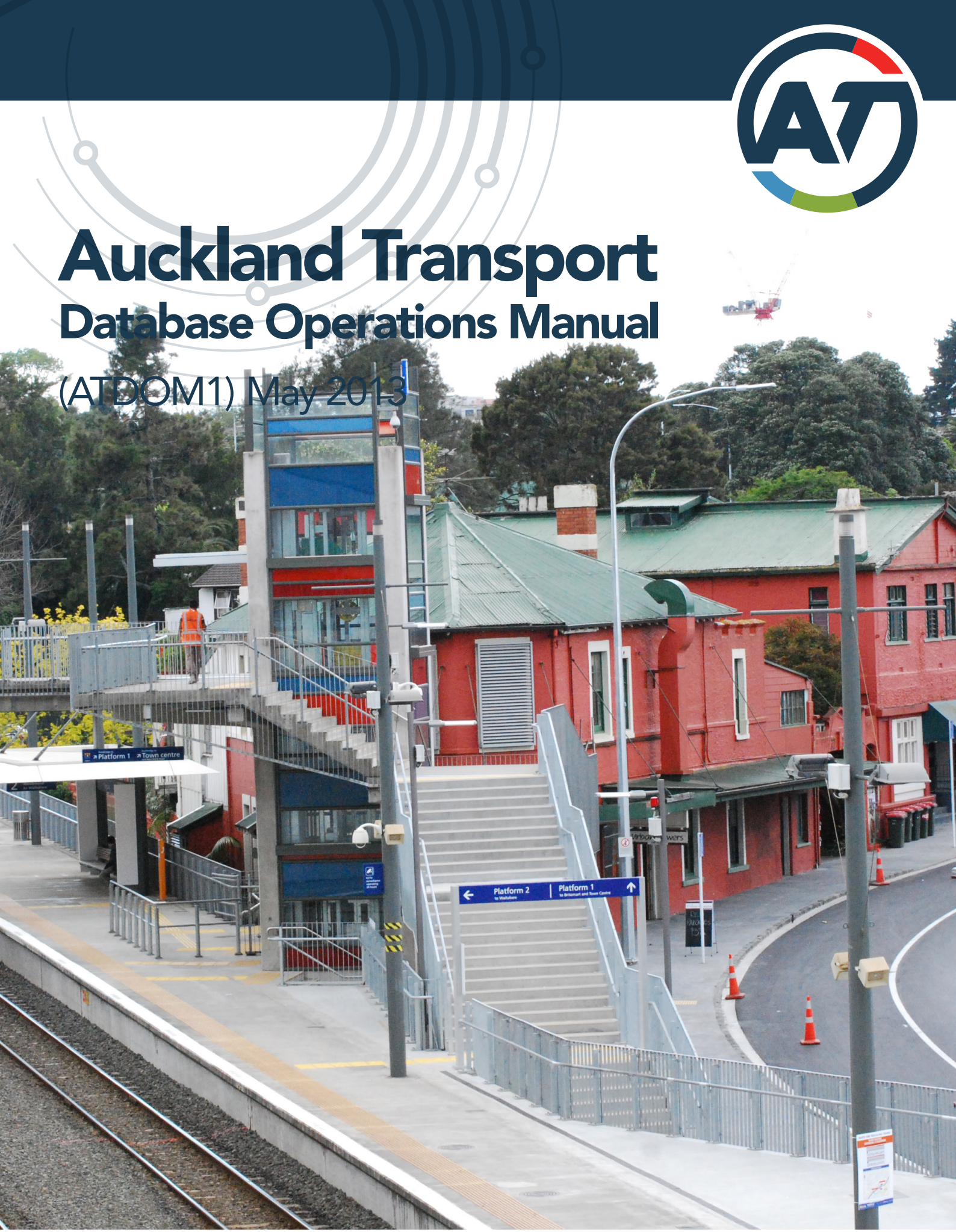
Auckland Transport
Database Operations Manual
(ATDOM1) May 2013



Auckland Transport
An Auckland Council Organisation

1 Contents

OVERVIEW

The merging of seven individual asset registers into one reinforced the need for an overall Auckland Transport Database Operations Manual (ATDOM). Analysis of the individual sets (as outlined in the previous RAMM Status Report) clearly reinforced the industry need for a local authority equivalent of the State Highway Database Operations Manual (SHDOM) to improve consistency, accuracy and completeness of the Auckland Transport Asset Register. Typical examples include duplicated lookup codes for the same activity, significant variation in population of tables and individual fields, and evidence of different approaches in terms of management of treatment lengths and forward work programming.

Robust asset management decision making relies upon the accuracy, completeness and consistency of information contained in the asset register. This includes quantity, location, condition and value of all assets owned and maintained by Auckland Transport. When this information is to the appropriate standard, reliable and accurate renewal and replacement programmes, with respective funding requirements can be developed.

The reliability and confidence of decision support outcomes is directly linked to the quality of the asset register data. Generally this comes from the asset management information system, which can originate from a single source or multiple sources.

In order to obtain a consistent, accurate, complete and up to date asset register, systems and processes are required. This includes documentation of data collection methodologies, data entry checks and ongoing continuous validation to provide total database management.

This Manual is the starting point to developing an overarching document for Auckland Transport and their suppliers. It sets out a database management framework for the collection, delivery, management and desktop validation of road asset inventory and some core condition data. This first phase contains the template database operations manual for 10 key RAMM asset tables. It contains a table overview then provides additional key information on the mandatory fields and how these are populated (Data Dictionary). Guidance notes are provided on data collection and management for each section.

The ATDOM is a living document that will be continually updated and developed over time. Further work is anticipated to complete templates for outstanding tables. Any comments /suggestions should be sent to Manager: Asset Systems and Monitoring, Auckland Transport.

ACKNOWLEDGEMENTS

In preparation of this manual there have been a number of organisations and individuals that have contributed. Contributions range from verbal conversations to supply of written literature and are not in any priority order.

- New Zealand Transport Agency (NZTA) – Making available electronic copy of SM050: State Highway Database Operations Manual which is referenced in Section 4 of this document.
- Auckland Transport (AT) Staff – For various inputs and review and taking the initiative to continue the pursuit of more robust asset registers.
- These organisations were involved in the consultation process for the RAMM Status Report, portions of which are included in this report:

    - Auckland Transport
    - Downer
    - Fulton Hogan (FH)
    - RAMM Software Limited (RSL)
    - Beca (BECA)
    - Previous Local Government Organisation (LGO) staff from the various Councils
    - Opus International Consultants Ltd (OPUS)
    - Projenz.

2 INTRODUCTION

2.1 Purpose

This document, in its current form, is considered to be the starting point in the overall process of developing a complete Database Operations Manual for Auckland Transport. It outlines methodology for both the field data collection and entry into Auckland Transport's RAMM database for purposely selected 10 key asset tables. The draft manual outlines what is considered to be current best practice for the activities that were previously being undertaken by individual Councils of the Auckland Region.

The manual is intended to provide guidance to those individuals and organisations that supply Auckland Transport with services to deliver transportation outcomes that maintain, change, remove or upgrade physical assets resulting in subsequent changes to the asset register.

2.2 Objectives

Phase one focused on selected high priority core asset tables identified in the RAMM Status Report and agreed with Auckland Transport. Further work is required to complete the manual for all tables that Auckland Transport decides to maintain. A primary objective of this first phase was to develop and establish a framework for data collection, data entry, and maintenance that future phases could build upon.

2.3 Scope of High Priority Tables

The 10 tables selected in phase one included:

- Carriageway (asset)
- Carriageway Surfacing (asset)
- Footpath (asset)
- Forward Work Programme Treatments (asset maintenance)
- Loading (asset demand)
- Maintenance Cost (asset maintenance)
- Pavement Structure (asset)
- Road Names (information)
- Traffic (asset demand)
- Treatment Length (information)

The tables have been ordered alphabetically and are not represented in order of priority. Section five has the tables ordered in the same way for ease of finding the information required.

2.4 Previous High Priority Recommendations from RAMM Status Report

A number of high priority tasks were identified from the analysis undertaken while preparing the RAMM Status Report[1], one of which was creation of the Database Operations Manual. A full commentary and supporting analysis/discussion is contained in the full report[1].

2.5 RAMM Database Metadata Specifications

In the preparation of the Data Dictionary in Section five, reference has been made to the on-line information provided in RAMM Manager, by RAMM Software Limited (RSL). This information has been included in the report in "good faith" as the authors are not software or metadata experts.

2.5.1 Metadata Currency

The data collection and Data Dictionary requirements for the manual have been based on the current operating version of RAMM for Auckland Transport's database. At the time of writing this report it was RAMM 2008.

2.5.2 Future Versions

The Database Operations Manual will require updating to ensure alignment with metadata changes that occur with future versions of RAMM. Any significant changes to table structure should be well known in advance to the industry prior to it being released. This will enable changes in process and collection to be well understood and documented, prior to implementation.

Where changes or additions to asset collection methodologies are agreed, then documentation will be required to ensure consistency for the whole database. All data providers will need to be advised to ensure homogenous metadata for the specific asset.

2.6 RAMM Knowledge

In preparing this manual a certain level of RAMM knowledge has been assumed. To get to a point where you are either collecting data in the field, or being responsible for database maintenance for Auckland Transport you must have NZTA RAMM L1 or L2 certification. As a pre-requisite, organised on the job training would have been completed to ensure familiarity and proficiency in the required work.

[1] RAMM Status Report Stage One, April 2011, Opus International Consultants Limited.

2 BACKGROUND

2.1 Formation of Auckland Council

The establishment of Auckland Council, and its coming into power on 1 November 2010 resulted in a number of activities being implemented prior to this date. One such activity was the creation of a single asset repository for the Council-controlled organisation of Auckland Transport (AT).

The Road Assessment and Maintenance Management (RAMM) system has historically been the primary transport asset repository for all Council owned and maintained assets. The creation of Auckland Council resulted in combining seven previous Local Government Organisations (LGO), including their RAMM databases for; Rodney District Council, North Shore City Council, Waitakere City Council, Auckland City Council, Manukau City Council, Papakura District Council and approximately half of Franklin District Council.

2.2 Database Amalgamation

The primary merging of the seven RAMM databases was managed by the Auckland Regional Transport Agency (ARTA), another previous Local Government Organisation, with the work completed by RAMM Software Limited (RSL) who are the software developers and providers of RAMM. Part of this process included combining seven previous individual lists for each of the 700-800 lookup tables for each database, to form one for the Auckland Transport Database.

2.3 Consistency of Policy

With each of the seven databases being managed by a separate organisation there exists differences in approach, methodology and recorded data that need to be understood, managed and updated to provide a consistent database over time, for the whole Auckland Council.

2.4 Collaborative Approach – Data Custodians

Responsibility around maintenance and management of the Council asset data now becomes a joint responsibility between three main parties - Auckland Transport Systems and Monitoring, Road Corridor Maintenance and their contractors, and three asset management consultants each awarded one contract area, north, central and west, and south.

Therefore it is vitally important to define clear roles and responsibilities and documented guidelines to ensure the database is maintained as one, with consistent rules and metadata populated within each table.

2.5 Future Actions

The current form of the Auckland Transport Database Operations Manual (ATDOM) addresses the first phase of priority actions. In order to progress the ATDOM further, the following phase needs to be implemented:

- Complete the following tables in a format that is consistent with this phase one document. Updated specifications such as those prepared for the recent contracts will need to be considered (i.e. road rating in the road corridor maintenance contracts and High Speed Data (HSD) specifications from the HSD contract):
    - Rating
    - Roughness
    - High speed roughness
    - High speed texture
    - High speed rutting
    - Drainage
    - Crossings
- Review of all lookup tables for the matching tables that have been completed to date.
- Finalising the form the final document be made available (such as web based and downloadable in PDF format), and how to receive and incorporate feedback/ updates.
- Development of a training and certification/accreditation process for both data collectors and database managers to ensure the knowledge contained in ATDOM is understood by suppliers and applied when collecting and managing the asset register.

3 REFERENCE DOCUMENTS

The following publications and manuals have been referred to for this work:

- State Highway Database Operations Manual, SM050, New Zealand Transport Agency, May 2009.
- Franklin District Council RAMM Database Operations Manual, Opus Consultants Limited, 2010.
- Manukau City Council RAMM Database Operational Requirements, Opus International Consultants Limited, February 2012 revision.
- RAMM Computer Users' Manual, CJN Technologies Ltd, 1998.
- This is commonly referred to as the "Yellow Book", as it was contained in a yellow ring binder.
- Local Authority Database Operations Manual,PFM7, Transfund New Zealand, 1997.
- Work Instruction for Waitakere City Council Road Network Treatment Lengths and Forward Works Programme 2009, Opus International Consultants Limited, October : 2009.
- Auckland Transports Code of Practice, As Built Data Requirements.

4 RAMM TABLES

4.1 Carriageways

4.1.1 What is a Carriageway?

The RAMM system defines a carriageway as a section of road with homogenous traffic and loading volumes, pavement type (sealed, unsealed, structural, bridge), width, number of lanes and urban/rural classification along its length. The organisational (i.e.: maintenance contractor) and administrational (i.e. ward or sub area) aspects of the road also need to be homogenous over the length of a carriageway section.

A road may be broken down into multiple carriageway sections if any of the above criteria change along its length such as:

- The number of lanes change, i.e. from 2 to 3 (at the start of a passing lane).
- The speed limit changes to greater than 70km/hr (urban to rural).
- The width changes by more than 2.5m over a significant length (typically >100m).
- Traffic volumes and/or composition change significantly such as at major intersections.
- The road changes in surface type i.e. sealed to unsealed, thin surface flexible to bridge.

4.1.2 Why is this Table Important?

The Carriageway Table contains dimension and road section characteristics and provides the principal framework for all road reserve assets to be attached to. Specifically, the RAMM Carriageway Table includes:

- Dimensional characteristics such as length, width, number of lanes, area and road reserve width.
- Political boundary information such as ward and community board areas.
- Urban and rural classification based on the NZTA definitions.
- Information on the length of sealed and unsealed roads in the network.
- NZTA maintenance group classification.
- Other general characteristics such as road class, pavement type, hierarchy, traffic volume and loading, traffic management levels and average roughness data.

4.1.3 What is the Carriageway Table Used For?

The RAMM Carriageway Table is Auckland Transport's primary repository for all locational, dimensional, organisational and summary statistical information for each road section. The table can be used to produce carriageway lists, report network lengths by centreline and

lane length, and undertake further network length analysis by urban/rural, pavement type, maintenance area and maintenance category.

The actual sectioning of the road to create carriageway sections is detailed in this table. The same sectioning is used for all other asset tables in the database. The Treatment Length Table is the only table that does not use this sectioning method. However, treatment lengths be sectioned by carriageways or, more typically, using the top surface seal seams.

4.1.4 What Activities Affect this Table?

There are 10 key activities listed that affect the Carriageway Table in terms of physical changes to the asset that must be captured in RAMM to keep the table up to date. The activities include but are not limited to:

- New road construction - new carriageway sections need to be generated.
- Existing road reconstruction (sometimes) that can result in changes to the pavement type from thin surfaced flexible to structural asphaltic concrete pavement.
- Changes to existing carriageway nodes resulting from new road construction.
- Changes to existing carriageway nodes resulting from carriageway reviews.
- Seal extensions, as this changes some of the characteristic fields such as pavement type and usually width.
- Seal widening projects as this affects the width.
- Minor safety works that result in additional lanes at intersections, creating new carriageway sections as a result of changes to the carriageway width and number of lanes.
- Speed review changes, as the section may change from rural to urban.
- Political/maintenance boundary changes.
- Other works that create a change to the existing data held within the Carriageway Table.

4.1.5 Who Provides the Data?

The supplier carrying out the physical work resulting in changes to the Carriageway Table is typically responsible for the provision of Carriageway data that is compatible with RAMM. Database managers are required to ensure that all major work activities that could impact on the Carriageway Table are identified and the appropriate changes made to the RAMM database.

4.1.6 What Fields are Collected and Why?

The Carriageway Data Dictionary (appended) outlines the data that must be collected and provided by suppliers carrying out activities that affect the Carriageway Table. This data is required to ensure that the objectives of the Carriageway Table can be met.

4.1.7 What Resources are Required to Collect Carriageway Data?

To collect Carriageway data, you will need the following equipment and reference material:

- ATDOM which will assist you in identifying what specific data is required.
- Current carriageway list which shows road ID's, road names, start and end locations and descriptions for each road.
- A calibrated vehicle tripmeter (with completed calibration form) accurate to 1m per 1000m (+/- 0.1%).
- A calibrated measuring wheel (with completed calibration form) accurate to 0.1m per 100m (+/- 0.1%).
- Whatever electronic device your organisation needs to download the data from the counter.
- An approved traffic management plan for the work activity to be undertaken.
- RAMM data collection forms (or equivalent).

4.1.8 How is the Database Updated?

The Carriageway Data Dictionary (appended) provides additional guidance to database technicians who have read/write access to the RAMM Carriageway Table. The database can be updated using 3 methods:

- Automated bulk uploading of Carriageway data through the RAMM Manager data import facility (preferred method for large amounts of load data but not the typical approach).
- Manual updating of some minor attribute data in RAMM for Windows (preferred method for making those small minor changes such as changes to start and end names).
- All manual major or significant changes to dimensional related data can be done through RAMM Network Manager, including adding new sections, splitting, joining and deletion. Unsealed to sealed changes to carriageway sections can also be made in RAMM Network Manager. Database managers require specific training in the use of RAMM Network Manager before using this module to ensure the desired outcome is obtained.

4.1.9 How Can this Database Operations Manual Help You?

Accompanying this table overview is the following sections:

- RAMM Carriageway Data Collection Guide Notes and FAQ's (Section 4.1.10) - includes diagrams and illustrations around standard Carriageway data collection conventions to ensure the data is collected consistently in the field. Some typical FAQ's are also provided.

- Carriageway Data Dictionary (appended) provides a column by column description of the Carriageway table including what data is required, how it is collected, entered and managed and what are the allowable values.

Collectively, these documents are designed to assist both data collectors and database managers achieve the ultimate outcome of accurate, consistent and up to date data.

4.1.10 RAMM Carriageway Data Collection Guide Notes and FAQ's

The following guide notes are to be used as a reference when carrying out activities that affect the RAMM Carriageway updates. The guide notes cover all the necessary information to collect RAMM Carriageway data in a consistent and accurate manner for all the mandatory fields that are required.

Survey Direction

Existing conventions need to be considered regarding survey direction. Auckland Transport may require roads surveyed in a specific direction. However, when validating or setting up a new database, roads should be surveyed from the major traffic end to the minor traffic end as follows:

- Arterial road to collector road.

- Collector road to local road.

- Local road to the end of the road or to the cul-de-sac end.

Exceptions to this are one way roads where traffic flow dictates the survey direction.

Minimum and Maximum Carriageway Lengths

As described above, changes in width, number of lanes, urban/rural, pavement type, traffic volumes and administrational areas require a new carriageway section. However, to avoid the proliferation of short carriageway sections (such as changes to no. of lanes around signalised intersections, or short bridges) the following guidelines apply:

- Urban area - minimum carriageway length 30m, maximum carriageway length 1500m.

- Rural area - minimum carriageway length 50m, maximum carriageway length 3,000m.

Exceptions to these should be avoided but will be required in certain circumstances.

Generally the length of a carriageway section is equal to the end metres minus the start metres. However, for first carriageway section of most roads starting from a three way or four way intersection, the length needs to be adjusted to be the "end metres minus the start metres" less the distance between the intersecting centreline of each road to the kerb line. This length adjustment needs to be completed using the length adjustment option. This also needs to be done for roads that end at a three way or four way intersection. Diagram 4.1.1 demonstrates this length adjustment.

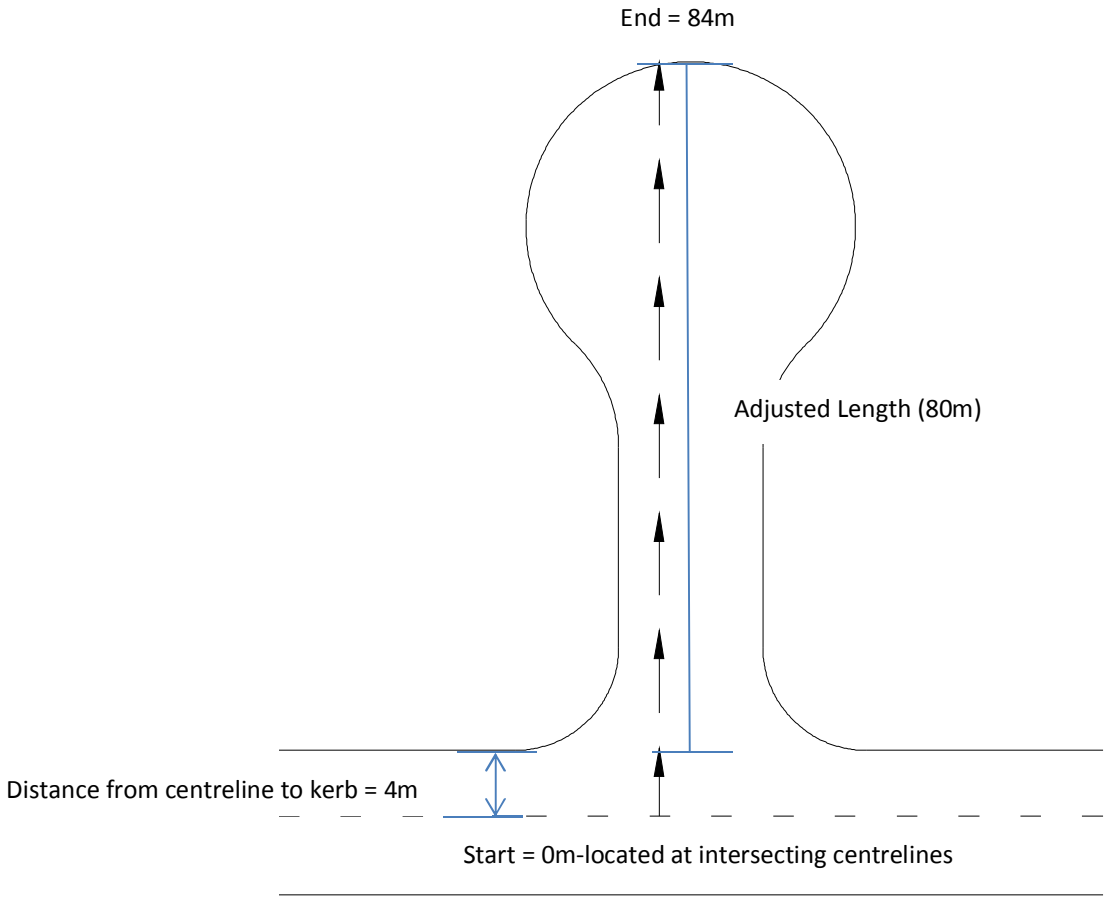


Diagram 4.1.1: Example of Carriageway Length Adjustment

Carriageway Table Data

The following data is non-dimensional data that cannot be measured on site but is still required for collection. Guidance is provided below on how this data is assessed.

