Overview

Maintenance Activity Data

May 2024

INTRODUCTION

This document provides a general overview of maintenance activity data and the current practice of recording, monitoring, and reporting this data for road networks across New Zealand. This document will also cover what is currently considered good sector practice.

WHAT IS MAINTENANCE ACTIVITY DATA?

Maintenance activity data is a recorded summary of maintenance which has occurred to a specific asset, at a specific location, or over a specific length of road. It generally reflects the maintenance of an existing asset that has undergone planned or unplanned work to fix a fault.

Maintenance contracts should be setup to adequately and accurately record works delivered, including base data relating to maintenance activity covering the detail shown in the adjacent figure.

- What work was done (the activity)
- How much work was done (the quantity)
- Where the work was done (the location/asset)
- Why it was done (the fault)
- When it was done (the date)

WHY IS MAINTENANCE ACTIVITY DATA IMPORTANT?

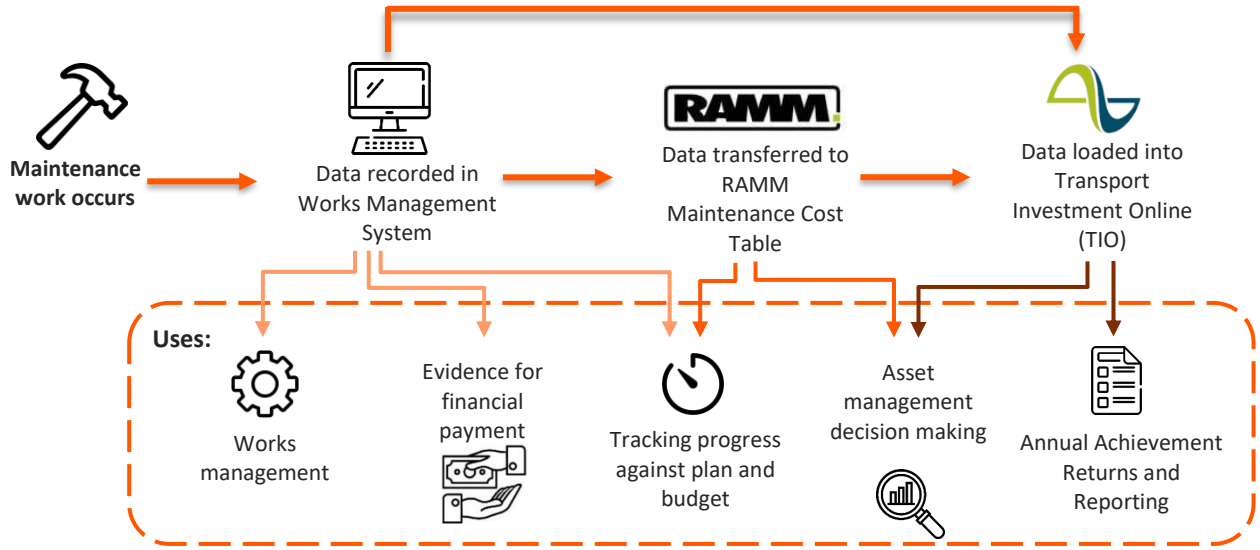
The accurate and timely collection and recording of reactive and programmed routine maintenance activity data is fundamental to assisting Road Controlling Authorities (RCAs) in managing and analysing their roading assets over time.

Maintenance activity data supports a variety of tasks throughout the lifecycle of the maintenance work. Examples of this include managing maintenance works, providing evidence for payment for completed work, and reporting maintenance activity in a RCA's Annual Achievement Return. Maintenance activity data is also key for asset management decision making, as it can be used as inputs for renewals forward work programme development, pavement deterioration modelling, and for present value analysis of individual projects.

Figure 1 shows the typical flow of maintenance activity data throughout the lifecycle of the maintenance work, and some key uses of this dataset.

By recording and maintaining good maintenance activity data, RCAs can make more effective and efficient evidence-based decisions.

Figure 1: Typical maintenance activity data flow



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WHAT MAINTENANCE ACTIVITY DATA SHOULD BE RECORDED?

