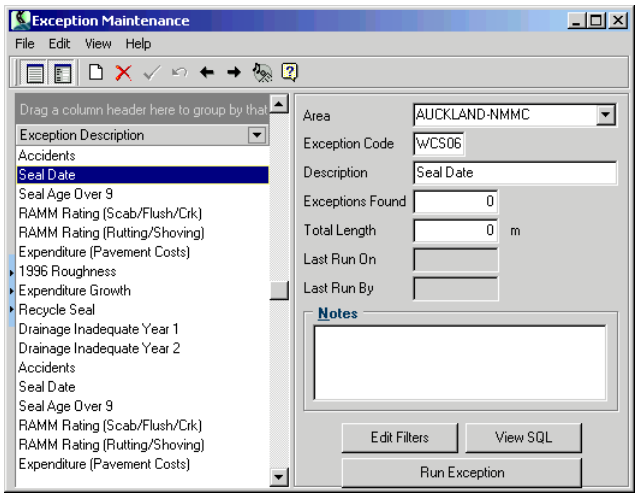
Overview

You can use exceptions to search through Treatment Length summary data finding Treatment Lengths that are performing abnormally. Run this from the **Projects > Forward Work > Exceptions** menu from RAMM Manager.

An exception can be based on either, a filter or an SQL query you have created. You can also start by using the filter tool to develop the exception and switch to SQL when more complex searches are required than the filter tool offers. However, once you switch to SQL you can no longer access the exception as a filter.

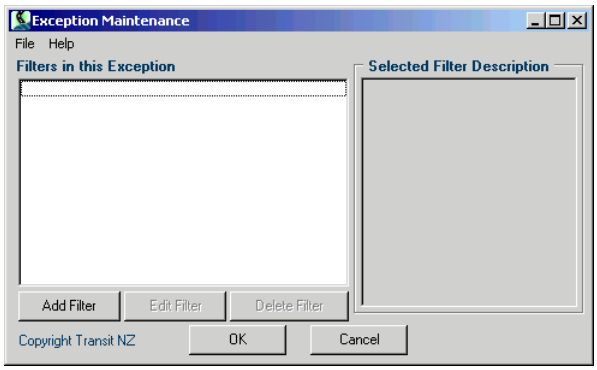
When running an exception all Treatment Lengths matching the criteria you have specified are tagged with the code of that exception. These tags remain against the Treatment Length until you clear them or rerun the exception.

To find all the Treatment Lengths tagged by an exception use RAMM. Click on the Treatment Length icon and filter the grid for Treatment Lengths with that exception code.



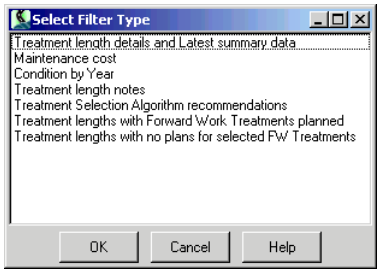
To create a new Exception definition you first need to insert a new record, selecting a Network Management Area, giving it a unique Exception Code, and a Description. You can also add some explanatory notes if you wish.

Once you have your basic definition you need to add the selection criteria. Do this by clicking on the **Edit Filters** button. This will cause the following window to be displayed.

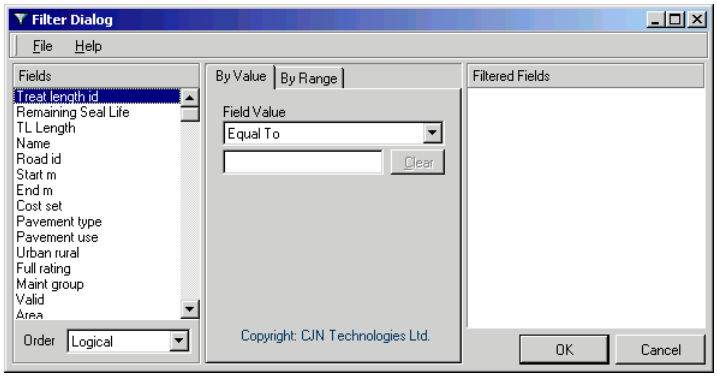


Filtering information for Treatment Lengths is complex as a result of the diverse range of tables that hold Treatment Length related data.

Therefore, you will need to choose what type of Treatment Length information you want to search for using the following window.

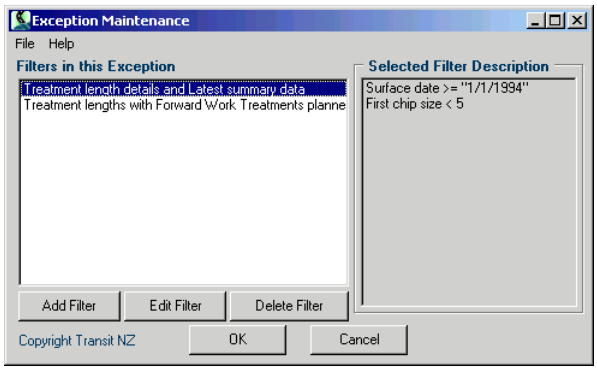


In this example we have chosen to search for information from the **Treatment Length details and Latest summary data**. This causes a Filter Dialog to be displayed as follows.

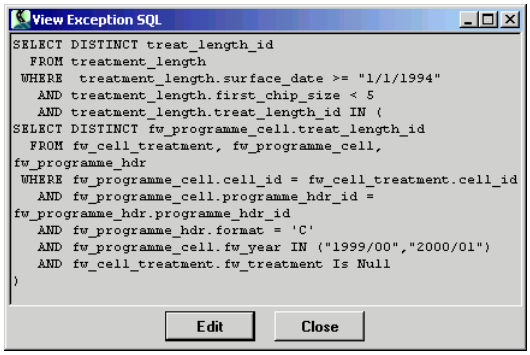


Use this in the same way as you would for filtering any asset and select from the information available and define the search criteria.

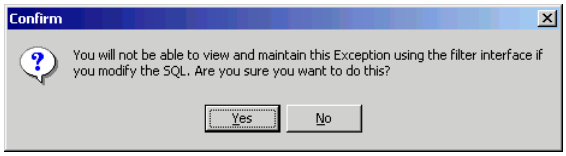
The following window shows some selection criteria based on the Surface Date and First Chip Size.



Once you have saved your definition you can look at the SQL that has been generated for you based on the selection criteria. The following is the SQL from the query described in the last window.

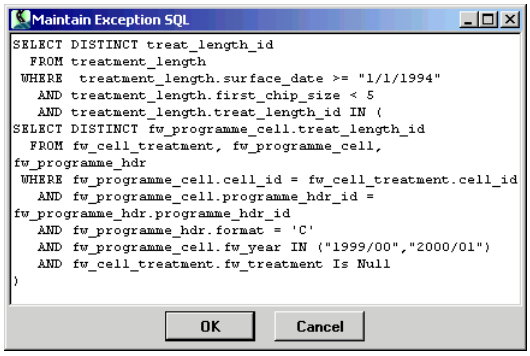


As you can see, this SQL is quite complex. However, if you want to alter this SQL you can do so by clicking on the **Edit** button. If you do this you will be warned as follows:

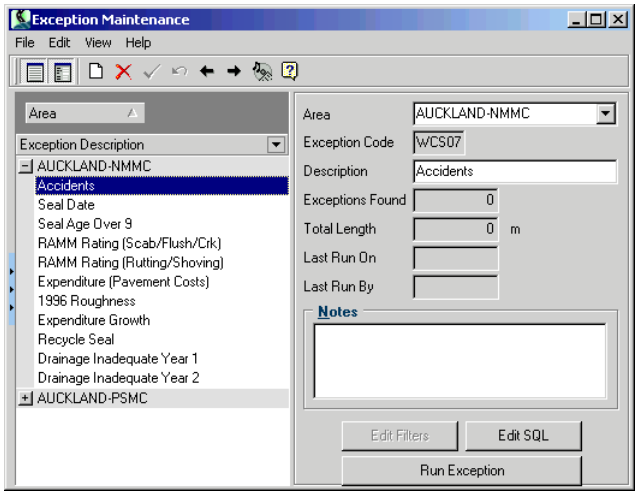


The reason for this warning is that RAMM will no longer be able to determine the component parts of your SQL once you have altered it. Therefore, once you have done this there is no going back and you will only be allowed to edit the SQL from now on.

In edit mode the SQL window looks like this:



When you have finished altering the SQL click on Ok to save the changes. As you can see from the following example, you can only click on the **View (Edit) SQL** button from now on.



Edit Filters

This allows you to define a Treatment Length filter for the exception.

View (Edit) SQL

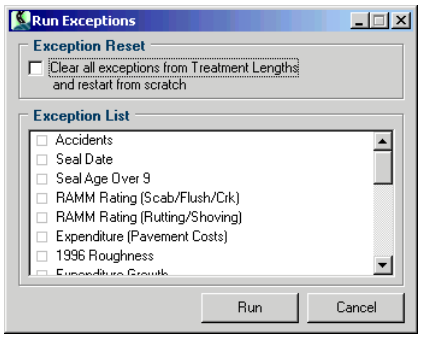
Shows the SQL used by RAMM to select Treatment Lengths matching your filter criteria. You may choose to **Edit** the SQL directly from this window however you will no longer be able to use the filter interface to modify the exception. Use the Edit option for complex queries that the filter mechanism cannot accommodate, for example introducing 'OR' into the query.

Run Exception

The exception must be saved before you can run it. The Run Exception button runs only the currently displayed exception. The exception code is cleared from all Treatment Lengths then reset by running the exception filter or SQL. Other exceptions are not affected.

File > Run Multiple Exceptions

Use this option to run more than one Exception definition at once.



Exception Reset

Selecting this tickbox will force all exception codes to be cleared from Treatment Lengths regardless of whether you choose to run the exception from the Exception List box. This does not delete any of your exceptions, only the codes held against Treatment Lengths are cleared, the definition of the exception is unaffected (all exceptions defined in the Exception Maintenance window will remain).

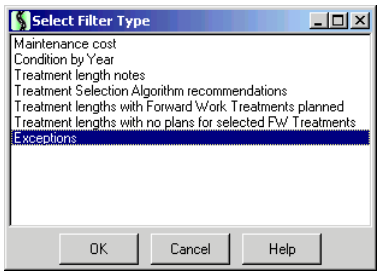
Exception List

Choose the exceptions to run. Unless the exception reset tickbox is selected exception codes are only cleared for the exceptions you choose to run.

Using the Exception

Once you have created and run the exception it will appear in the Treatment Length filter, which is very similar to the mechanism used to create the exception. The difference is that the Treatment Length filter provides searching by exceptions.

To do this, select the filter type **Exceptions**.



Note that the Exceptions Filter option is only available from the Treatment Length Filter in RAMM.

Why Use Exceptions?

- Building an exception allows you to develop a search and tag all the Treatment Lengths matching the query **at that time**. You can then close RAMM for Windows and find exactly the same set of Treatment Lengths next time by searching for the exception. The list of Treatment Lengths found will remain the same until you re-run the exception.
- For complex queries it is much **faster** to filter for an exception you have already run, compared to re-running a complex filter.
- When necessary you can **edit** the Exception SQL directly. This is not available for a Treatment Length filter.

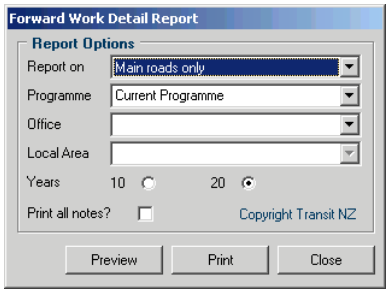
Forward Work Detail Report

This is a detailed report of the Twenty-Year Programme for the Treatment Lengths within the selected Road.

The report can be configured to look at either the Main Roads or the Ramps.

It is possible to choose to report on the Current Forward Work Programme or one of the alternative scenarios. The report can be further configured to choose an Office or Local Area.

You can access this report from within RAMM using the menu **Forward work > Detail Report**.

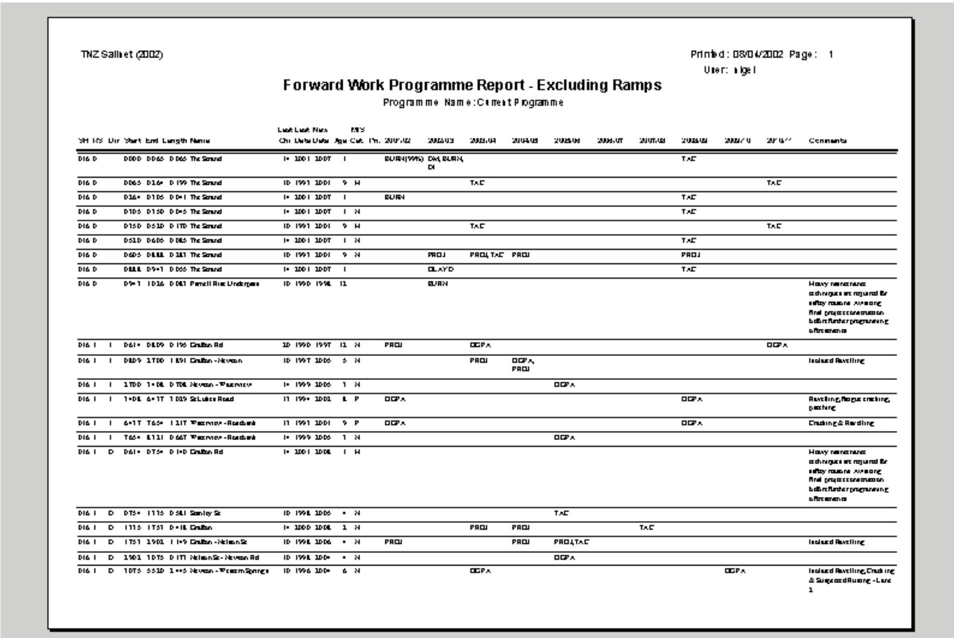


As you can see from the Options Dialog there are a number of variations of this report that you can choose from.

Firstly, you can choose to report on the Main Roads or the Ramps Only. You can also select which of your Programmes that you want to send to the report. By default the Current Programme is selected. You can then choose to filter the report down to the Office or Local Area level.

When Forward Work Planning was first implemented it was designed to support a 10-year Forward Work Programme. It has since been extended to support a 20-year Programme. However, for convenience and to save space, you can choose to look at only the first 10 years of the Forward Work Plan.

This report will, by default, only show you the most recent note that applies to each Treatment Length. However, you can choose to have all notes displayed in the report. See the section on Treatment Length Notes (on page 58) for more information on using these notes.

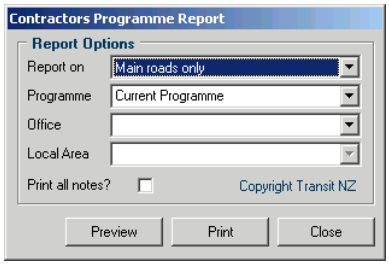


The example report shown here is for Main Roads, over 10 years of the Current Programme, and displays only the most recent notes.

Contractors' Programme Report

The Contractors' Programme Report gives you details of the first five years of the Forward Work Plan. The format is similar to the Detail Report.

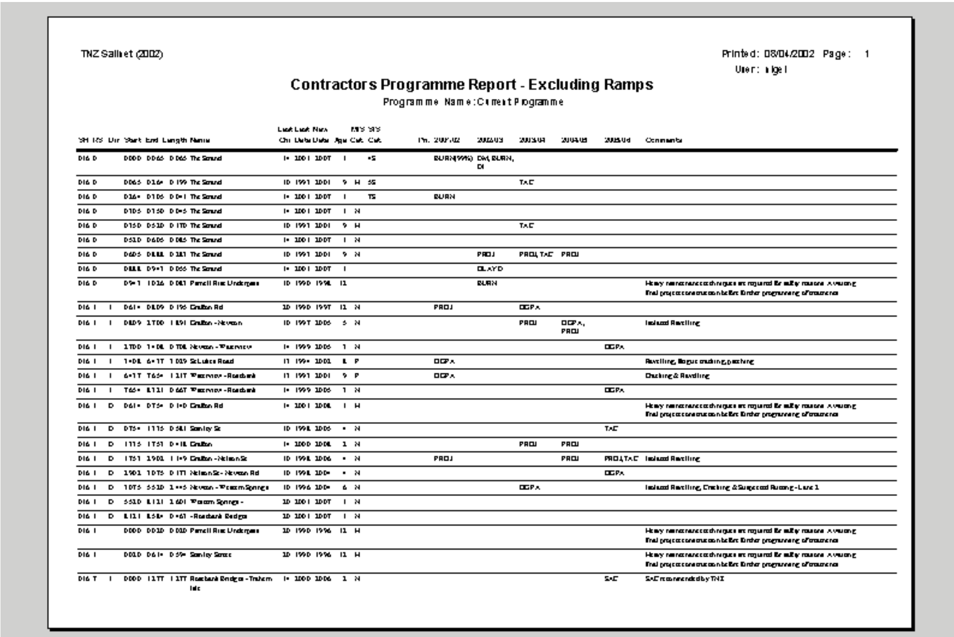
Access to this report is in RAMM using the **Forward work > Contractors Programme Report** menu.



As you can see from the Options Dialog there are a number of variations of this report that you can choose from.

Firstly, you can choose to report on the Main Roads or the Ramps Only. You can also select which of your Programmes that you want to send to the report. By default the Current Programme is selected. You can then choose to filter the report down to the Office or Local Area level.

This report will, by default, only show you the most recent note that applies to each Treatment Length. However, you can choose to have all notes displayed in the report. See the section on Treatment Length Notes for more information on using these notes.



The example shown here is for Main Roads and is reporting the first five years from the Current Programme. Only the most recent notes are displayed.

Field Inspection Report

The Field Inspection Report contains all the information that you might need, from the Forward Work Programme for your Treatment Lengths, to take with you into the field when doing an assessment.

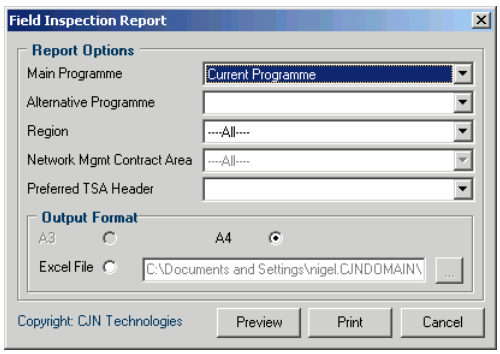
You can choose to extract the data from one or two Programmes (for comparison).

There are two versions of this report. One is in a fixed format and available to print or export to Microsoft Excel. The second is in the form of a Grid that you can manipulate in order to display those parts of the data that is of interest to you.

Many people have their own version of the Field Inspection Report, which have been created using MS Excel. Therefore, to make life easier the new Grid Field Inspection Report in RAMM can be used to save the data you require directly in MS Excel format. You can then use this as the data source for your own report. All the data that you require should be available so this provides an easy route to getting the information.

Formatted Version

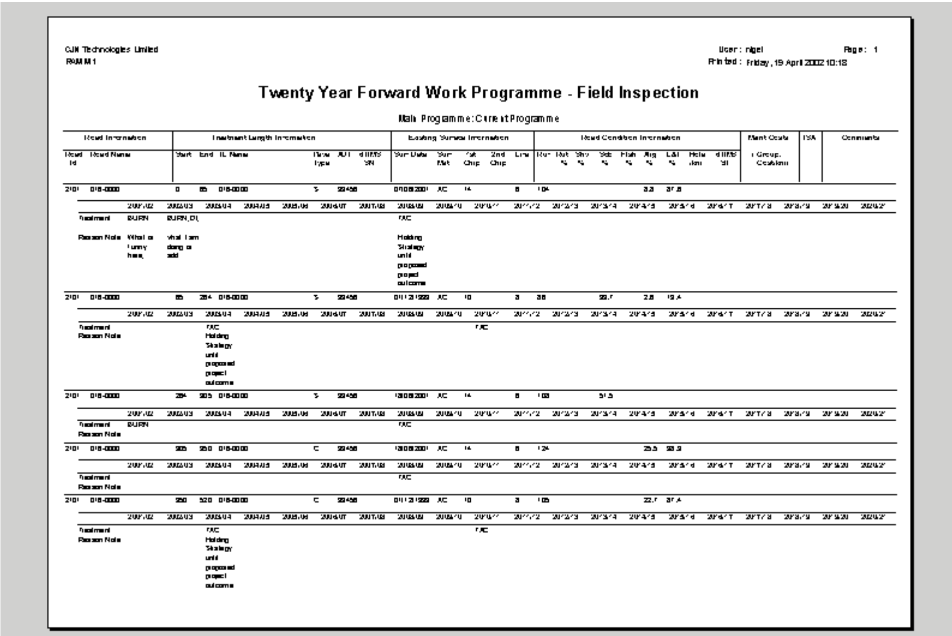
The formatted version of the Field Inspection Report is available in RAMM under the menu **Forward work > Field Inspection Report > Formatted**.



As you can see from the options dialog, above, you can choose one or two Forward Work Programmes to be sent to the report. Details from the Main Programme will appear above those from the Alternative in the report. By default the Main Programme is set to be the Current Programme, but you can change this if you wish.

Along with your choice of Programmes you can also filter the report by the Region or Network Management Area.