Carriageway Field	Assessment Method	Additional Notes
Pavement Type (B, C, S, T, U)	Based on visual assessment on site.	B, C, and U are obvious. You may need access to as-built drawings to differentiate between T and S for carriageways surfaced with AC.
Pavement Use (1, 2, 3, 4, 5, 6, 7)	This depends upon the average daily traffic. Generally the traffic count data provided in the database will be used to determine the pavement use. For new sub-divisional roads, a rate of 1 vehicle movement per meter of total road length is used as a basis to estimate number of vehicles per day.	Review the count and estimate data for surrounding carriageway sections to assist in calculating a reasonable estimate of AADT, which then can be used to assign a pavement use band to the carriageway section.
Lanes (1, 2, 3, 4, 5, 6, 7, 8)	The numbers of marked traffic lanes are counted. This may vary from road to road. Unmarked roads less than 4m wide are considered one lane.	For divided median sections (northbound/southbound) the number of lanes in each direction are used.
Urban/Rural (U, R)	The NZTA definition for urban is any road section that has a posted speed limit of 70 km/hr or less (i.e10, 20, 30, 40, 50, 60, 70km/hr). Rural road sections have a posted speed limit of > 70 km/hr (i.e. 80, 90, 100km/hr).	
Carriageway Area	This information is entered from ward/sub area maps provided by Auckland Transport.	
Hierarchy	This is determined from road hierarchy maps provided by Auckland Transport. Typically they are from the District Plan.	

Divided Carriageways (Full length)

Where a road has a physical median that separates each direction of travel over the full length of the road then each side has a separate road name and road id. The road name is suffixed in brackets with the travel direction for that road i.e. TE IRIRANGI DR (WESTBOUND) and TE IRIRANGI DR (EASTBOUND).

Single Divided Section (Not full length of road)

If the physical median is not present for the full length, then the increasing direction carriageway sections are contiguous (with no direction suffixed in brackets after the road name), i.e. TE IRIRANGI DR and decreasing section are added as required (with the direction suffixed in brackets after the road name) i.e. TE IRIRANGI DR (EASTBOUND).

Multiple Divided Sections

In the case where there is more than one divided section along the length of the road, then the running distance continues from the end of the first divided section through to the end of the last divided section. This will result in there being gaps between the divided sections, as the running distance is contiguous from the start of the first divided section.

Example:

The table below shows an example of a road that has multiple divided sections along its length.

Roadname	Start m	End m	Start name	End name	No. lanes	Width
Redoubt Rd	0	1000	John Rd	Start divided median	4	20
Redoubt Rd	1000	1500	Start divided median	End divided median	2	10
Redoubt Rd	1500	2000	End divided median	Smith Rd (Start divided median)	4	20
Redoubt Rd	2000	2500	Smith Rd (Start divided median)	End divided median	2	10
Redoubt Rd	2500	2800	End divided median	Hill Rd	4	20
Redoubt Rd (Westbound)	0	500	Start divided median	Smith Rd (End divided median)	2	10
Redoubt Rd (Westbound)	1000	1500	Start divided median	End divided median	2	10

Note that Redoubt Rd (Westbound) is measured in the direction of the traffic, and the start node for the section is 0, not 300 (i.e. 2800 minus 2500), i.e. do not confuse this approach with the NZTA approach for increasing/decreasing sections of State Highway).

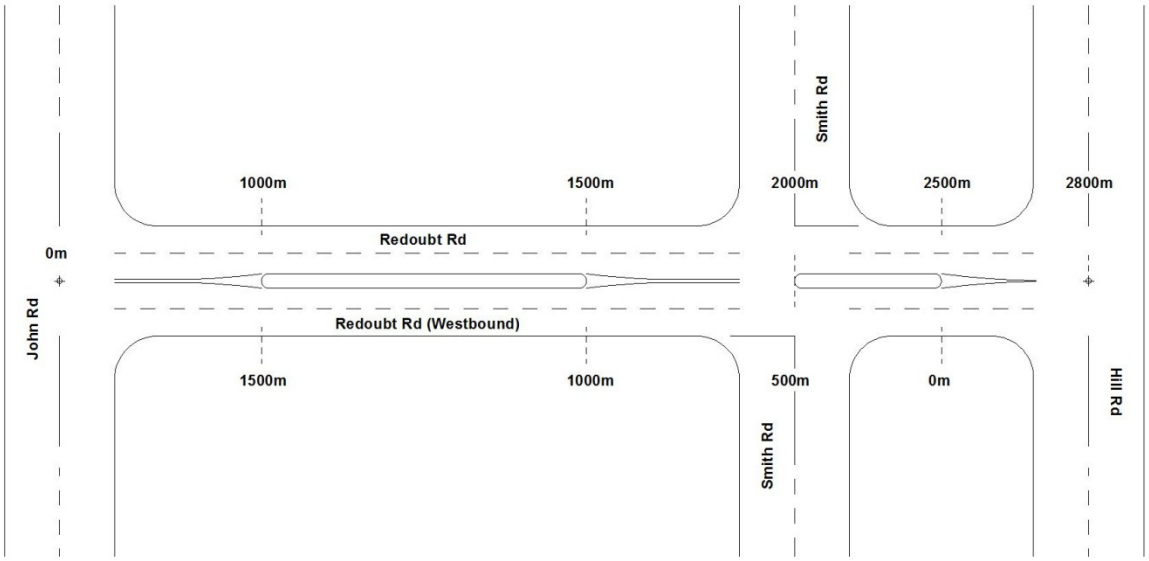


Diagram 4.1.2: Example of Multiple Divided Sections

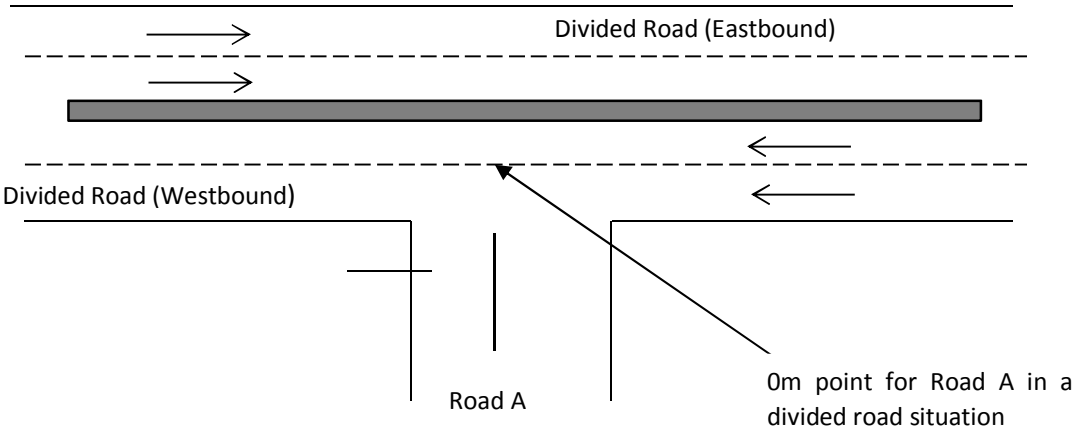


Diagram 4.1.3: Zero Point for Side Road Onto a Divided Road

Creating Carriageway Sections

Each road will have carriageway sections established using the standard rules for creating carriageway sections such as:

- **At an intersection:** Generally in urban areas carriageway breaks occur at all intersections, expect for intersections that are very close together (<30m). For rural roads intersections may be too far apart, so another obvious and easily locatable but permanent physical feature such as a catchpit, box culvert, transformer or power pole may be used. Rural carriageway sections generally should not exceed 3km.
- **Change in pavement type:** i.e. thin surfaced flexible (T) to structural asphaltic concrete (S), or T to unsealed (U), or to a bridge deck (B), etc. Typically bridges longer than 50m have their own carriageway section.
- **Significant changes in traffic volume:** which occurs around major intersections and major accesses.
- **Changes in organisational area**: as recorded in the area field (i.e.: ward change).
- **Change in ownership**: i.e. end of public road and start of private road.
- **Significant width changes:** i.e. a lane gain or drop, or width change >2.5m for a length of 100m or more.
- A change from urban road (<=70 km/hr) to rural road (>70km/hr), as defined by the NZTA definition.

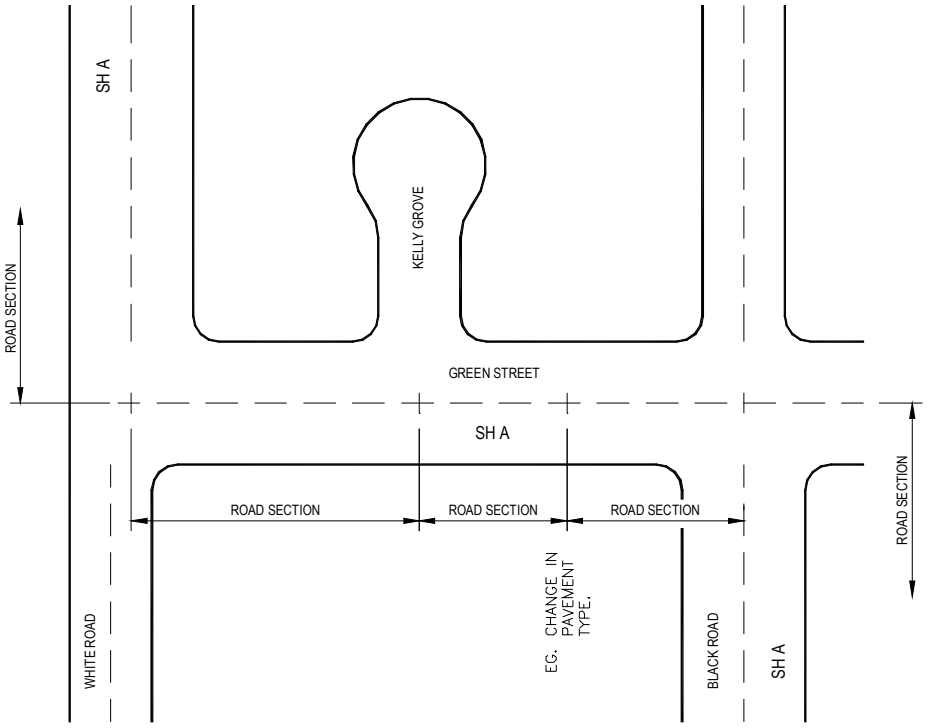


Diagram 4.1.3: Example of Carriageway Sectioning

Roundabouts:

All large roundabouts are surveyed as a separate road. Roundabouts are deemed large if approach islands are present. Small roundabouts, such as small domes or roundabouts with painted traversable islands are treated like standard intersections.

Roundabouts are named as follows:

"MAJOR ROAD NAME/MINOR ROAD NAME RAB", e.g. "GREAT SOUTH/WILLIAM RAB Note that the street suffixes are excluded in the road name. The start and end names are e.g.: "WILLIAM ST – WILLIAM ST" and include the suffixes. For two major roads, or roads of the same hierarchy, naming is ordered alphabetically.

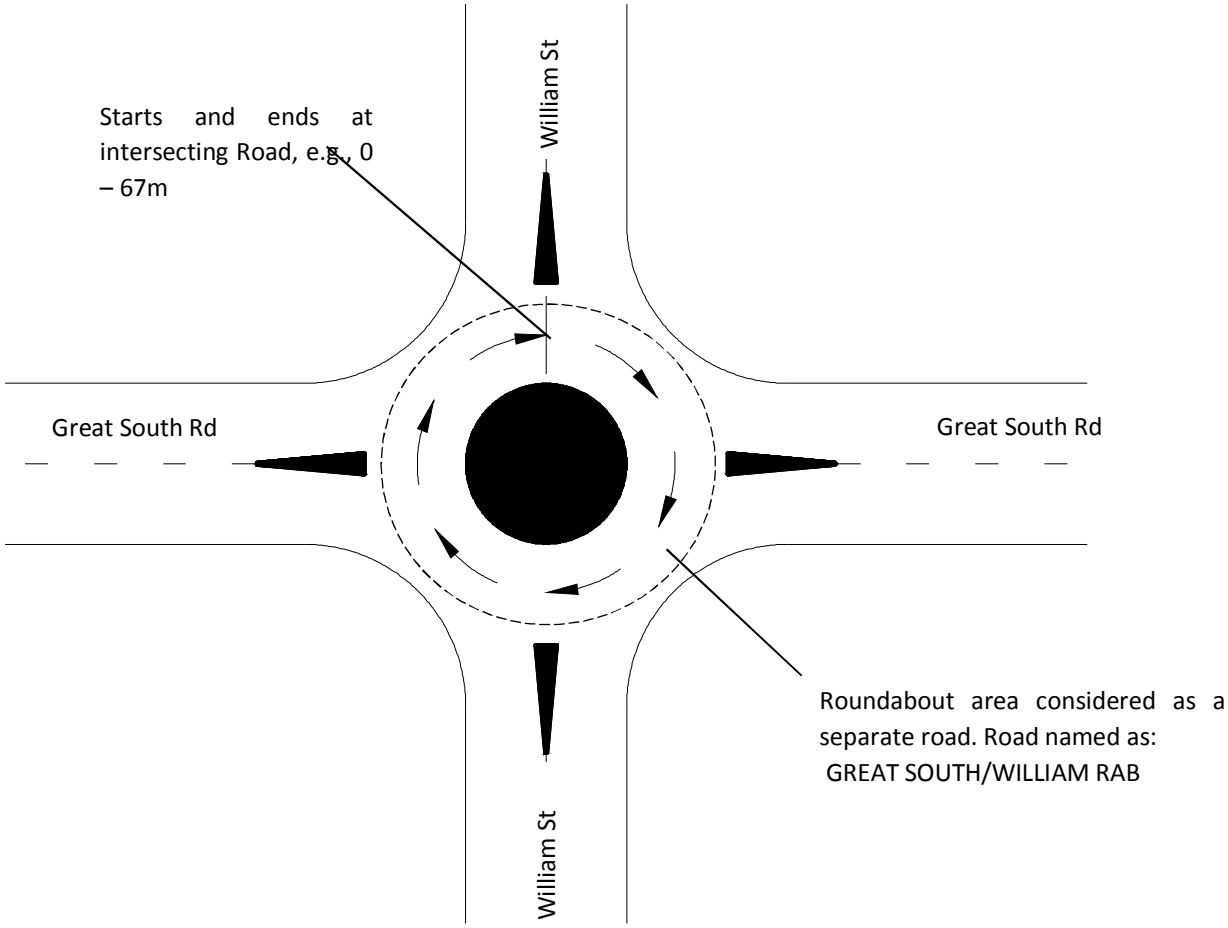


Diagram 4.1.4: Roundabout Treated as a Separate Road

Additional Notes:

Great South Road is the major road, so the naming convention is GREAT SOUTH/WILLIAM RAB, with start/end names 0 – 67, WILLIAM ST (NORTH) – WILLIAM ST (NORTH).

Roundabout Intersecting Roads:

Where roads start, end or intersect a roundabout, the carriageway sections will start/end at the roundabout approach islands. The island nose closest to the roundabout itself is used as the start/end point.

Where a road passes through the roundabout, the displacements are measured between the approach islands and a gap is in the displacements. The "gap" allows high speed data to be continuous when passing through the roundabout. This is illustrated in Diagram 4.1.5 below:

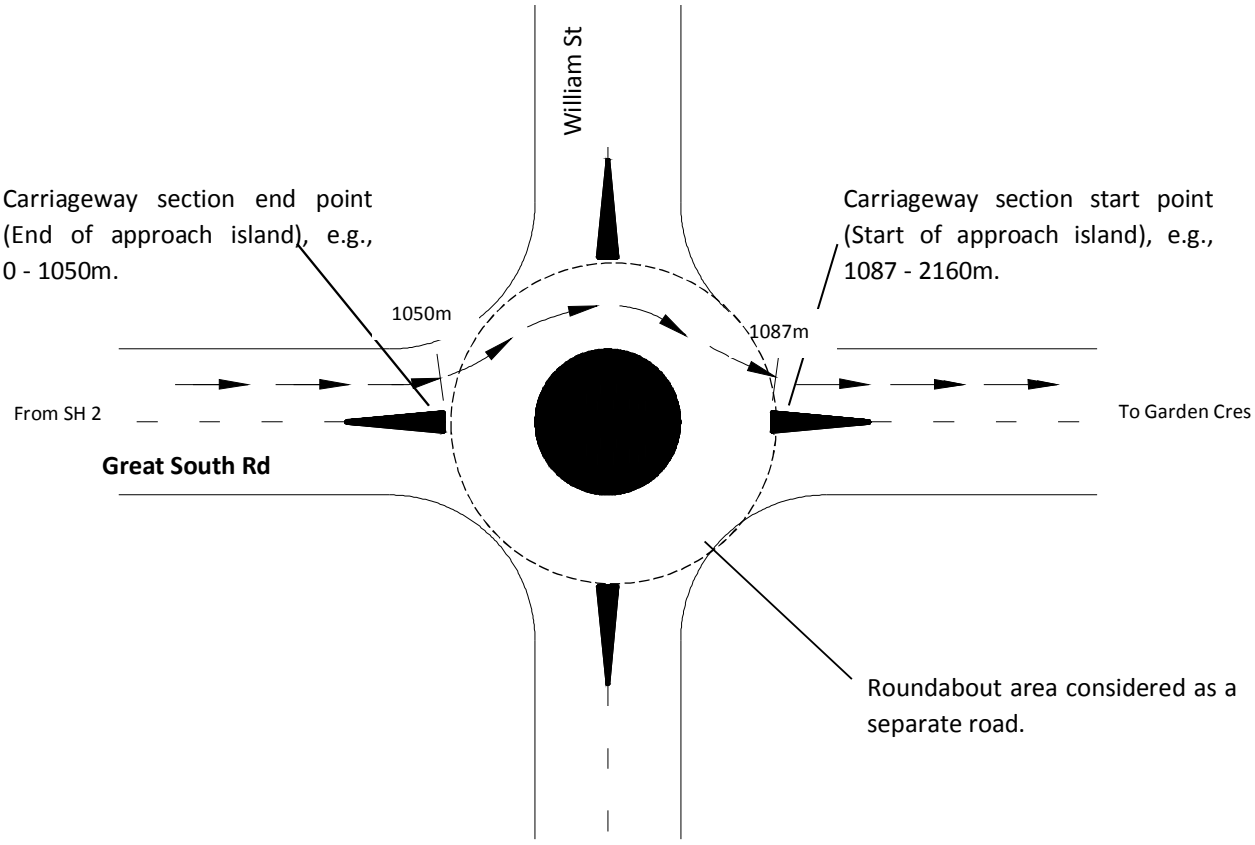


Diagram 4.1.5: Example of Carriageway Sectioning of a Road Through a Roundabout

Example:

GREAT SOUTH RD, carriageways 0 – 1050m, SH 2 – WILLIAM ST and 1087 – 2160m, WILLIAM ST – GARDEN CRES. Note that a gap exists between the displacements. Any other roads that start or end at roundabouts start/end at the approach islands do not encroach on the roundabout area.

Cul-De-Sacs:

The following describes how cul-de-sacs are surveyed, with respect to end position of the last carriageway section. Cul-de-sacs with small islands are treated like standard cul-de-sacs, measuring the extreme most point. Diagram 4.1.6 shows a standard cul-de-sac, with Diagram 4.1.7 having a small island.

Cul-de-sacs with large islands are surveyed by splitting the carriageway at the start of the island nose when approaching the cul-de-sac, driving around the loop, and ending the carriageway at the same point when exiting the cul-de-sac head. This is shown in Diagram 4.1.8.