Under the National Land Transport Programme (NLTP) road maintenance activities are delivered under two activity classes: local road maintenance and state highway maintenance. Under these activity classes there are four Government Policy Statement (GPS) expenditure reporting lines, defined as:

Operate *– investment in the operation of existing state highways and local roads to deliver an appropriate level of services.*

Maintain *– investment in the maintenance of existing state highways and local roads to deliver an appropriate level of service, excluding asset upgrades.*

Renew *– investment in renewal of existing state highways and local roads to deliver an appropriate level of service.*

Emergency *– urgent response to transport network disruptions to restore an appropriate level of service.*

Each GPS expenditure reporting line contains work categories under which qualifying activities are programmed and delivered. All activities under each work category can be tracked using Dispatches in RAMM (or another works management system) and should be loaded into Transport Investment Online (TIO). However, not all should be included in the RAMM Maintenance Cost table.

It is important that sufficient information is recorded for maintenance activities so that it can be used and analysed. This information includes items such as where and when the work took place, and the details of the fault and activity. The quantity of the recorded activity should also be recorded as to provide an indication of asset performance, and cost should be recorded as to provide a basis of maintenance spend on the network.

WHERE IS MAINTENANCE ACTIVITY DATA RECORDED AND USED?

Maintenance activity data is often recorded throughout the whole life cycle of the maintenance work itself. Figure 2 shows where maintenance cost data is recorded at different stages of an activity, as well as some of their main uses.

Figure 2: Where and when maintenance activity data is recorded

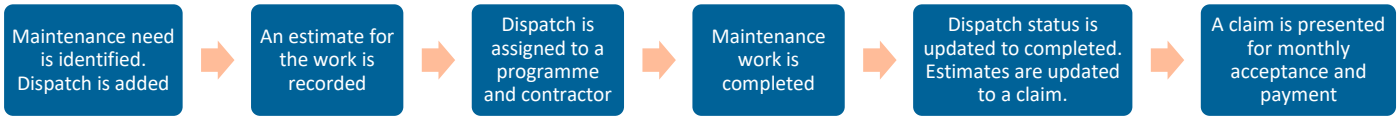
	Works Management System	RAMM Maintenance Cost Table	Transport Investment Online (TIO)
When data is recorded:	Throughout the lifecycle of a maintenance activity	After the maintenance activity has been completed and payment claim accepted/approved	Milestone reporting, typically at the end of the financial year
Typical uses:	Management and delivery of works, and evidence for financial payment between contractors and RCAs	Asset management decision making and analysis (e.g. asset performance analysis, net present value analysis)	Reporting in AAR, evidence for financial payment between NZTA and RCAs, and for tracking total activity progress

RAMM Works Management – Dispatches and Claims

The Dispatch and Claims tables in RAMM are an example of a works management system used to record maintenance activity and track its progress from planning through to completion and payment. The following information is recorded in the RAMM Dispatch and Claims tables:

- Unique ID
- Network contract identifier
- Asset details
- Who reported the problem
- Details of the fault
- When the work is programmed to occur
- Cost codes that the work would be associated to
- Cost and quantity estimates and claimed amounts
- Progress status and notes of the dispatch

The RAMM Works Management module is often utilised by contractors, consultants, and RCAs as it allows all parties to use a common platform for managing their maintenance activity data. A typical workflow is shown below.



When a Dispatch is created, it is assigned to a programme (typically the month and year the work is to be done) and given an estimate (quantity and cost) for the work.

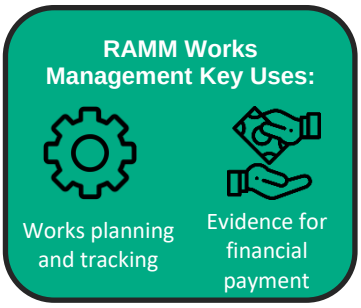
The quantity recorded in the Dispatches is dependent on the contract type/model, as it is used for evidence of work completed. Quantities could include the following units depending on the activity:

- Length (e.g. metres, kilometres)
- Volume (e.g. cubic metres, litre)
- Weight (e.g. kilogram, tonne)
- Area (e.g. square metres, hectare)
- Each
- Time (e.g. hour, day, week, month, year)

Quantities can also be recorded as a One-off or a Provisional Sum.

Once the work has been completed on site, the dispatch should be assigned a completed status. A claim for the work can now be presented with actual quantities and costs. Monthly, contractors will present the dispatches and corresponding claims for acceptance so that they can get paid for the maintenance work delivered.