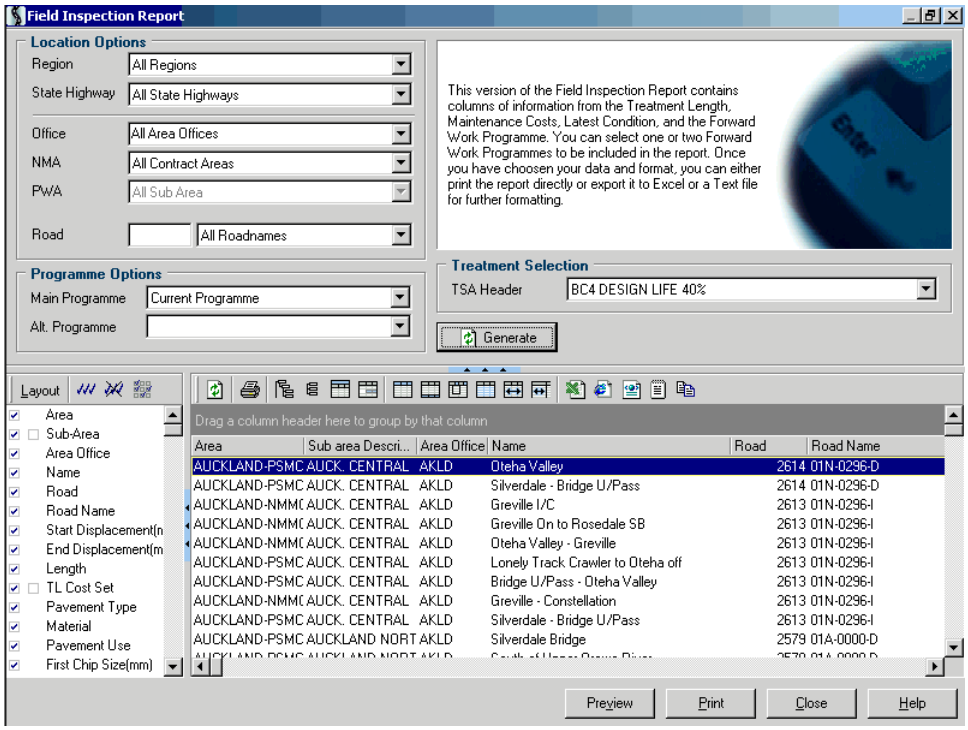
Among the information that is available on this report is the Treatment Selection Algorithm recommendation. Since it is possible to run a number of TSA Analyses during the course of your review of the network, RAMM needs to know which one to extract the data from.



This example of the report is in A4 format and is for the Current Programme only.

Grid Version

The grid version of the Field Inspection Report is available in RAMM from the **Forward work > Field Inspection Report > Grid** menu.

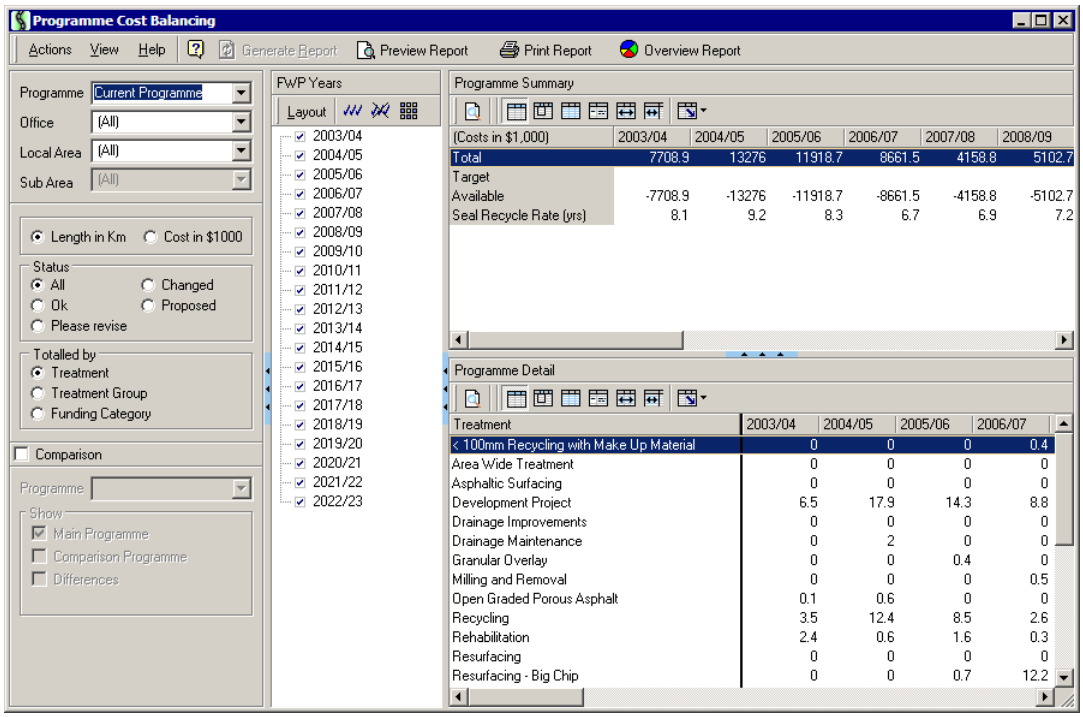


This example of the Field Inspection Report Grid has been generated for the complete network as present in the database.

You can choose to run the report for only a portion of the network by choosing from the Location options. You will also need to select a TSA Header from those available. Once you have made your choices click on the Generate button to populate the report grid.

Balancing the Programme

This window is available in RAMM from the **Forward work > Balancing** menu.



This is a formally formatted report that is used for audit purposes when a Consultant returns the Forward Work Programme to Transit New Zealand. Use the radio buttons provided to select the filters to be applied (for example: status - ALL or Changed)

Use the Office and Local Area fields to select the parts of the programme to be summarised for balancing.

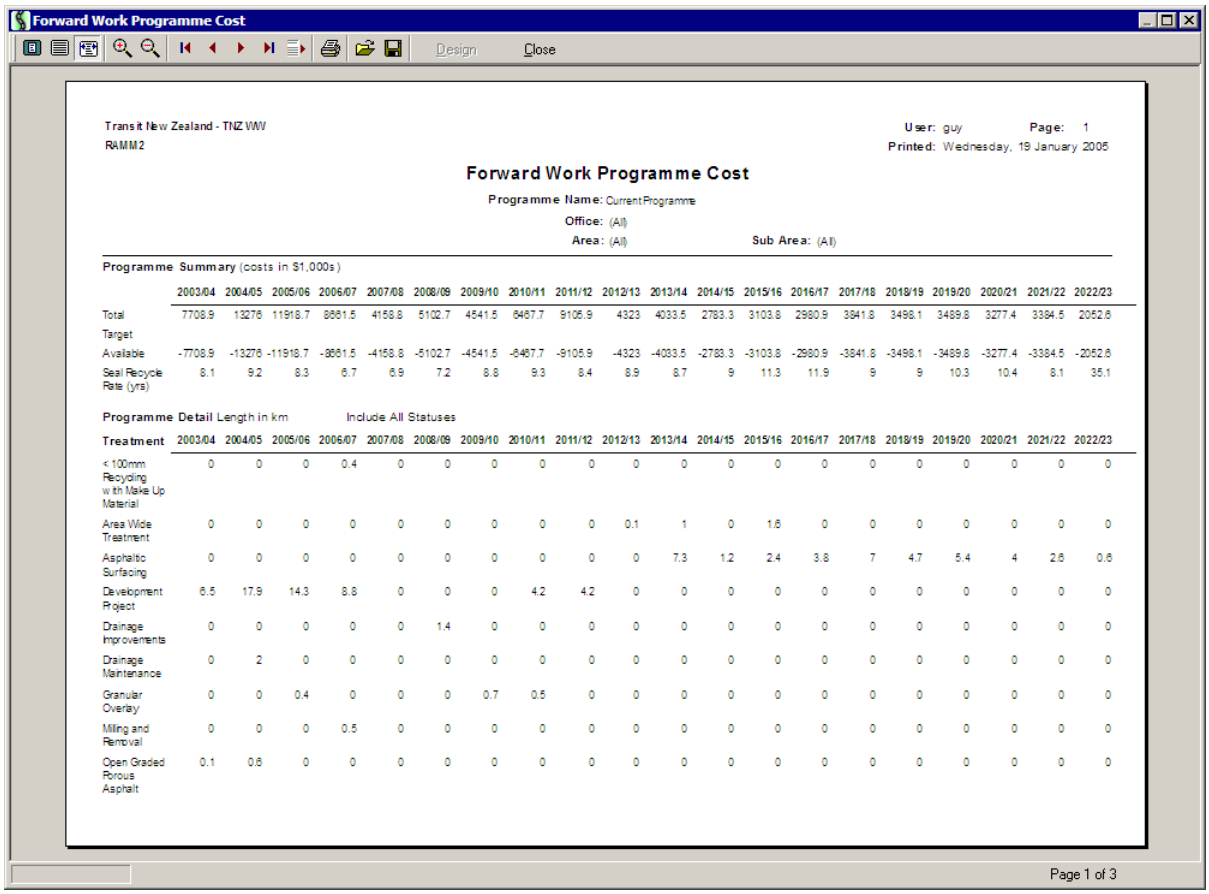
The **Programme Summary** reports the total dollars calculated from the appropriate cost sets for **total** (total programme) and available (the difference between target and **total**). To enter or edit targets select the Edit Targets push button. Enter a value for each of the twenty years against each network management area and sub-area.

The **Reseal Cycle Rate** is calculated by dividing the total length of resealing programmed by the total length of the network. Where an Office and Local Area are selected, the lengths used are those relating to the selection.

The **Programme Detail** window reports either dollars (in $000) or length (in km) for each of the Treatments, Treatment Groups, or Funding Groups as selected. The dollars and length are calculated on the basis of the **treatments** programmed, the length of the Treatment Lengths to which they apply, and the costs assigned through the treatment cost set.

Any change to the treatments assigned to a Treatment Length, the Treatment Length itself, or the costs assigned through the cost set will invalidate the programme balancing data. The table is flagged as invalid, and before it can be viewed you need to recalculate the Programme Costs.

A formatted report based on the information on this window is also available by clicking the **Preview Report** button or choosing the menu **Actions > Preview Report**. To print it, click the **Print** button or select **Actions > Print**. You can also generate an **Overview Report** (on page 92) graph.



Forward Work Programme Cost

Design Close

Transit New Zealand - TNZ WW
RAMM2

User: guy Page: 1
Printed: Wednesday, 19 January 2005

Forward Work Programme Cost

Programme Name: Current Programme
Office: (All)
Area: (All) Sub Area: (All)

Programme Summary (costs in $1,000s)

	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
Total	7708.9	13276	11918.7	8661.5	4158.8	5102.7	4541.5	6467.7	9105.9	4323	4033.5	2783.3	3103.8	2980.9	3841.8	3498.1	3489.8	3277.4	3384.5	2052.6
Target																				
Available	-7708.9	-13276	-11918.7	-8661.5	-4158.8	-5102.7	-4541.5	-6467.7	-9105.9	-4323	-4033.5	-2783.3	-3103.8	-2980.9	-3841.8	-3498.1	-3489.8	-3277.4	-3384.5	-2052.6
Seal Recycle Rate (yrs)	8.1	9.2	8.3	6.7	6.9	7.2	8.8	9.3	8.4	8.9	8.7	9	11.3	11.9	9	9	10.3	10.4	8.1	35.1

Programme Detail Length in km Include All Statuses

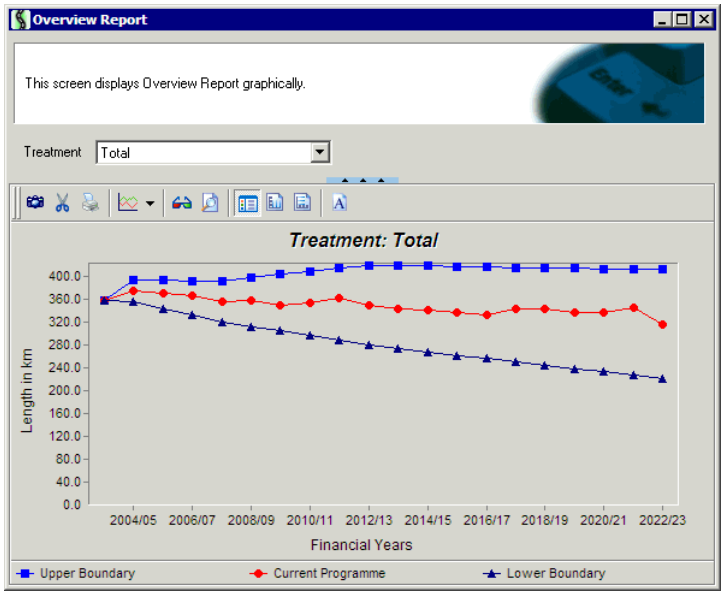
Treatment	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
< 100mm Recycling w th Make Up Material	0	0	0	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Area Wide Treatment	0	0	0	0	0	0	0	0	0	0.1	1	0	1.6	0	0	0	0	0	0	0
Asphaltic Surfacing	0	0	0	0	0	0	0	0	0	0	7.3	1.2	2.4	3.8	7	4.7	5.4	4	2.6	0.6
Development Project	6.5	17.9	14.3	8.8	0	0	0	4.2	4.2	0	0	0	0	0	0	0	0	0	0	0
Drainage Improvements	0	0	0	0	0	1.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Drainage Maintenance	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Granular Overlay	0	0	0.4	0	0	0	0.7	0.5	0	0	0	0	0	0	0	0	0	0	0	0
Milling and Removal	0	0	0	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Open Graded Porous Asphalt	0.1	0.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Page 1 of 3

Overview Report

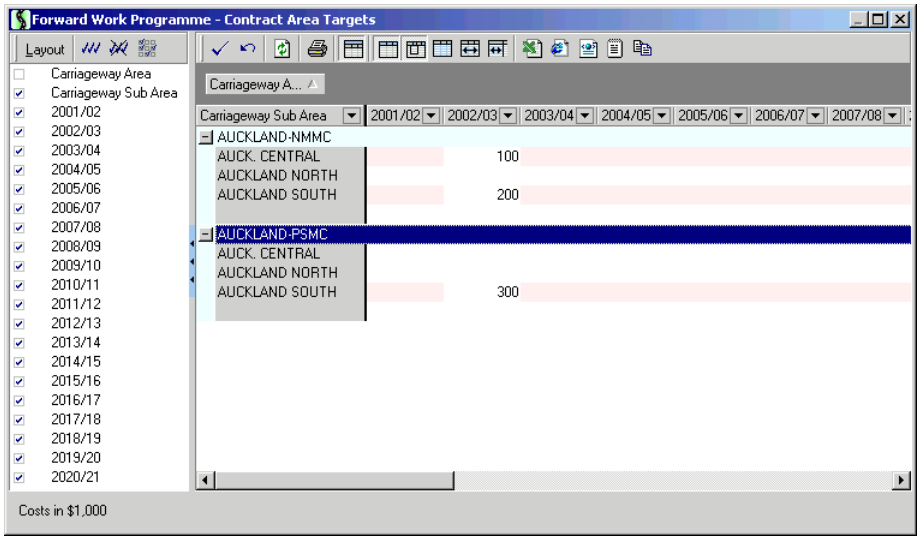
You can generate an Overview Report in graph format from the Forward Work Programme balancing window.

Click the **Overview Report** button, or select **Actions > Overview Report**.



Editing Programme Targets

This screen is available in RAMM from the Programme Balancing window by using the **Actions > Edit Targets** menu.



Enter Target Values for the twenty Planning Years and those Sub-Areas that require them. All Targets for a given Planning Year are added together and displayed in the Programme Summary area of the Balancing window.

(Costs in $1,000)	2001/02	2002/03	2003/04	2004/05
Total	13142.4	13290.5	10434.7	13587.8
Target		600		
Available	-13142.4	-12690.5	-10434.7	-13587.8
Seal Recycle Rate (yrs)	8.6	7.7	8.8	7.3

Programme Outputs

Format

The programme includes the following information:

- Treatment Length referenced by route position.
- Treatment Length reference name.
- Date and type of last seal coat and expected life.

- Upper pavement moisture sensitivity.
- Maintenance intervention strategy applicable for the Treatment Length.
- **Treatments** (other than reactive maintenance) against each of the 20 years.
- Comments.

Programme Accuracy

The first year of the programme is the current financial year and represents the work programme in progress.

The second year represents a firm recommendation on works for which funds should be sought for treatment in the next financial year.

The third year presents a reasonable assessment of the needs. There must be some tangible evidence supporting the programme for that year.

Years 4 to 20 represent an intuitive assessment based on considerations including age and expected life.

Pretreatment

Pretreatment needs (for example: drainage works prior to resealing) shall be indicated in the programme.

Economic Analysis

Whenever possible the Year 1 and 2 programmes should be supported by economic analysis. This is a pre-requisite for pavement reconstruction, seal widening and improvement works which should have benefit/cost ratios above the current cut off ratio or otherwise have prior client funding approvals.

Project Development Status

Construction works shall have the current project development status (Point X or Y) as defined in the Transit New Zealand Land Transport Programme Development and Management Manual, confirmed in the comments section of the programme.

Reviewing the Forward Work Programme

Once the Forward Work Programme has been completed by the Consultant it is ready to be reviewed at Transit New Zealand. This section details the process by which this takes place.

Review

The **Twenty-Year Programme** is subject to constant review. The adequacy of the proposed **treatments** may change as the pavement deteriorates. Other factors for example, crash statistics, may influence improvement works.

Review Frequency

Two formal reviews of the twenty-year programme are required.

One review is required once the results of the **RAMM** Condition Rating Survey, Treatment Selection, and Roughness Survey have been completed and needs to be timed to coincide with NLTP development. This is generally carried out in October. Another review is required once the level of funding for the following year is confirmed. Programmes and strategies will need to be aligned to approve funding levels. This is generally carried out in May.

Other reviews may be required whenever any funding changes occur or pavement deterioration does not occur as expected.

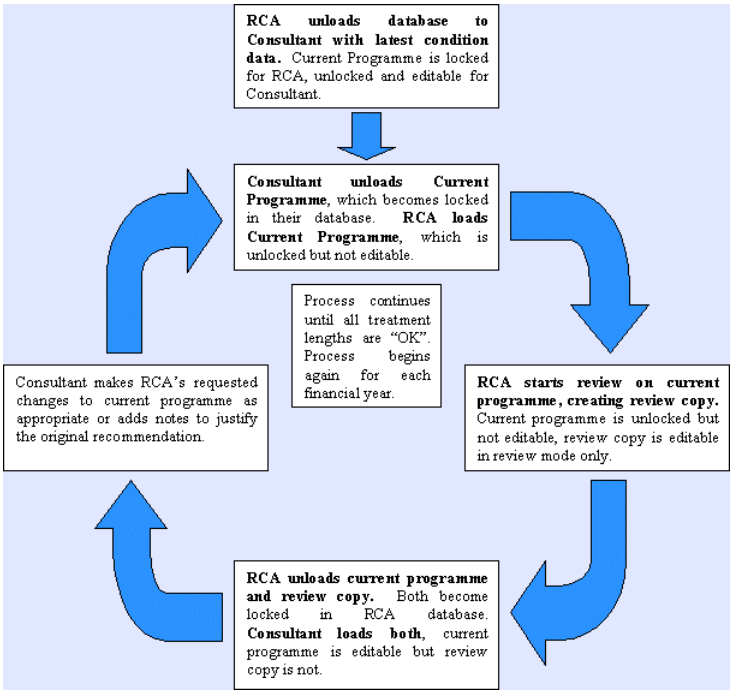
Basis of the Review

Whenever a formal review is undertaken all data inputs shall be updated. The following actions shall also be undertaken:

- Adjustments to the current work programme shall be made in accordance with physical works achievements.
- The programme for the following four years shall be reviewed in consideration of the best currently available information.
- Refinement of preventative maintenance or pretreatment programmes shall be provided in terms of extent and cost.
- Priorities shall be determined for works recommended in the following year.

Forward Works Programme Review Procedure

Overview Of Transit New Zealand (RCA) and Consultant Roles In Review Process



Permissions

Consultant

- Can edit the Current Programme (provided it is not locked).
- Cannot change the Review Programme loaded from Transit New Zealand.
- Can copy Programmes to create Alternative Scenarios and then edit these.

Transit New Zealand

- Cannot edit the Current Programme.
- Can add instructions to the Current Programme in the form of Review Notes, so that the Consultant can edit the Programme.
- Can also copy Programmes to create Scenarios and then edit the Scenarios.

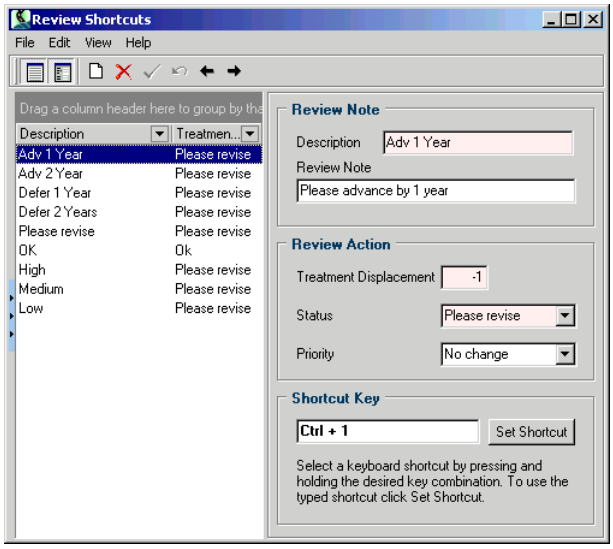
Preparing to Review the Programme

Reviewing a Forward Work Programme is the responsibility of staff at Transit New Zealand. However, some of the steps in this process need to be carried out by the Consultant who is maintaining that Programme.