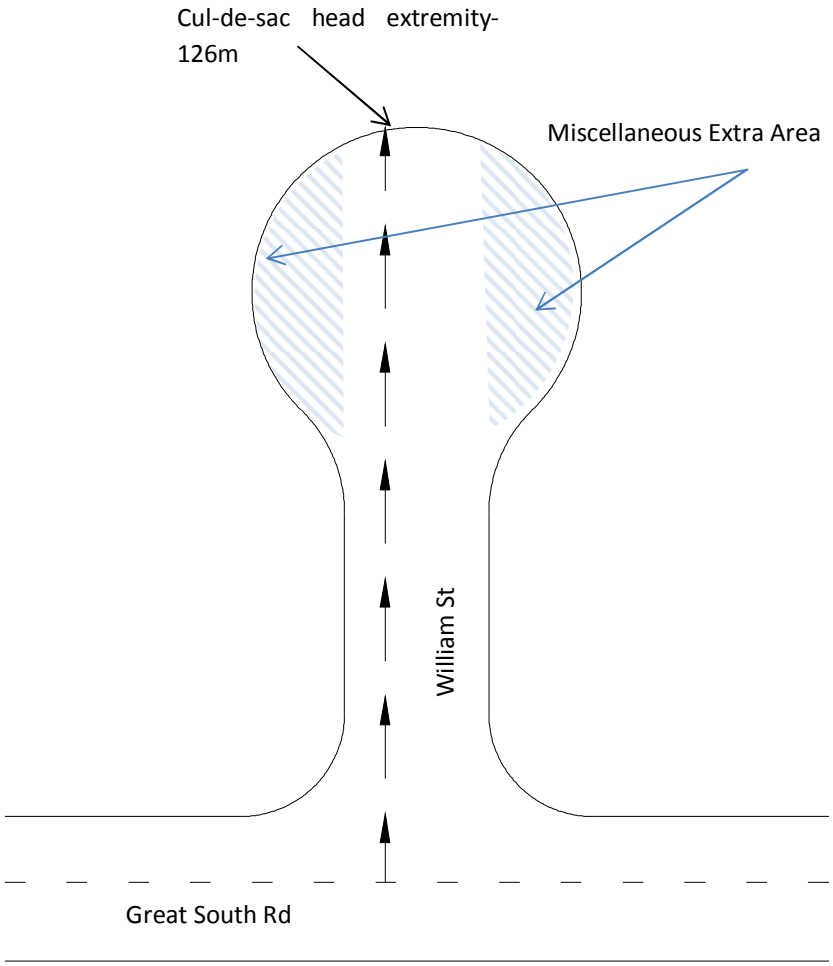


Diagram 4.1.6: Definition of a Cul-de-sac Carriageway Section

The carriageway section for William Street will be as follows:

0 – 126m, GREAT SOUTH RD – CUL-DE-SAC

Cul-de-sac Head with Small Island

Cul-de-sacs with small islands that can be driven past without deviation through the cul-de-sac turning area to the end of the road will be treated like a normal cul-de sac, as shown in Diagram 4.1.7 below.

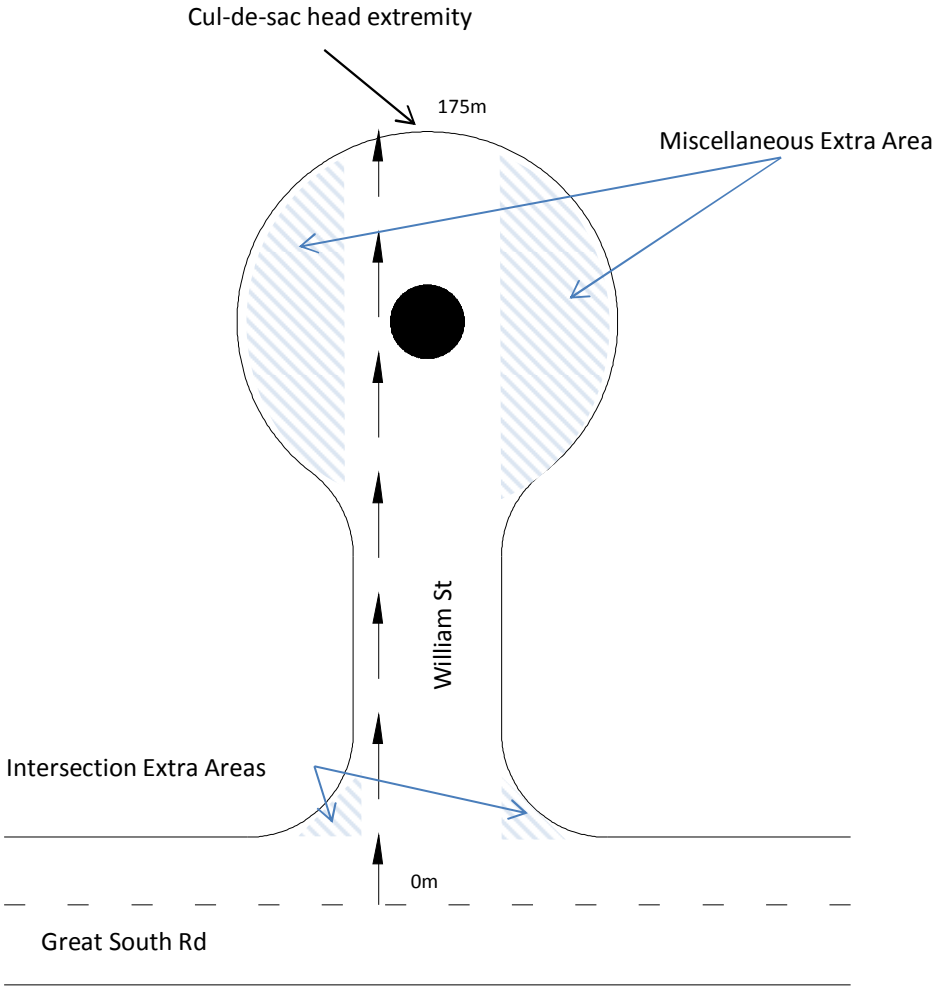


Diagram 4.1.7: Definition of a Cul-de-sac With Small Head Island Carriageway Section

The carriageway section for Williams Street will be as follows:

0 – 175m, GREAT SOUTH RD – CUL-DE-SAC.

Cul-de-sac Head with Large Island

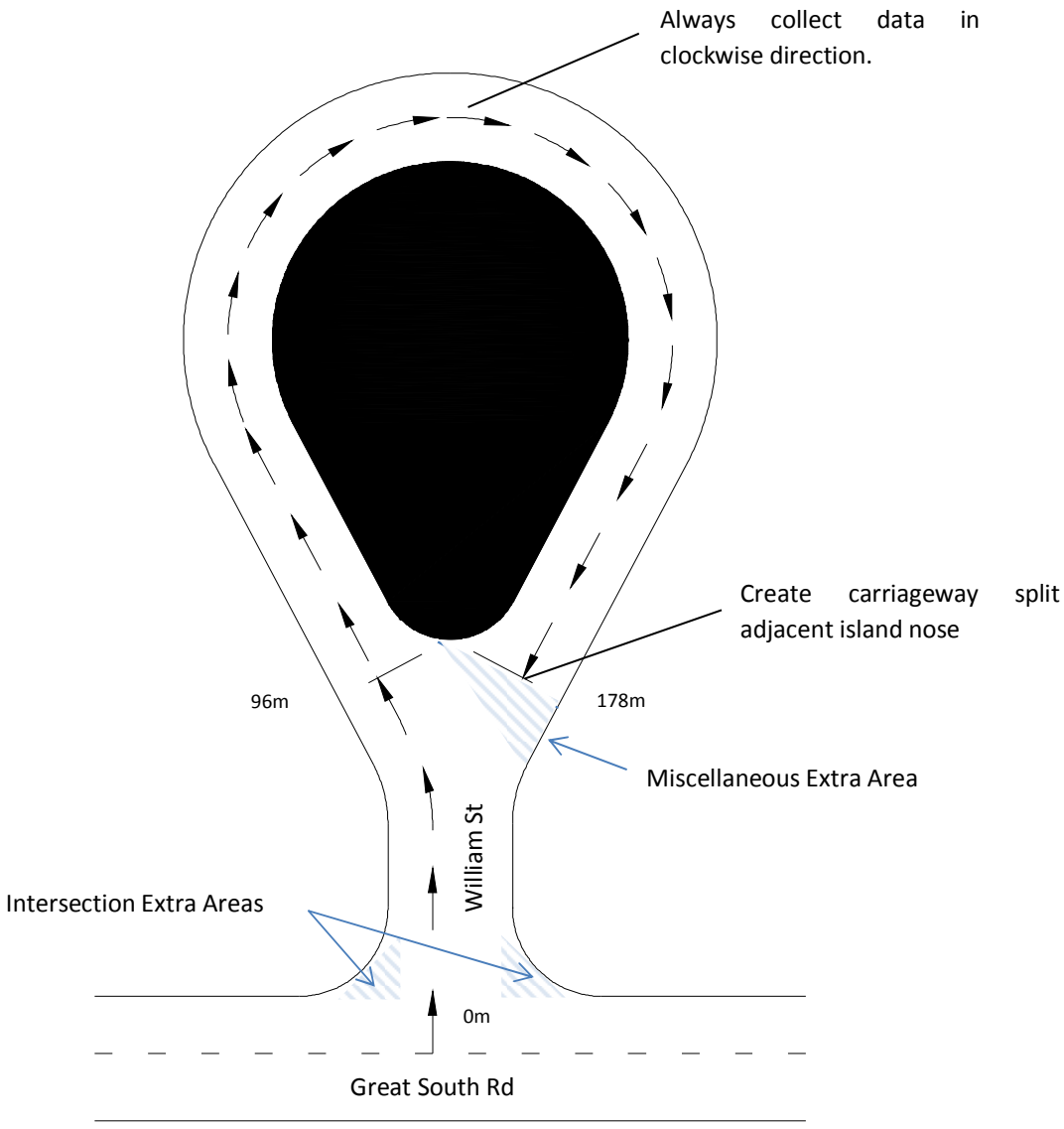


Diagram 4.1.8: Definition of a Cul-de-sac With Large Head Island Carriageway Section

The carriageway section for Williams St will be as follows:

0 – 96m, GREAT SOUTH RD – START ISLAND RHS

96 – 178m, START ISLAND RHS – END ISLAND RHS

Note: The last carriageway section is usually only one lane.

Hammerheads

For roads with hammerheads, set the main access road and hammerhead up as separate roads, e.g., WILLIAM ST and WILLIAM ST HAMMERHEAD. Survey the main access road from the road origin to the centreline of the hammerhead. Survey the hammer head from one cul-de-sac through to the other, describing the start and end points, e.g., CUL-DE-SAC (SOUTH). It is also desirable to create a carriageway split where the main road intersects to avoid any confusion regarding which end to start the survey. This is shown in the diagram below.

If the orientation of the hammerhead section is not obvious (i.e.: hammerhead does not run from east to west or north to south) then house numbers may be used to describe the start end and name fields of the hammerhead.

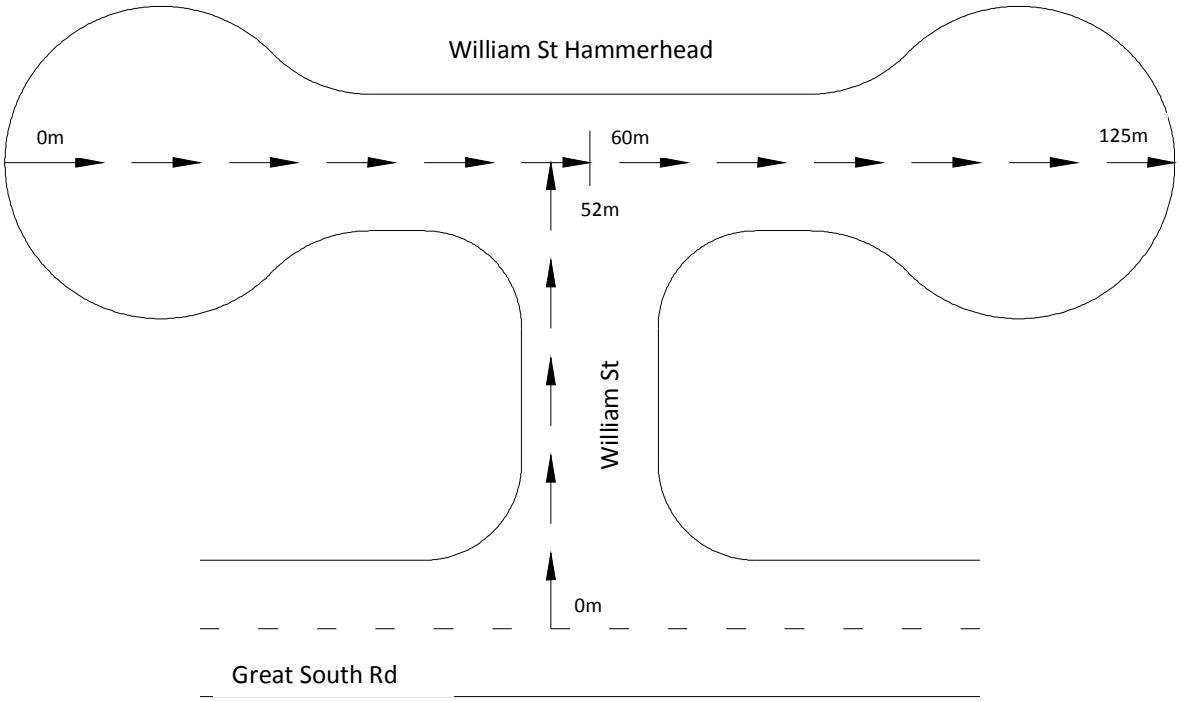


Diagram 4.1.9: Definition of a Hammerhead Carriageway Section

The carriageway section for Williams Street will be as follows:

Road 1: WILLIAM ST 0 – 52m, GREAT SOUTH RD – WILLIAM ST HAMMERHEAD

Road 2: WILLIAM ST HAMMERHEAD, 0 – 60m, CUL-DE-SAC (WEST) – WILLIAM ST and 60 – 125m, WILLIAM ST – CUL-DE-SAC (EAST).

Loops

This case is similar to hammerheads with the loop section being set up as a separate road, e.g., WILLIAM ST LOOP. Separating these elements into individual roads allows clear identification of each element, and the start and end locations for each section. This is shown in the diagram below.

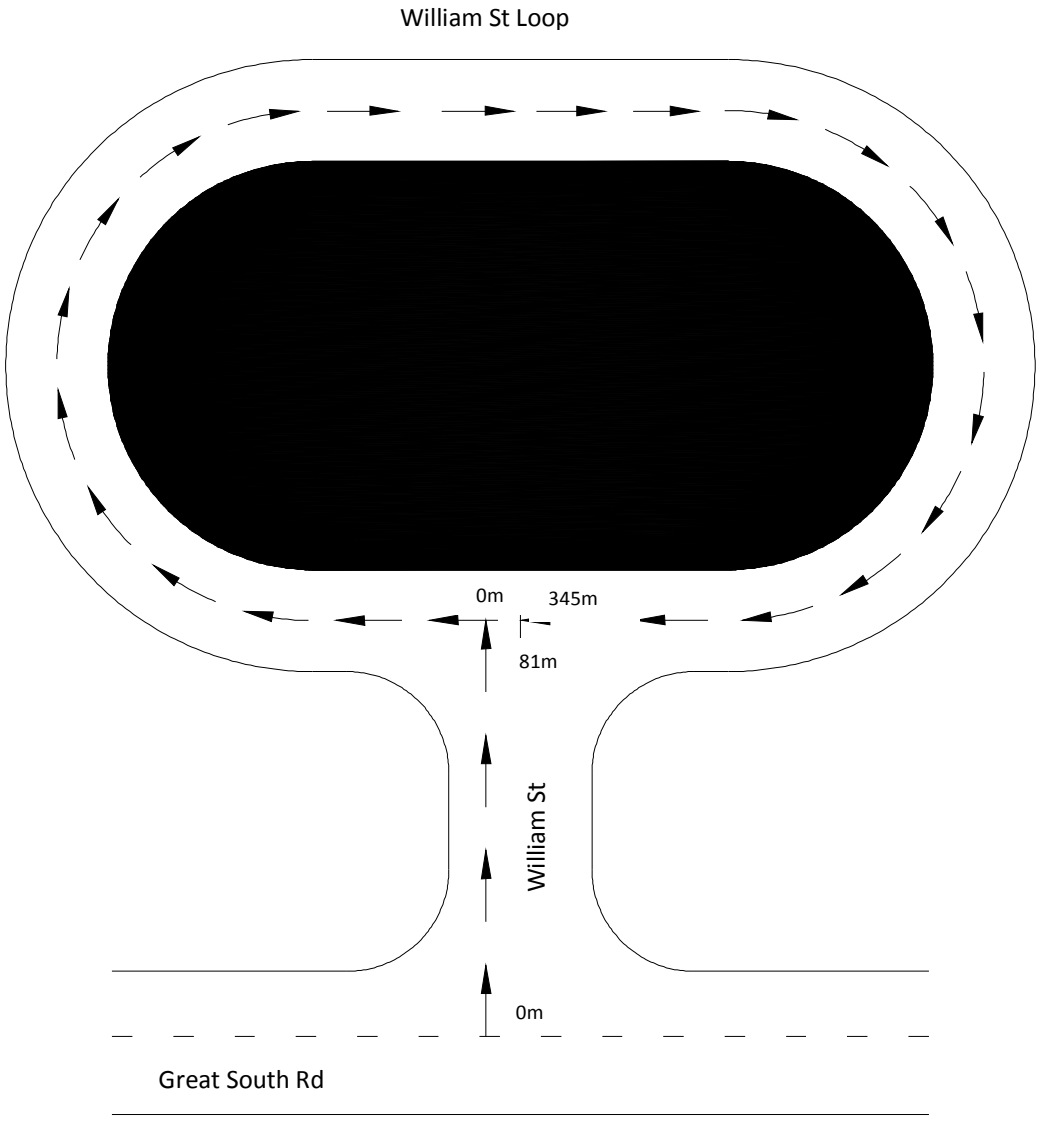


Diagram 4.1.10: Definition of a Loop Carriageway Section

The carriageway section for Williams Street will be as follows:

Road 1: WILLIAM ST 0 – 81m, GREAT SOUTH RD – WILLIAM ST LOOP

Road 2: WILLIAM ST LOOP 0 – 345m, WILLIAM ST – WILLIAM ST

Intersections

In the interests of accuracy, an attempt has been made to reduce the amount of ambiguity that exists at intersections. The following rules have been applied when determining carriageway start/end points:

- For both marked and unmarked intersections approaching at a right angle, the centre of the intersection is used.
- For both marked and unmarked intersections approaching at a small angle, the centre of the intersection is used.
- For marked intersections approaching at an acute angle, the point of the marking (or middle of the median island) will be projected at a right angle to the road being measured.
- For unmarked intersections approaching at an acute angle, the middle of the intersection will be projected at a right angle to the road being measured.
- At all poorly defined intersections, well defined and easily locatable features such as sumps or power poles may also be used to further define the node, e.g. SMITH ST (SUMP LHS) – means that the node is located at Smith St adjacent a sump on the left hand side.

The following diagrams show methodologies for dealing with typical carriageway start and end point situations.