Over each period, there is a claim header for all maintenance work claimed. When the claim period has been completed, the claim header can be assigned a completed status. The maintenance items in that claim header can now be validated and then should be transferred to the Maintenance Cost table (where applicable).



RAMM Maintenance Costs Table

On completion of maintenance activity, it is a requirement that the organisation responsible for the maintenance activity programme keep details of this work so it can be provided on request to NZ Transport Agency Waka Kotahi.

It is industry best practice that the data for completed maintenance activity will be in the Maintenance Cost table in RAMM. Data should be loaded/transferred into the Maintenance Cost table from the works management system ideally monthly, but at least annually at the end of the financial year. The Maintenance Cost table contains:

- Where the work took place
- When the work took place
- Cost codes/groups
- Details of the fault
- Details of the activity
- Costs (in current day dollars and indexed up) and quantities

If the Maintenance Cost record is linked to a RAMM dispatch for that work, the Dispatch ID should also be recorded.

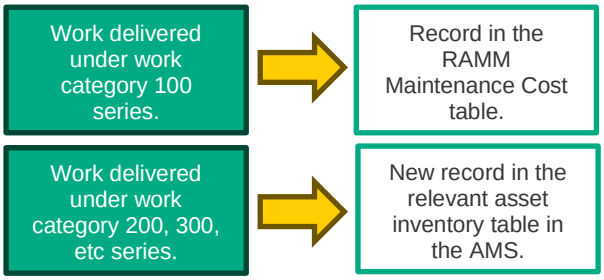
At the time of this document's publication, industry best practice is to recorded cost code/group, fault, and activity consistent with SHDOM Appendix 4 where possible. As further industry standards are published, it will become best practice for maintenance activity to be consistent with those publications.

Not all work recorded in the RAMM Dispatch table should be transferred to the Maintenance Cost table, and so the RCA should set this up accordingly. 200 Work Category items shouldn't be included in the Maintenance Cost table, but rather should be as-builted as new records in their relevant asset inventory table(s). 100 Work Category items should be included in the Maintenance Cost table.

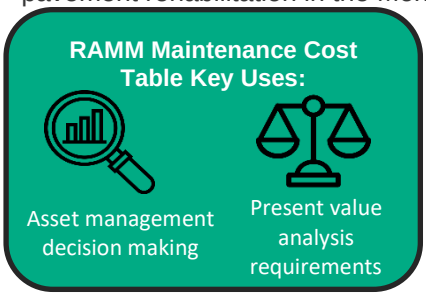
EXEMPTIONS

There are some exemptions to this. Common examples include:

- Asset replacement, such as a sign, streetlight, or guardrail, as a maintenance activity following vehicle damage which would also result in new record in the asset inventory table.
- A pavement repair (i.e. digout) above a quantity defined by the RCA to be recorded in the Pavement Layer table.



Maintenance activity data for the pavement and surfacing cost groups are key inputs for renewals forward work programme development and pavement deterioration modelling. It is a funding requirement that RCAs undertake present value analysis of individual projects. The simplified procedure for pavement rehabilitation in the Monetised Benefits and Costs Manual includes the use of maintenance activity data for projects under work category 214. *Therefore, as a minimum, pavement and surfacing maintenance activities should be recorded.*



As the Maintenance Cost table is used for asset management decision making and analysis, time-based units of quantity are not preferred to be recorded as their usability is limited. Standardised other units of quantity that can be easily compared activity by activity are preferred, such as length, area, volume, weight, and each. The quantities used for activity records, and how useful these are, should be carefully considered when loading dispatch data to the Maintenance Cost table, or during configuration of the automated transfer on claim approval.

Transport Investment Online (TIO)

Transport Investment Online (TIO) is a web-based system used by NZ Transport Agency Waka Kotahi and RCAs to capture and manage all activities included in the National Land Transport Plan (NLTP). Maintenance activity is included in this. Every activity funded through the NLTP is recorded in TIO along with the expected benefits and long-term outcomes of each decision.

The data in TIO is used for:

- Planning
- Prioritising and allocating funding
- Reporting
- Performance monitoring
- Supporting compliance with Land Transport Management Act 2003

MAINTENANCE ACTIVITY DATA IN TIO

The data that is entered into TIO is reported on work categories or funding categories. Although this data can be summarised from the RAMM Maintenance Cost table, there is not a direct linkage to the RAMM based entries, and so some work needs to be done to get the information in the correct format/split for manually loading into TIO. All RCAs must manually update TIO to reflect the maintenance activity work done over the reported financial year period.