Therefore, this section describes all the steps taken by both Transit New Zealand and the Consultant when a Programme Review is being carried out.

Maintaining Review Shortcuts

Reviewing the Programme is a Transit New Zealand function that can only be carried out on the master database held by Transit New Zealand. Therefore, the ability to define and maintain the Shortcut Keys used in the Review process can only be done by Transit New Zealand. This window is available in RAMM Manager from the menu **Projects > Forward Work > Review Shortcuts**.



This window is used to define a Shortcut Key for a recommendation that you might use frequently during the course of a Review.

Each Shortcut consists of a Description (the name of the Shortcut), a note that will be recorded in the Review Notes area, and a set of actions that will be carried out on the Treatment affected.

The Review action comes in three parts:

Treatment Displacement
This moves the Treatment from its current Planning Year to one either before or after the current one.

Status
This action changes the Status of the Programme for the given Treatment Length.

Priority
This action changes the Priority associated with the Treatment to give an indication of how important it is to carry it out.

To set the Shortcut Key you click on the Shortcut Key data field and then press your choice of keys on the keyboard. Your choice will be displayed in the data field and you confirm that it is to be used by clicking the **Set Shortcut** button.

Treatment Displacement
This moves the Treatment from its current Planning Year to one either before or after the current one.

Status
This action changes the Status of the Programme for the given Treatment Length.

Priority
This action changes the Priority associated with the Treatment to give an indication of how important it is to carry it out.

To set the Shortcut Key you click on the Shortcut Key data field and then press your choice of keys on the keyboard. Your choice will be displayed in the data field and you confirm that it is to be used by clicking the **Set Shortcut** button.

Programme Balancing Report

Transit New Zealand also requires a copy of the Balancing Report to accompany the Forward Work Programme files. Please see the section on Balancing the Programme (on page 89) for a description on how to produce this report.

Starting the Programme Review

Transit New Zealand has the ability to formally review the Current Forward Work Programme and either approve the proposed work for each Treatment Length or make recommendations for alterations.

Transit New Zealand cannot make any changes to the Current Programme, and can only make recommendations that are passed back to the Consultant.

Programme Review

Programme Reviews can only be carried out by Transit New Zealand. The objective of this process is to acknowledge all proposed **treatments** as acceptable, or alternatively instruct the consultant on changes that are to be made.

Instructions are issued in the form of review notes attached to Treatment Lengths in the current programme. The suggested changes (defer one year etc) are reflected in the review programme. The client can gauge the effects of the suggested changes by looking at the programme balance for the review programme.

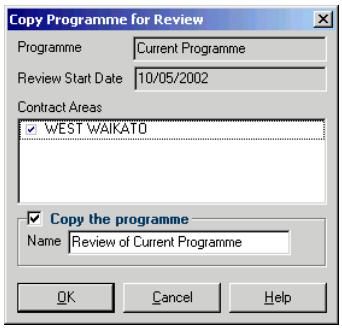
Initiating a Review (Transit New Zealand)

To begin the Review process you must first initiate the review for the Current Programme. You can do this in RAMM Manager from the Programme Maintenance window by choosing the menu **Actions > Review > Initiate**. Alternatively, if you are using the Planning window in RAMM you can initiate a review using the menu **Actions > Initiate Review**.

The status of the Programme should be **unlocked** but **not editable** before the review is initiated, and this does not change.

It is the Consultant's job to select the appropriate treatments, and thus Transit New Zealand cannot edit a current forward works programme; they can only review it, make comments on it and then return it to the Consultant for updating. Physical changes are made on the review copy of the programme.

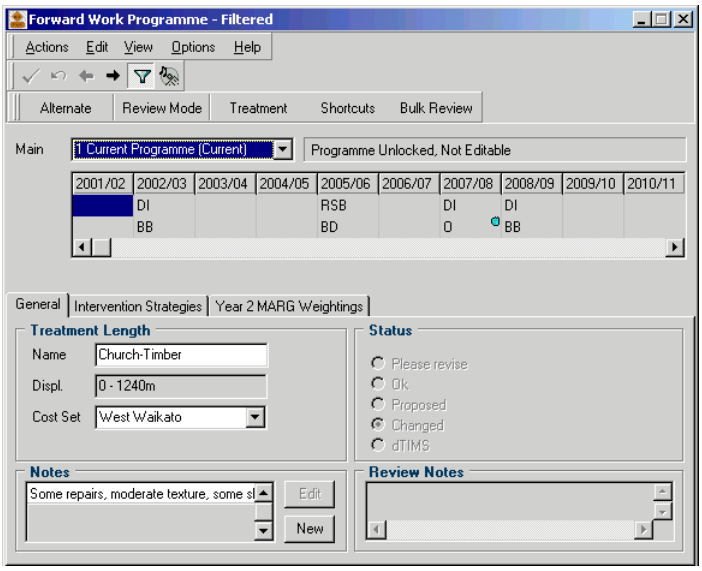
Once the review is initiated, the "Copy Programme for Review" window is opened.



This window gives the choice to review some or all of the Network Management Areas contained in the programme, and whether to make a review copy of the current programme. This review copy can by viewed with the current programme in RAMM when the review is being performed (see below) so it is recommended that this copy be made. The copy has a status of editable by review only.

Reviewing the Programme

When the Current Programme is in Review the Forward Work Planning window looks like this:



The **Review Mode**, **Shortcuts**, and **Bulk Review** buttons are now available to you.

Review Mode

Allows you to begin reviewing the Current Forward Work Plan and opens the Review Shortcuts toolbar.

Shortcuts – Reviewing the Programme

Opens the Review Shortcuts toolbar if it has been closed.

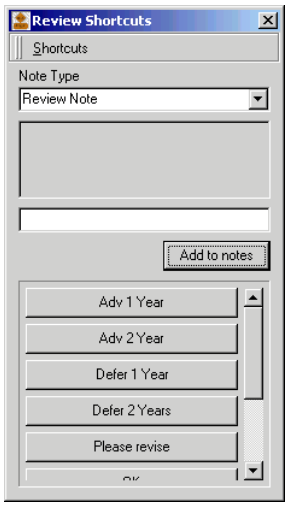
Bulk Review

Opens the Bulk Review window to allow you to review more than one Treatment Length at one time.

Working in Review Mode

To begin reviewing, press the **Review Mode** button on the toolbar.

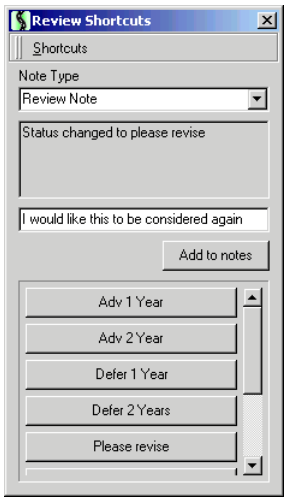
This opens the **Review Shortcuts** window and allows Transit New Zealand to add notes to the programme by selecting cells and then adding the desired instruction by clicking the appropriate button in the Shortcuts window.



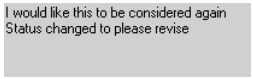
Shortcuts

The shortcut buttons are designed to attach clear instructions to the Consultant on what actions are required. Review notes detailing the instruction are automatically attached to the Treatment Length when the buttons are pushed.

When "Please Revise" is added to a Treatment Length, there should also be a note accompanying this.



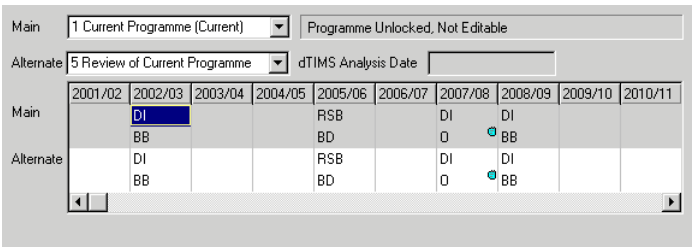
This note can be added by entering it into the box in the Shortcuts window, then pressing the **Add to notes** button. This results in a note that looks like:



This note will then be recorded as a Review Note for this Treatment Length.

Working With Alternative Programmes

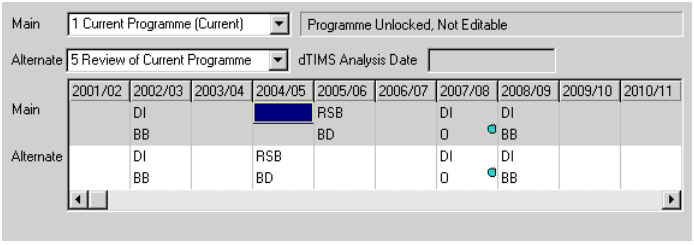
Pressing the **Alternate Programme** button will bring up the review copy of the **current programme** underneath the current programme (or any other programme when not in Review Mode). This is to allow two programmes to be compared, and allows the suggested changes to be physically made on the review copy. **If the review copy is not open the suggested changes will not be made on it.**



This review copy shows the changes requested. The current programme is not changed - it only has instructions to the Consultant added in the review notes window.

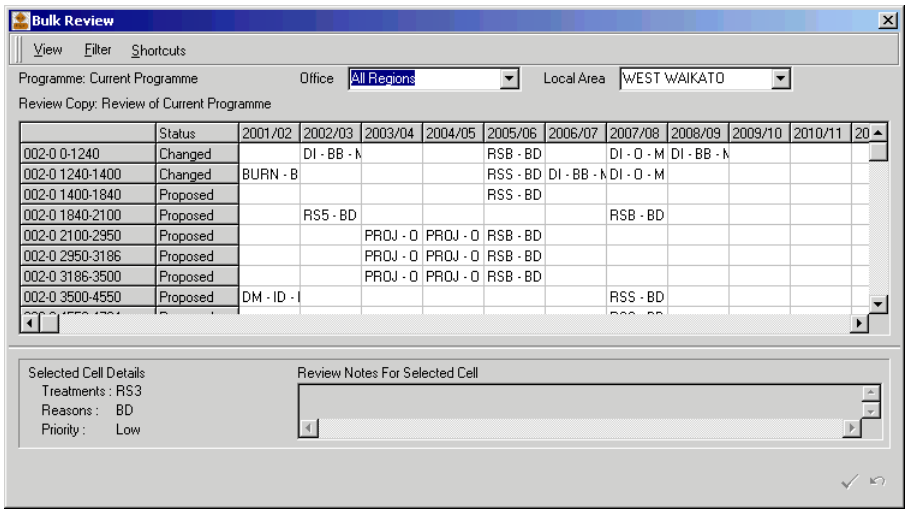
Working With Alternative Programmes (Example)

If we choose to advance the 2005/06 Treatment by one Year we would see the following:



Working with the Bulk Review

The **Bulk Review** button opens the Bulk Review window.



This window lists all Treatment Lengths for a Network Management Area, and allows filtering of these Treatment Lengths. A number of **treatments** can be selected at once by holding down the **CTRL** key and picking cells, and then these can have the same instructions added concurrently. For example, a filter may be applied to show all low-priority Year 2 reseals, then after selecting them all the shortcut button to defer all of these by one year can be pressed.

When viewed in the Bulk Review window, the programme is updated as changes are made (i.e. this view behaves the same as the Review copy in that it shows the changes requested, not just the instructions).

View > Refresh

This menu causes the window to be refreshed.

View > Shortcuts

This menu displays the Shortcuts toolbar if it has been closed.

Filter > Set/Edit Filter

This menu allows you to set or edit a filter for the Treatment Lengths displayed in the Bulk Review window.

Filter > Clear Filter

This menu clears any filter that you have previously set.

Shortcuts - Working With the Bulk Review

This is a menu alternative to using the buttons on the Review Shortcuts toolbar.

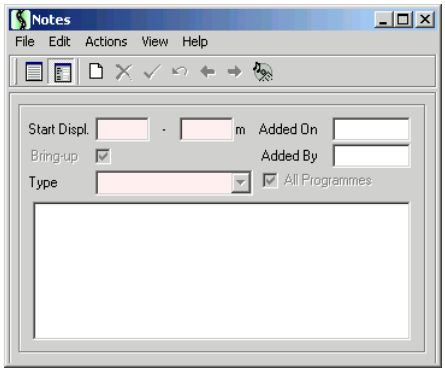
Returning to Normal Mode

To return to the normal mode of the Forward Works window press the **Review Mode** button once again.

Notes

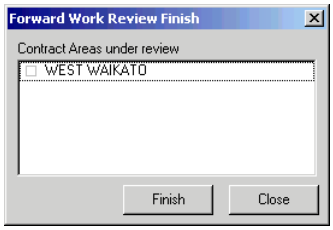
Notes can be added to either the Review Notes window or the Treatment Length Notes window.

General notes can be added in the Treatment Length Notes window, and can only be edited by the party that added them (for example the Consultant cannot edit a note added by Transit New Zealand). Review notes are added in the Shortcuts window (as explained in Review Mode).



Ending a Review

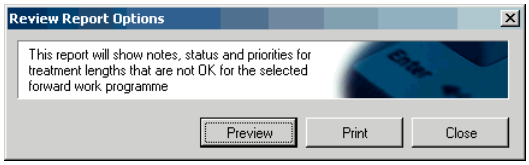
When the review of the Current Programme is complete you tell RAMM that the review is at an end by choosing the **Actions > Review > Finish** menu from the Programme Maintenance window in RAMM Manager.



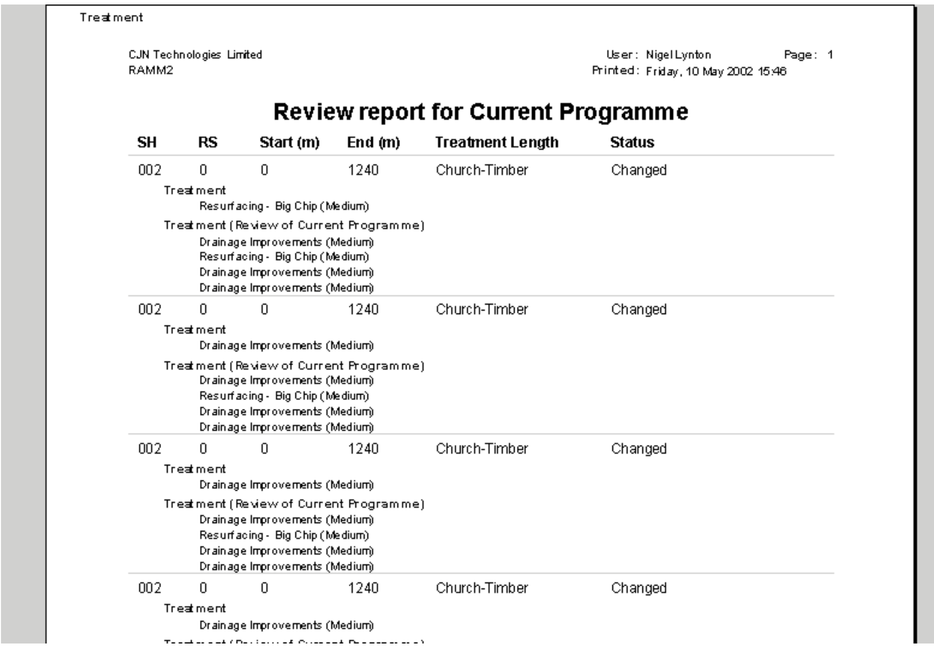
Choose the Network Management Area from those listed and click on the **Finish** button.

Review Report

You can look at the notes, status, and priorities for the Treatment Lengths that are not Ok using the Review Report. This report is available from the Programme Maintenance window in RAMM Manager by choosing the menu **Actions > Review > Report**.



The report will look something like this.



Treatment

CJN Technologies Limited
RAMM2

User: Nigel Lynton Page: 1
Printed: Friday, 10 May 2002 15:46

Review report for Current Programme

SH	RS	Start (m)	End (m)	Treatment Length	Status
002	0	0	1240	Church-Timber	Changed

Treatment
- Resurfacing - Big Chip (Medium)

Treatment (Review of Current Programme)
- Drainage Improvements (Medium)
- Resurfacing - Big Chip (Medium)
- Drainage Improvements (Medium)
- Drainage Improvements (Medium)

SH	RS	Start (m)	End (m)	Treatment Length	Status
002	0	0	1240	Church-Timber	Changed

Treatment
- Drainage Improvements (Medium)

Treatment (Review of Current Programme)
- Drainage Improvements (Medium)
- Resurfacing - Big Chip (Medium)
- Drainage Improvements (Medium)
- Drainage Improvements (Medium)

SH	RS	Start (m)	End (m)	Treatment Length	Status
002	0	0	1240	Church-Timber	Changed

Treatment
- Drainage Improvements (Medium)

Treatment (Review of Current Programme)
- Drainage Improvements (Medium)
- Resurfacing - Big Chip (Medium)
- Drainage Improvements (Medium)
- Drainage Improvements (Medium)

SH	RS	Start (m)	End (m)	Treatment Length	Status
002	0	0	1240	Church-Timber	Changed

Treatment
- Drainage Improvements (Medium)

Making the Requested Changes to the Programme

Making the requested changes is done the same way as developing the programme - in the Forward Works window, the **treatments** can be moved by dragging and dropping them from where they are at present to where Transit New Zealand wants them to be. Treatments can be erased and new treatments added if necessary.

Review Status

The status is changed automatically as the programme is edited.

When the status of all the Treatment Lengths is "OK" the programme can be submitted to the annual plan.

Step in Process	*Review Status*
Consultant constructs the Forward Work Programme.	Proposed.
Transit New Zealand reviews Treatment Lengths.	
No changes required.	Ok.
Changes required.	Please Revise.
Consultant makes requested changes.	Changed.
Transit New Zealand reviews again.	
No changes required.	Ok.
Changes required.	Please Revise.

Forward Work Programme Costs

The cost of a Treatment Length for each year of the Twenty-Year Programme is calculated using the routine maintenance costs from the RMCE curve, the overhead cost of the cost set, the cost of the treatment and the costs of any MIS attached to the treatment (the latter two are used only if there is a treatment scheduled).

- The routine maintenance cost of the pavement and the surfacing is interpolated from an RMCE curve set against each cost set.
- If there are **treatments** present with an MIS attached, these MIS costs override the cost from the RMCE curve.
- A cost set is attached to each Treatment Length.
- The cost of a treatment is attached to a cost set.
- The cost of an MIS is attached to each cost set.

Setting Up To Calculate Costs

The following must be done to enable the estimation of routine maintenance costs:

- The treatment costs for each cost set need to be entered.
- The MIS and MIS costs for each cost set need to be entered.
- The MIS for the year before and the year of treatment needs to be entered against each treatment.
- RMCE curve(s) need to be defined and attached to the cost set(s).
- Overhead costs for cyclic maintenance such as litter removal, grass mowing etc. need to be entered for each cost set.
- The reset of the RMCE curve needs to be defined for each treatment.

Maintaining Treatments, Treatment Length Cost Sets, and Maintenance Intervention Strategies are discussed earlier in this document in the Preparing for Forward Work Planning section.

Routine Maintenance Cost Estimation

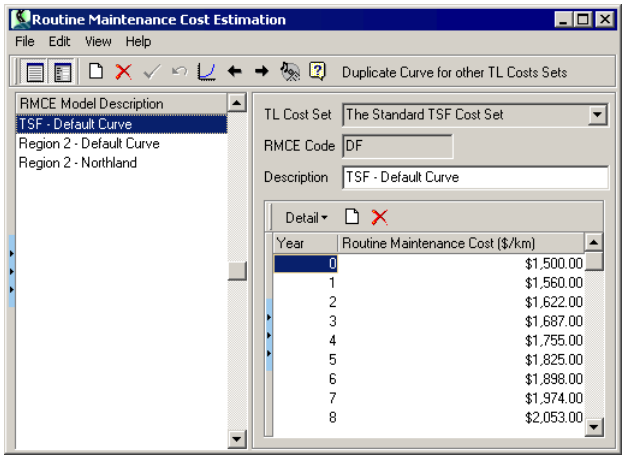
The RMCE curves are derived curves for a cost set that predict maintenance costs for any number of years into the future for all Treatment Lengths within that cost set. The curves can be produced by analysis of historic pavement and surfacing costs by seal age.

There is a default curve in the database to provide a starting point, but Consultants will define their own curves as they analyse their region's maintenance costs and work out curves that best reflect their area. How far forward the curve estimates costs will reflect the areas maintenance costs - if a large cost (say $100,000/km/year +) is being incurred, then the curve may need to extend to a longer time-frame than ten or twenty years to accommodate the initial position on the curve, calculated from previous years maintenance costs.

RMCE Curves are defined and maintained by Consultants. However, the information is retained in the database by means of the Forward Work Unload and Load that transfers it to the main databases held at Transit New Zealand.

Maintaining RMCE Curves

RMCE Curve definitions are maintained in RAMM Manager. Access the maintenance window from the menu **Projects > Forward Work > Routine Maintenance Cost Estimation**.

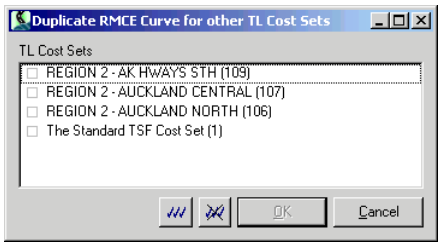


You need to define RMCE Curves for each of the Cost Sets that you have in the Network Management Area database. This is because the profile for different areas of the network may not be the same as each other.