Defining Carriageways Start and End Points: Right Angle Intersection

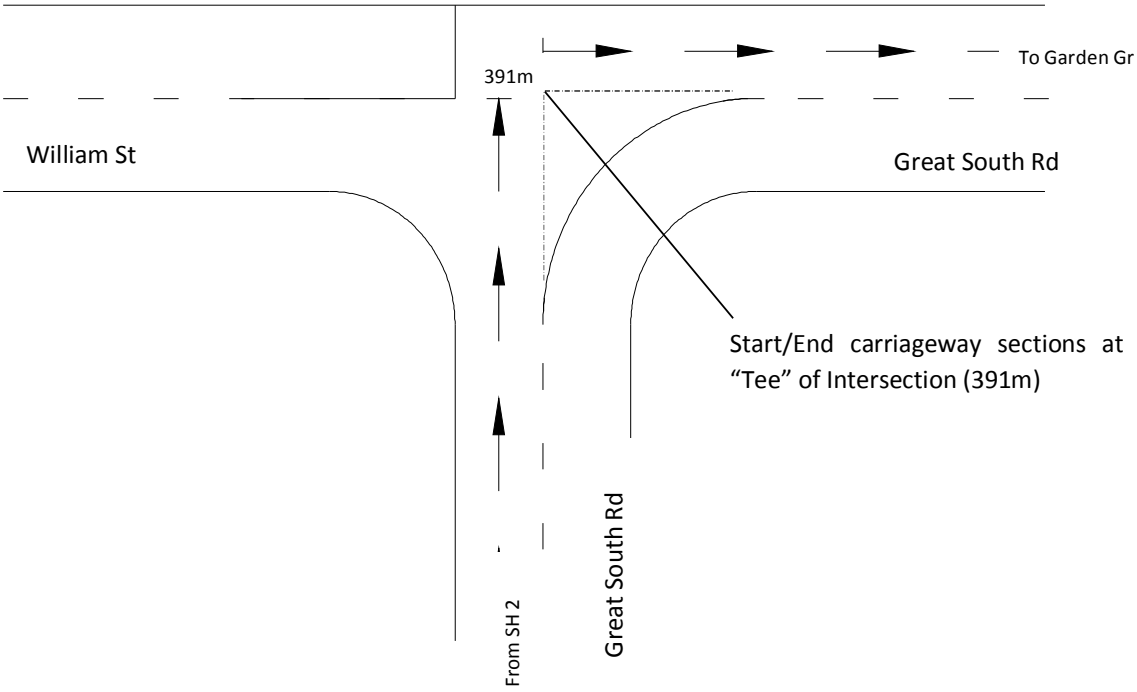


Diagram 4.1.11: Carriageway Section Definitions for a Through Road Making a Right Angle Turn in an Intersection

The carriageway sections for Great South Road will be as follows:

0 – 391m, SH 2 – WILLIAM ST (AT TEE)

391 – 689m WILLIAM ST (AT TEE) – GARDEN GR

Defining Carriageways Start and End Points: Acute Angled Intersection

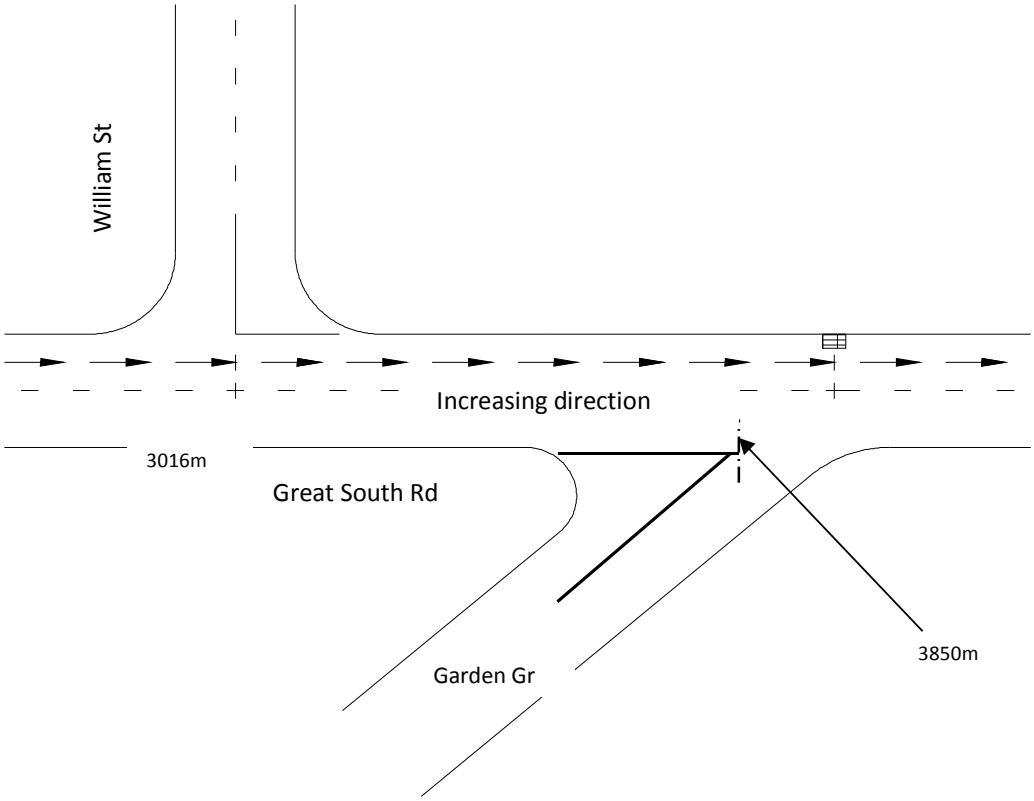


Diagram 4.1.12: Carriageway Section Definitions for Intersections at an Acute Angle

The carriageway sections for Great South Road will be as follows:

3016 – 3850m, WILLIAM ST – GARDEN GR

Defining Carriageways Start and End Points: Two Roads Starting/Ending on Curve

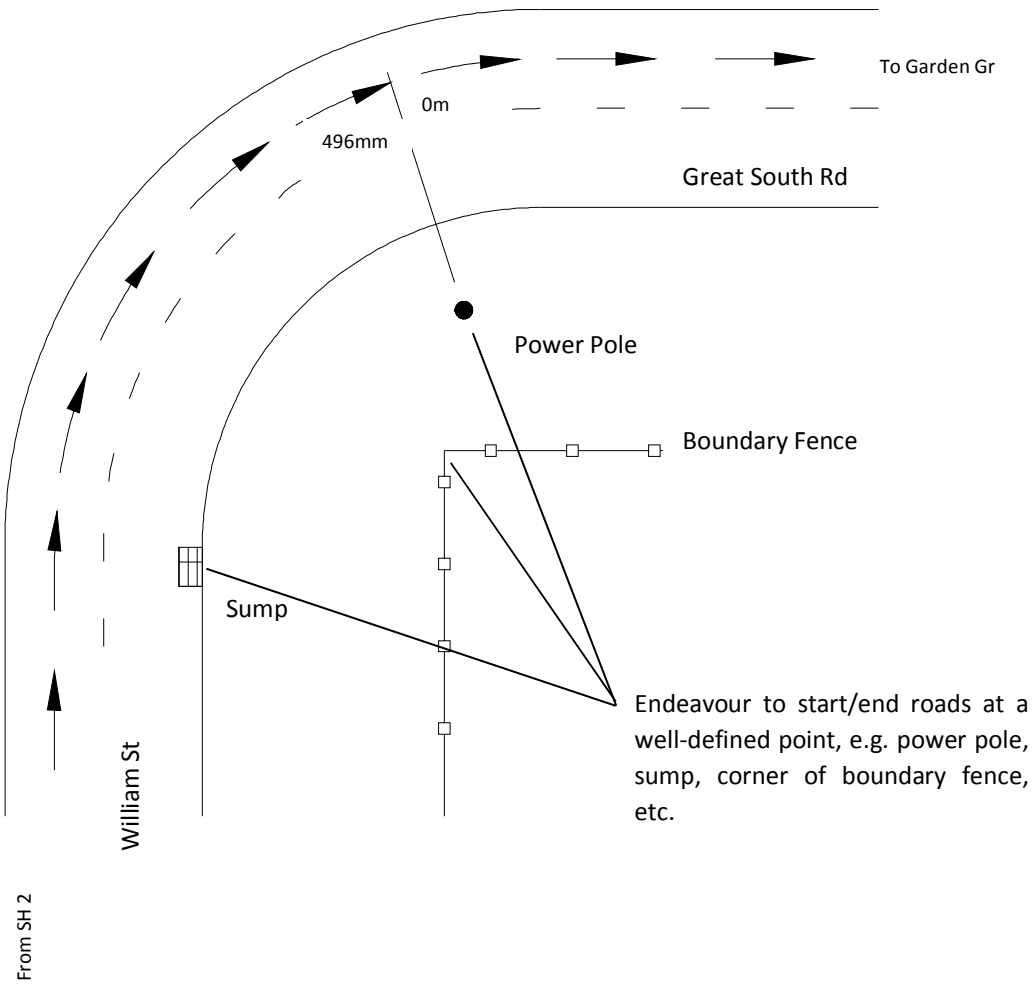


Diagram 4.1.13: Carriageway Section Definitions for Two Roads Starting and Ending on a Curve

The carriageway sections for both roads will be as follows:

Road 1: WILLIAM ST, carriageways 0 – 496m, SH 2 – GREAT SOUTH RD (POWERPOLE RHS)

Road 2: GREAT SOUTH RD, carriageways 0 – 1065m, WILLIAM ST (POWERPOLE RHS) – GARDEN GR

4.2 Carriageway Surfacings

4.2.1 Why is this Table Important?

The RAMM Carriageway Surfacings table provides a logical place to store current and historic surfacing data such as chipseals, asphalts, and slurries.

The accuracy of this table is absolutely critical as surfacing records contained in it represent significant investment by Auckland Transport (AT). The table is used extensively in conjunction with high-speed data and other condition assessment tables to undertake high-level condition analysis. Specifically, the RAMM Carriageway Surfacings Table includes:

- Road that the surfacing is on.
- The start and end locations of the surfacing.
- Surfacing dimensions such as length, width and area.
- Surfacing material properties such as seal type and chip size, aggregate source and properties such as PSV and ALD.
- Surfacing function (i.e.: first coat, second coat, membrane seals and reseals).
- Surfacing date.
- Surfacing additives (flux, cutter, adhesion).
- Binder type and application rates.
- Surface reason - the primary reason for undertaking the surfacing.
- Design life of the surfacing - particularly if done under a performance specified P/17 specification.
- Information on who carried out the surfacing work.

4.2.2 What is the Carriageway Surfacings Table Used For?

The RAMM Carriageway Surfacings Table is Auckland Transport's primary repository for all surfacing records. It contains all of the current and historical information on all resurfacing activity, including surfacings that have been removed. A complete and accurate Carriageway Surfacings Table is necessary to:

- Create an accurate top surface profile (surface structure).
- Provide accurate annual reporting on resurfacing achievement.
- Provide accurate treatment selection reporting.
- Provide input to research projects.

- Provide a critical input into establishing and maintaining treatment lengths and developing a forward work programme.

4.2.3 What Activities Affect This Table?

There are six key activities that affect the Carriageway Surfacings Table in terms of physical changes to the asset that must be captured in RAMM to keep the table up to date. The activities are:

- General maintenance resurfacing with chipseals, asphaltic concrete or slurries: ensure that surface function is set to "2" for 2nd coat or "R" for reseal depending on the function of the seal.
- Milling of existing surfacings as a pre-treatment to further resurfacing work: ensure that the milled surface has "removed date" populated.
- Area wide pavement treatments (AWPT's) where usually all existing surfaces are removed and new pavement constructed: ensure that surface function is set to "1", and that all underlying surfacings have "removed date" populated.
- Rehabilitations (including rip and remake treatments) where usually all existing surfaces are removed and existing pavement rehabilitated: ensure that surface function is set to "1", and that all underlying surfacings which are removed as part of the rehabilitation have "removed date" populated.
- Construction projects including new roads and road realignments: ensure that surface function is set to "1", or "M" for membrane seals under asphaltic concrete surfacings.
- Seal widening projects: ensure that "offset" and "width" are populated for the surfacings associated with seal widening activities. Generally the total combined surface equals the carriageway width.
- Safety projects where resurfacing was a component of the project.
- Top surface reviews and validations.

4.2.4 Who Provides the Data?

The supplier carrying out the physical changes to the asset is typically responsible for the provision of RAMM updates. Therefore in terms of the activities that affect the Carriageway Surfacings Asset listed above, the following suppliers are responsible:

- Road construction and reconstruction (including subdivisions, realignments, widening, rehabilitations and area wide pavement treatments) - the project consultant for the project as outlined in the as-built process.

- Annual resurfacing projects - the project consultant and/or contractor delivering the resurfacing works.
- Safety projects with a resurfacing component - the project consultant for the safety project as outlined in the as-built process.
- Top surface reviews - the consultant carrying out the top surface review.

4.2.5 What Fields are Collected and Why?

The Carriageway Surfacings Data Dictionary (appended) outlines the data that must be collected and provided by suppliers carrying out activities that affect the Carriageway Surfacings Table. This Data Dictionary represents the minimum data requirements to ensure that the objectives of the surfacing table can be achieved.

4.2.6 What Resources are Required to Collect Carriageway Surfacings Data?

To collect Carriageway Surfacings data, you will need the following equipment and reference material:

- Auckland Transport's Database Operation Manual (ATDOM) which will assist you in identifying what specific data is required.
- Current carriageway list which shows road ID's, road names, start and end locations and descriptions for each road.
- A calibrated vehicle tripmeter (with completed calibration form) accurate to 1m per 1000m (+/- 0.1%).
- A calibrated measuring wheel (with completed calibration form) accurate to 0.1m per 100m (+/- 0.1%).
- Contractor surfacing records.
- Pocket RAMM or similar device if this is your preferred method of data capture.
- RAMM data collection forms (or equivalent).

4.2.7 How is the Database Updated?

The Carriageway Surfacings Data Dictionary (appended) provides additional guidance to database managers who have read/write access to the RAMM Carriageway Surfacings Table. The database can be updated using 2 methods:

- Importing data from spreadsheets, validating and moving to the Carriageway Surfacing Table (preferred method for loading large amounts of data such as annual resurfacing records).

- Manual addition, updating and deleting of Carriageway Surfacings records in RAMM for Windows (preferred method for widening, rehabilitations and other resurfacing project where the number of records is small and the existing surfacing data requires some manipulation).

Updating existing Carriageway Surfacings records as a result of Carriageway Surfacings resurfacing and reconstruction projects can be complicated. The preferred way to undertake this work is in RAMM for Windows, viewing the Carriageway Surfacings data for each affected record in grid view, then updating in detail view. When the Carriageway Surfacings records are updated, always view the data again in grid view to ensure there are no overlaps or gaps in the Carriageway Surfacings data.

4.2.8 How Can This Database Operations Manual Help You?

Accompanying this Table Overview are the following sections:

- RAMM Carriageway Surfacings Data Collection Guide Notes and FAQ's (Section 4.2.9) - includes diagrams and illustrations around standard Carriageway Surfacings data collection conventions to ensure the data is collected consistently in the field. Some typical FAQ's are also provided.

- Carriageway Surfacings Data Dictionary (appended) - provides a column by column description of the Carriageway Surfacings Table including what data is required, how it is collected, entered and managed, and what are the allowable values for each field.

Collectively these sections are designed to assist both data collectors and database managers achieve the ultimate outcome of accurate, consistent and up to date data.

4.2.9 RAMM Carriageway Surfacings Data Collection Guide Notes and FAQ's

The following guide notes are to be used as a reference when carrying out activities that affect the RAMM Carriageway Surfacings updates. The guide notes cover all the necessary information to collect RAMM Carriageway Surfacings data in a consistent and accurate manner for all the mandatory fields that are required.

What does "Removed Date" mean? And when do I populate it?

Removed date must be populated for surfaces that are physically removed from the Network. ***Do not delete*** these surfaces from the database.

The Removed Date is a flag, which differentiates between surfaces that are currently on the network and those that have been removed as part of some form of pavement renewal activity.

Be aware that most removed surfaces do not coincide exactly with the area of pavement renewal, so you may have to split historical records into two or more records and apply

Removed Date only to that part of the surface which has been removed due to pavement renewal activity.

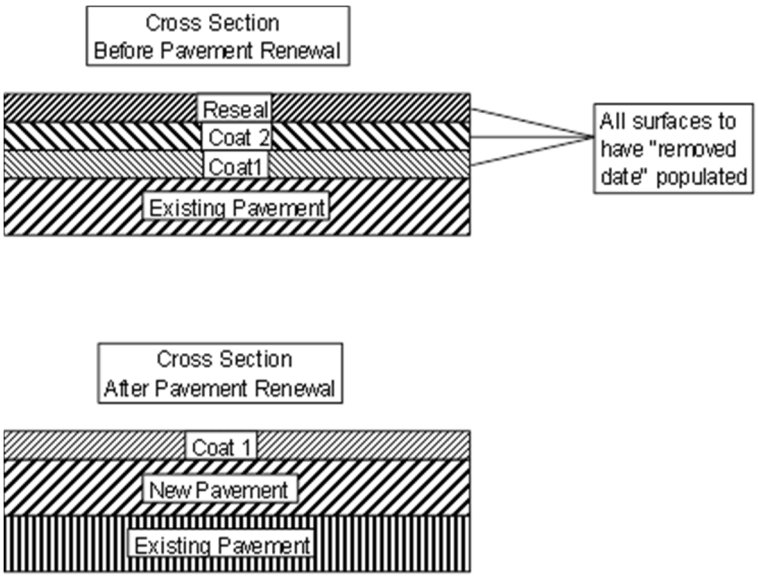


Figure 4.2.9.1: Cross-sections of Pavement and Top Surface Before and After Pavement Renewal

How Does "Offset" Work?

The offset of a surfacing is simply the distance from the left hand edge of seal to the left hand edge of the offset surfacing. Offset should be recorded where a lane treatment, or widening activity (>2.5m widening) over a significant length (> 100m) is undertaken. For example, if you construct a new 2.5m wide shoulder on the left hand side (LHS) on an existing 6m wide road, then the shoulder widening work will have:

- Offset = 0m
- Width = 2.5m.

The existing surfacing that runs concurrently with the shoulder widening will need to be updated to have:

- Offset = 2.5m
- Width = 6.0m
- Full width flag unchecked.

Make sure that all underlying surfaces are manipulated to match the new offsets resulting from the construction of the shoulder widening.

If a new 2.5m wide shoulder is constructed on the right hand side (RHS) of an existing 6m wide road then the shoulder widening will have:

- Offset = 6.0m

- Width = 2.5m.
- Full width flag unchecked.

The existing surfacing record that runs concurrently with the shoulder widening will need the full width flag unchecked.

What is the Definition of Surface Width?

Surface width is the average of several measurements from left hand edge of seal to right hand edge of seal. Surfaces that span one or more intersection can have a greater nominal width than the surrounding carriageway sections as intersections are typically wider. If a surfacing spans the full width of the carriageway, then you do not need to provide a surfacing width - simply tick the full width flag. This avoids the proliferation of "strip seals" running parallel to the main seals when the top surface profile of the road is generated in the surface structure table.

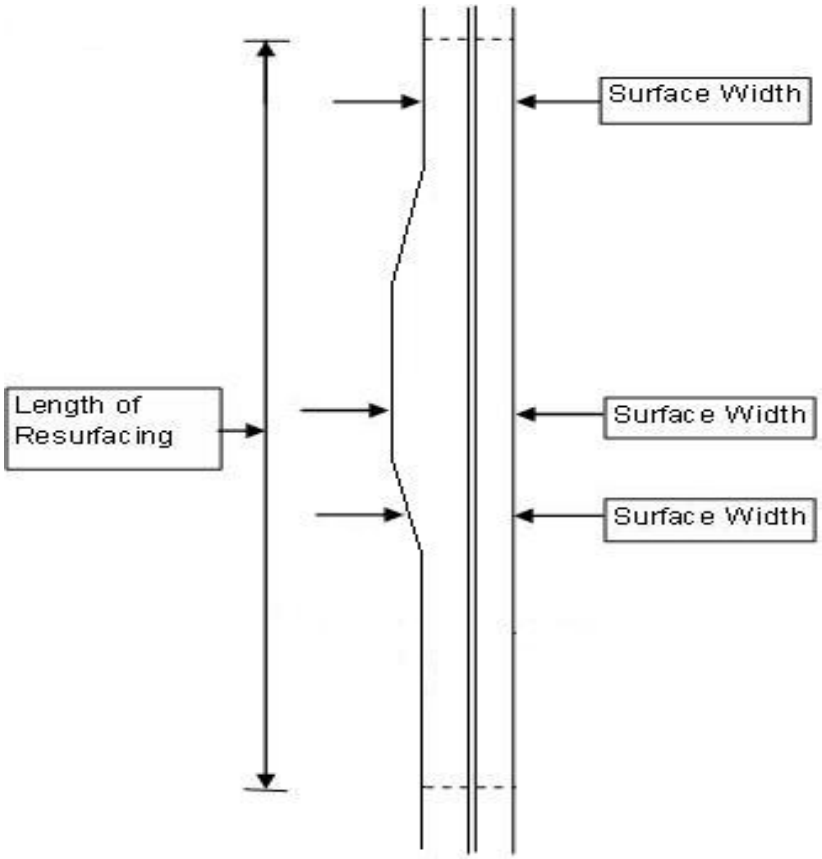


Figure 4.2.9.2: Example of a surfacing with average widths

What is Surface Function?

Surface function defines a surfacing into one of the following categories:

- 1: 1st coat seal

- 2: 2nd coat seal
- M: membrane seal
- R: reseal.

An accurate surfacing table will have 1st coat seals for all corresponding pavement data (>1-15 days older than the pavement date) and have corresponding 2nd coat seal (>6-36 months older than the 1st coat data).

Two chip seals are commonly entered into the surfacing table as surface function 2; **this is incorrect** (unless the two coat is a second coat). Use surface material to correctly code single chip and multi-chip seals.

How do I deal with Surface Function when I put a membrane seal down?

Membrane seals are usually a chip seal waterproofing surface underlying an asphaltic concrete surfacing. In this situation "M" should be used as the surface function for the membrane seal and the asphaltic surfacing has a surface function of 2 (i.e.: 2nd coat seal).

How short should a resurfacing treatment be before you shouldn't add it to RAMM?

Do not add reseal lengths that are shorter than 50m **UNLESS** they are valid surfacing lengths. A reseal this length can be considered a patch (and thus shouldn't be entered) unless it is an expensive treatment (say AC, OGPA etc.), or the road section itself is <50m (ramp, roundabout etc.).

When is AC no longer thin asphaltic surfacing?

Single treatment AC layers greater than 80mm are considered structural layers and need to be incorporated in the pavement layer table, and the carriageway pavement type changed from "T" to "S" (thin surfaced flexible to structural AC). The wearing course that sits above the structural AC needs to be entered into the surfacing table.

Ideally the maximum thickness of thin asphaltic surfacing is 40mm, however surfaces between 40 – 80mm are not structural, as such these would have to go in the surfacing table.

4.3 Footpath

4.3.1 Why is This Table Important?

The footpath table contains asset related information on all footpath and shared pathway assets including footpaths that run parallel to the road, start at but end away from the road, join roads and start and end away from roads. Specifically, the RAMM footpath table includes:

- Location information such as the road the footpath is on, and where the footpath starts and ends in relation to the road, and the position of the footpath on the berm/road reserve.
- Dimensional information such as footpath length, width and area.
- Physical attribute information such as the material that the footpath is made of, what number and types of users use the footpath.
- Other key information such as who owns and maintains the footpath, when the footpath was constructed and surfaced, when the footpath data was collected and by whom, when the footpath data was added to RAMM, and if the footpath record has been changed since it was added.

4.3.2 What is the Footpath Table Used For?

The RAMM Footpath Table is Auckland Transport's primary repository for all footpaths and shared pathway asset inventory and condition information and is used for monitoring condition, forward planning, determining levels of service, undertaking valuations and capturing annual investment in both footpath construction and maintenance. Accurate footpath data can also be used to spatially show footpath assets on aerial photographs or in GIS images.

4.3.3 What Activities Affect this Table?

There are three key activities that affect the footpath table in terms of physical changes to the asset that must be captured in RAMM to keep the table up to date. The activities are:

- New subdivision construction - typically new footpaths are constructed as part of subdivision developments - these new footpaths need to be added to RAMM.
- Footpath maintenance/renewals - when existing footpaths are resurfaced over significant lengths as part of footpath renewal and maintenance projects, the current footpath data in RAMM for the affected footpaths needs to be updated.
- Street scaping - these projects significantly affect current footpath data in RAMM and as a result, require RAMM data updates.