TIO Key Uses (Maintenance Activity Related):

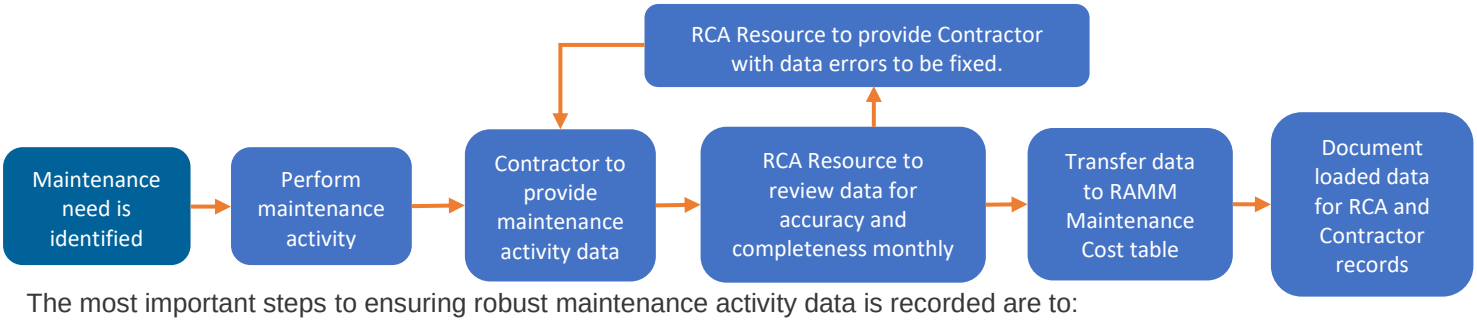
Annual Achievement Returns and Reporting

TIO is the portal that is required to be used for completing an RCA's Annual Achievement Return (AAR) annually in the month of July (the specified date will change each year). The completion of this is a condition of funding. The AAR will summarise the work done for the year, which includes maintenance activity.

HOW CAN I ACHIEVE ROBUST MAINTENANCE ACTIVITY DATA?

Robust maintenance activity data should be usable for asset performance analysis, forward works programme development and pavement deterioration modelling. A typical process for collecting robust data is shown in Figure 3.

Figure 3: Process of collecting and loading maintenance activity data



The most important steps to ensuring robust maintenance activity data is recorded are to:

1. Do it in partnership with a maintenance contractor who takes ownership for recording complete and accurate data.
2. Have an RCA resource who understands the data and takes ownership for its overall accuracy and completeness.
3. Agree on standardised cost groups, activity, fault types (as per the current industry standard) and units.

ROLES AND RESPONSIBILITIES

	Maintenance Activity Supplier	RCA
Monthly Activities	✓ Capture maintenance activity data. ✓ Present claims for work completed. ✓ Transfer data from the Works Management System to the Maintenance Cost table, if applicable. ✓ Take on feedback provided and amend maintenance data when required.	✓ Check accuracy of maintenance activity data to establish quality. ✓ Verify maintenance cost data is reflective of claimed activity. ✓ Provide feedback on maintenance data. ✓ Transfer data from the Works Management System to the Maintenance Cost table, if applicable.
Annual Activities		✓ Load maintenance information and evidence into TIO. ✓ Complete Annual Achievement Return in TIO by July.

COMMON ISSUE AND CHALLENGES

Some of the key issues and challenges with capturing and using this data can be:

- Missing or low-quality data due to unclear process and workflows
- Lack of common identifier field, breaking the linkage between the dispatch and maintenance cost tables
- Recorded costs are not adjusted to reflect current costs when used for analysis (the RAMM Maintenance Cost table includes a "Cost Amount RCI" column which adjusts the original cost to current costs, based on the RAMM Construction Index)
- Accurately recording the location and quantity of activity associated with lump sum schedule items.

REFERENCES

SHDOM and SHDOM Appendix 4

RIMS Roading Asset Maintenance Cost Guidelines

RAMM Help

Monetised Benefits and Cost Manual

NZTA Planning and Investment Knowledge Base

Te Ringa Maimoa is a collaborative initiative between Local Government NZ, NZ Transport Agency Waka Kotahi and all road controlling authorities.

For more information, please contact: TeRingaMaimoa@nzta.govt.nz