Duplicate Curve For Other TL Cost Sets

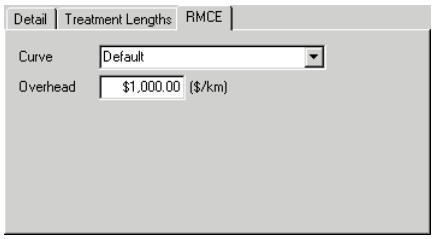
If you wish to copy one RMCE Curve definition to another Cost Set then you can do so using the **Duplicate Curve for other TL Cost Sets** button.

This displays the following that allows you to choose one or more of your other Cost Sets to copy the curve.



Tick one or more of the Cost Sets and click on **OK** to copy the RMCE Curve.

Once the points on the curve have been defined, the curve is attached to a cost set. This is done via the RMCE tab on the Cost Set maintenance window.



You need to choose from the list of RMCE Curves that are available for the highlighted Cost Set.

If you have a standard Overhead charge that is to always be added to the RMCE cost at any point then enter a value here.

Overhead Costs

The figure in the *Overhead* box is to cover items that are not in the *Pavement* or *Surfacing* maintenance categories, such as litter removal, verge mowing and vegetation control. This is independent of the age of the seal, and is added onto the routine pavement and surfacing maintenance cost interpolated from the RMCE curve to get the total maintenance cost.

RMCE Curve Reset after Treatment

The **Reset RMCE Curve** drop-down menu contains three options – **None, Reset to Midpoint** and **Reset to Zero**. This defines what the maintenance costs will be in the year following the treatment.

The way that costs are calculated for the year after the treatment depends on the setting for the Reset.

None

The curve continues on as it was. For example, if the year two years before the treatment was Year 5 of the curve, a Maintenance Intervention Strategy was applied to the next two years and the treatment did not reset the curve. The year after the treatment would then be Year 8 of the curve.

Midpoint

The year the curve would have been on in the year of the treatment minus the life of the treatment as defined in the Treatments table, or zero which ever is greater. This is not actually the "Midpoint" of the RMCE curve, but it is more the midpoint of where the curve was before the treatment occurred with some adjustment for the expected life of the treatment.

Zero

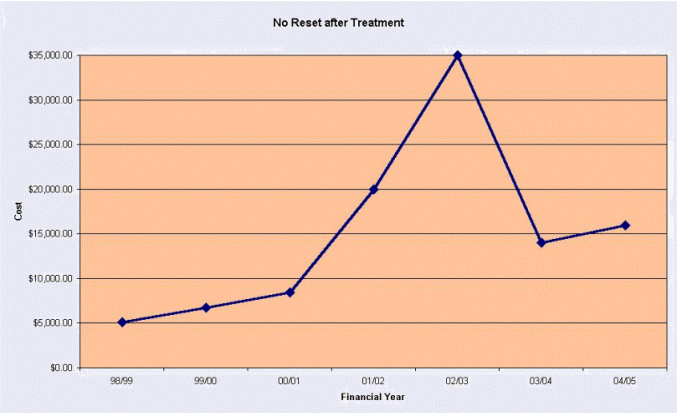
The cost at Year 0 of the curve is applied to the year after the treatment.

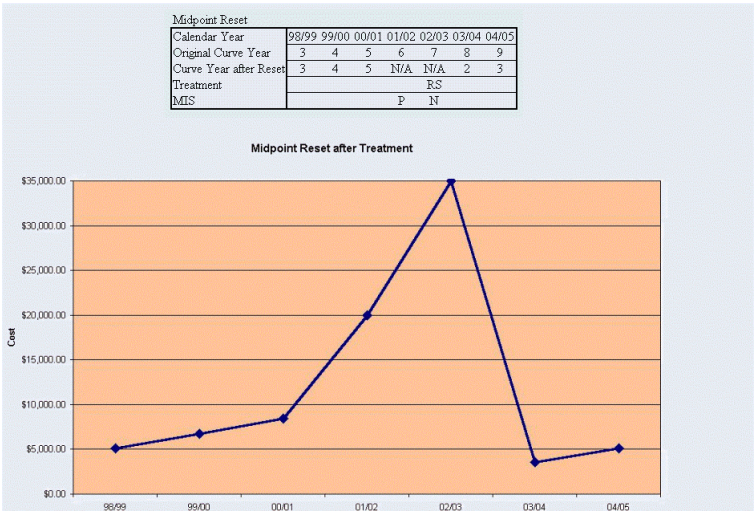
The graphs and tables below show the effects of the resets. They are based on the curve being on year three in 1998/99, with a Reseal with a five-year life ($30,000) in 2002/03, an **MIS** of Pre-reseal repairs ($20,000) in the year before the treatment, an MIS of Normal maintenance ($5,000) in the year of the treatment and an overhead cost of $1,000. Values of the curve are tabulated below.

Year	0	1	2	3	4	5
Routine Maintenance Cost	$0.00	$1,175.25	$2,564.70	$4,088.03	$5,714.83	$7,427.85
Year	6	7	8	9		
Routine Maintenance Cost	$9,215.69	$11,070.16	$12,984.98	$14,955.21		

No Reset

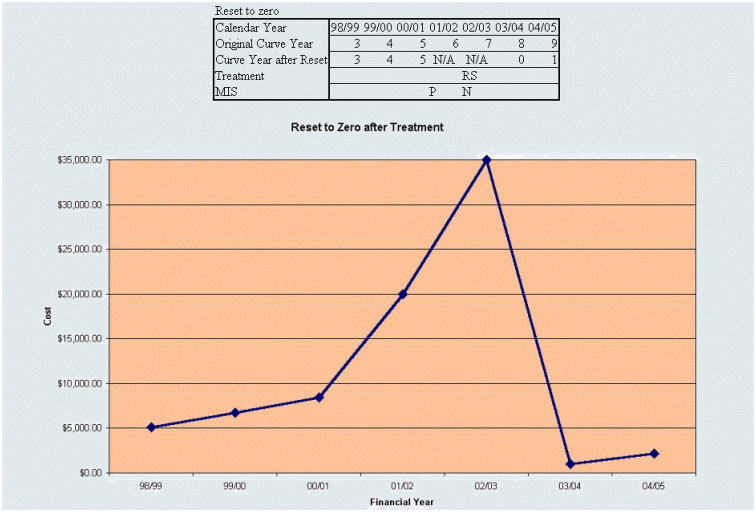
Calendar Year	98/99	99/00	00/01	01/02	02/03	03/04	04/05
Original Curve Year	3	4	5	6	7	8	9
Curve Year after Reset	3	4	5	N/A	N/A	8	9
Treatment					RS		
MIS				P	N		





Midpoint Reset

Calendar Year	98/99	99/00	00/01	01/02	02/03	03/04	04/05
Original Curve Year	3	4	5	6	7	8	9
Curve Year after Reset	3	4	5	N/A	N/A	2	3
Treatment					RS		
MIS				P	N		



Reset to zero

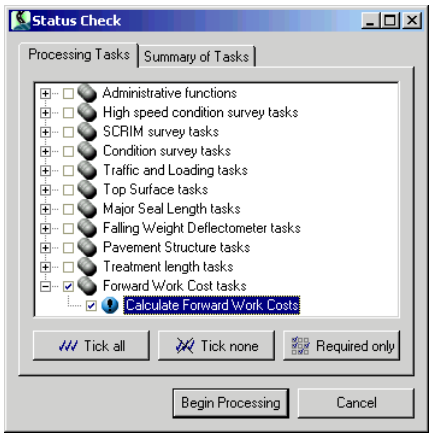
Calendar Year	98/99	99/00	00/01	01/02	02/03	03/04	04/05
Original Curve Year	3	4	5	6	7	8	9
Curve Year after Reset	3	4	5	N/A	N/A	0	1
Treatment					RS		
MIS				P	N		

Calculation of Programme Costs

There are two places where you can calculate the Forward Work Programme costs for both Treatments and Routine Maintenance. They are the Forward Work Balancing window or the Status Check Dialog.

Calculating from Status Check

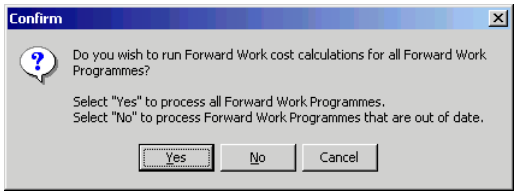
Access Status Check from RAMM Manager using the menu **Processes > Status Check**.



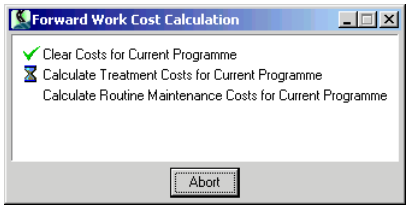
Choose the Forward Work Cost tasks and Calculate Forward Work Costs.

If RAMM knows that the Forward Work Costs are out of date then this item will already be ticked.

Once you begin processing you will see the following dialog asking you if you wish to calculate the costs for all Forward Work Programmes in the database or only those that are flagged as needing to be updated.



Choose either option and you will see a process dialog similar to the following.



One of these dialogs will be displayed for each of the Forward Work Programmes where the costs are being calculated.

As you can see this process will calculate the Treatment Costs followed by the Routine Maintenance Cost Estimates.

Calculating from Balancing

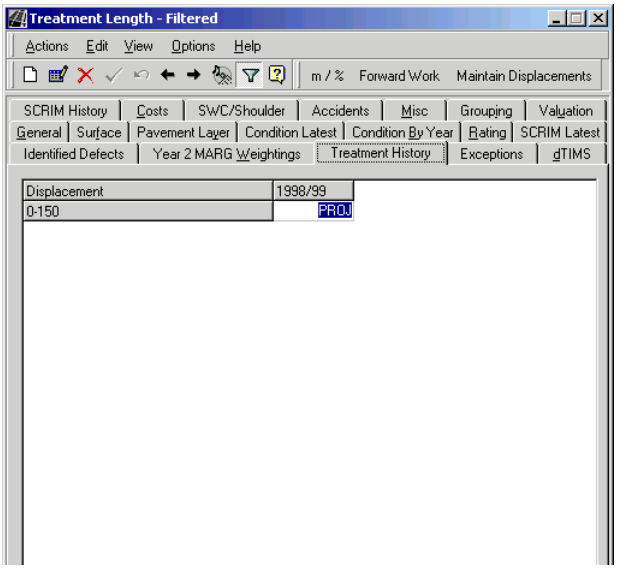
Open the Forward Work Balancing window and choose the menu **Actions > Calculate** to start the process running.

This will then run the same processes as described above to calculate the Treatment and Routine Maintenance costs.

Looking at the Treatment History

When an End of Year Rollover has occurred any work that was planned in Year 1 will be moved into the Treatment History.

If you wish to see what Treatments have taken place in the past you can do so by referring to the Treatment Length. A tab called "Treatment History" is available on the Treatment Length Detail window in RAMM.



Any historical Treatment that took place on the Road, and whose location falls wholly or partially within the Treatment Length displacements, will be shown here.

CHAPTER 12

Lookup Codes

IN THIS CHAPTER

Preparing for Forward Work Planning

This section details what you need to do before you can set up and maintain a Forward Work Plan. We will look at creating an empty plan, setting up Treatments, Reasons, and other supporting information.

Twenty-Year Programme

The Forward Work Programme summarises maintenance and improvement treatments for all Treatment Lengths. The programme is prepared for the subsequent 20-year period.

Controlling network management at project level is a continuous process. Constant assessment, reassessment and adjustment of treatments, Treatment Lengths and Maintenance Intervention Strategies are required.

Pavement Maintenance Management is a dynamic process. As the pavement ages, deterioration will occur in different ways and at different rates. Continual assessment of the appropriateness and success of programmes and strategies will lead to quality decisions being made for future programmes and strategies.

The alignment of understanding between Client, Consultant and Contractor should result in feedback being provided from all these parties.

National and Local Lookup Tables

Maintenance of look up tables is available in RAMM Manager. Some look up tables are nationally controlled, and the balance require some liaison with Transit New Zealand Regional staff before adding, changing or deleting entries. The data

relationship between these tables is complex and care should be taken when maintaining them.

Nationally Controlled Information

Information in these tables is maintained by Transit New Zealand at Head Office. If you want to update or add to any of this information, please contact Transit New Zealand at your Regional Office and they will approach Head Office with your request. Updated national tables, for your Network Management Area, can be unloaded from the main database at Head Office, using National Table Export. When you receive the file you can load it into your regional database using the National Table Import.

Nationally controlled information includes:

- Funding Groups.
- Maintenance Intervention Strategies (excluding costs).
- Note Types.
- Primary Motivators.
- Reasons.
- MARG Factors.
- MARG Weightings.
- MARG Activity / Defect Relationships.
- Safety Intervention Strategies.
- Treatments (excluding costs).
- Treatment Groups.

Locally Controlled Information

The following information must be developed locally to suit the needs of the Network Management Area:

- Treatment Length Cost Sets.
- Treatment Costs.
- Maintenance Intervention Strategy Costs.
- Routine Maintenance Cost Estimation.

Having established the tables, the Treatment Length - Cost Set link must be established locally, and the treatment costs for each cost set generated. Cost Sets

operate in a similar manner to the cost sets that we are familiar with in the RAMM Treatment Selection Algorithm (TSA).

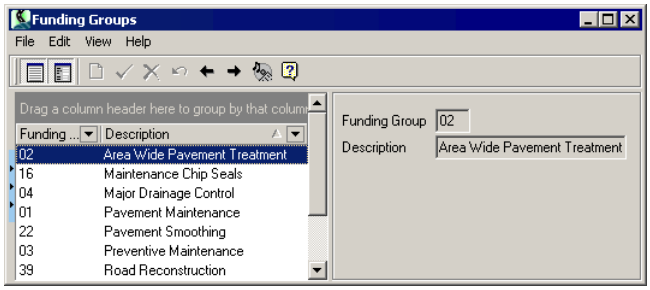
Locally entered data is transferred back to Transit New Zealand, for input into the main database, using the Forward Work Unload/Load processes.

Funding Groups

Funding Groups represent a generic grouping of treatments into items under which funds will be sought. Grouping will be established on the basis of the criteria established in the Transfund Programme and Funding Manual.

Maintaining Funding Groups

Access the maintenance window from RAMM Manager using the menu **Projects > Forward Work > Funding Groups**.



This information is nationally controlled and so cannot be maintained by Consultants accessing a database generated for them from the Transit New Zealand controlled copy. Contact Transit New Zealand if you want to add or update any Funding Groups.

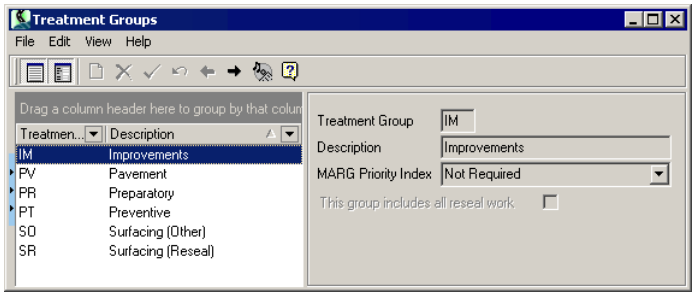
Updated Funding Group information can be delivered to the Consultant using the National Table Export/Import.

Treatment Groups

Treatment groups are established for network management purposes.

Maintaining Treatment Groups

Access the maintenance window from RAMM Manager using the option **Projects > Forward Work > Treatment Groups**.



This information is controlled by the Transit New Zealand and so cannot be maintained by Consultants accessing a database generated for them from the Transit New Zealand controlled copy.

Updated Treatment Group information can be delivered to the Consultant using the National Table Export/Import.

Some areas of Forward Work Planning need to know which Treatments indicate Reseal work. To do this a flag is set against one, and only one, of the Treatment Groups to indicate that all the Treatments that are part of this Group are Reseal. Setting this flag for one of the Treatment Groups will automatically cause all other Groups to have the flag set to "not reseals".

The MARG Priority Index is used to indicate if Treatments belonging to this Group contribute (or not) to the Reseal Index or Pavement Area Treatment Index.

Treatments

Treatments are the descriptions of the work types carried out to maintain the asset.

In the Forward Work Programme the default treatment is a blank cell. This is taken to be routine maintenance. The value of the Treatment in any particular cell depends on a number of factors, for example, last Treatment, next Treatment, age relative to these and routine maintenance costs in the previous year.

Treatments can be set up so that a percentage coverage can be applied. This value indicates the extent of work required, and the costs. Costs will obviously be applied against the percentage coverage specified. Percentage coverage can be set to apply to all treatment types, but is principally intended for work such as drainage improvements where these will typically only apply to part of the Treatment Length. Percentage coverage capability is set up using the flag in the administrative look up table maintenance function.

The definitions for Treatments are nationally controlled and so must be defined by Transit New Zealand. Updated Treatment definitions can be supplied to the Consultant using the National Table Export/Import (see "National Tables Export" on page 165).

Treatment Applicability

Not all Treatments are available for use in the Forward Work Plan in any given Planning Year. The more general the Treatment definition the further out in the Programme you would use it.

All Treatments defined in Forward Work Planning are assigned to one of the following Programme Periods:

- Years 1 to 4.
- Years 1 to 10.
- Years 1 to 20.
- Years 3 to 10.
- Years 11 to 20.

Over time, processes such as the End of Year Rollover (on page 156) may cause some Treatments to move from a Year where they are valid to one where they are not. RAMM provides a report to allow you to quickly find these cases so that you can replace the Treatment with one more applicable to the Planning Year.

Treatment Life

Each Treatment is expected to be effective for a limited period of time. This Treatment Life may vary between the different parts of your network. A Suggested Life is provided for each Treatment. This is defined by Transit New Zealand and delivered via the National Table Export/Import. However, since the Life of the Treatment can be different in each of the Areas. Consultants have the ability to assign their own value for the Treatment in the Network Management Area in their copy of the database.

Inactive Treatments

Over time Treatment definitions may change and there will be definitions that you no longer wish to be used in your Forward Work Programme. However, they may still be recorded in the Treatment History of work that has been completed in previous years.

To ensure the history is retained you can flag Treatments as being Inactive. However, this does not automatically mean that those Treatments are removed or replaced in the Current or Alternative Programmes. To assist you to find Inactive Treatments in your plan RAMM provides an Inactive FWP Treatments Report (see "Inactive Forward Work Programme Treatments" on page 73).

dTIMS Treatments

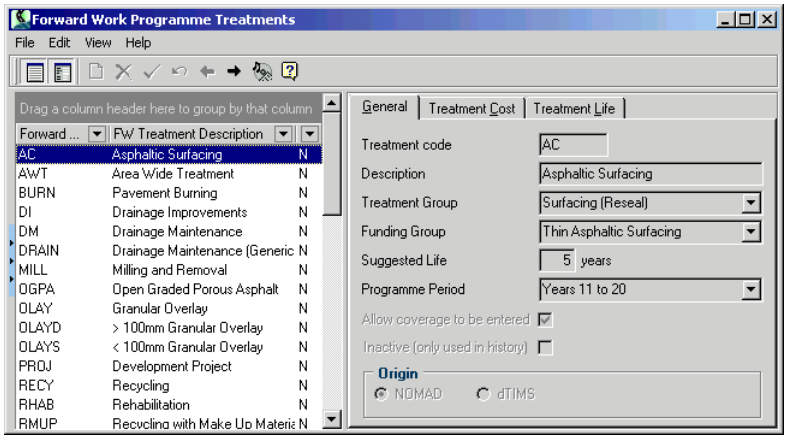
RAMM Forward Work Planning has the facility to import information from a dTIMS analysis (see "dTIMS Analyses and Forward Work Planning" on page 162) and record it as an Alternative Scenario.

Part of the information that is imported is the definitions for dTIMS Treatments. These are also recorded here together with the Forward Work Programme Treatments. To distinguish between them, RAMM flags all Treatments as originating in either Forward Work Planning or dTIMS.

You can look at the details of dTIMS Treatments here, but cannot alter them.

Maintaining Treatments

This can be accessed in RAMM Manager from the menu **Projects > Forward Work > Treatments**.



Treatment definitions are nationally controlled. Transit New Zealand can make the definitions available to Consultants via the National Table Export/Import (see "National Tables Export" on page 165).

When you insert a new Treatment you are required to assign it to a Funding and a Treatment Group. You are also required to state which Programme Period the Treatment is applicable for. Since only Forward Work Planning Treatments can be inserted here the Origin flag will default to NOMAD. The Suggested Life for the Treatment will default to 5 years, but you can update this to any value that you require.

If you are at Transit New Zealand, entering a new Treatment, then you will not be allowed to enter any information on the Treatment Cost or Treatment Life tabs on this window. This information is specific to the Network Management Area and should be completed by a Consultant using their copy of the database.

Tick the Allow Coverage flag if you wish to allow this Treatment to apply to a percentage of the Treatment Length. If Coverage is not allowed then the Treatment will be assumed to apply to 100% of the Treatment Length.

If you wish to indicate that a Treatment is no longer applicable to the Current Forward Work Programme you should tick the Inactive flag. This means that the Treatment can no longer be used for future work. However, it may still exist in the Treatment History and this is acceptable to RAMM.

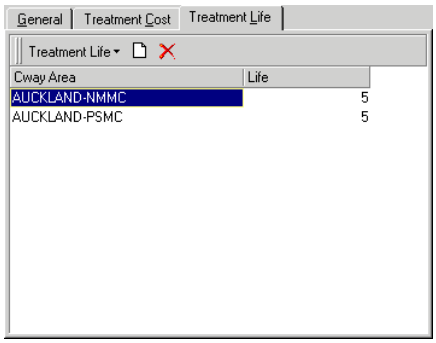
RAMM provides a report, the Inactive FWP Treatments Report (see "Inactive Forward Work Programme Treatments" on page 73), which can be used to

determine where Inactive Treatments are present in the Current Programme so that they can be replaced with a more appropriate alternative.