4.3.4 Who Provides the Data?

The supplier carrying out the physical changes to the asset is typically responsible for the provision of RAMM updates. Therefore in terms of the activities that affect the footpath assets listed above, the following suppliers are responsible:

- New subdivision construction - the project consultant for the subdivision through the subdivision as-built process.
- Footpath maintenance/renewals - the project consultant and/or contractor delivering the maintenance/renewal project through requirements of the as-built process.
- Street scaping - the project consultant and/or contractor delivering the street scaping project through the requirements of the as-built process for which the work was procured i.e. maintenance contract or capital contract.

4.3.5 What Fields are Collected and Why?

The Footpath Data Dictionary (appended) outlines the data that must be collected and provided by suppliers carrying out activities that affect the Footpath Table. There are approximately 70 fields in the Footpath Table - nearly half of these fields are mandatory. The remaining half are either mandatory subject to certain conditions being met, optional, not required or generated by the RAMM software or other suppliers.

The reason for the collection of this data is to ensure sufficient information is known about footpaths (location, dimensions, age and condition) to enable intelligent and informed asset management related decisions to be made around the future management and maintenance of Auckland Transport's footpath assets.

4.3.6 What Resources are Required to Collect Footpath Data?

To collect footpath data, you will need the following equipment and reference material:

- ATDOM which will assist you in identifying what specific data is required.
- Current carriageway information including Road ID's, Road names, start and end locations and descriptions for each road.
- Current footpath information including Road ID's, Road names, start and end locations and descriptions for each footpath.
- A calibrated vehicle tripmeter (with completed calibration form) accurate to 1m per 1000m (+/- 0.1%).
- A calibrated measuring wheel (with completed calibration form) accurate to 0.1m per 100m (+/- 0.1%).

- As-built drawings for renewals and subdivision projects.
- Pocket RAMM (or similar device approved by Auckland Transport) if this is your preferred method of database capture.
- RAMM data collection forms (or equivalent).

4.3.7 How is the Database Updated?

The Footpath Table is typically updated by suppliers sending their collected RAMM data to Auckland Transport or a nominated consultant. Trained and certified database managers then enter the data into RAMM. In some instances, the supplier collecting the data will also have read/write access to the database, in which case they will update the database directly.

The database can be updated using two methods:

- Automated mass upload of new footpath records via the RAMM Manager data import facility.
- Manual addition, updating and deleting of footpath records in RAMM for Windows (preferred) or via Pocket RAMM.

Updating existing footpath records as a result of footpath resurfacing and reconstruction projects can be complicated. The preferred way to undertake this work is in RAMM for Windows, viewing the footpath data for each affected record in grid view, than updating in detail view. When the footpath records are updated, always view the data again in grid view to ensure there are no overlaps or unwanted gaps in the footpath data. Also ensure all relevant fields have been populated as outlined in the Footpath Data Dictionary.

The Footpath Data Dictionary provides additional guidance to trained and certified database managers who have read/write access to the RAMM Footpath Table.

4.3.8 How Can This Database Operations Manual Help You?

Accompanying this database operations manual are the following sections:

- RAMM Footpath Data Collection Guide Notes and FAQ's (Section 4.3.9) -includes diagrams and illustrations of standard footpath data collection conventions to ensure the data is collected consistently in the field. Some typical FAQ's are also provided.
- Footpath Data Dictionary (appended) - provides a column by column description of the Footpath Table including what data is required, how it is collected and entered, and allowable values.

Collectively these documents are designed to assist both data collectors and database managers achieve the ultimate outcome of accurate, consistent and up to date data.

4.3.9 RAMM Footpath Data Collection Guide Notes and FAQ's

The following guide notes are to be used as a reference when carrying out RAMM footpath surveys. The guide notes cover all the necessary information to collect RAMM footpath data in a consistent and accurate manner for all the mandatory fields that are required.

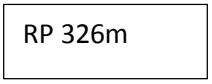
Key to Guide Note diagrams:

Increasing direction: 

Start and end locations of footpath assets:

Carriageway nodes: 

Route positions: 



Footpath Start Position for Normal Tee Intersection

Guidance notes: Road A only has a footpath on the RHS. This footpath starts half way around the intersection (45 degrees for a right angle intersection) of Footpath B1 RHS and Footpath A RHS. As there is no footpath on the LHS of Road A, Footpath B2 RHS starts as shown in the diagram.

FAQ's:

Q: Do vehicle crossings count as a footpath?

A: Yes, as the vehicle crossings are serving as a footpath. You do not need to stop and start footpath assets at vehicle crossings.

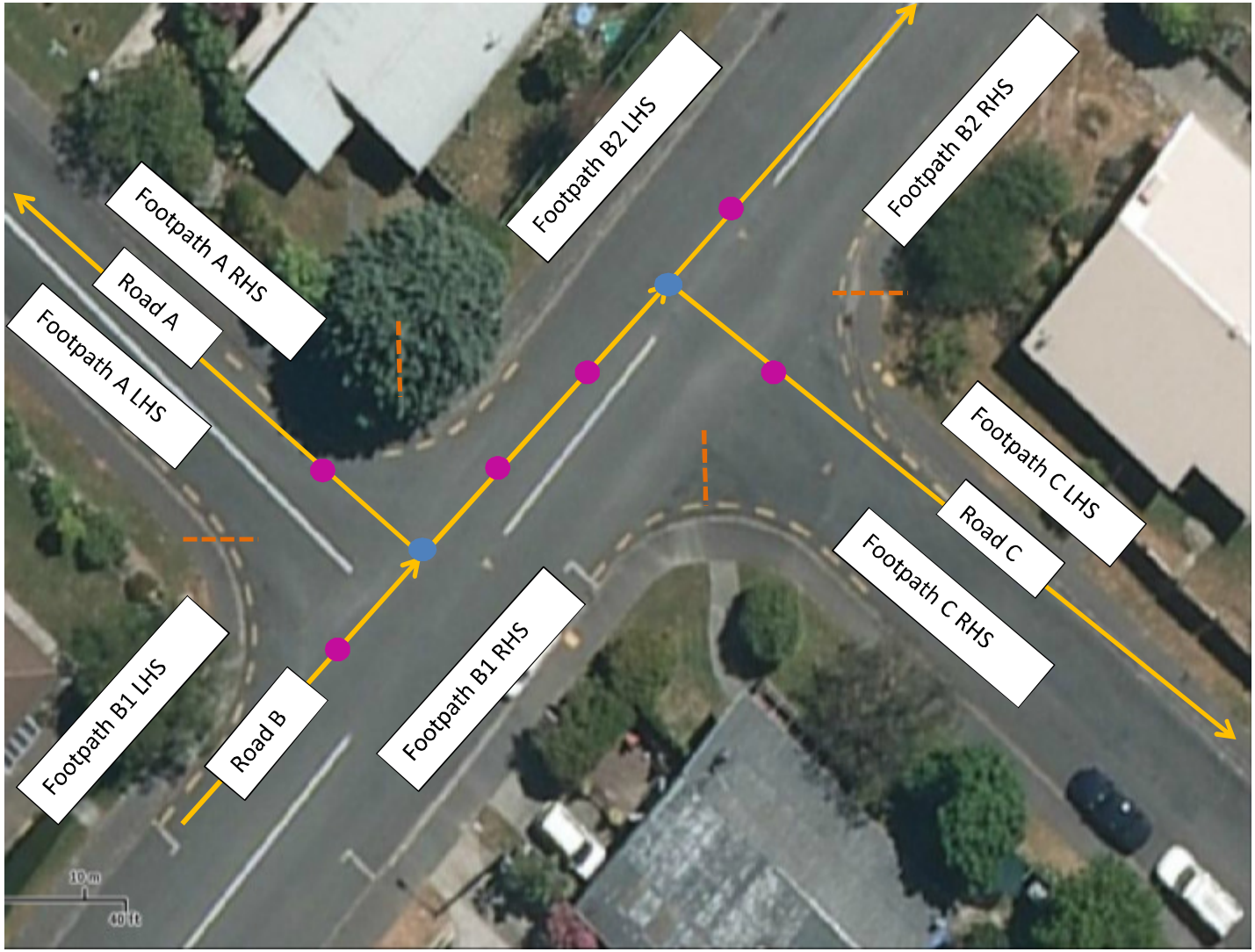
Q: Is the data for footpaths on one way or multi-lane streets collected in the same fashion as two way streets?

A: Yes, irrespective of the number of lanes or the directional nature of the road, the data is collected in the same fashion.

Q: If I have a vehicle crossing with no footpath either side, does the vehicle crossing then count as a footpath?

A: No, as the vehicle crossings' primary purpose is as a crossing, and not a footpath.

Footpath Start Position and End Position Around Multiple Tee Intersections



Guidance notes:

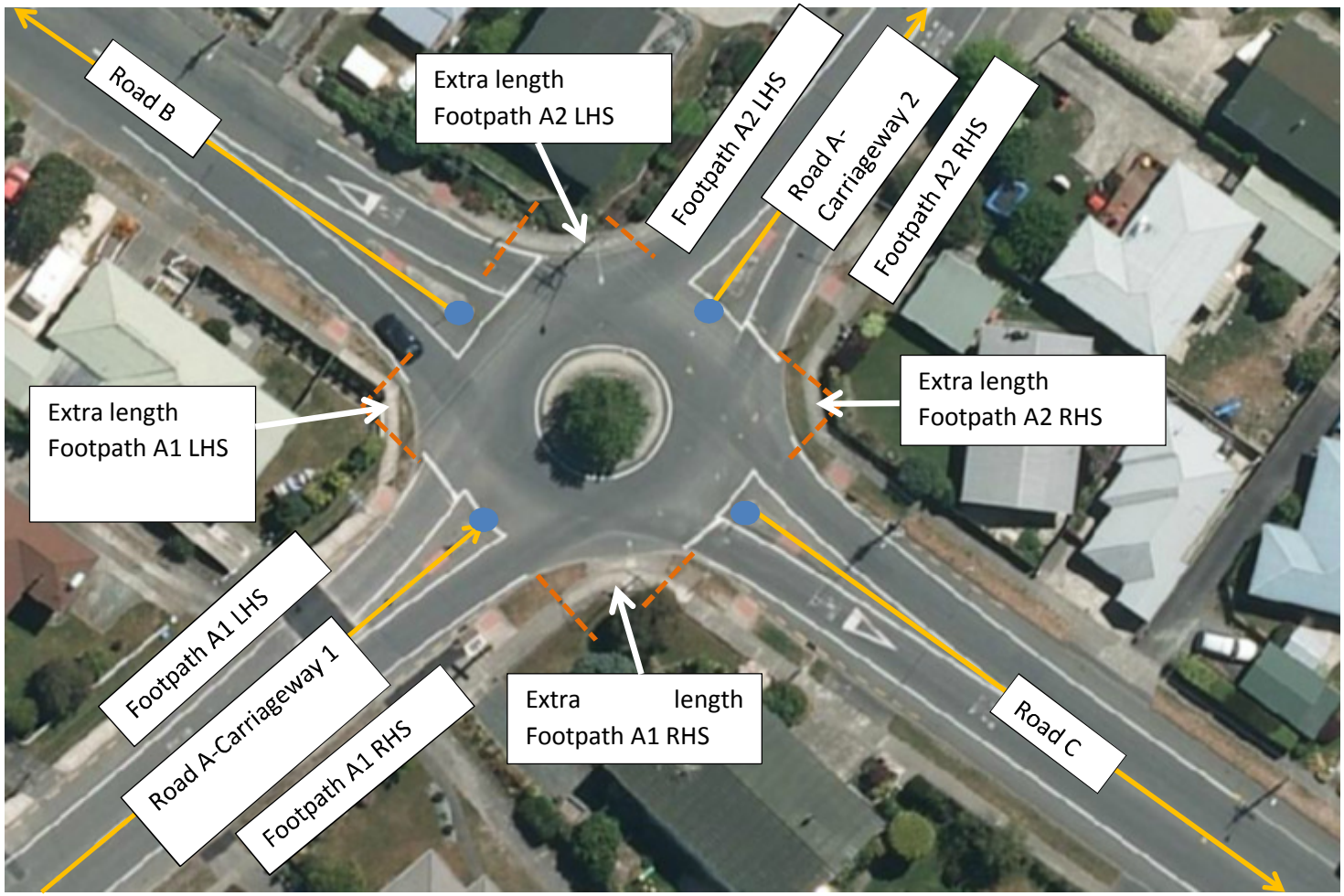
For right angle intersections, the footpath record for the side road starts at 45 degrees around the corner of the intersection. There is no overlapping in the collection of footpath lengths for footpaths that transition from main roads into minor roads. There is no break in the contiguous footpath B1 RHS records that runs through carriageway section at the intersection of Road A and Road B.

FAQ's:

Q: Where is the footpath start position for roads that are not at 90 degrees to one another?

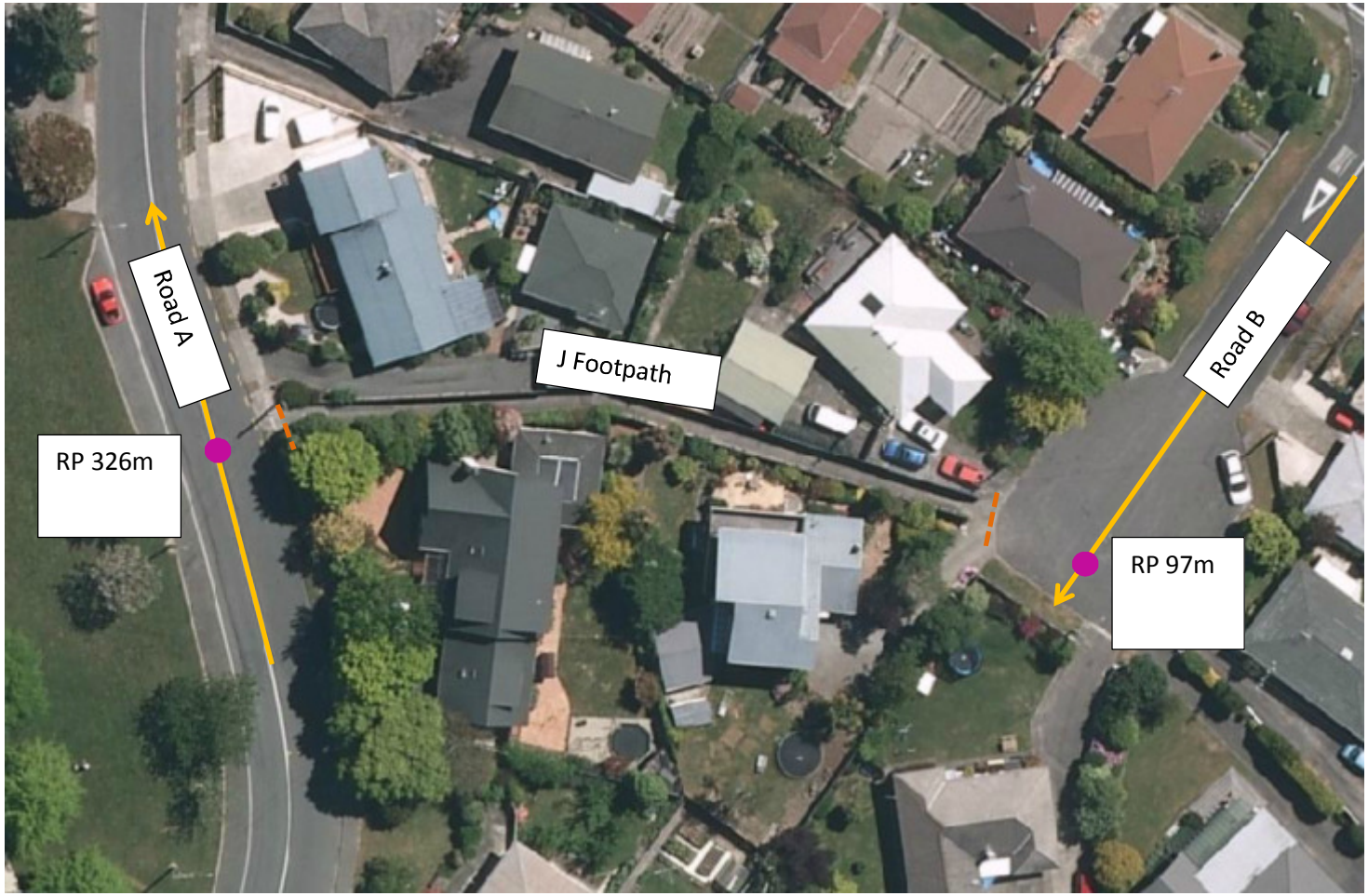
A: Endeavour to start the footpath record for these types of intersection half way around the corner. If all data is collected in this fashion, then the risk of overlapping footpath records (and inaccurate length reporting) is reduced.

Footpath Start and End Positions Around Roundabouts



Guidance notes:
As Roundabouts are treated as separate intersections, footpaths need to start and end where the carriageway section ends and starts for the road running through the roundabout (Road A). Footpath length beyond the end and start positions of the carriageway section can be added as a length adjustment. Do not add any footpath records to roundabout carriageway sections. Put the additional length of footpaths on the main road (Road A) running through the roundabout.

Start Position and End Position for J Footpaths (footpaths between two roads)



Guidance notes:

The diagram shows a J Footpath (Joins another road) connecting Road A with Road B. This footpath is collected from the Road A with a start position of RP 326 on the RHS of Road A. The footpath ends on the RHS of Road B at RP 97. The length is the measured distance between the start and end position.

FAQ's:

Q: Should the record for a J footpath start on the major road or the minor road?

A: It doesn't matter, there needs to be a record for the start position of the J footpath on both roads, so neither road has priority.

Length Adjustment for a Footpath in a Cul-de-sac

Guidance notes:

Where a footpath follows around a cul-de-sac head (as shown in the photo) the actual length around the outside may be different to the road centre line length. Where this is the case the additional measured length of the footpath is added under length adjustment field and the length adjustment reason of "CUL DE SAC" is used. The end point for the both the LH and RH footpath is shown by the dashed line.

FAQ's:

Q: As shown in the photo, it appears that the footpath ends past the end of the road (which is the end of the seal in the cul-de-sac shown by the arrow head). Do I need to make the end of the footpath greater than the length of the road?

A: No, use the same displacement for the end of road as the footpath.

Footpath Side

Guidance notes:
The diagram shows that the increasing direction of Road A runs from left to right (as indicated by the arrow). When looking in the direction of the arrow, footpaths on the LHS of the road are coded L and footpaths on the RHS of the road are coded R.

FAQ's:
A: Is this approach the same for one way or multi-lane roads?
A: Yes, the direction of traffic or the number of lanes doesn't not change this.

Footpath Offset

Guidance notes:

Footpath offsets are the estimated distance (to the nearest metre) from the centre of the road to the side of the footpath closest to the road. The offset of footpath A is shown by the white arrow.

FAQ's:

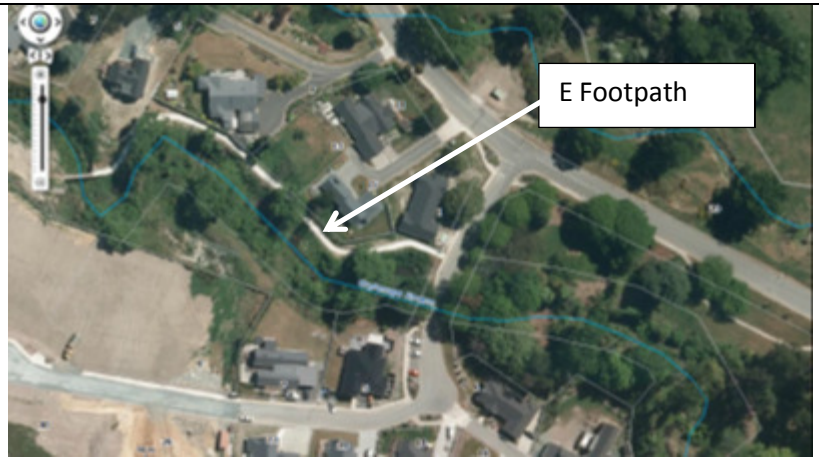
Q: How accurate do I need to be at measuring offsets?

A: You only need to estimate the offset. Therefore you only need to record your estimated offset to the nearest metre.

Q: What do I do when the footpath asset changes along the length of the footpath?

A: Record an average offset only. Remember, it is only an estimated offset only.

Footpath Position

Position	Typical Example(s)	Description
E		Footpath **Ends** away from the road -has a start displacement but no end displacement -has a length requiring a length adjustment
J		Footpath **Joins** another road -has a start displacement but no end displacement -requires a start displacement on both roads -requires a side on each road -has a length requiring a length adjustment

Position	Typical Example(s)	Description
B		Footpath runs parallel to the road but flush with the **Boundary.** -no mowable or landscaped berm between the road reserve/boundary and the footpath. -mowable or landscaped berm between the footpath and the road/kerb.
K	 	Footpath runs parallel to the road but flush with the **Kerb.** -no mowable or landscaped berm on the road side of the footpath. -mowable or landscaped berm between the footpath and the boundary.
L		Footpath **Loops** away and joins back onto the road.

Position	Typical Example(s)	Description
M	 	Footpath runs parallel to the road in the **Middle** of the berm -there is a mowable or landscaped berm on either side of the footpath between the kerb and the boundary
R		Footpath starts and ends **Remotely** from the road
U	N/A	Footpath position is unknown. **Note: (Not to be used**.)
W		Footpath runs parallel to the road over the **Whole** berm width -no mowable or landscaped berm between the road and the boundary
P		Footpath ends away from road in **Park** or reserve. **Note: (Not to be used)**
S		Footpath is berm footpath for pedestrian **Safety.** **Note: (Not to be used)**

Footpath Condition

Footpath condition is the average subjective condition on a scale of 1 (excellent) to 5 (very poor) for an individual footpath section. Use the comments field to collect information relating isolated defects that require immediate intervention. Note that detailed footpath condition data can be found in the footpath condition rating table.

Condition	Typical Example (s)	Description
1	 	1-Excellent (new or near new footpath) -No defects -Less than or equal to 5 years old

Condition	Typical Example (s)	Description
2	 	2-Good (good condition but not new) -No defects -Greater than 5 years old
3	 	3-Average (aged footpath but still in reasonably good condition not requiring replacement for 5-20 years, some minor defects or repairs such as: -cracking -ravelling -discolouration -short sections (<5m) of repaired and/or resurfaced areas

Condition	Typical Example (s)	Description
	 	
4		4-Poor (aged footpath in poor condition requiring replacement in 1-5 years, substantial evidence of repairs) -extensive defects -trip hazards -ravelling -extensive sections of repairs

Condition	Typical Example (s)	Description
	 	
5	 	5-Very poor (aged and deteriorated footpath requiring replacement immediately) -extensive defects -trip hazards -chronic ravelling -extensive cracking -sections of failing repairs

4.4 Forward Work Programme Treatments

4.4.1 Why is This Table Important?

The Treatment Definitions Table contains information regarding the treatments used in the forward work programme (FWP). Specifically, the RAMM Treatment Definitions Table includes:

- The code representing each treatment type.
- A description of the treatment.
- The period of the forward work programme where the treatment is applicable.
- The funding group that the treatment belongs to.

4.4.2 What is the Treatment Definitions Table Used For?

The RAMM Treatment Definitions Table is Auckland Transport's primary repository for information regarding possible treatments that can be entered into the forward work programme.

4.4.3 What Activities Affect this Table?

The activities that affect the Treatment Definitions Table are when a new treatment is being used or when an old treatment is no longer used. The table needs to be kept up to date with all possible treatment types that are programmed to be applied to roads on the network. Only a database manager can update the treatment definitions.

The applicable period of the FWP is important because it specifies which years the particular treatment may be applied. For example in years 1-3 very specific treatments such as RS35 (reseal grade 3/5) or AC10 (asphaltic concrete mix 10) can be applied and the treatment type and specific chip size should be known. Treatments in years 4+ are less detailed and only the general treatment type and general chip size is known. For treatments beyond 10 years, the treatment should be very generic (CS or AC) as beyond 10 years we are unlikely to accurately predict the specific chip size.

4.4.4 Who Provides the Data and How is the Database Updated?

Database managers are responsible for making sure that the treatments contained in the Treatment Definitions Table are an accurate representation of the treatments being physically undertaken in the network.

4.4.5 How Can This Database Operations Manual Help You?

Accompanying this Table Overview is the following section:

- Forward Work Programme Treatments (Table 4.4)-provides a description of the current Treatment Definitions Table including what treatments are available, and what are the recommended time periods for these treatments.

Collectively these documents are designed to assist both data collectors and database managers to achieve the ultimate outcome of accurate, consistent and up to date data.

Table 4.4: Forward Work Programme Treatments

Treatment Description	Treatment Code	Recommended Year for Treatment Code
AC10	AC10	Years 1-4
AC14	AC14	Years 1-4
AC20	AC20	Years 1-4
Concrete road renewal	CONC	All years
Interlocking Blocks	INBLK	All years
Kerb & Channel	K&C	All years
Levelling course	LMIX	Years 1-4
Milling and removal (eg roundabout)	MILL	Years 1-4
Opex Maintenance	MAINT	All years
Open Graded Porous Asphalt	OGPA	All years
Overlay	OLAY	All years
Development Project (e.g. realignment)	PROJ	All years
Reconstruction	RCON	All years
Rejuvenation Seal	REJUV	All years
Recycling (cold milling)	RECY	Years 1-4
Rehabilitation	RHAB	All years
Reseal (chip unknown)	RS	Years 5+
Reseal - Small chip	RSS	Years 5+
Reseal - Big chip	RSB	Years 5+
Reseal - Multi chip	RSM	Years 5+
Reseal - single chip, grade 2	RS2	Years 1-4
Reseal – 2 and 4, two chip	RS24	Years 1-4
Reseal - racked in 2 and 4, two chip	RS24R	Years 1-4
Reseal – Sandwich Seal, grade 2 then 4	RS24S	Years 1-4
Reseal - single chip, grade 3	RS3	Years 1-4
Reseal - 3 and 5, two chip	RS35	Years 1-4
Reseal - racked in 3 and 5, two chip	RS35R	Years 1-4
Reseal - Sandwich Seal, grade 3 then 5	RS35S	Years 1-4
Reseal - single chip, grade 4	RS4	Years 1-4
Reseal Grade 4 and 6	RS46	Years 1-4

Treatment Description	Treatment Code	Recommended Year for Treatment Code
Reseal - racked in 4 and 6, two chip	RS46R	Years 1-4
Reseal - Sandwich Seal, grade 4 then 6	RS46S	Years 1-4
Reseal - single chip, grade 5	RS5	Years 1-4
Reseal - single chip, grade 6	RS6	Years 1-4
Second Coat Seal (chip unkn)	SC	Years 5+
Second Coat Seal, single chip, grade 2	SC2	Years 1-4
Second Coat Seal - Small chip	SCS	Years 5+
Second Coat Seal - Big chip	SCB	Years 5+
Second Coat Seal - Multi chip	SCM	Years 5+
Second Coat - 2 and 4, two chip	SC24	Years 1-4
Second Coat - racked in 2 and 4, two chip	SC24R	Years 1-4
Second Coat Seal - single chip, grade 3	SC3	Years 1-4
Second Coat Seal - 3 and 5, two chip	SC35	Years 1-4
Second Coat Seal - racked in 3 and 5, two chip	SC35R	Years 1-4
Second Coat Seal - single chip, grade 4	SC4	Years 1-4
Second Coat - 4 and 6, two chip	SC46	Years 1-4
Second Coat Seal - racked in 4 and 6, two chip	SC46R	Years 1-4
Second Coat Seal - single chip, grade 5	SC5	Years 1-4
Second Coat Seal - single chip, grade 6	SC6	Years 1-4
Seal Extension	SE	All Years
Slurry Seal	SLRY	All Years
Stone Mastic Asphalt	SMA	Years 5+
Stone Mastic Asphalt 10	SMA10	Years 1-4
Stone Mastic Asphalt 11	SMA11	Years 1-4
Stone Mastic Asphalt 14	SMA14	Years 1-4
Stabilisation (lime and or cement)	STAB	Years 1-4
Structural asphaltic concrete	STAC	All Years
Seal widening	SW	All Years
Thin Asphaltic Concrete	TAC	Years 5+
Texturising Seal	TEXT	All Years
TNZ10	TNZ10	Years 1-4
TNZ15	TNZ15	Years 1-4
Ultra Thin Asphaltic Concrete	UTA	Years 1-4
Void Filling	VF	Years 1-4
Wheel track rutting	WRUT	Years 1-4
Water cutting	WTCT	All Years

4.5 Loading

4.5.1 Why is This Table Important?

The Loading Table contains details on the composition of vehicle flow namely classification bins as per NZTA 2011 classification requirements. Specifically, the RAMM Loading Table includes:

- Loading classification for carriageway sections relating to both physical counts and estimates. Default values are also provided where there are no counts or estimates based on urban-rural and carriageway hierarchy criteria.
- Dates relating to when the last loading count/estimate was updated/added into the database.
- Classification history at a particular location.
- Notes in relation to the loading survey.

4.5.2 What is the Loading Table Used For?

The RAMM Loading Table is Auckland Transport's primary repository for all classified count data and loading estimate data. Loading information is an important parameter in pavement design, economic evaluations and for higher level asset management tools such as forward work programming, treatment selection analysis, pavement deterioration modelling and asset valuation.

4.5.3 What Activities Affect this Table?

There are three key activities that affect the Loading Table in terms of physical changes to the asset that must be captured in RAMM to keep the table up to date. The activities are:

- Changes to carriageway nodes resulting from new road construction or carriageway reviews.
- Classified traffic counting.
- Traffic and loading estimate reviews.

4.5.4 Who Provides the Data?

The supplier carrying out the classified counting is typically responsible for the provision of loading counting data that is compatible with RAMM. Database managers are responsible for amending the estimates contained in the Loading Table when making changes the carriageway sections.

4.5.5 What Fields are Collected and Why?

The Loading Data Dictionary (appended) outlines the data that must be collected and provided by suppliers carrying out activities that affect the Loading Table.

4.5.6 What Resources are Required to Collect Loading Data?

To collect Loading data, you will need the following equipment and reference material:

- ATDOM which will assist you in identifying what specific data is required.
- Current carriageway list which shows Road ID's, road names, start and end locations and descriptions for each road.
- A classified counting programme approved by Auckland Transport.
- Calibrated, certified and accurate classified counting equipment.
- A calibrated vehicle tripmeter (with completed calibration form) accurate to 1m per 1000m (+/- 0.1%).
- A calibrated measuring wheel (with completed calibration form) accurate to 0.1m per 100m (+/- 0.1%).
- Whatever electronic device your organisation needs to download the data from the counter.
- An approved traffic management plan for collecting classified count data.
- RAMM data collection forms (or equivalent).

4.5.7 How is the Database Updated?

The Loading Data Dictionary (appended) provides additional guidance to database managers who have read/write access to the RAMM Loading table. The database can be updated using four methods:

- Automated uploading of bulk loading count data through the RAMM Manager data import facility (preferred).
- Manual addition, updating and deleting of loading records in RAMM for Windows.
- Manual updating of the estimates when making carriageway changes.
- Automated updating of estimates based on current loading count data if a network estimate model exists.

4.5.8 How Can This Database Operations Manual Help You?

Accompanying this Database Operations Manual are the following sections:

- AT Data Template format as required by AT.
- Loading Data Dictionary (appended) - provides a column by column description of the RAMM Loading Table including what data is required, how it is collected, entered and managed, and what are the allowable values.

Collectively these documents are designed to assist both data collectors and database managers achieve the ultimate outcome of accurate, consistent and up to date data.

4.6 Maintenance Costs

4.6.1 Why is this Table Important?

The Maintenance Cost Table contains information regarding specific road asset maintenance activities undertaken within the Auckland Transport roading network. It includes the normal cost activities and the associated cost for completing that activity. Cyclic activities are not required to be loaded into this table. Specifically, the RAMM Maintenance Cost Table includes:

- Locational information such as the road, the activity that was carried out, the length, side and position of the completed works.
- The cost group specific to the schedule item.
- The activity which was carried out.
- The fault that instigated the maintenance activity.
- The cost of the activity.
- Quantity of the work completed for that activity.
- Unit for quantity i.e. metres, square metres, each etc.
- The date the activity was carried out.
- The ability to tag items to a budget code, so that spent to date and remaining budget can be calculated.

4.6.2 What is the Maintenance Cost Table Used For?

The RAMM Maintenance Cost Table is Auckland Transport's primary repository for all maintenance related activities of their road assets (this generally excludes annual renewals such as pavement rehabilitation and resurfacing). This table provides detailed information including cost, quantity, position, activity type and when the maintenance activity was carried out. This table is used for the following purposes:

- As a key input into pavement predictive modelling.
- Optimised decision making process at a strategic level (i.e.: net present value analysis or whole of life cost analysis).
- Annual funding allocation process.
- Preparing estimates for maintenance contracts.
- Asset condition monitoring and development of maintenance cost curves.

4.6.3 What Activities Affect this Table?

The following types of typical maintenance activities need to be recorded as maintenance costs and entered into the RAMM Maintenance Cost Table:

- Digout repairs for a section of failed pavement.
- Milling repairs for a section of failed asphaltic concrete surfacing.
- Replacement of vandalised signs.
- Filling of a pothole on a suburban street.
- Repairs to a concrete footpath.
- Grading unsealed roads.

It is important to note that not all maintenance cost activities affect the Maintenance Cost Table.

4.6.4 Who Provides the Data?

The supplier carrying out the maintenance activities is responsible for the provision of RAMM maintenance cost updates. They are also responsible for transferring the maintenance cost data into the Maintenance Cost Table on a monthly basis. Specific activities and the supplier responsible are shown below:

- Maintenance activities - the project consultant and/or contractor delivering the maintenance/renewal project.
- Scheduled items - the consultant and/or contractor is responsible for defining the schedule items with the right cost, activity and fault codes.
- Auditing - the consultant and/or contractor who is auditing the data prior to or after transferring the data into the RAMM Maintenance Cost Table.

4.6.5 What Fields are Collected and Why?

The Maintenance Cost Data Dictionary outlines the data that must be collected and provided by suppliers carrying out activities that affect the Maintenance Cost Table. These are the minimum data requirements that will ensure that the maintenance cost data contained in RAMM can be used for its intended purposes as discussed above.

4.6.6 What Resources are Required to Collect Maintenance Cost Data?

To collect maintenance data, you will need the following equipment and reference material:

- ATDOM which will assist you in identifying what specific data is required.

- Current carriageway information including Road ID's, Road names, start and end locations and descriptions for each road. This will assist you in locating yourself correctly on the network.
- A calibrated vehicle tripmeter (with completed calibration form) accurate to 1m per 1000m (+/- 0.1%).
- A calibrated measuring wheel (with completed calibration form) accurate to 0.1m per 100m (+/- 0.1%).
- Pocket RAMM (or similar device approved by Auckland Transport) if this is your preferred method of data capture.
- RAMM data collection forms (or equivalent).

4.6.7 How is the Database Updated?

The Maintenance Cost Data Dictionary (appended) provides additional guidance to database managers who have read/write access to the RAMM Maintenance Cost Table. The database can be updated using two methods:

- Automated upload of bulk Maintenance cost data through the RAMM Manager data import facility on a monthly basis - this is the preferred method and is required by AT unless specified differently in existing contracts.
- Transfer of Maintenance cost data through RAMM Contractor on a monthly basis – this is NOT the preferred option as there is insufficient validation checks of the data via loading.

Maintenance cost data needs to be loaded in monthly batches.

RCI updates are maintained by RAMM Software Limited.

Note that maintenance cost data is only deleted when a road is realigned. Those maintenance cost records that were attached to the section of road that has been bypassed can be deleted.

4.6.8 How Can This Database Operations Manual Help You?

Accompanying this Database Operations Manual is the following section:

- Maintenance Cost Data Dictionary (appended) - provides a column by column description of the Maintenance Cost Table including what data is required, how it is collected, entered and managed, and what are the allowable values.

This document is designed to assist both data collectors and database managers achieve the ultimate outcome of accurate, consistent and up to date data.

4.7 Pavement Layer

4.7.1 Why is this Table Important?

The Pavement Layer Table is to store information, both historical and current, on the structural pavement layers, including the sub-grade underneath the pavement. This includes a single treatment structural asphaltic pavement layer with a total design depth > 80mm.

Since it is impossible to verify the composition of the structural layers beneath a pavement once it has been sealed, it is critical that this information is provided or recorded at the time of construction.

A further source of valuable information on pavement strength and layer depth is the information obtained when test-pits are carried out (note that testpit data can be stored in the pave_test_pit table).

Specifically, the RAMM Pavement Layer Table includes:

- Start and end locations of the pavement layer.
- Length, width, thickness and offset of the pavement layer.
- Type, composition, source and strength of the pavement layer.
- Date the layer was constructed, reconstructed or removed.
- Stabilisation agents that may have been used to strengthen the pavement layer.

4.7.2 What is the Pavement Layer Table Used For?

Its primary use is for providing accurate contributing data towards:

- An accurate pavement structure table.
- Comparing with national annual achievement reporting for pavement renewal projects to NZTA.
- The development of the pavement deterioration model.

4.7.3 What Activities Affect this Table?

There are five key activities that affect the Pavement Layer Table in terms of physical changes to the asset that must be captured in RAMM to keep the table up to date. The activities are:

- New road construction (i.e.: new subdivision roads and realignments).
- Road reconstruction (i.e.: rehabilitation).

- Rip and remake projects.
- Structural AC projects.
- Testpit investigation which usually provides some information on pavement thickness and subgrade properties should be added, or used to validate existing data.

4.7.4 Who Provides the Data?

The supplier carrying out the physical changes to the asset is typically responsible for the provision of RAMM updates. Therefore in terms of the activities that affect the Pavement Layer asset listed above, the following suppliers are responsible:

- New road construction (including subdivisions and realignments) - the project consultant for the subdivision as specified in the as-built process.
- Pavement layer maintenance (including rip and remake, and pavement rehabilitation projects) - the project consultant and/or contractor delivering the maintenance/renewal project as specified in the as-built process.
- Structural asphaltic concrete pavement projects - the project consultant and/or contractor delivering the project as specified in the as-built process.

4.7.5 What Fields are Collected and Why?

The Pavement Layer Data Dictionary (appended) outlines the data that must be collected and provided by suppliers carrying out activities that affect the Pavement Layer Table. The dictionary defines the minimum data required to meet the requirements of an accurate and consistent pavement layer table.

4.7.6 What Resources are Required to Collect Pavement Layer Data?

To collect Pavement Layer data, you will need the following equipment and reference material:

- ATDOM which will assist you in identifying what specific data is required.
- Current carriageway list which shows road ID's, road names, start and end locations and descriptions for each road.
- A calibrated vehicle tripmeter (with completed calibration form) accurate to 1m per 1000m (+/- 0.1%).
- A calibrated measuring wheel (with completed calibration form) accurate to 0.1m per 100m (+/- 0.1%).
- As-built drawings including specific information pavement designs.
- Details on stabilisation agents including percentage and type.

- Pocket RAMM or similar device if this is your preferred method of data capture.
- RAMM data collection forms (or equivalent).

4.7.7 How is the Database Updated?

The Pavement Layer Data Dictionary (appended) provides additional guidance to database managers who have read/write access to the RAMM Pavement Layer Table. The database can be updated using 2 methods:

- Importing data from spreadsheets, validating and moving to the Carriageway Surfacing Table (preferred method for loading large amounts of data on new road construction where the new pavement layers have no effect on existing data as typically there is no existing data).
- Manual addition, updating and deleting of Pavement Layer records in RAMM for Windows (preferred method as most new pavement layers on existing roads will affect existing layers in some way).

In addition to the above two methods there is a tool called the Pavement Builder. Before using this tool you should be totally familiar with what it does and be prepared to do a check at the end to see that the outcome was what was expected. Also be aware that no other database administrators can touch the Pavement Layer Table while you are using the tool as it locks the table.

Updating existing pavement layer records as a result of pavement layer reconstruction projects can be complicated. The preferred way to undertake this work is in RAMM for Windows, viewing the pavement layer data for each affected record in grid view, than updating in detail view. When the pavement layer records are updated, always view the data again in grid view to ensure there are no overlaps or gaps in the pavement layer data.

It is important that a clear understanding and knowledge of how the pavement was built, including the sequence of activities is known prior to updating the Pavement Layer Table.

4.7.8 How Can This Database Operations Manual Help You?

Accompanying this Table Overview are the following sections:

- RAMM Pavement Layer Data Collection Guide Notes and FAQ's (Section 4.7.9) - includes diagrams and illustrations around standard pavement layer data collection conventions to ensure the data is collected consistently in the field. Some typical FAQ's are also provided.
- Pavement Layer Data Dictionary (appended) - provides a column by column description of the Pavement Layer Table including what data is required, how it is collected, entered and managed, and what are the allowable values.

Collectively these documents are designed to assist both data collectors and database managers achieve the ultimate outcome of accurate, consistent and up to date data.

4.7.9 RAMM Pavement Layer Data Collection Guide Notes and FAQ's

The following guide notes are to be used as a reference when carrying out activities that affect the RAMM pavement layer updates. The guide notes cover all the necessary information to collect RAMM pavement layer data in a consistent and accurate manner for all the mandatory fields that are required.

How do I record a granular pavement overlay project in RAMM?

An overlay is simply new pavement material placed over the top of an existing road surface. It may or may not involve removal of existing surfaces via milling or scarifying. Where these surfaces are not removed, the pavement layer data can be simply added to the database.

Although the surfacings data has not been physically removed, it is no longer acting as a surface (i.e.: it is now part of the pavement layer), therefore all the surfaces under the overlay need to have a surface_removed date entered.

If the total combined depth of surfacings under the granular overlay exceeds 50mm, then a new pavement layer record needs to be added to the Pavement Layer Table. Use the pavement material code "SEALS" for this layer.

How do I record a rip and remake pavement reconstruction project in RAMM?

A rip and remake will not affect the pavement layer data (unless the top layer of the pavement is changed in thickness or stabilised in some way) but will require surfacings in the Surfacing Table to have "removed date" populated. Make sure to add a note to the layers affected by the rip and remake and the date the rip and remake occurred.

How do I record stabilisation of an existing pavement?

The following fields must be populated if you have stabilised an existing pavement:

- Stabilisation material (Cement, Lime, Kiln Dust).
- Stabilisation percentage (typically between 2 and 10).
- Reconstructed (must be set to yes).
- Pavement date (set this to the date that the pavement was stabilised).

This information is stored in a combination of tables.

How do I record pavement details where I have done widening?

Pavement data is treated the same as surfacings data where widening is concerned. Refer to surfacing section for further details. Note that the existing pavement record that runs through the area of widening may need to be split into three records when LHS widening occurs.

How short does a pavement layer need to be before I don't put it into RAMM?

Any pavement renewal shorter than 50m should be loaded as a pavement repair in the Maintenance Cost table and not loaded into the Pavement Layer table (unless the road section is a ramp; or roundabout and is less than 50m long).

Do I need to change existing pavement layer data when I load new data?

New pavement layer data (with exception to overlays) must be "integrated" into existing pavement layer records. This is mandatory when you have stabilised an existing layer, or are undertaking LHS widening (refer to offsets pavement layers described below).