Treatment Life

Treatments may have different lives depending on the local conditions in area of the Network that you are working in. To handle this Forward Work Planning allows the Consultant to define a different Life for the Treatment for each Network Management Area in their portion of the database.

For new Treatments this will default to the Suggested Life defined by Transit New Zealand.

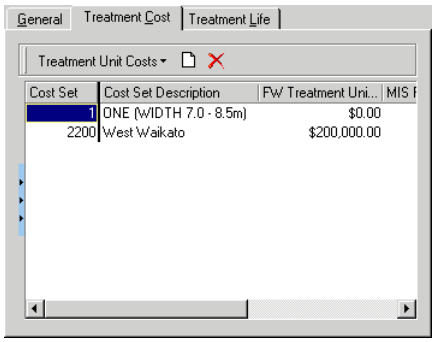


Once the Consultant has recorded Treatment Lives for all the Network Management Areas in their copy of the database this information will be returned to Transit New Zealand using the Forward Work Unload/Load functionality. Transit New Zealand will be able to read this information but cannot update it.

The treatment life is needed for calculating which year the RMCE curve will use after a treatment with a curve reset of "Reset to Midpoint" (how it is involved is explained in RMCE Curve Reset after Treatment). The life listed in the treatment table is different to that listed in the surface life table because traffic factors have been left out for simplicity - the calculation would become too complex and time consuming if the balancing programme had to go away and look at the traffic of the Treatment Length to determine the life of the treatment.

Treatment Costs

The cost of applying a Treatment will vary between, and within, Network Management Areas as a result of local conditions. RAMM allows Consultants to record the cost for each Treatment for each of the Cost Sets that have been defined. The section on Treatment Cost Sets (on page 127) has a more detailed explanation of their definition and use.



Once the Consultant has recorded Treatment Costs for all the Cost Sets in their Network Management Areas this information will be returned to Transit New Zealand using the Forward Work Unload/Load functionality. Transit New Zealand will be able to read this information but cannot update it.

Treatment Cost Sets

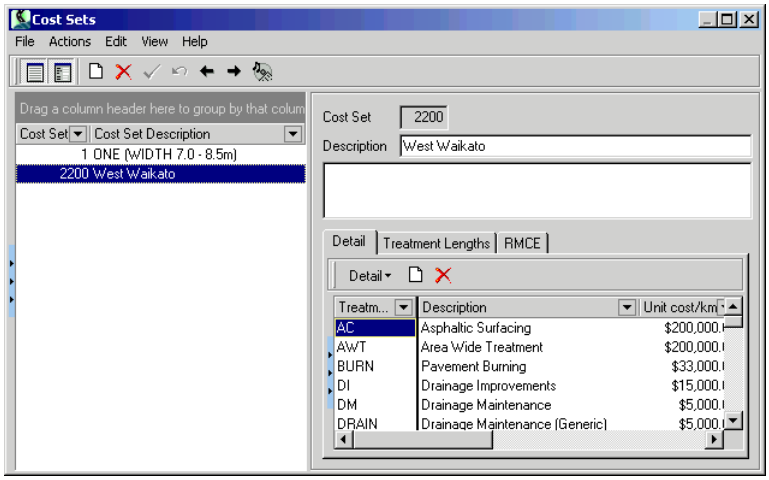
Treatment Cost Sets as used in the **Twenty-Year Programme** are synonymous with the cost sets used in Treatment Selection, that is they exist on a one to one basis, are known by the same name and apply over the same area. For Twenty-Year Programming, the costs of the **treatments** specified in the treatment table are attached.

To change the cost set to which a particular Treatment Length is associated, edit the cost set field on the Treatment Length view window. This change will then apply to both treatment selection and the Twenty-Year Programme financial calculations.

In all cases the costs are based on units of $/km.

Maintaining Treatment Cost Sets

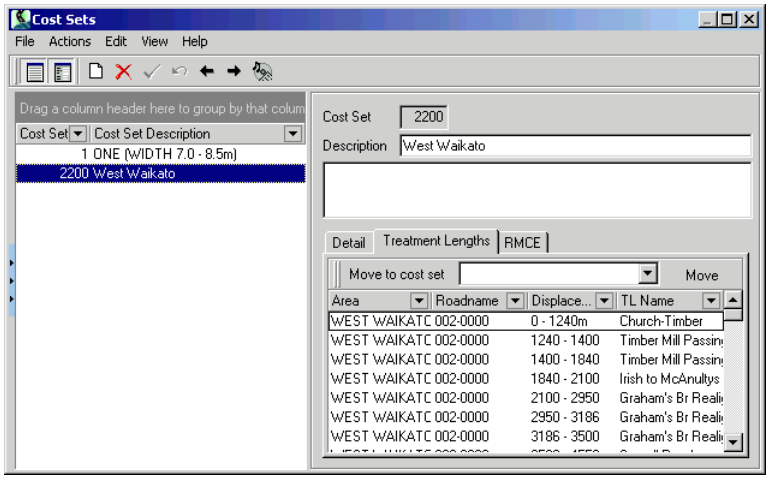
Access Treatment Cost Sets through the RAMM Manager menu **Maintenance > Lookups > Carriageway > Cost Sets**.



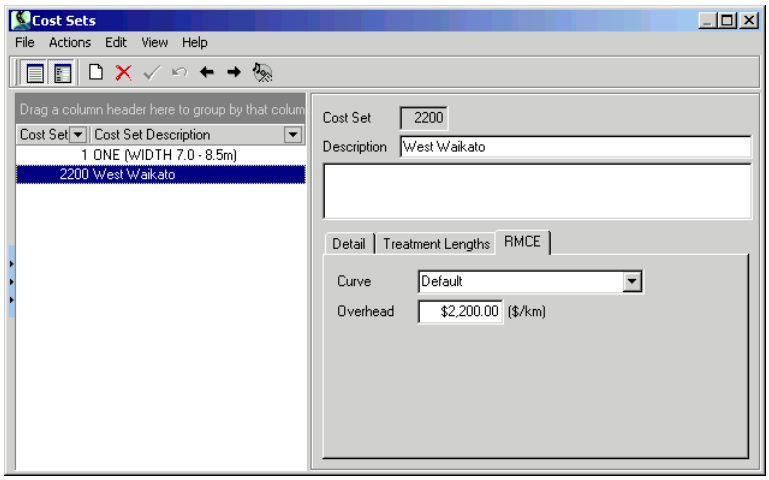
Cost Sets can be defined either by Transit New Zealand or the Consultant. New Cost Sets defined by the Consultant will be transferred to Transit New Zealand through the Forward Work Unload/Load function.

New Cost Sets are automatically numbered according the range allowed for each Network Management Area. If no range is defined for the Network Management Area (as would normally apply in a Local Authority database) then the Cost Sets will be numbered from 1.

When you insert a new Cost Set RAMM will automatically create one row for each of the active Treatments that are flagged with an Origin of NOMAD. The Unit Cost, which is expressed in $ per km, will default to zero and can be updated as required. This information is the same as that displayed for individual Treatments on the Treatment maintenance window and you can edit it from either place.



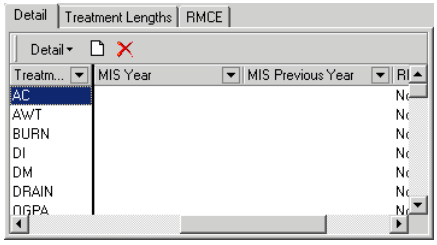
This window also allows you to define which Cost Set each of the Treatment Lengths will use. Although you can assign a Cost Set by maintaining the Treatment Length in RAMM, you can also do it here by highlighting one or more Treatment Lengths, selecting a Cost Set from the "Move to cost set" combo box and clicking on the "Move" button.



If you intend using Routine Maintenance Cost Estimation (RMCE) you will need to define an Overhead Cost to the Cost Set and associate it with a RMCE Curve.

Additional information on the Detail tab that is used in the RMCE calculation is the Maintenance Intervention Strategy which is to be applied to the year in which the Treatment takes place and that for the year just previous to the one where the Treatment takes place. Maintenance Intervention Strategies (on page 158) have costs associated with them and so impact on the RMCE.

Finally on the Detail tab is a RMCE Reset option. This also has an impact on the RMCE calculation and needs to be considered if you wish to use this functionality.



This table holds all the **treatments** that are recognised in the database as well as the groups they are in (funding and treatment), their expected life and their unit costs by cost set.

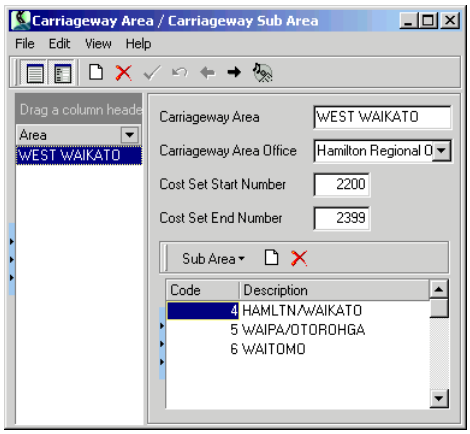
The pull-down menus titled "MIS (Year of Treatment)" and "MIS (Year Preceding)" are where the MIS for the treatment are attached. If an **MIS** is selected for either of these years, the maintenance costs given by the RMCE curve will be overridden with the figure defined in the Maintenance Intervention Strategy window for the particular cost set. For example, if the treatment was a reseal, the MIS for the year preceding the reseal may be Pre-Reseal Repairs (to reflect the increased of maintenance to bring the Treatment Length to the ideal condition for sealing), and the MIS of the year of the Treatment may be normal maintenance (to keep the Treatment Length in the same condition).

The Consultant needs to decide what the MIS (if any) will be for each treatment. If it is decided there will be no special maintenance for a Treatment then leave the two MIS columns blank. For example, a Treatment such as shoulder grading may have no impact on the interpolated costs and accordingly the MIS will be left blank.

Maintaining Cost Set Ranges

The range of allowed values that can be used for your Cost Set Identifier is defined by Transit New Zealand. Each Network Management Area is assigned its own unique range of numbers.

You can maintain Carriageway Area definitions in RAMM Manager from the menu **Maintenance > Lookups > Carriageway > Cway Area/Sub Area**.



Care should be taken when maintaining information for the Carriageway Area. The transfer of information between Transit New Zealand and Consultants depends on the Carriageway Area name and the Cost Set Number. If the name of

the Carriageway Area is changed in one database and not the other then there will be problems with the Forward Work Load rejecting the file Unloaded from the other database.

If the Cost Set Number Range is incorrectly set so that it overlaps the range assigned to another Network Management Area in the same Transit New Zealand main database, then the FWP Load will overwrite the wrong Cost Set definition and vital information will be lost.

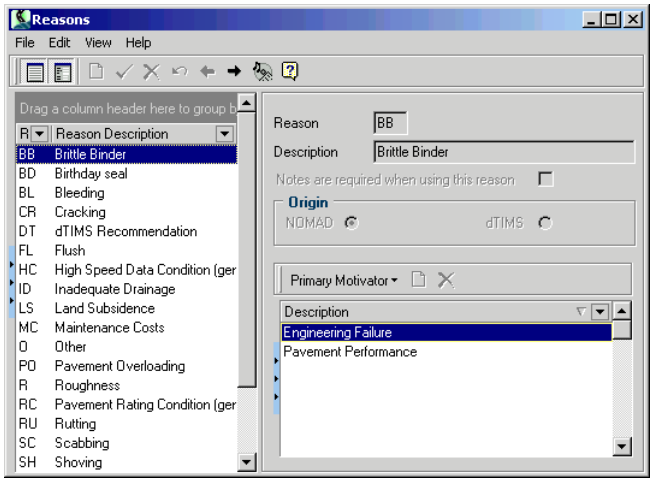
Reasons

Reasons are the explanations of why a given Treatment will be carried out when maintaining the asset. One or more reasons must be entered for every Planning Year when you assign at least one Treatment.

RAMM Forward Work Planning allows information from dTIMS analyses to be loaded as Alternative Scenarios. Whilst dTIMS does not explicitly define a Reason for each of its Treatments, RAMM requires one. Therefore, RAMM will automatically create a Reason called "dTIMS Recommendation" and flag it with an Origin of dTIMS. All other Reasons are defined as having an origin of NOMAD.

Maintaining Reasons

Reason definitions can be maintained in RAMM Manager by accessing the menu **Projects > Forward Work > Reasons**.



When inserting a new Reason definition you will need to supply the Code and the Description. For all new Reasons the Origin will be set to NOMAD. Details of dTIMS Reasons can be viewed here but are as a result of the load of a dTIMS

Analysis only. See the section on dTIMS Analyses and Forward Work Planning (on page 162) for further details.

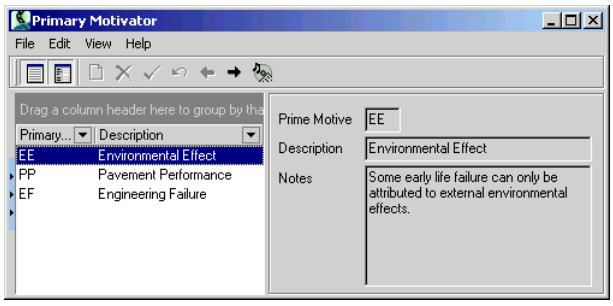
Each Reason can have none, one, or more Primary Motivators associated with it. A Primary Motivator is a definition of the underlying cause for the Reason when it has been assigned to a planned Treatment.

You can tell RAMM that you require further details to be entered into the Programme when a given Reason has been assigned. This is done by ticking the "Notes are required when using this reason" option. This ensures that RAMM requests a Reason Note to be entered whenever this Reason is used.

Reason definitions are nationally maintained by Transit New Zealand. New and updated definitions can be provided to the Consultant via the National Table Export/Import (see "National Tables Export" on page 165) process.

Primary Motivators

Maintenance for the Primary Motivator is through RAMM Manager using the menu **Projects > Forward Work > Primary Motivator**.



When entering a new Primary Motivator you will need to supply both a Code and Description. You can optionally include some notes to enhance the definition.

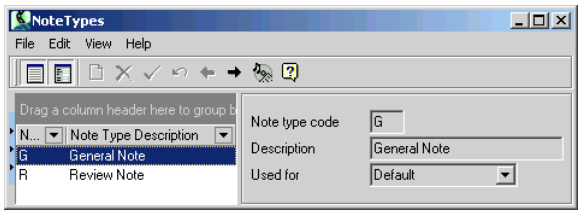
Primary Motivator definitions are nationally maintained by Transit New Zealand. New and updated definitions can be provided to the Consultant via the National Table Export/Import process (see "National Tables Export" on page 165).

Note Types

Note Types are used to categorise the free format notes available for entry against the Current Forward Work Programme or any alternative scenario.

Maintaining Note Types

Note Types can be added and maintained in RAMM Manager from the menu **Projects > Forward Work > Note Types.**



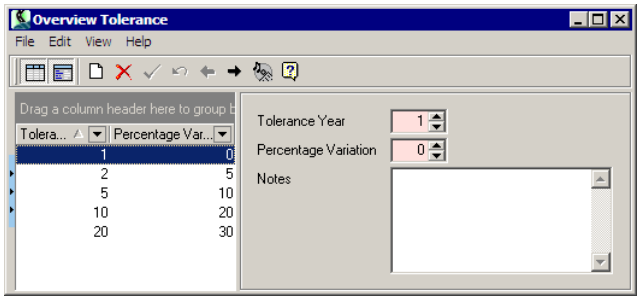
This information is maintained by Transit New Zealand.

Updated Note Types can be obtained from Transit New Zealand using the National Table Export/Import process (see "National Tables Export" on page 165).

Maintaining Overview Tolerances

This window allows you to set up Tolerance Years and a percentage variation for each Tolerance Year.

Select **RAMM Manager > Projects > Forward Work > Overview Tolerance** to launch this window.



These options control how the Overview Report (on page 92) is generated.

CHAPTER 13

Managing Programmes

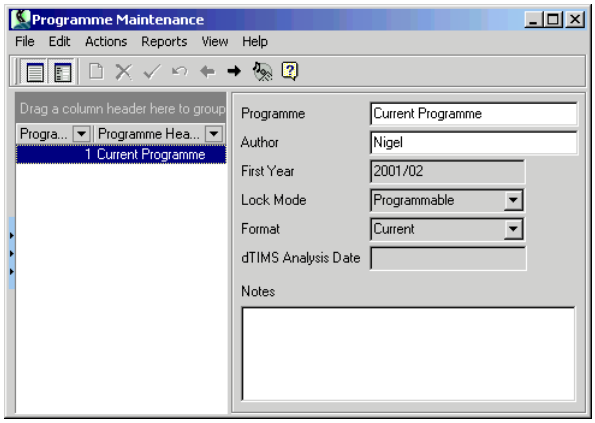
IN THIS CHAPTER

Programme Maintenance

Programme Maintenance allows you to manage multiple Forward Work Programmes. When you next use the Forward Work Programme features within RAMM for Windows you will be able to choose the Programme to work with. Use this window to copy, archive, print and manage your Programmes.

Maintaining Forward Work Programme Headers

The maintenance of Forward Work Programme Headers is carried out in RAMM Manager from the menu **Projects > Forward Work > Programmes**.



If you do not have any Forward Work Programmes defined in your database then the first time that you enter this window a Current Programme will be automatically created for you. By default the name of this Programme will be "Current Programme" but you can change this at any time.

Apart from the name of the Programme, the Author, and the Notes nothing else on this window can be changed by directly editing the field on the window. All changes and other maintenance functions are accessed from the Actions or Reports menus.

First Year

The First Year indicates the Financial Year corresponding to Year 1 of the Forward Work Programme. Year 1 is the Current Financial Year and any work planned for that year should have been approved and already be taking place. The First Year only changes when you perform an End of Year Rollover on the database. This is a Transit New Zealand function that is described more fully in our section on End of Year Rollover (on page 156).

Lock Mode

The Lock Mode is an indication of the state of the Programme. It can be Programmable, which means that you can maintain full details of the Programme, Locked, which means that you cannot change the Programme, or Review only,

which means that the Programme has been created as a copy of the Current Programme for use during the Review. See the section on the Reviewing the Forward Work Programme (on page 95) for more details. As a Consultant, any changes that you make to a Programme that you have unlocked may be lost when Transit New Zealand returns a copy of the database to you.

Format

The Format of the Programme can be Current, Archived, Linked, or dTIMS Recommendation. Only one Programme can be the Current Programme. Copies of the Current or other Programmes are set with a Format of Linked. If you choose to Archive a Programme then the Format will be set to Archived. Archive Programmes retain only their cost information. All other information will be lost.

Only Programmes that have been loaded from dTIMS Analysis data will have the Format of dTIMS Recommendation.

dTIMS Analysis Date

The dTIMS Analysis Date is information that is loaded from the dTIMS Analysis and indicates the date when that analysis was carried out in dTIMS. It is not the date when you loaded the analysis into RAMM but the date, from dTIMS, when the analysis was carried out.

Actions > Duplicate

This option will create a copy of the highlighted Programme. By default the new copy will have the same title as the original with the text "Copy of" attached to the front. You can rename it to suit yourself.

This programme will also be given the Format of "Linked" to indicate that it is not the Current Programme, but is derived from it.

Actions > Archive

Use this menu to archive the highlighted Programme. Detailed information on each Treatment Length is deleted from the Programme including Treatments, Reasons, Status, Priority, Maintenance and Safety Intervention Strategies. Treatment Length Notes are unaffected by archiving. Once archived a Programme can only be viewed in RAMM through the Forward Work Balancing window and summary reports produced. Archive Programmes are ones that you have finished with, but where you wish to retain an overview for reference only.

Actions > Lock/Unlock Programme

Use this menu to either lock a Programme that is Unlocked or to unlock a previously Locked Programme. You can lock a Programme yourself if you wish to ensure that you do not accidentally change any of the details. If you unload a Programme using the Forward Work Unload/Load it will automatically be locked. You can still unlock an unloaded Programme but you will be warned that any changes you make may be lost if the Programme is returned. Returning a Programme through the FWP Load will also unlock it.

Actions > Make Current

Use this option to set the highlighted Programme to be the Current Programme. Remember, that only one Programme can be Current at any one time, so setting the highlighted Programme to Current will cause the former Current Programme to be set as Linked. This is not available for Archived Programmes or those loaded from a dTIMS Analysis.

Actions > Review

These options are used when reviewing a Programme. See the section on the Reviewing the Forward Work Programme (on page 95).

Reports > Detail Report

This is another way to access the Forward Work Detail Report. Please see Forward Work Detail Report (on page 82) for more information.

Reports > Review

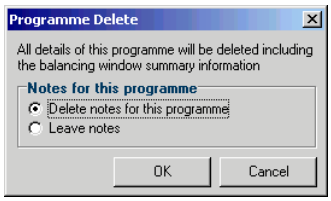
This option is used when reviewing a Programme. Please see the section on Reviewing the Forward Work Programme (on page 95).

Deleting a Forward Work Programme

You cannot delete the Current Forward Work Programme in RAMM. If you genuinely wish to delete the Programme you are currently working on, you must first set one of your Alternative Scenarios to be the Current Programme. You will then be able to delete the one you wanted to delete originally.

If the Programme you are deleting is a simple copy of the Current Programme (that is an alternative that you have set up) then you will be prompted to confirm the deletion but having done that the Programme will be deleted.

However, if the Programme that you intend deleting is one created as part of a Review of the Current Programme then you will see the following dialog displayed.



You can then choose to keep the Review Notes from the Programme you are deleting or to remove those as well.

Programme Development

The Twenty-Year Programme produced by the intellectual process is an indicative assessment. Rehabilitation and improvement works identified, are then subject to more rigorous economic and engineering scrutiny.

Once funding levels are confirmed, the Twenty-Year Programme will be reviewed to ensure rejected proposals have appropriate **Maintenance Intervention Strategies** applied.

Preparing the Forward Work Programme

The site assessment should identify possible solutions. These need to be costed and quantified against economic criteria or by economic awareness to determine the most economically acceptable solution. A priority will need to be allocated against each treatment.

Treatments may be determined by referencing other sources of information. This may include safety improvements or other improvement works separately investigated. The status, timing and economic viability of these projects will need to be determined and recognised prior to inclusion in the Twenty-Year Programme and allocation of a Maintenance Intervention Strategy.

Maintenance Functions

Maintenance of the Twenty-Year Programme and supporting files will generally follow the following pattern.

1. Maintain look up tables.
2. Review treatments.
3. Review and maintain cost sets.
4. Review Maintenance Intervention Strategies.
5. Review Safety Intervention Strategies.
6. Review intervention levels for the exception reporting.
7. Run exception reports (Treatment Lengths generating an exception in condition data will be flagged).
8. Review treatments - office exercise. Use the exceptions generated and/or associated condition data.
9. Review treatments - field review.

Performance Monitoring

The constant evaluation of the degree of success of selected treatments will enable greater confidence to be provided to future treatment selection evaluations.

Performance monitoring and the associated feedback is critical to the development of the intellectual process.

Assessing Your Data

Prior to any field assessment of Treatment Lengths being made, data needs to be collated and interpreted to determine the trends and exceptions described in Trends and Exceptions (on page 74).

Importance

The bulk of maintenance expenditure is likely to occur over a small percentage of the network. When cumulative expenditure is plotted against cumulative length 65% of expenditure occurs over 20% of the length of the network.

Data collection and analysis will allow the 20% of the network with high maintenance costs to be more readily identified and **Treatments** and **Maintenance Intervention Strategies** formulated to reduce maintenance costs. An improvement in maintenance programmes and strategies will result in a trend towards a straight line (an even distribution of needs).

Assessing the Programme in the Field

Treatment Lengths that have trends and exceptions noted are targeted for field assessment. The field assessment will require visual inspection of the site to determine:

- Is there is a problem as indicated by the trend or exceptions?
- Is there is any other problem associated with the site?
- What is the cause of the identified problem?
- What is the extent of the problem?
- Is local or area treatment appropriate?
- What are acceptable solutions?

Unloading Programmes

Use the Forward Work Unload function to unload a selection of programmes to be delivered to Transit New Zealand.

Programmes

Programmes to be unloaded can be chosen from a list containing all programmes in the database. Programmes changed or created since the database was sent to you are automatically checked. The **current programme** is automatically included in the programmes to unload and cannot be unchecked.

WARNING: Any changed programmes that are not sent will not appear in the next database Transit New Zealand delivers to you.

Unload

During the unload; the status of treatments is switched from Changed to Proposed for each chosen programme and the programmes Locked. The programmes are locked to prevent changes being made until Transit New Zealand delivers a new database. Programmes sent from Transit New Zealand are always Unlocked.

To unlock a programme yourself and continue working with it, use the **Projects > Forward Work > Programmes** menu option in RAMM Manager. If you do this you must ensure another Unload is sent before you next receive a database unload from Transit New Zealand or your work will be lost.

Save as type

All data for the chosen programmes is unloaded to a single compressed file with an .FWU extension.

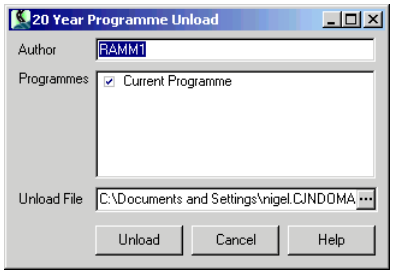
Email

The .fwu file created can be emailed to Transit New Zealand for loading into their programme.

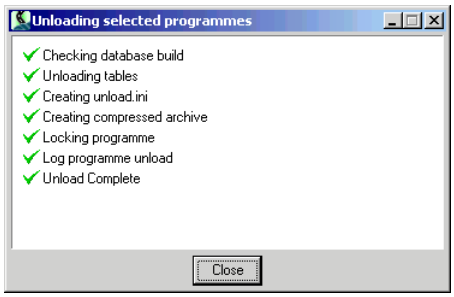
Programme Unload (Transit New Zealand/Consultant)

- After giving RAMM Manager exclusive access to the database, **Projects > Forward Work > Unload**
- Status on the unloaded programmes changes to locked when either user unloads.

The status automatically changes to locked to prevent any changes being made while the other party has the programme, as these changes will be lost if they are not unloaded before the programme received from the other party is loaded. The programme can be unlocked in RAMM Manager using the menu **Projects > Forward Work > Programmes**, select the programme, then **Actions > Unlock Programme**.



Choose the destination directory and the name for the Unload file. Then click on the **Unload** button to start the process.



Once the unload is complete click on the **Close** button. The file is now ready to be sent to Transit New Zealand.

Loading Programmes

This process loads programmes, sent by consultants, into the Transit New Zealand database. The contents of the load file are displayed and the programmes to be loaded offered. The Programme Load wizard will guide you through choices

on which programmes to load, whether to create a copy of the programmes being overwritten, managing alternative scenarios when Treatment Lengths have changed or programmes are in review.

Loading Implementation Steps

The following implementation steps are carried out by Transit New Zealand before unloading the database for dispatch to Consultants.

Loading Implementation Steps

1. Maintain nationally controlled lookup tables (see "National and Local Lookup Tables" on page 119).
2. Summarise Treatment Lengths. This process summarises key data to the Treatment Length level. For example, roughness statistics (mean, maximum, etc). The database will then be unloaded and released. Implementation should then continue as below.
3. Complete lookup table creation - Regionally controlled tables. (Liaison with Regional Transit New Zealand Staff is essential)
4. Maintain Treatment Lengths. Maintain the system generated Treatment Lengths to match the physical layout appropriate. The Generate Treatment Length process will create Treatment Length joints at all Major Seal Joints. These may not match the joints considered appropriate locally.
5. Maintain the cost sets attached to the Treatment Lengths. The generate function defaults these to the same cost sets currently attached for treatment selection. If these are not adequately set up to reflect changes in costs associated with **area treatments**, maintenance will be required.
6. Attach Treatments, Reasons, Maintenance Intervention Strategies, Safety Interventions, Priority and Notes to the Treatment Lengths.
7. Check for the appropriateness of the balance of the programme. This step involves consideration of the total length and cost of the various treatments across the twenty year planning period: essentially, looking for peaks and ensuring that they are justified. Some re-evaluation of treatments may be required to achieve an appropriate balance.

The programme is then ready for downloading and returning to Transit New Zealand.

To Load Programmes

How To Load Programmes:

1. Create a backup of the database. Use the database backup facilities in RAMM Manager (**File > Backup Database**) to create a backup of your database.
2. Select a Forward Work Archive. Select the forward work archive file (.fwu file extension) sent from the consultant.
3. After selecting the archive, use the load wizard to select load options. Up to three windows are presented:
   - *Programme Contents* - shows the programmes being delivered and the contract areas covered.
   - *Treatment Lengths have Changed* - only shown if the consultant has changed Treatment Lengths.
   - *Programmes Under Review* - only displayed if programmes are being reviewed.

Once the load routine is completed, the database into which the load was performed has an exact copy of the Treatment Lengths and programme information unloaded from the consultant's database.

Load Programme Contents

All programmes in your database are displayed in this panel plus new ones created by the consultant. Columns are used as follows:

- **Current** - shows the **current programme** on your database.
- **Received** - this is ticked for all programmes changed and returned by the consultant or shows New for all new programmes
- **Copy** - tick any programmes being returned if you want a copy saved before loading the consultant's version. The copy can be viewed and maintained just like other alternative or scenario programmes.

Loading Changed Treatment Lengths

This window is displayed because the Treatment Lengths in the database are different from those delivered from the consultant. The new or changed Treatment Lengths from the consultant will be loaded, replacing any Treatment Lengths covering the same carriageway length. Only Treatment Lengths for the contract areas being loaded are changed.

The **treatments** in alternative (scenario) programmes covering these Treatment Lengths will be cleared. If a new programme has not been delivered by the consultant, there are two options for how to deal with these Treatment Lengths that have no forward work programme:

- Blanks - leave the programme blank.
- Current - schedule the same treatments scheduled in the **current programme**.

Loading Under Review

This window shows programmes currently in Review. If a programme is received while a review is under way you must decide whether to delete the review and restart from scratch or continue with the review. If you choose to continue you may have already made comments about **treatments** that the consultant has now changed. The comments may be irrelevant and at worst confusing.

Invalid Load

When there are rows that do not link to roads or carriageway sections these are listed in a grid and you may fix the errors. The only rows displayed are those that are in error. A filter option is available if you wish to further refine the rows displayed. You can only update or delete rows. On completion the validation is run again either until there are no problems with the data or you press **Cancel**. Two buttons are available to make corrections easier.

- **Correct Carriageways**
- **Correct Roads**

These buttons are designed to handle the majority of the cases, however there a number of more complex changes that cannot be handled by routines (for instance Splitting a Road will involve redefining the start and end displacements, not just attaching to a new road and carriageway section). You can either make these changes manually or return the data and a list of changes that have occurred to the roadnames and carriageway table to the data supplier for correction.

The filter button enables you to filter the information. When a filter is currently in use the word *Filtered* appears on the window title bar.

Correct Carriageway

The **Correct Carriageways** button will appear if there are records located within the wrong carriageway sections. This button will automatically locate these records and place them in the correct carriageway section. If there are two displacement columns in the table (for example *start_m* and *end_m*) then you must choose which one is used to determine the correct carriageway section. When a row does not sit within a carriageway section the column *carrway_start_m* is left as it is.

Correct Roads

The **Correct Roads** button will appear if there are records that do not link to the roadnames table. The Road ID of the current row is defaulted into the **Invalid Road ID** column. You can either enter the correct Road ID directly into the **Correct Road ID** column or select the roadnames from the pull down list available on the **Correct Road** column. Clicking the **Correct** button will apply the change.

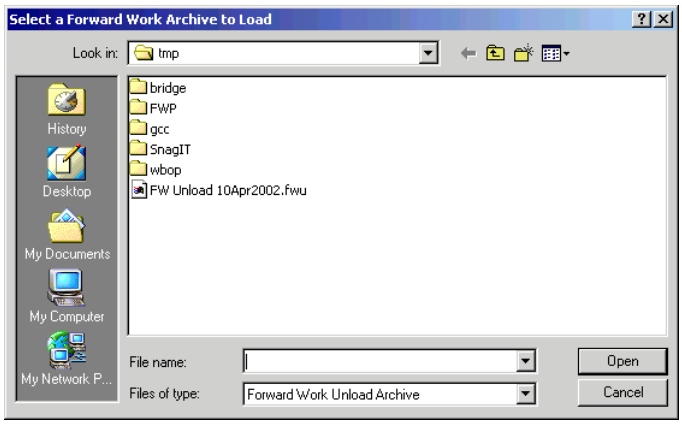
Programme Load (Transit New Zealand/Consultant)

- After giving RAMM Manager exclusive access to the database, choose **Projects > Forward Work > Load**.
- Status of the loaded programme changes to unlocked and editable for a Consultant user, and unlocked but not editable for a Transit New Zealand user.

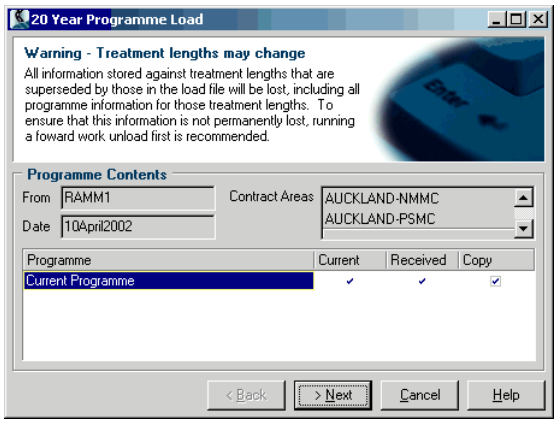
There will be a forward works programme that is the **current programme** (although not necessarily called "Current") in the database. The programme that is being loaded will overwrite this programme. Therefore, the option to make a copy of the existing current programme is given to you. By default the name of this copy will be the same as the original but with the text "Copy of" appended to the front. It is recommended that this be renamed if it is going to be retained, to reduce confusion later in the year when there may be many programmes with the same name. This can be done in RAMM Manager from the menu **Projects > Forward Work >**

Programmes, select the programme and type the new name in the box at the top right.

Select the file to be loaded by browsing.



When you have selected the file to be loaded click on the **Open** button and you'll see the following information.



You are warned that by loading this file you may well cause Treatment Lengths to be changed in your database. As part of the preparation of the Forward Work Programme your Consultant may have changed the Treatment Lengths in their Network Management Area. These changes will be implemented in the Transit New Zealand copy of the database as the Programme is loaded.

It is recommended, in case there is a problem, that you take a backup either by backing up the entire database or by unloading your own copy of the Forward Work Programme before loading the one from the Consultant. Your unloaded copy will have a record of the Treatment Lengths as they are before the

Consultant's Programme changes them and you can use this to restore the database back to where it was before.

The Programme Contents part of this window displays details of the Network Management Area(s) and Programme(s) that are present in the unload file. Use this information to confirm that you have the correct information before continuing with the load.

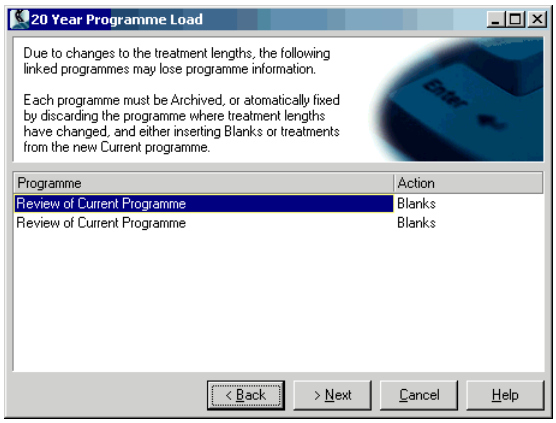
The Programmes listed on this window include all those currently in your database plus an indication of whether you are receiving a new copy of that Programme from your Consultant.

Finally, you can indicate if you wish to make a copy of any one of your existing Programmes before the incoming one replaces it.

Once you have made your choices click on the **Next** button to continue.

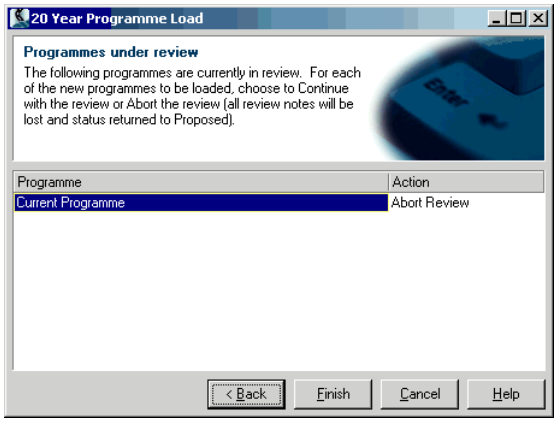
You then need to decide what you want to do to Programmes (other than the Current Programme) when Treatment Lengths have changed.

For the affected Treatment Lengths you can choose an Action to set those Programmes to be **Blank**, **Archived**, or to take the Treatment from the incoming **Current** Programme.

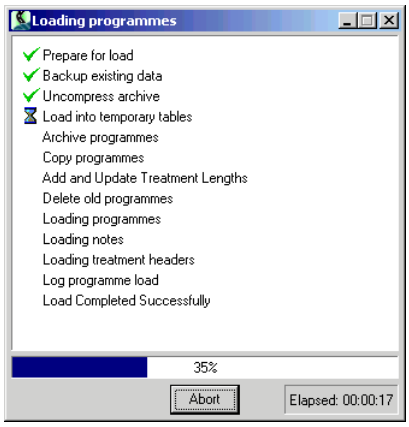


When Transit New Zealand loads the programme from the Consultant after the first review has been conducted, they will be asked if they want to carry on the review or abort it (default).

Click on the **Next** button to see details of the Programme that is under review and to decide whether to continue with the review or not.



Once you have made your decisions on whether to **Abort** or **Continue** the Review, click on the **Finish** button to load the information from the Unload file.

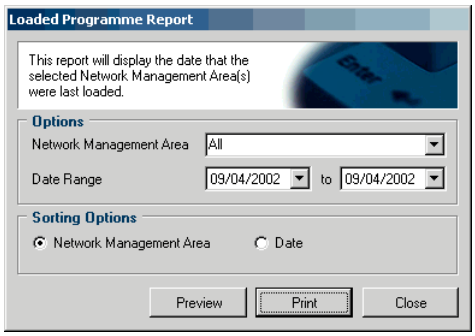


When this process has completed the new Forward Work Programmes will be available to work with.

If RAMM encounters a problem during the load process it will abort the process and restore the original Forward Work Programmes and Treatment Lengths.

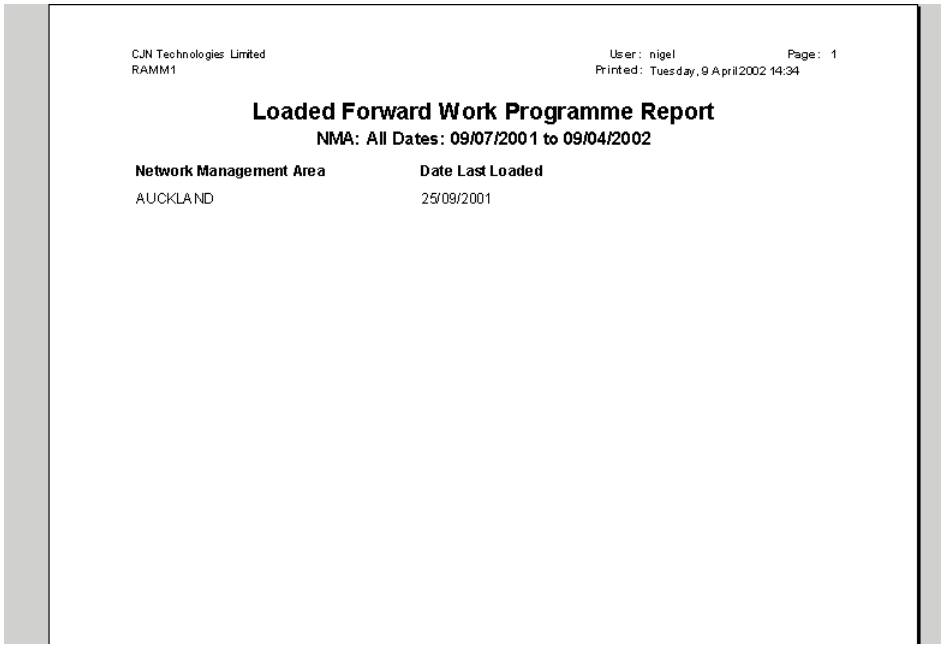
Loaded Programme Report

A record is kept of all the Forward Work Programme loads that have taken place. If you wish to review that history a report is available in RAMM Manager from the menu **Reports > Forward Work > Loaded Programme Report**.



You can filter the information passed to the report by selecting a specific Network Management Area or by setting the dates that you are interested in.

The finished report will look something like this.



CJN Technologies Limited
RAMM1

User: nigel Page: 1
Printed: Tuesday, 9 April 2002 14:34

Loaded Forward Work Programme Report

NMA: All Dates: 09/07/2001 to 09/04/2002

Network Management Area	Date Last Loaded
AUCKLAND	25/09/2001

CHAPTER 14

National Tasks

IN THIS CHAPTER

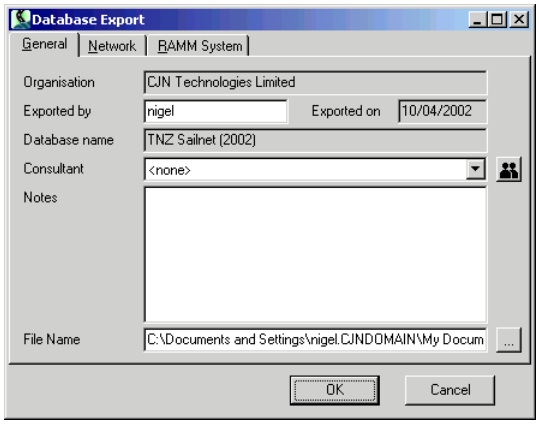
Creating a Database for your Consultant

As part of the planning cycle, Transit New Zealand will create extracts of the main database for each of the Network Management Areas. These extracts will be sent to their Consultants.

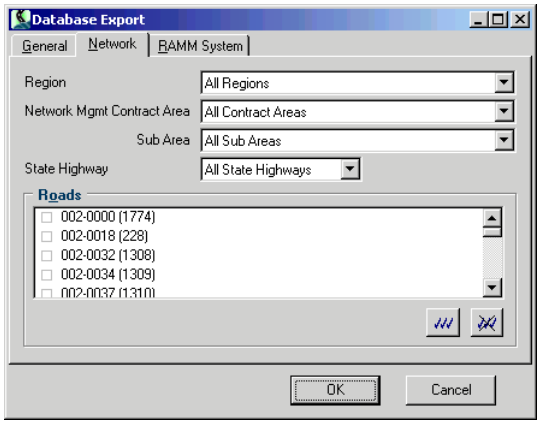
This section deals with the creation of the Consultant databases and how Consultants import them.