When do I populate the "removed_date" in the Pavement Layer Table?

If the existing pavement material has been removed or stabilised during pavement construction then it will need to be tagged as "removed" in the Database. This is done by populating the "removed_date" field with the date that the pavement layer material was removed. Typically this is at least 1 day before the new pavement layer date.

This is generally done using pavement builder, such as when a pavement has been stabilised. Pavement builder will tag the previously unbound layers as removed, and add a new stabilised layer with material type "composite".

What do I do when I stabilise a pavement layer but there is no data in RAMM that I can add the stabilising details to?

In this situation, you will need to add an estimated layer to the Pavement Layer Table, then you can add the stabilised details. Set the "estimated/known" field to "E" to show that the record is estimated; use a default date of "01/01/xxxx" as the pavement layer date, including specifying the year. The year can be assumed as 25 years before stabilisation, i.e. if stabilisation has been done in 2012, the default date would be 01/01/1987. Add additional information in the notes field to provide any other relevant information.

How do I differentiate between separate layers in a multi-layer pavement?

Typically most pavements comprise of more than one layer, e.g.: prepared subgrade (bottom layer), GAP65-graded all passing 65mm sieve (sub base-middle layer) and GAP40-graded all passing 40mm sieve (basecourse-upper or top layer). RAMM determines the order of layers by their dates, so the older the layer the lower the layer sits relative to surrounding layers. The youngest layer sits on top. Even if you place both GAP40 and

GAP65 on the same day, you can nominate the GAP40 to be the top layer by assigning it a younger date in relation to the GAP65 (one day younger will suffice).

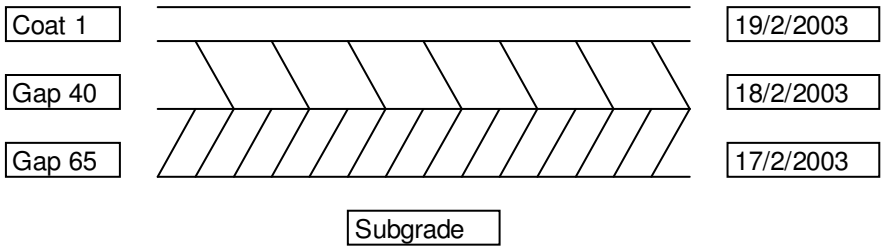


Figure 4.7.9.1: Example of a multi layered pavement layer. Note use of layer dates to ensure the correct sequencing of the layers in RAMM

Worked example 1: AWPT with stabilisation from route position (RP) 0 to RP1000

You have ripped up and removed the existing surface, adding 100mm of new pavement material (GAP40) and stabilised to a depth of 200mm using cement as a stabilisation agent at 2%. There is no existing pavement layer data in RAMM. Once you have completed the changes using RAMM Pavement Builder, your Pavement Layer Table (previously blank) will now look like:

Start m	End m	Date	Removed Date	Est. / Known	Material	Depth	Recon-structed	Stab %	Stabilised Agent
0	1000	17/2/2005		K	COMPOSITE	200	Y	2	Cement
0	1000	15/2/2005	17/2/2005	K	GAP40	100	N		
0	1000	1/1/1980	17/2/2005	E	UNK	100	N		

Notes:

The unknown layer dated 1/1/1980 will need to be the first layer added during the pavement builder process.

The filter for “removed date is null” will need to be cleared in order to see the removed layers.

Pavement Builder will tag the historic surfacings that runs concurrently with the AWPT as “removed”.

Worked example 2: LHS seal widening from RP300 to RP600

You are seal widening from RP300 to RP600 at an average width of 3.5m using 150mm of GAP65 and 100mm of GAP40. There is currently a pavement layer record from RP0 to RP1000 as shown in the following table:

Start m	End m	Date	Estimated / Known	Material	Depth	Reconstructed	Width	Offset
0	1000	17/02/1990	K	GAP40	100	N	10	0
0	1000	15/02/1990	K	GAP65	150	N	10	0

Once you have added the widening layer to RAMM your layer data should now look like this:

Start m	End m	Date	Estimated / Known	Material	Depth	Reconstructed	Width	Offset
0	300	17/02/1990	K	GAP40	100	N	10	0
0	300	15/02/1990	K	GAP65	150	N	10	0
300	600	17/02/1990	K	GAP40	100	N	10	3.5
300	600	15/02/1990	K	GAP65	150	N	10	3.5
300	600	16/02/2005	K	GAP40	100	N	3.5	0
300	600	15/02/2005	K	GAP65	150	N	3.5	0
600	1000	17/02/1990	K	GAP40	100	N	10	0
600	1000	15/02/1990	K	GAP65	150	N	10	0

Note: There are now eight rows of data where there were originally two. The full width flag is unchecked, or set to “No”, for all layers within 300 to 600m.

As you will also be sealing the widening, the same propagation of data must take place in the Surfacings Table.

4.8 Road Names

4.8.1 Why is this Table Important?

The Roadnames Table contains information about the type of road, overall ownership and location details such as suburb and town. This information helps to ensure duplication of location and name is avoided. Specifically, the RAMM Roadnames Table includes:

- A unique database road identifier, road_id for each road.
- The road name, as it was vested to Council, with consistent abbreviations.
- Location information such as suburb, postal code and town.
- Linkage to the NZTA funding region, and the road controlling authority that owns the road.

4.8.2 What is the Roadnames Table Used For?

The RAMM Roadnames Table is Auckland Transport's primary repository for all vested roads that it is required to maintain and provides a primary linkage between RAMM and other asset management systems.

Private roads are also entered with just the roadnames detail. This ensures the call centre can advise customers if this is not a road that Council is responsible for maintaining.

4.8.3 What Activities Affect this Table?

There are five key activities that affect the Roadnames Table in terms of changes to the asset register that must be captured in RAMM to keep the table up to date. The activities are:

- New road construction (subdivisions).
- Road renaming.
- Stopping of roads and sale/change of ownership from Council.
- Revocation of state highways back to the local authority, or private roads that Council vests as public.
- Changes to existing road connectivity that break or create new roads, resulting from new road construction.

4.8.4 Who Provides the Data?

Generally this information will be provided by Council through their processes. New subdivision roads will be advised with location and extent maps and required road name(s). Road name changes will be advised through the regulatory process, including delegation

and revocation of state highways and change of ownership of other roads. Changes to the road network resulting from capital/maintenance projects will be advised through the as-built data process.

4.8.5 What Fields are Collected and Why?

The Roadnames Data Dictionary (appended) outlines the data that must be populated, with all of this information able to be entered into the database from the office. It will be necessary to obtain location and extent maps for all required changes.

4.8.6 What Resources are Required to Collect Roadnames Data?

To collect and manage Roadnames data, you will need the following reference materials:

- ATDOM which will assist you in identifying what specific data is required.
- A map showing the extent and location of the road to be added/removed.
- A copy of the resolution from the appropriate Council committee approving the changes, endorsed or supplied by the Auckland Transport asset management team.
- A mapping tool that can assist in confirming suburb, town, and postal code, if this information is not supplied. Quickmap, Council GIS or Google maps may be sufficient for this.
- RAMM data collection forms (or equivalent).

4.8.7 How is the Database Updated?

The Roadnames Data Dictionary (appended) provides additional guidance to database managers who have read/write access to the RAMM Roadnames Table. The database can be updated using 2 methods:

- Automated upload of bulk Roadnames data through the RAMM Manager data import facility (for large amounts of data, not typically used as the roadnames table is relatively static).
- Manual addition, updating and deleting of Roadnames records in RAMM Network Manager. This is the preferred option for smaller quantities of work relating to Roadnames.

Note that Roadnames cannot be updated through the RAMM for Windows screen.

4.8.8 How Can This Database Operations Manual Help You?

Accompanying this Table Overview are the following sections:

- RAMM Roadnames Data Collection Guide Notes and FAQ's (Section 4.8.9) -includes information around standard Roadnames naming conventions (such as abbreviations) to ensure the data is collected consistently in the field. Some typical FAQ's are also provided.

- Roadnames Data Dictionary (appended) - provides a column by column description of the Roadnames table including what data is required, how it is collected and entered, and what are the allowable values.

Collectively these documents are designed to assist both data collectors and database managers achieve the ultimate outcome of accurate, consistent and up to date data.

4.8.9 RAMM Roadnames Data Collection Guide Notes and FAQ's

The following guide notes are to be used as a reference when carrying out activities that affect the RAMM Roadnames updates. The guide notes cover the necessary information to collect RAMM Roadnames data in a consistent and accurate manner for all the mandatory fields that are required.

Roadnames road start/end name convention and abbreviations

All roads must have a consistent naming convention. To reduce clutter, all future road name additions must have abbreviated road and start/end names, e.g. if a road name is Ascot Road, then it should be written as ASCOT RD not ASCOT ROAD.

Where road names are to have north and south added for clarity, but these are not part of the actual name, then the latter part shall be placed in brackets. e.g., ASCOT RD (NORTH). This rule applies to all other suffixes that may need to be added to Roadnames (such as ASCOT RD (WESTBOUND), but excludes Roundabouts, Walkway, High/Low/Same Level Access, Loop, Service Lane, Walkway and Hammerhead suffixes.

Table 4.8 below describes abbreviations to be used in the Road Names Table and also in the start and end name fields of the Carriageway Table.

Table 4.8: Road Name Abbreviations for RAMM

Full Name	Abbreviation	Full Name	Abbreviation
Road	RD	Private	PVT
Street	ST	Roundabout	RAB
Place	PL	Increase	INC
Avenue	AVE	Decrease	DEC
Terrace	TCE	Right Hand Side	RHS
Crescent	CRES	Left Hand Side	LHS
Drive	DR	North	NORTH
Lane	LANE	South	SOUTH
Parade	PDE	East	EAST
Rise	RISE	West	WEST
Court	CRT	Low Level Access	LLA
Cul De Sac	CUL-DE-SAC	High Level Access	HLA
Grove	GR	Walkway	WWAY
Way	WAY	Cycleway	CYWAY
Close	CLOSE	Car park	CARPARK
		Extension	EXTN

If the same road name exists in two different parts of the network then the road name is written as road name with the ward in brackets. Example: CROSS ST (DRURY), CROSS ST (RED HILL).

It is important that the naming conventions are consistent. Refer to the Carriageway Table (section 4.1) for further information on start and end name naming convention which follows the same general principles of Roadnames naming convention.

Service Lane Naming Convention

The following naming convention applies where service lanes do not have a specific local name, e.g., MCDUFF LANE. To help find service lanes, the service lane name will be recorded along with the RP, i.e., (the displacement of the service lane measured on the main road), and side of the road on which the service lane resides, i.e.:

EAST ST SERVICE LANE (RP334 RHS)

This describes a service lane located on the right hand side of East St at displacement 334m. The service lane is then surveyed as a separate road.

Roundabout Naming Convention

Roundabouts are named in such a way that clearly identifies all roundabouts from one another. In almost all cases, a roundabout has more than one road associated with it and one of those roads will be more major than the other road. The naming convention is as

follows: "MAIN RD/MINOR RD RAB" (RAB is a standard abbreviation for roundabout). For example, if Great North Road was the main road, and Te Atatu Rd was the minor road, then the roundabout at the intersection of Great North Rd and Te Atatu Rd would be:

GREAT NORTH/TE ATATU RAB

Note that the "RD" component of both Great North and Te Atatu Roads has been removed in order to reduce clutter.

High/Low/Same Level Accessway Naming Conventions

High/Low/Same Level Accesses are Council owned accesses that run parallel to the road they originate from. They are typically located in areas of challenging topography where direct access onto the road is prevented from large cuts and fills on the main road. The property numbers which are accessed from the High/Low/Same Level Access are used to assist in identifying the correct access. For a Low Level Access on Don Buck Road accessing properties 20 to 32, the naming convention would be:

DON BUCK RD LLA (#20 - #32)

For a High Level Access on Abbots Way accessing properties 2 to 36, the naming convention would be:

ABBOTTS WAY HLA (#2 - #36)

The High/Same/Low Level Access needs to run in the same direction as the parent road, therefore in some instances this will require the access to begin at the end and end on the parent road.

Walkway Naming Convention

Walkways are named in such a way that clearly identifies all walkways from one another and also makes locating the walkway easy. For example, the Parry/Harwood Walkway which runs between Parry and Harwood Streets and has a start on Parry Street at RP 210m on the LHS would be named:

PARRY/HARWOOD WWAY (RP210 LHS)

Walkways get their own separate Roadname where they have other assets that are required to be recorded against them. For example they have drainage features, bridges and or other structures, lights, signs, bicycle hoops etc. The footpath asset still gets recorded in the Footpath Table to ensure it gets rated with the other footpaths. The Carriageway Table records the sections the walkway is broken into, along with its locational and dimensional information. "**Accessway**" or "**Walkway**" are commonly the type of hierarchy used for walkway.

Where a walkway is connected to a road and does not have additional assets to be recorded against it, then it does not have its own Roadname and is recorded in the Footpath Table for the road it is connected to.

Cycleway Naming Convention

Onroad Cycleways
These are considered as part of the carriageway and have their assets recorded accordingly.

Joint Footpath/ Cycleways
Joint walkways/cycleways that are recorded in the Footpath Table are not recorded as a separate road. This avoids duplication.

Off Road Cycleways
These are named in a similar way to walkways, and require their own Roadname when they have other assets to be recorded against them, i.e. drainage features, bridges and or other structures, lights, signs, bicycle hoops etc.

For example, an off road cycleway that starts from Smith Road (RP127) on the right hand side and ends at Brown Road would be named:

SMITH/ BROWN CYWAY (RP 127 RHS)

All cycleways are recorded in the footpath table, regardless of surface material.

For all cycleways hierarchy is recorded as “Cycleway”

4.9 Traffic

4.9.1 Why is this Table Important?

The RAMM Traffic Table contains traffic volume count information on some carriageway sections of some roads and traffic volume estimates on all carriageway sections of all roads.

Specifically, the RAMM Traffic Table includes:

- Traffic volumes noted average daily traffic (ADT) for carriageway sections relating to both physical counts and estimates.
- Dates relating to when the last traffic count was updated/added into the database.
- Traffic volume history at a particular location.
- Notes in relation to 85th percentile speeds.

4.9.2 What is the Traffic Table Used For?

The RAMM Traffic Table is Auckland Transport's primary repository for all traffic count and traffic estimate data. Traffic Volumes are used to update the pavement use group in the Carriageway Table and are an important parameter in pavement design, economic evaluations, temporary traffic management requirements and for higher level asset management tools such as forward work programming, treatment selection analysis (TSA), pavement deterioration modelling and asset valuation.

4.9.3 What Activities Affect this Table?

There are three key activities that affect the Traffic Table in terms of physical changes to the asset that must be captured in RAMM to keep the table up to date. The activities are:

- Changes to carriageway nodes resulting from new road construction or carriageway reviews.
- Traffic volume counting surveys.
- Traffic volume estimate reviews.

4.9.4 Who Provides the Data?

The supplier carrying out the traffic counting is typically responsible for the provision of traffic counting data in a format that is compatible with RAMM. Database managers are responsible for amending the estimates contained in the Traffic Table when making changes to existing carriageway sections (such as inserting new carriageway sections) or adding new carriageway sections.

4.9.5 What Fields are Collected and Why?

The Traffic Data Dictionary (appended) outlines the data that must be collected and provided by suppliers carrying out activities that affect the Traffic Table.

What equipment is required to collect Traffic data?

To collect Traffic data, you will need the following equipment and reference material:

- ATDOM which will assist you in identifying what specific data is required.
- Current carriageway list which shows Road ID's, Road names, start and end locations and descriptions for each road.
- A traffic counting programme approved by Auckland Transport.
- Calibrated, certified and accurate traffic counting equipment.
- A calibrated vehicle tripmeter (with completed calibration form) accurate to 1m over 1km (+/-0.1%)for locating exact count location.
- Whatever electronic device your organisation needs to download the data from the counter.
- An approved traffic management plan.

4.9.6 How is the Database Updated?

The Traffic Data Dictionary (appended) provides additional guidance to database managers who have read/write access to the RAMM Traffic Table. The database can be updated using four methods:

- Automated uploading of bulk traffic count data through the RAMM Manager data import facility (preferred for large quantities of traffic counting data).
- Manual addition, updating and deleting of traffic records in RAMM for Windows.
- Manual updating of the estimates when making carriageway changes.
- Automated updating of estimates based on current traffic count data if a network estimate model exists.

4.9.7 How can this Database Operations Manual Help You?

Accompanying this Database Operations Manual are the following sections:

- AT will provide the data in a format that is required from the traffic count service provider.

- Traffic Data Dictionary (appended) - provides a column by column description of the Traffic Table including what data is required, how it is collected, entered and managed, and what are the allowable values.

Collectively these documents are designed to assist both data collectors and database managers achieve the ultimate outcome of accurate, consistent and up to date data.

4.10 Treatment Length (Maintenance)

4.10.1 What is a Treatment Length

A treatment length is a section of road that is subject to the same traffic loadings, exhibits the same condition, the same structural properties (usually) and the same surfacing type and age (usually) along its length. It is also a section of road that is going to be treated simultaneously along its full length sometime into the future.

Typical examples of treatment lengths include the following:

- Cul-de-sac turning heads (usually AC)
- Bridge decks (can be any surfacing type)
- Intersections (including roundabouts, can be any surfacing type)
- Cobbled areas (such as raised pavement tables)
- A homogenous length of reseal with similar condition along its length

You do not need to maintain treatment lengths for unsealed roads.

Note that treatment lengths must not span changes in pavement type located in the Carriageway Table.

4.10.2 Why is this Table Important and What is it Used For?

The RAMM Treatment Length Table is an important table as it contains all the road carriageway asset condition, pavement and surfacing inventory, and asset demand data that is used to model, programme and prioritise future treatments and maintenance. Specifically, the RAMM Treatment Length Table includes:

- Location information - start and end displacements of treatment lengths.
- Condition related information - this is sourced automatically by the software from other tables such as the condition rating table and high speed data tables.
- Physical attributes such as pavement and surfacing inventory - this information is also sourced from other RAMM tables.
- Asset demand such as traffic volumes - this information is also sourced from other RAMM tables.

The key objective of this overview is to focus on the general principals around how the start and end displacements of treatment lengths are managed. Accurate treatment lengths are the key starting point to robust forward work programming and network management.

4.10.3 What Activities Affect this Table?

There are four key activities that affect the Treatment Length Table in terms of physical changes to the asset that must be captured in RAMM to keep the table up to date. The activities are:

- New sub-divisional roads and road realignments - these require new treatment lengths to be created.
- Road reconstruction projects - these require existing treatment lengths to be adjusted.
- Annual resurfacing - this activity may require existing treatment lengths to be adjusted.
- Carriageway and surfacing reviews - these reviews may require existing treatment lengths to be adjusted.

4.10.4 Who Provides the Data?

The supplier carrying out the physical changes to the asset is typically responsible for the provision of RAMM updates. However, treatment lengths are based on the physical properties of a road such as the surfacing age and type, pavement strength and traffic volumes - all of which can be determined from other data that is provided such as RAMM surfacing records. Therefore treatment length data is not actually "collected", it is more interpolated by a trained and certified database manager.

4.10.5 What Fields are Collected and Why?

As stated above, no specific data is collected in the field, however it is important to note that surfacing and pavement layer start and end displacements must be collected accurately in order for a trained and certified database manager to be able to establish or update treatment lengths.

4.10.6 How is the Database Updated?

The database can be updated using two methods:

- Automated generation of treatment lengths based on the carriageway surfacing and carriageways.
- Manual addition, updating and deleting of treatment length records in RAMM for Windows (preferred).

Note that treatment lengths cannot span changes in carriageway pavement type. For example if a contiguous reseal surface spans across both the bridge and its approaches, and the bridge is in the Carriageway Table with pavement type B (and the approaches are pavement type T) then three treatment lengths need to be established, two for each

approach and one for the bridge itself, despite the top surface being uniform across the bridge and its approaches.

4.10.7 What Fields are Maintained?

As stated above, a significant number of the fields in the Treatment Length Table are populated with data that is sourced from other tables. However, the following fields are not and their status in terms of required data is outlined in the table below.

Field	Data Status	Comment
road_id	Required	Looks up on Roadnames
tl_name	Not required	
tl_start_m	Required	Can be automatically generated
tl_end_m	Required	Can be automatically generated
tl_disabled	Required	Defaults to N Refer to guide notes on disabling treatment lengths
tl_cost_set	Required	Looks up on tl_cost_set

4.10.8 How can this Database Operations Manual Help you?

Accompanying this Database Operations Manual is the following section:

- RAMM Treatment Length Data Collection Guide Notes and FAQ's (Section 4.10.9) - includes diagrams and illustrations around standard treatment length data conventions to ensure the database is managed consistently in the database. Some typical FAQ's are also provided.

This document is designed to assist both data collectors and database managers achieve the ultimate outcome of accurate, consistent and up to date data.

4.10.9 RAMM Treatment Length Data Collection Guide Notes and FAQ's

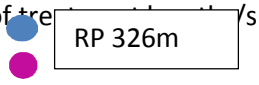
The following guide notes are to be used as a reference when carrying out activities that affect the RAMM treatment length updates. The guide notes cover all the necessary information to accurately and consistently manage RAMM treatment length data in a consistent and accurate manner for all the mandatory fields that are required.