Database Export

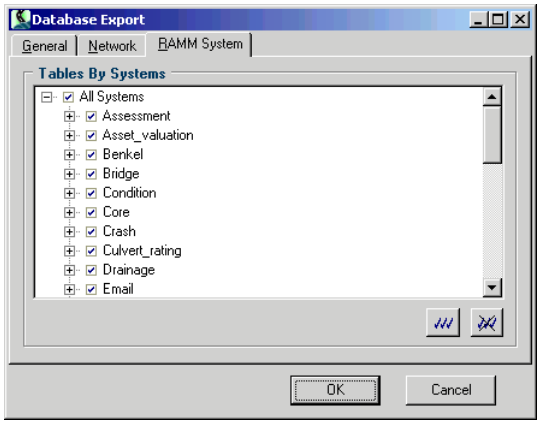
You can export all or part of your Network using the Database Export function that is available in RAMM Manager from the menu **File > Database Export**.



Go to the Network tab to choose the portion of your network that you wish to export. Transit New Zealand returning a Network Management Area to the Consultant, should use this tab to select the appropriate NMA.



If you wish to exclude a portion of the information in the database you can do so by choosing some of the systems listed on the RAMM System tab.

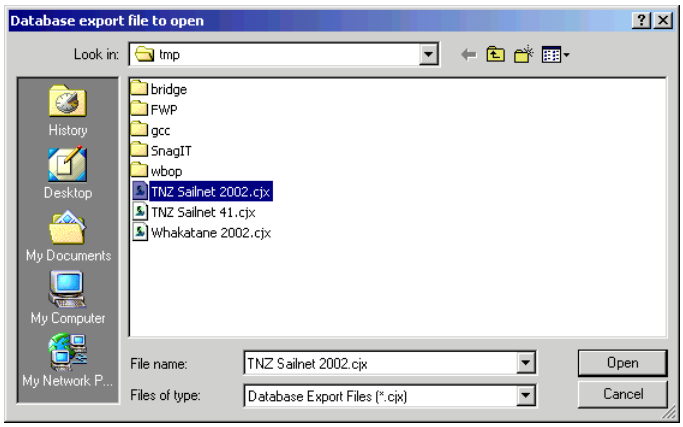


When you have finished making your selections, click on the **OK** button to start the export.

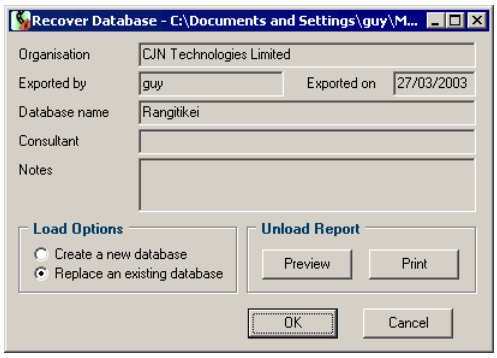
Database Import

When a Consultant receives a database from Transit New Zealand it can be used to create a new database using the Database Import. This is available in RAMM Manager from the menu **File > Database Import**.

Use the browse window to locate the database export file.



Select your file and click on **Open** to begin the import.



It is advisable to choose to create a new database from this file rather than replacing any existing copy.

End of Year Rollover

The End of Year Rollover process can only be run by Transit New Zealand against the master databases.

Run this rollover process to setup your database ready for planning treatments for the next season.

Tasks Performed

The rollover process performs the following tasks:

- **Rollover** - The year displayed in the first column of the programme is moved forward one year. For example, if 2002/03 used to be the first year, after rollover 2003/04 will show as the first year.
- **History** - Treatments scheduled for Year 1, prior to the rollover, are recorded in a history table. These can be viewed from the RAMM Treatment Length detail window.
- **Delete Year 1** - Reasons, reason notes, priority, targets and status for Year 1 are deleted.
- **Maintenance Intervention Strategy reset** - If the treatments now placed in Year 1 or Year 2 of the programme have changed, the MIS is reset to null.
- **Force Balancing Window Recalculation** - When a programme is next displayed in the Balancing window the system will recalculate the programme costs.

End of Year Rollover Preparation

To prepare for running the rollover check the following:

- **Confirm compatibility will be maintained.**
  When unloading and loading programmes, the first year of the loaded programmes must be the same as the programmes in the target database. If there is any mismatch the load will abort. Be sure other users you may wish to load programmes from, or send programmes to, are using the same year.
- **Backup.**
  End of Year rollover makes major changes to the database that are **non-reversible**. Create a backup of the database. Use the Database Backup facility in RAMM Manager to make a copy of your database before performing the End of Year Rollover.

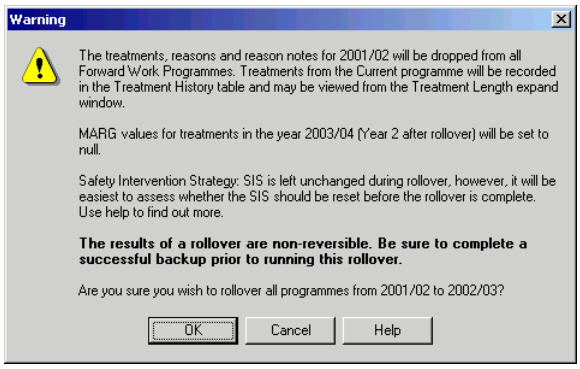
- **Check Safety Intervention Strategies.**
  Some Safety Intervention Strategies may now be able to be cleared. This is not done automatically during the rollover since some Safety Intervention Strategies must remain after treatment work is completed (for example the SIS may be long term or not corrected by the programmed treatment).

  It is easiest to review the SIS prior to rollover, using the Forward Work Programme window in RAMM. This shows the **treatments** in Year 1 and allows SIS maintenance. The SIS review can be done after the rollover, using the Treatment History tab of the Treatment Length detail window and the Forward Work Programme window.

- **Check Treatments in Year 1?**
  Is the correct programme selected as the current programme?
  It is assumed all treatments in Year 1 of the current programme have been contracted and completed. Check that Year 1 of the current programme accurately reflects the work done, as this will be recorded in the Treatment History.

Performing the End of Year Rollover

The End of Year Rollover process is only available to Transit New Zealand when using the Transit New Zealand master database. You can get to this function from RAMM Manager using the menu **Projects > Forward Work > EOY Rollover**.



The **most important** thing to note about the End of Year Rollover process is that it is **irreversible**. Once this process has run there is no going back. The only way to get back to the position you were in before is to restore a database backup.

The End of Year Rollover is used to tell RAMM that we are now in a new financial year. All Treatments currently defined as taking place in Year 1 are now assumed to have taken place. Therefore, this information is moved from Year 1 into the History.

The only information that goes into the History is the Treatment and where on the network it took place (Road and Displacement). The formal link between the Treatment and a Treatment Length is broken at this point. We do this because Treatment Lengths are dynamic in RAMM and may change considerably over time. However, the Road definition is not so volatile and we can use this to record the location of historical Treatments.

Information about the Reason, Primary Motivator, Reason Notes, etc will be lost.

Once Year 1 information has been placed into the history all the other Years move one forward. That is Year 2 becomes Year 1, Year 3 becomes Year 2, and so on. A new, blank year is made available for Year 20.

Effects of End of Year Rollover

This movement of Treatments has some side effects that you also need to be aware of.

Maintenance Intervention Strategies

Part of the normal Forward Work Planning process is to delete the Maintenance Intervention Strategy for a Treatment Length whenever a change is made to the Treatments in Years 1 to 3.

End of Year Rollover affects all Years 1 through 3, so if there was a Treatment present in any one of those Years the MIS will be deleted.

It is the responsibility of the Consultant to ensure that any missing Maintenance Intervention Strategies are replaced. Using the Forward Work Programme Planning Grid you should be able to find all the Treatment Lengths that are affected.

MARG Priorities

MARG values are calculated for Year 2 of the Forward Work Programme. Therefore, since Year 2 has become Year 1 after the Rollover, the values we have

previously calculated no longer apply. To avoid confusion the MARG values are completely cleared for the database.

Safety Intervention Strategies

The End of Year Rollover does not alter safety Intervention Strategies. However, it would be sensible to review them when the new Consultant copy of the database has been received.

Allowed Treatments

Treatments are defined by Transit New Zealand as being applicable only for certain Years in the Forward Work Plan.

End of Year Rollover can cause some Treatments to move from a Year where they are valid into a Year where they are not.

Finding these Treatments by visually scanning through the Programme is not an easy task. Therefore, RAMM provides you with a report to assist.

The Out-of-Date FWP Treatments report can be accessed from RAMM Manager using the menu **Reports > Forward Work > Out-of-date FWP Treatments**.

It is the responsibility of Consultants to update the Forward Work Plan to replace any out-of-date Treatments with more appropriate alternatives. Therefore, it is recommended that you run this report as soon as you receive a new copy of the Consultant database following End of Year Rollover.

Primary Motivators

Primary Motivators are required for all Reasons that have them defined, when those Reasons are used in Years 1 to 5. This means that any Reason used in Year 6, that you did not assign a Primary Motivator to is now in error as it moves into Year 5.

Like, Treatments this is a difficult thing to scan for visually and so RAMM provides you with a Missing Primary Motivators report. You can access this report in RAMM Manager from the menu **Reports > Forward Work > Missing Primary Motivators**.

It is the Consultants responsibility to ensure that all Reasons that require a Primary Motivator have an appropriate on assigned. Therefore, it is recommended that you run this report as soon as you receive a new copy of the Consultant database following End of Year Rollover.

Inactive Treatments

Inactive Treatments have no connection with End of Year Rollover and therefore shouldn't be a cause for concern. However after performing an End of Year Rollover it would be advisable to check for Inactive Treatments still in the Programme.

From time to time Transit New Zealand decides that a given Treatment is no longer applicable. Since we need to keep the historical references to it, we cannot remove it from the system.

However, the process of flagging a Treatment as Inactive does not force any changes to the Plan.

Once you receive a new copy of the Consultant database following the End of Year Rollover it is recommended that you look for and replace any Treatments that are now inactive. RAMM provides a report to help you locate any of these cases. You can get to the report in RAMM Manager from the menu **Reports > Forward Work > Inactive FWP Treatments**.

What Else Can I Do with RAMM Forward Work Planning?

There are a number of other tasks that can be performed within the RAMM Forward Work Programme. They will not be things that you would do every day. These tasks are:

- Combine All Programmes.
- Unload RAMM Data for dTIMS.
- Load dTIMS Analyses.
- National Table Export.
- National Table Import.

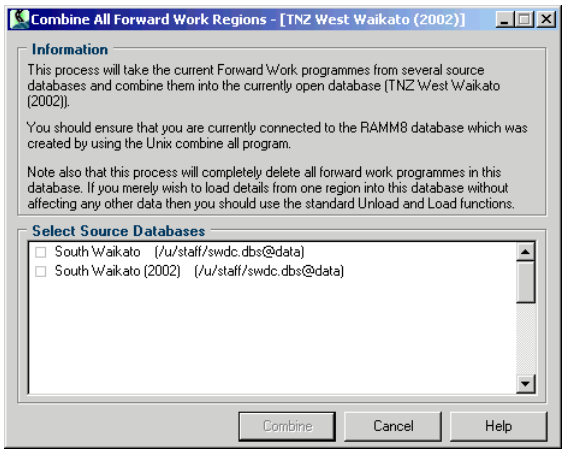
Combine All Programmes

Combine All Programmes is the process by which the Forward Work Programmes, from two or more databases, can be combined into the current database. One combined Current Programme is created from those in the source databases.

Connect to the database that is to be the destination for the combined Forward Work Programmes and choose the databases that will be used to provide the source data.

Note that this process will remove all Programmes in the destination database before generating the new combined Programme.

This option is only available to Transit New Zealand, using the RCA master databases. Access to this function is in RAMM Manager using the **Projects > Forward Work > Combine All** menu.



Remember that the database that you are currently connected to, whose name appears in the window title, is going to be used as the destination for all the source databases.

This means that *anything that is currently recorded in this database will be deleted* and replaced with the incoming information.

Select your source databases from the list available on this window. The databases that you choose will only have information read from them and will not be altered or affected in any way.

The Combine All Programmes process is intended to be run when connected to the RAMM8 database, which is a blank database specifically created for this purpose.

dTIMS Analyses and Forward Work Planning

dTIMS is a tool used to analyse Pavement data and make recommendations for the Forward Work Programme. RAMM provides a method of extracting Treatment Length and other data from your network in a format that can be imported into dTIMS.

Once you have completed your dTIMS Analyses you can extract the results of one or more of them to be returned to RAMM as an Alternative Scenario.

These dTIMS recommendations are available in RAMM for reference and can be compared against the Current or other Programmes. dTIMS Treatment definitions are not the same as those used by RAMM. Therefore, RAMM will not allow you to alter the format of a scenario created from a dTIMS analysis into the Current Programme.

dTIMS and RAMM have no formal links. They do not share the same database, so please be aware that if you make changes in one system they are not directly reflected in the other.

Therefore, if you wish to take the results of your dTIMS analysis and return them into RAMM to compare them with your Forward Work Programme, you **must not make any changes** to the Treatment Lengths in RAMM.

Similarly, it is possible to make adjustments to Treatment Lengths in dTIMS. However, you must not do so if you wish to return the results of the analysis back to RAMM.

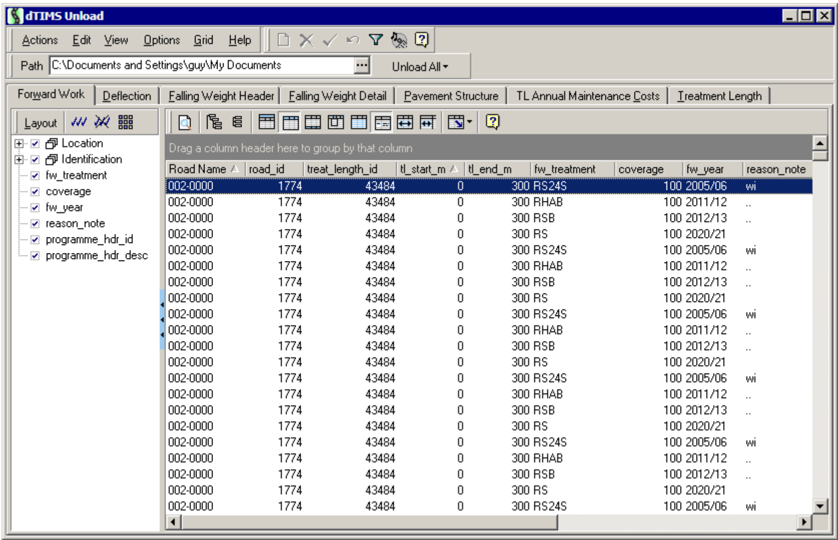
NOTE: If there are any differences between the Treatment Lengths in RAMM and those coming back from dTIMS the results of the analysis will not be loaded into RAMM.

Three types of dTIMS Unload are available in RAMM: dTIMS, dTIMS CT, and dTIMS CT Express.

dTIMS / dTIMS CT / dTIMS CT Express Unload

In the RAMM main window, select the type of unload you wish to perform. All three unload selections are available from the **dTIMS** menu.

The selected dTIMS unload will launch the relevant process and unload the required data.

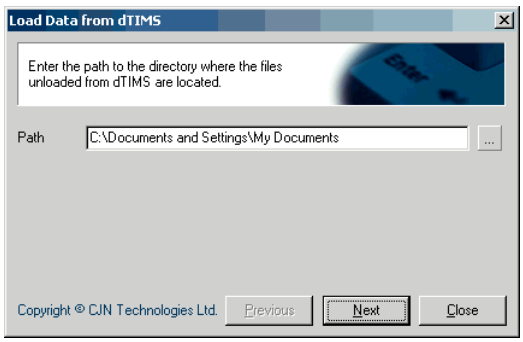


The **Path** window shows the location of the unload file. You can change this location if necessary by typing it in or clicking the **Browse** button ... to choose another location.

Click the **Unload All** button next to the Path window and select the file type for your unload files. RAMM will create the unload files at the selected location.

dTIMS Load

Information from the dTIMS Analysis can be loaded into RAMM using the **Projects > dTIMS > Load** menu in RAMM Manager.



The information that RAMM will accept can be extracted from dTIMS using the Reporter Program. Place the files created from dTIMS into a directory on your Hard Drive. Type or use the Browse function to enter the path to these files.

You should have the following files from dTIMS:

- dtims_header.unl
- dtims_tl.unl
- dtims_treatment.unl
- dtims_fwp.unl

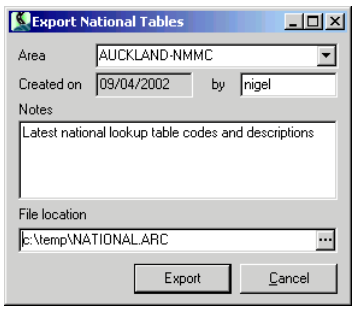
Click on the **Next** button to load the selected information.

You will be given details of the files that you are about to load. If they are the correct files then click on the Finish button to load the information.

If there are no problems then the results of the dTIMS analysis will be loaded. However, if the Treatment Lengths do not match then you will not be allowed to load the analysis.

National Tables Export

Data which is recorded in tables that are nationally maintained, by Transit New Zealand can be unloaded from the master database in RAMM Manager using the **Projects > Forward Work > National Tables > Export** menu.



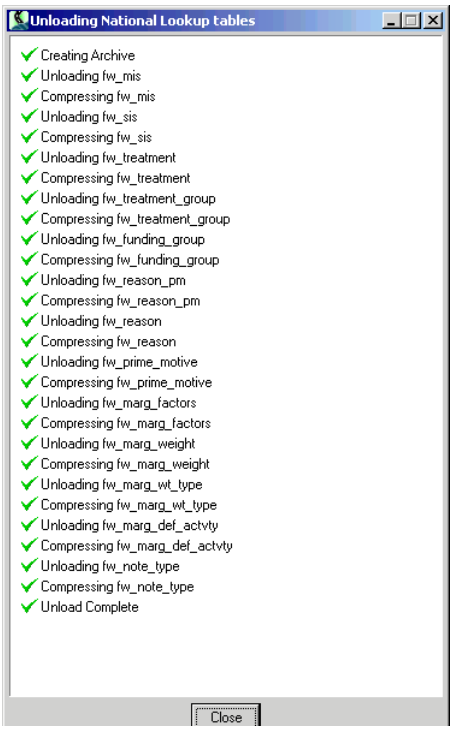
This option is only available to you if you are working with the Transit New Zealand database.

Much of the national data differs for each of the Network Management Areas in your database. Therefore, you need to select the NMA that you wish to extract national data for and save that to its own file. Create, and send to your Consultants, one file for each NMA.

The nationally controlled data that will be extracted is as follows:

- Maintenance Intervention Strategies.
- Safety Intervention Strategies.
- Treatments.
- Treatment Groups.
- Funding Groups.
- Reasons.
- Primary Motivators.
- Reason / Primary Motivator Relationships.
- MARG Factors.
- MARG Weightings.
- MARG Default Activities.
- Note Types.

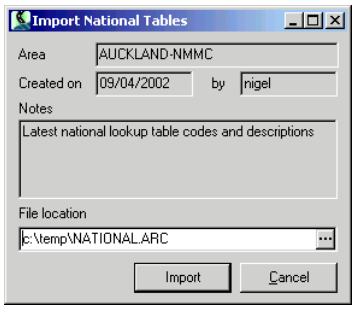
Running the process will display a list as follows:



This is a list of all the nationally controlled tables that have had data extracted and stored in the file that you nominated. You can now send this file to your Consultant to be loaded into their database.

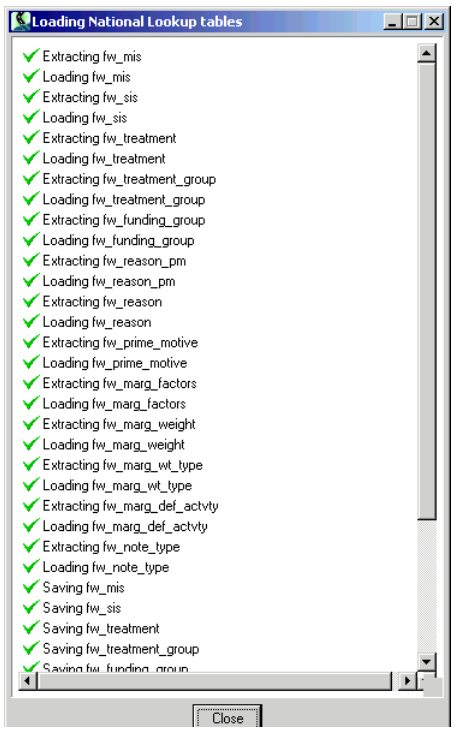
National Tables Import

If you wish to load the latest version of the nationally controlled data then you can do so in RAMM Manager from the **Projects > Forward Work > National Tables > Import** menu.



You can only import the data for one Network Management Area at one time. If you have two or more NMAs in your database then you should have received one file for each of them.

Clicking on the Import button displays the following:



Once this is complete, your National tables will be up to date.

CHAPTER 15

Project Ranking

Maintenance treatments drawn from Year 2 of the Forward Work Programme into the Annual Plan may require further detailed consideration before commitment.

Chapter 1 – Section 10 of the *SHAMM* discusses Project Ranking in terms of Pre-commitment Verification, Project Ranking Methodologies, and Specific Methodologies.

Ranking methodologies are currently available for Area Wide Pavement Treatment and Resurfacing.

IN THIS CHAPTER

Maintenance Allocation Review Group Calculations

The methodologies used in the Maintenance Allocation Review Group (MARG) calculations are the *Pavement Area Treatment Index (PATI)* and the *Resealing Index (RI)*.

Detailed discussions of these methodologies can be found in the *SHAMM* manual. See *Chapter 1 – Appendix G* for a discussion of PATI calculations and *Chapter 1 – Appendix H* for the RI calculations.

When Do You Need To Calculate MARG?

In the Forward Work Programme process, MARG Weighting is only used after the following activities are completed:

- Treatment Lengths altered, validated and problems corrected.
- Exceptions run to highlight problem areas.
- Treatment selection run to recommend treatments and report missing data.

- Forward work programme decided for each Treatment Length.
- Optionally, the programme unloaded by consultants, loaded by Transit New Zealand Head Office and collated into a larger Network view.

It is assumed at this point in the process, that any data problems underlying the Forward Work Programme or Treatment Lengths will have been reported in previous activities and have been rectified as far as possible. There is no requirement to report problems such as data being unavailable, or business rules compromised when calculating the MARG Weighting for a treatment. If problems are encountered that prevent the MARG Weighting being calculated, it is set to zero and you are warned of the Treatment Length and treatment that failed.

The process to recalculate MARG Priorities is run by you whenever required. MARG priorities are not recalculated as part of the **Treatment Length Summarise** process.

The calculation is always performed on current available data.

Overriding the Calculated MARG Values

Transit New Zealand has the ability to override the calculated MARG values. Both the calculated and override figures are kept in the system.

When re-running the MARG calculation at Transit New Zealand you can choose to clear the override values if you wish.

Consultants do not have the ability to either enter override values or clear any that may be present in the database.

An additional priority indicator is available that is independent of the calculated or override MARG values. This priority, which is of the form of a High / Medium / Low flag can be set against a Treatment Length at any time.

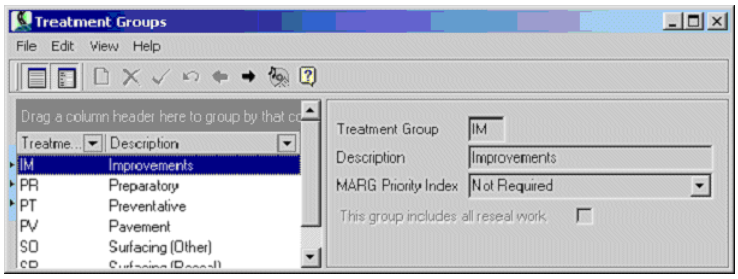
Who can use MARG?

You can have three levels of access to the MARG facilities:

- **View:** View MARG Weighting calculated for a treatment.
- **Run:** You are permitted to clear MARG priorities and re-run the calculations.
- **Override:** You can override the system calculated MARG Weighting (Transit New Zealand only).

Assigning MARG Indices to Treatments

The definition of which Treatments are associated with the Reseal Pavement Area Treatment Index is achieved through the Treatment Group Definition.



Each Treatment Group can be assigned to either the Reseal Index or PATI. Therefore, all Treatments that are members of that Group are then included in the calculation.

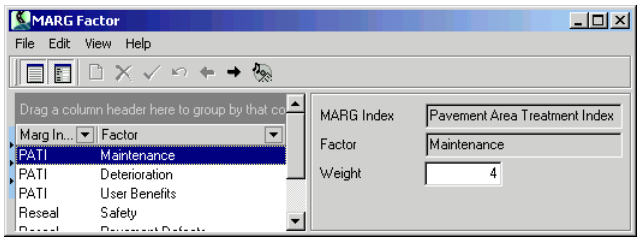
Other **treatments** that currently do not have a MARG score calculated for them can be added to the appropriate Treatment Group (Pavement or Surfacing (Reseal)) in the Treatment Group drop-down menu of the Treatments window.

MARG Factors and Weightings

All the weightings, the parameters for the weightings and the adjustment factors are maintainable by you. However, the database administrator should be the only person to change these weightings. This is to ensure national uniformity when it comes to ranking projects for funding allocation.

Maintaining MARG Factors

Access to the MARG Factors maintenance window is through RAMM Manager using the menu **Projects > Forward Work > MARG > Factor**.



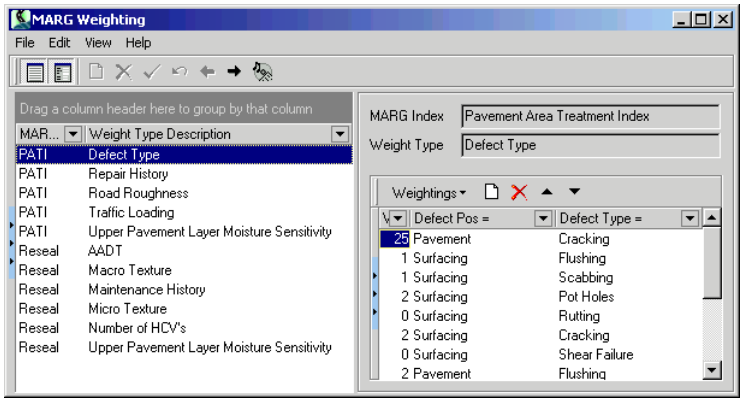
The MARG Index Factors have been defined by Transit New Zealand and preloaded into the database. It is not possible for either Transit New Zealand or Consultants to add or remove these Factors.

However, the value of the Weight, given to the Factor, can be modified at any time by either Transit New Zealand or Consultants.

Consultants should note, however, that this information is not recorded by Network Management Area and is not returned to Transit New Zealand. Therefore, any changes that you make in this area will be lost and replaced by the Transit New Zealand definitions the next time you receive a new copy of the NMA database.

Maintaining MARG Weightings

Access to the MARG Factors maintenance window is through RAMM Manager using the menu **Projects > Forward Work > MARG > Weighting**.



Once again the MARG Weighting Types have been defined by Transit New Zealand and pre-loaded into the database. It is not possible for either Transit New Zealand or Consultants to add or remove Weighting Types. However, the Weightings that go to make up the Types can be added to, deleted, or modified. This is available to either Transit New Zealand or Consultants.

Consultants should note, however, that this information is not recorded by Network Management Area and is not returned to Transit New Zealand. Therefore, any changes that you make in this area will be lost and replaced by the Transit New Zealand definitions the next time you receive a new copy of the NMA database.

Calculating A MARG Score

Check that there is a value in the Upper Pavement Layer Moisture Sensitivity box on the Pavement tab in the Treatment Length detail view. A MARG value cannot be calculated without this.

The default value is "Not A Problem", but the Consultant should select their own value for this field. To add or change a value, click the **Maintain** button on the Treatment Length table in RAMM. All other fields should be populated because most of the data is taken from the Treatment Length summary table, which is updated when Treatment Length Resummarise is run.

Click **Calculate** on the Year 2 MARG Weightings tab of the Treatment Length detail view or of the Forward Works Programme window in RAMM, or in RAMM Manager from the menu **Processes > Treatment Lengths > MARG Calculation**.

Select either the current Treatment Length or all Treatment Lengths (this may take some time for a network), and decide whether you want to erase user-entered (override) values and priorities (these options are only available to Transit New Zealand users).

Click **Calculate**.

After calculation has finished, push **F5** to refresh the window and view the calculated MARG values.

It is also possible to calculate the MARG score for all or an individual Treatment Length by accessing the Year 2 MARG Weightings tab on either the Treatment Length Detail window or the Forward Work Planning window.

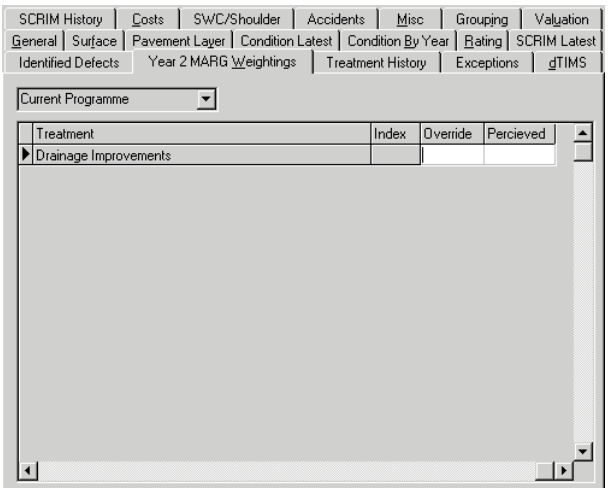
User Override And Priorities

If Transit New Zealand thinks that the calculated score is not right, then a score that is more representative of the Treatment Length can be entered. A priority can also be attached if this is appropriate.

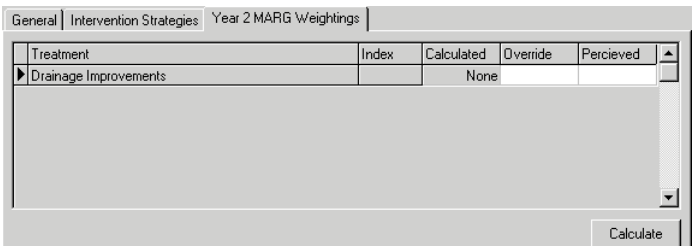
These user-entered values can only be entered and changed by Transit New Zealand, and cannot be erased by the Consultant. They are not erased when MARG is recalculated unless specified, and in the reporting the override value is used for ranking, not the calculated value.

To enter values, simply click on the box next to the calculated MARG score and type the number or select from the pull down menu for the priority.

You can access the MARG data for a Treatment Length from the Year 2 MARG Weightings tab on the Treatment Length Detail window.



Alternatively, you can also get at the same information from the Year 2 MARG Weightings tab on the Forward Work Planning window.



Reporting MARG Scores

There are two reports available in RAMM Manager:

- Detailing calculation errors in the MARG process (when the word "Failed" appears in the MARG value box, or the value is zero).
- Lists those Treatment Lengths with a MARG value, from highest score (highest priority) to lowest score (lowest priority) by programme, region, network management area and treatment group.

These are accessed from **Reports > Forward Work > MARG Calculation Error** and **Reports > Forward Work > MARG Treatment Detail**.

CHAPTER 16

Database Housekeeping

The following is a checklist of database housekeeping functions to be carried out periodically. It must not be regarded as complete, rather consider it a dynamic list that will be added to based on operational experience, user feedback and requests for assistance.

IN THIS CHAPTER

Tables

Cost sets - the treatment cost sets should be reviewed at least annually checking:

- The appropriateness of the split of cost sets. Do they still fairly represent the areas where costs change?
- The costs allocated to each treatment within the cost set.

Functions

Summarise - This process is described within the software documentation. It summarises the data held against Treatment Lengths, and checks the integrity of the consistency of the Treatment Lengths (are they contiguous, covering the full length of roadnames, etc).

CHAPTER 17

Security in Forward Work Planning

IN THIS CHAPTER

Forward Work Planning Environments

There are three Forward Work Planning environments, and it's important to understand distinctions between them before setting the User Type in Staff Permissions (on page 180).

Road Controlling Authority Environment

Transit New Zealand, as the Road Controlling Authority (RCA), retains the *master database* of the road network, and would work with the Forward Work Programme in the Road Controlling Authority environment. A *working view* of the master RAMM database for one or more Network Management Areas is given to each Consultant.

Consultant Environment

The Consultant then works with the Forward Work Programme for those Network Management Areas. The Consultant has access to only the *working view* of the database instead of all the roads. Therefore, the *Consultant* environment and tools are different to those of the RCA to ensure that the Forward Work Programme is not edited in ways that will cause conflicts and errors.

Local Authority Environment

The *Local Authority* environment allows unrestricted access to all functionality. This environment is used when there is no need to allow for the division of the road network into smaller Network Management Areas and a diversity of roles within the Forward Work Programme.

Staff Permissions

Staff Permission levels are an effective way to control access to your database, and the tasks that can be performed on it.

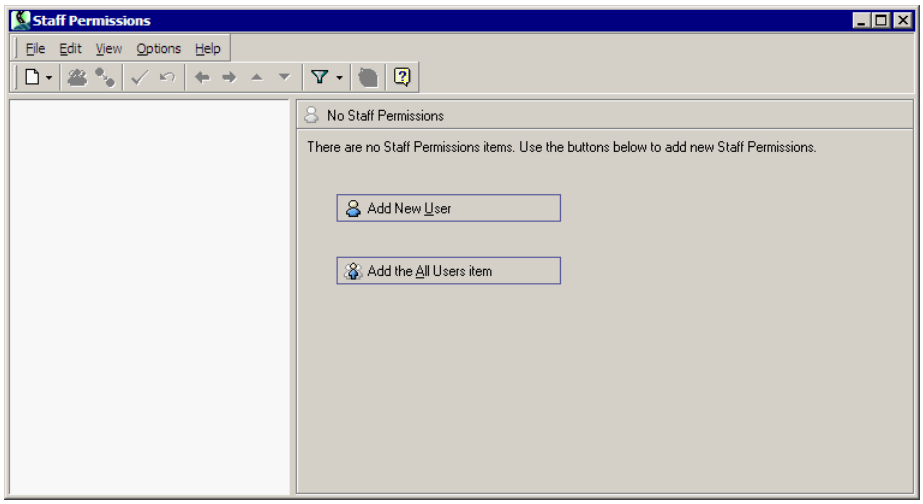
They are set in RAMM Manager, in the Staff Permissions window. A full discussion of Staff Security is available in the *Security* section of the *Working with RAMM* guide.

This topic is specific to Staff Permissions in Forward Work Planning.

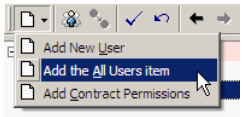
Setting User Level Permissions

1 In RAMM Manager, launch the Staff Permissions window by selecting **Maintenance > Staff**.

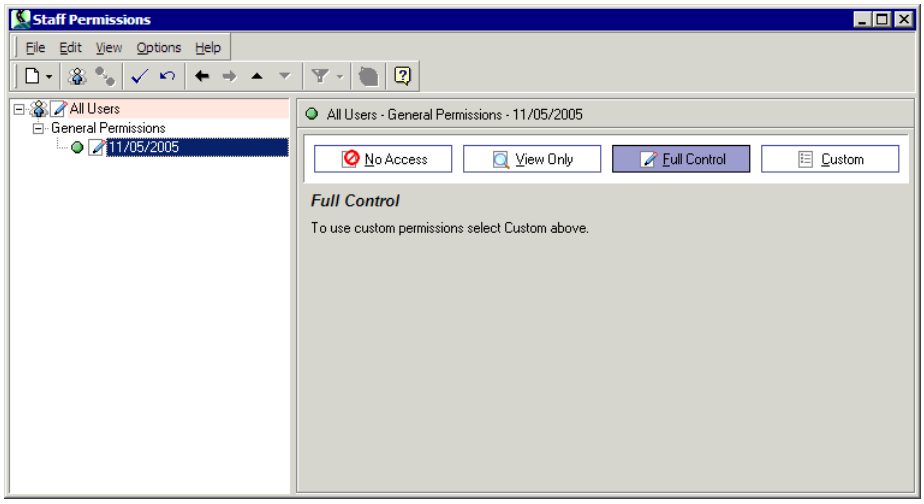
2 If this is the first time you're running Staff Permissions, the window will open blank, giving you the option of setting them up. Click **Add New User** if you wish to set up a Permission for a single user, or **Add the All Users Item** to set up Permissions affecting all users.



3 The window will now show a Permission in the list on the left, depending on your choice. You can add another Permission at any time by clicking and selecting it from the **Add Item** button drop-down list on the toolbar:

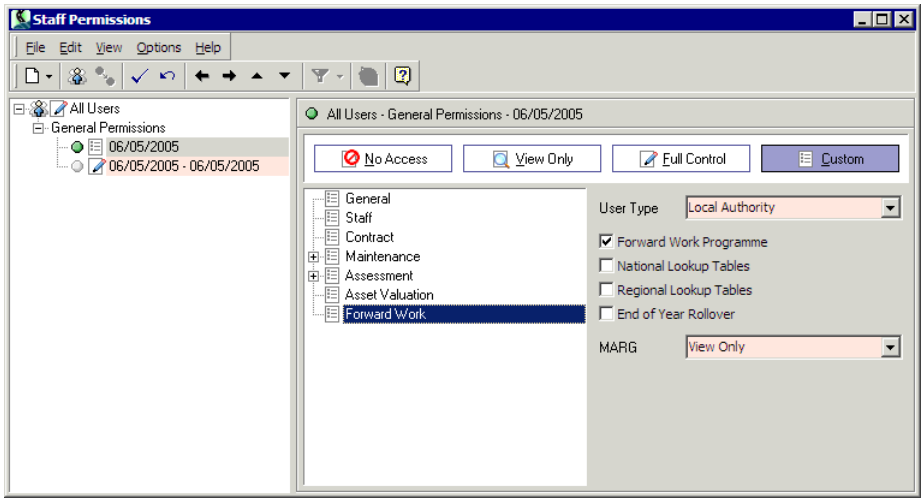


4 Set the access level for the Permission you just entered. The **No Access**, **View Only** and **Full Control** settings are quite straightforward, and do not require any adjustment beyond selecting the level.



5 To set custom Permissions like the **User Type** and specific access to parts of the Forward Work Programme, click **Custom**. The Detail panel will now show another tree with the relevant categories.

Click the **Forward Work** category in the tree to view and select the required options.



6 Save the Permission when you are done.

Each of the Forward Work Permissions available to you is described below.

User Type

This drop-down list in the Custom Staff Permissions detail panel is to set the User Type for the database. For more information, see Forward Work Planning Environments (on page 179).

- **Road Controlling Authority**. For the user of the master database- most likely, Transit New Zealand.
- **Consultant**. Select this option if you are using a working view of the database to manage Network Management Areas.
- **Local Authority**. For unrestricted access to all Forward Work Programme functions.

Forward Work Programme

This is simply a Yes/No switch to indicate if you have permission to use any of the Forward Work Programme tools.

National Lookup Tables

This is another Yes/No switch to indicate if you have permission to Export and Import the National Lookup data. This is the data maintained by Transit New Zealand.

Regional Lookup Tables

This Yes/No switch that determines if you have permission to maintain the Regional Lookup data. This is the data maintained by the Consultant.

End of Year Rollover

This is a Yes/No switch to indicate if you have permission to run the End of Year Rollover process. This is best left switched off.

MARG

This switch determines what access you have to the MARG information. The default is *View Only*, but this can be changed if necessary.

- **View Only**. This indicates that you can see the MARG information and run the Treatment Detail and Error reports, but cannot run the process to calculate MARG or set override values.
- **Calculate**. This indicates that you can, in addition to viewing the MARG values, run the process that calculates the MARG. If you have this level of permission you cannot edit the Override values.
- **Override and Calculate**. This indicates that you have full access to the MARG data. You can run the MARG calculation process and set override values and priorities.

Glossary

Asset Type
An asset type is a category of the assets that make up your network - like Bridges or Footpaths.

Database
A computerised container for large amounts of information - in RAMM's case, about a particular roading network. You may use more than one RAMM database, particularly if you work with more than one Road Controlling Authority.

Detail Window
Type of window used for working with road asset details one at a time, particularly when you're editing and viewing them.

Filter (Database Filter, Grid Filter)
Filters enable you to streamline the information you see in the Road Selection panel and Detail or Grid windows (see below) by sorting the data according to various criteria.

Grid Window
Type of window used for working with road assets, usually for more than one road at a time. A Grid window is basically a visual report writer - you get everything looking the way you want by adjusting the Grid layout, then work with road assets, export or print the displayed details.

Hosting
The RAMM Hosting service lets you run RAMM across the Internet.

LTNZ
Land Transport New Zealand, formerly known as Transfund New Zealand.

MARG
Maintenance Allocation Review Group.

MIS
Maintenance Intervention Strategy. These definitions are maintained nationally by Transit New Zealand.

Network
The network is the entire collection of roads managed by a particular Road Controlling Authority. Each RAMM database usually contains all the information for a particular network.

NMA
Network Management Area- the section of the road network that a Consultant is responsible for. NMAs are associated with MIS codes.

NOMAD
National Optimisation of Maintenance Allocation by Decade, the software component providing pavement maintenance and treatment information at a project level for up to 20 years on behalf of Transit New Zealand. NOMAD, also known as RAMM Forward Work Planning, is interlinked with dTIMS / dTIMS CT, the decision tool for future works, and the Annual Plan process.

Null
Blank, having no value.

RAMM
Road Assessment and Maintenance Management - the full name of the software that this guide describes.

RCA
Road Controlling Authority. The organisation responsible for managing a particular network of roading assets.

Record
A record holds all the details about a particular item, like a Berm or Street Light. Think of it like your medical record that holds all the details about your health, or your school record that holds academic details.

RMCE
Routine Maintenance Cost Estimation. RMCE curves provide the basis of cost estimation for Maintenance Intervention Strategies.

Road Asset
A detail about a particular aspect of the roads - their Pavement layers or Condition, for example.

SHAMM
State Highway Asset Management Manual. Also known by its code SM020.

SIS
Safety Intervention Strategy.

Table
Container in the RAMM database that holds all the records about an aspect of all the roads - their Berm or Shoulder details, for example. Each table holds all the information about only one aspect of all the roads.

TFNZ
Transfund New Zealand. See LTNZ above.

TNZ
Transit New Zealand.

TSA
Treatment Selection Algorithm. The formula used to calculate optimal forward work.

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