Key to Guide Note diagrams:

Active treatment lengths (arrow denotes increasing direction):

Disabled treatment lengths (arrow denotes increasing direction):

Start and end locations of tre /surfacing joins:

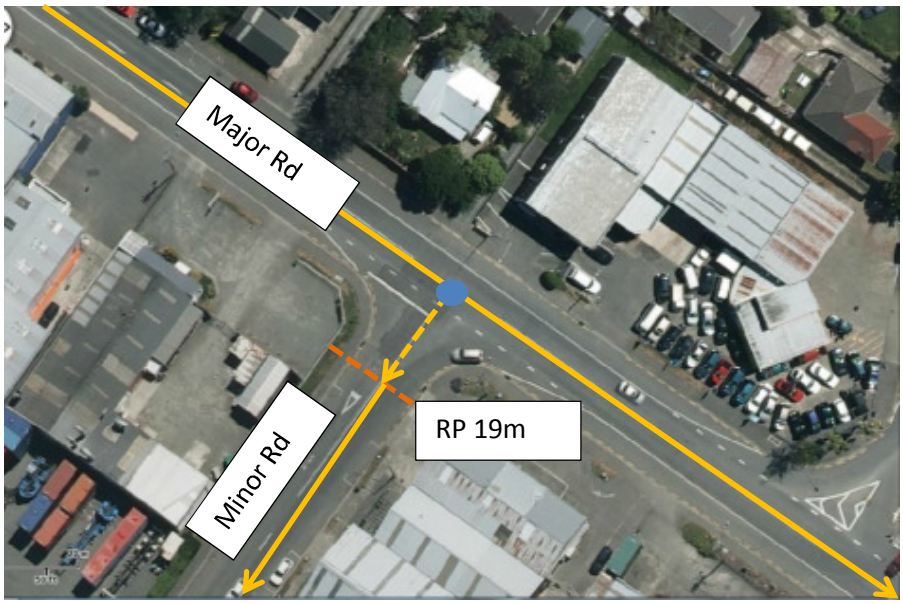


Carriageway nodes:

Route positions:

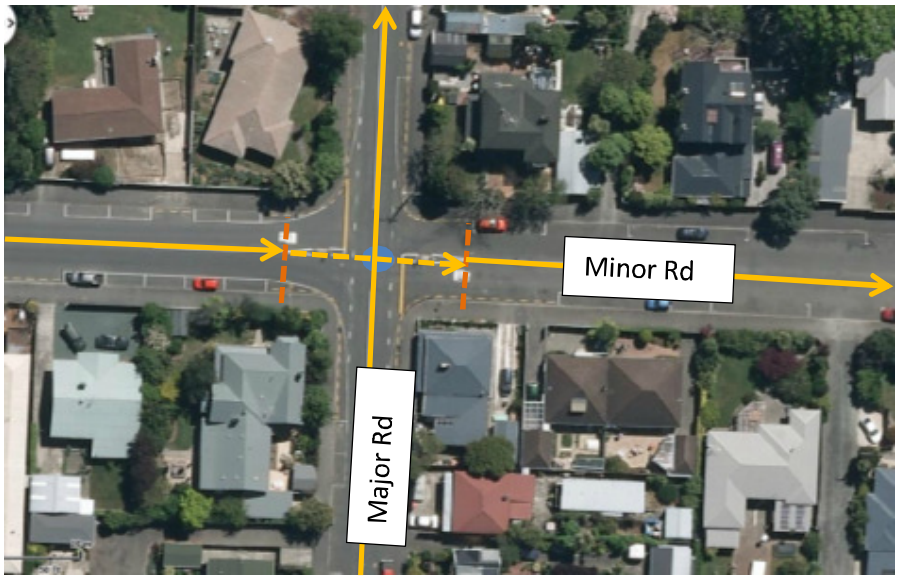
Establishing and Disabling Treatment Lengths

Treatment lengths need to be established primarily on the top surface of the Surface Structure Table. The process of automatic treatment length generation based on surface structure will insert treatment lengths within surfacing gaps. These treatment lengths need to be disabled for TSA, rating and NOMAD in the treatment length maintenance screen of RAMM for Windows. In the case of a standard T junction, the automatically generated treatment length between 0 and 19 that needs to be disabled is shown in the diagram below.



Treatment Length Maintenance at Four Way Intersections

Every section of every road needs to have only one treatment length assigned to it. In the situation of a four way intersection, the treatment length that makes up the intersection needs to be assigned to the major road, whilst the "dummy" treatment on the minor road through the intersection is disabled, as shown in the diagram below.



Treatment Length Maintenance at Roundabouts

A roundabout is treated in a similar way to a four way intersection, however additional allowance needs to be made to account for the carriageway gap that exists within the roundabout for both the major road and minor road, as shown in the diagram below. The roundabout itself needs to have its own treatment length assigned so it can be assessed for condition and future treatments planned and prioritised just like any other section of road. Note that the treatment lengths between the seal joins and the carriageway nodes are also disabled.

Managing Short Treatment Lengths

Typically a treatment length needs to be at least 50m in length to allow sufficient length for condition rating and justify programming forward work treatments, however there are some exceptions to this (cul-de-sac turning heads, small roundabouts etc). Short sections of interlocking blocks (pavers, speed humps, raised tables) which affect the surface structure need to have treatment lengths disabled for TSA, FWP and Rating.

5 DATA DICTIONARY

5.1 Carriageway Data Dictionary

Carriageway Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
carr_way_no	Unique identifier for the carriageway section.	System generated	This is a system generated number. For each carriageway section of a road RAMM will assign the unique number.	serial(10)	Compulsory	Compulsory
road_id	Unique RAMM road_id.	System generated	This generally is a system generated number. Where you want to keep the road id numbering consistent within the old legacy council area, then the assigned road id will have to be updated to the next sequential number in the assigned series.	integer (10)	Compulsory	Compulsory
carrway_start_m	Start displacement of the carriageway section from the road origin.	The displacement to the start of the carriageway section from the 0m point of the road. Try to ensure a physical point is used where possible, that is unlikely to change over time, and that is easy to find.	Ensure the 0m point is known, and is well defined.	integer(5)	Compulsory	Compulsory
carrway_end_m	End displacement of the carriageway section from the road origin.	The displacement to the end of the carriageway section from the 0m point of the road. Try to ensure a physical point is used where possible, that is unlikely to change over time, and that is easy to find.	Ensure the 0m point is known, and is well defined.	integer(5)	Compulsory	Compulsory

Carriageway Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
start_name	A description of the start point of the carriageway section. If it is a road then it shall be spelt the same as the road name for consistency.	Ensure the spelling is correct. Try to make this point an intersection, island nose etc., or physical point that is easily identifiable in future.	Check to ensure spelling is consistent and in accordance with the road naming conventions.	35 Characters	Optional	Compulsory
end_name	A description of the end point of the carriageway section. If it is a road then it shall be spelt the same as the road name for consistency.	Ensure the spelling is correct. Try to make this point an intersection, island nose etc., or physical point that is easily identifiable in future.	Check to ensure spelling is consistent and in accordance with the road naming conventions.	35 Characters	Optional	Compulsory
cway_area	A defined area the road resides within.	This is often a political boundary such as Ward, and would generally be entered form the office.	Existing population of this field relates to the previous local government organisations. There is a user defined table called reporting area that contains the ward, board and subdivision areas for Auckland Council.	15 Characters	Optional	Compulsory
cway_sub_area	A sub area of the carriageway area	This has been used for community board areas, previous maintenance areas and a variety of other uses. It will most likely be populated from the office, but when collection the data you will need to know what is to be populated.	The historic data has been populated for variety of purposes, and AT will have to decide what data they will populate this field with, such as board or subdivision could be possible options, for reporting.	smallint (4)	Optional	Compulsory
maint_group	The NZTA Maintenance group, as per State Highways.	Office populated	This relates to the urban and rural maintenance group numbered 1 to 7.	Urban and rural 1 to 7	Optional	Not Required

Carriageway Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
pavement_type	The predominant type of underlying pavement for the carriageway section.	If the section is on a bridge deck then select bridge. If the top surface is concrete then select concrete. If a single asphaltic treatment comprises a total depth greater than 80mm then it is considered structural AC. If the top surface is unsealed select "U" for unsealed, otherwise it will typically be a thin surfaced flexible pavement. This is generally the most common type of pavement construction in NZ.	When you receive the as built information, it should contain a typical cross section that will allow you to identify the pavement type. You will need to ensure that you have the surfacing details as well as the granular layers. The default value is T, for thin surfaced flexible.	B - Bridge C - Concrete S - Structural AC T - Thin Surfaced Flexible U - Unsealed	Compulsory	Compulsory
pavement_use	Approximate traffic volume band associated with the section.	Based on traffic volume associated with the section.	Pavement use may change as the traffic volumes are updated in the database. Ensure that any new traffic count volumes area reflected in this field.	1 - ADT <100 2 - ADT 100 - 500 3 - ADT 500 - 2,000 4- ADT 2,000 - 4,000 5 - ADT 4,000 - 10,000 6 - ADT 10,000 - 20,000 7 - ADT > 20,000	Compulsory	Compulsory
road_class	Road class	Not collected in the field.	All roads are generally class one, unless defined and gazetted as class C. Class C roads are defined as roads that are collector routes that may be used by heavy motor vehicles only for the purpose ofdelivery or collection of goods, and passengers at a destination located on the class C road.	1 - Class 1C- Class C	Compulsory	Compulsory

Carriageway Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
urban_rural	Urban or rural zone	This is currently defined using the NZTA definition in the programme and funding manual. It is based on the permanent posted speed. A rural road is one that has a permanent posted speed greater than 70km/hr, urban is less than or equal to 70 km/hr.	Make sure that you know exactly where the gazetted speed areas are to ensure the zone is correctly selected. If in doubt check Auckland Transport: Road Corridor Operations.	U - Urban R - Rural	Compulsory	Compulsory
cway_hierarchy	The functional classification of the road section.	This information is generally obtained from the office.	The assigned hierarchy is generally consistent with that defined in the District Plan.	These will have to be rationalised as currently the field is populated with the legacy councils hierarchy	Optional	Compulsory
lanes	The number of traffic lanes.	Just record the number of traffic lanes. Flush median and parking lanes are not counted as traffic lanes.	The number of traffic lanes recorded impacts on other statistics such as vehicle kilometres travelled (vkt), so ensure it is recorded to reflect the number of traffic lanes only. The default for data entry is 2.	(lanes >= 1) and (lanes<= 9) Default = 2	Compulsory	Compulsory
lane_width	The average lane width	The average lane width for all lanes from left hand to right hand edgeline for the defined road section.	Lane widths can vary between remarks after resurfacing.	0.1 up to 99.1	Optional	Not Required
length_m	The length of the carriageway section in metres	This is the actual length of the road, and excludes the length from the kerb line out to the point where the two roads centrelines intersect (z-point).	Ensuring this is done consistently results in accuracy for reported network length and doesn't double count, as defined in the original RAMM User Manual (yellow ringbinder). It is the end_m - start_m +/- any length_adjust_m.	integer(5)	Compulsory	Compulsory

Carriageway Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
length_adjust_m	Extra length, or reduced length from the length_m value.	Use this column to populate the difference in length, and provide an explanation for the reason under len_adjust_rsn.	Typically this relates to the difference in length from the kerb line to the intersecting centrelines for carriageway sections that start at 3 or 4 way intersections.	integer (5)	Optional	Compulsory when certain conditions are met
len_adjust_rsn	The reason for adjusting the calculated length.	This is only to be populated when a length adjustment is required, and the reason obtained from the allowable lookups.	Ensure that the appropriate lookup code is used for describing the length adjustment reason.	Looks up on length_adj_rsn This is a 5 character field, and can only be populated with the allowable lookup values.	Optional	Compulsory when certain conditions are met
cway_width	The width of the carriageway.	For sealed roads this is the width measured from kerb face to kerb face. For a non-kerbed carriageway this is the surfaced width (including any sealed shoulders). For unsealed roads this is the trafficable lane width. The carriageway width should be measured and recorded at least every 100m.	In some instances the recorded sealed width may be channel lip to channel lip, for a kerbed situation. Be sure you know what is recorded for the existing data.	decimal (3,1) >= 0.5 and <= 99.9m Default value = 1.0	Compulsory	Compulsory
cway_area_m^2	This is a system calculated field.	No data collection requirements.	This area is calculated by multiplying the length_m x cway_width field.	Integer (5) 0 to 999999	System Generated	System Generated

Carriageway Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
irr_width	Irregular or regular carriageway width indicator.	Where the measured width variation is less than 1.0m use regular, and if greater use irregular. Typically urban kerb and channelled roads will be regular, with rural roads often irregular due to seal widening on corners etc.		Char(1)I - IrregularR-Regular	Compulsory	Compulsory
res_width	Road reserve width	This is the road reserve width from boundary to boundary. Often supplied with the road reserve to vest plans.	This is not always the fence to fence width, so ensure the vested survey plans are used. Typically 20.1m was used for older subdivisions.	decimal (3,1) >=1 and <=60.1 Default value = R	Optional	Compulsory
misc_area	Area in m^2 of miscellaneous areas	These are miscellaneous areas that exist within the carriageway section, that are not bus bays, islands or intersection areas. i.e. parking areas etc.	These areas (as for bus bays and intersections) contribute to the total carriageway area for calculation of approximate seal areas etc. An example of a miscellaneous area would include parking bays.	smallint(4) >0 m^2 and <=9999 Default value of 0	Compulsory	Compulsory
bus_bays	The area of bus bays within the carriageway section.	These are areas that are not included in the measurement of the carriageway width, or any part of the irregular carriageway width. If the bus bay is not indented and included as part of the carriageway width, then don't add it in the bus bay area field.	Bus bays or stops may be in other user defined tables, so check these as well as the bylaws, as bus bays may be in here, as well as bus stop signs in the signs table.	smallint(4) >0 and <=9 999	Compulsory	Compulsory

Carriageway Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
islands	The total area of traffic islands in m^2. These areas are taken away from the total carriageway area.	The total area (m^2) for all traffic islands that is located within the carriageway section. This includes splitter islands, kerb projection islands, planted islands and short lengths of median islands if the carriageway section is not divided.	Where minor safety work involves modification/addition/deletion of islands, care needs to be taken to update and reflect this information in the carriageway table.	smallint(4) >0 and <=9999 Default value of 0	Compulsory	Compulsory when certain conditions are met
intersection	Any extra area at intersections to be included in the total area calculation.	Collect the extra seal areas that are not included as part of the width, or irregular width calculations. These are typically widened areas at an intersection and may include short lane gains, typically less than 100m where a separate carriageway section is not created to account for this. Also included are short left turn slip lanes.	Minor safety works, traffic signal upgrades that include lane arrangement changes can change this figure.	smallint(4)>=-9999 and <=9999	Compulsory	Compulsory
total_area	This is a system calculated field.	No data collection requirements	The total area is calculated + using cway_area_m^2 + (misc_area + bus_bays + intersections - islands).	smallint(5) >=-99999 and <= 99999	System Generated	System Generated
owner_type	The owner of the road section, i.e. the title holder.	Assumed to be local authority, unless advised otherwise.	Should be confirmed by the subdivision plan, with the vested owner denoted.	Char(1) C - Crown L- Local Authority P - Private	Compulsory	Compulsory
controlled_by	The authority which controls the road section.	Be sure to be clear around the roles, and difference between owner, controller, maintained and managed by.	Currently AT is the controller of the network therefore AT must be used at the organisation controlling the network.	Char(3) looks up on organisation	Optional	Compulsory

Carriageway Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
maintained_by	The name of the roading contractor who is contracted to do the maintenance work on the road section.	Completed in the office	Update to match the current contractor who has the contract to carry out the maintenance work on the network.	Char(3) looks up on organisation	Optional	Compulsory
managed_by	The name of the roading authority or contractor who manages the road section.	Completed in the office	For some boundary roads the road section may be jointly owned, but will be managed by one of the boundary Councils (Waikato DC, Hauraki DC, or Kaipara DC).	Char(3) looks up on organisation	Optional	Compulsory
road_group	NZTA groups for Maintenance Guidelines.	System assigned based on ADT.	Used for NZTA reporting on road groups.	Integer(4) Urban A - ADT>10,000 Urban B - ADT 5-10,000 Urban C - ADT 1- 5,000 Urban D - ADT 200 - 1,000 Urban E - ADT <200 Rural B - ADT >5,000 Rural C - ADT 1-5,000 Rural D - ADT 200 - 1,000 Rural E - ADT 20 – 200 Rural F - ADT <50	Optional	Compulsory
estimate_loading	Is the estimate loading figure estimated or from traffic counting data.	Completed in the office	System generated through status update process in RAMM Manager.	True or False Default - Estimate	Compulsory	Compulsory
loading_status	The origin of the loading information.	Completed in the office	Comes from the loading table.	Char(1) C - Count D -Default E - Estimate	System Generated	System Generated

Carriageway Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
loading_pc _heavy	Percentage of heavy vehicles from latest loading count.	From traffic count surveys	Comes from the loading table.	smallint(3) >=0 and <=100	System Generated	System Generated
loading_esa_hea vy	RAMM calculated Equivalent Standard Axles.	System calculated.	This is a system calculated value.	Decimal(5,3) >=0 and <= 99.999	System Generated	System Generated
loading_date	Date of the latest loading record for this road section.	System generated	This information comes through from the loading table.	date	System Generated	System Generated
traffic_adt_est	The latest ADT traffic estimate for this road section.	System generated	This information comes through from the traffic table.	integer(10) >=0 and <=999000	System Generated	System Generated
estimate_date	The date the latest estimate was done.	System generated	This information comes through from the traffic table.	date	System Generated	System Generated
traffic_adt_count	The ADT for the latest traffic count on the road section.	System generated	This information comes through from the traffic table.	integer(10) >=0 and <=999000	System Generated	System Generated
count_date	The date of the latest traffic count for the road section.	System generated	This information comes through from the traffic table.	date	System Generated	System Generated
traff_manage_ level	The traffic management level that applies to this road section.	For new roads this will have to be confirmed by the corridor access department of Auckland Transport.	Confirm TTM level with corridor access. For most roads the required level will be similar to the surrounding roads, or the road it comes off.	char(5) Looks up on traff_manage_level 1 - ADT <10,000 vpd 2 - ADT >=10,000 vpd 2L - Meets 2L requirements 3 - ADT >10,000 and high speed L - ADT <500 vpd (low volume)	Compulsory	Compulsory

Carriageway Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
				Default = "U"		
naasra_min	Minimum latest roughness value in NAASRA (counts/km).	System generated	This is a system calculated value.	smallint(3) >=10 and <=999	System Generated	System Generated
naasra_max	Maximum latest roughness value in NAASRA (counts/km).	System generated	This is a system calculated value.	smallint(3) >=10 and <=1000	System Generated	System Generated
naasra_avg	Average latest roughness value in NAASRA (counts/km).	System generated	This is a system calculated value.	smallint(3) >=10 and <=1001	System Generated	System Generated
cway_use_ category	This is a classification assigned to the road section that defines the type and nature of the traffic flow distribution during the week.	No data collection requirements	This field was populated for the national traffic database survey undertaken in the mid-1990s, to assign typical traffic patterns and loadings to the whole database. It doesn't appear to have been maintained and is unlikely to be with the default set to unknown.	char(2) 1A - Urban Arterial A2 - Urban Commercial l3- Urban Industrial 4 - Urban Collector 4B - Urban Other 5 - Urban Rural Fringe 6 - Rural Strategic 7A - Rural Summer Recreational 8 - Rural Feeder 9 - Urban Residential 10 - Urban Beach Roads 11- Rural Other UN – Unknown, Default	Compulsory	Compulsory

Carriageway Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
cway_group_1	Optional group columns that allows users to group carriageway sections according to individual requirements.	Dependent on grouping criteria	Use the current conventions from the legacy areas until a new global convention is established.	Char(4) Looks up on cway_group_1	Optional	Optional
cway_group_2	Optional group columns that allows users to group carriageway sections according to individual requirements.	Dependent on grouping criteria	Use the current conventions from the legacy areas until a new global convention is established.	Char(4) Looks up on cway_group_2	Optional	Optional
cway_group_3	Optional group columns that allows users to group carriageway sections according to individual requirements	Dependent on grouping criteria	Use the current conventions from the legacy areas until a new global convention is established.	Char(4) Looks up on cway_group_3	Optional	Optional
cway_group_4	Optional group columns that allows users to group carriageway sections according to individual requirements.	Dependent on grouping criteria	Use the current conventions from the legacy areas until a new global convention is established.	Char(4) Looks up on cway_group_4	Optional	Optional
cway_group_5	Optional group columns that allows users to group carriageway sections according to individual requirements.	Dependent on grouping criteria	Use the current conventions from the legacy areas until a new global convention is established.	Char(4)Looks up on cway_group_5	Optional	Optional

Carriageway Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
house_start_lhs	The house number of the left hand side at the start of the section.	The house number of the left hand side at the start of the section.	This was used to assist field crews with locating themselves. Not so much on an issue with for those that use pocket RAMM, or an equivalent device that locates the job in the field.	char(10)	Optional	Not Required
house_end_lhs	The house number of the left hand side at the end of the section.	The house number of the left hand side at the end of the section.	This was used to assist field crews with locating themselves. Not so much on an issue with for those that use pocket RAMM, or an equivalent device that locates the job in the field.	char(10)	Optional	Not Required
house_start_rhs	The house number of the right hand side at the start of the section.	The house number of the right hand side at the start of the section.	This was used to assist field crews with locating themselves. Not so much on an issue with for those that use pocket RAMM, or an equivalent device that locates the job in the field.	char(10)	Optional	Not Required
house_end_rhs	The house number of the right hand side at the start of the section.	The house number of the right hand side at the start of the section.	This was used to assist field crews with locating themselves. Not so much on an issue with for those that use pocket RAMM, or an equivalent device that locates the job in the field.	char(10)	Optional	Not Required
terrain	The general categorisation of the terrain for the road section.	The general topography of the road section.	This can be done by general observation, or can be assessed using topography maps with contours, and set criteria for each category.	char(1) F- Flat M - Mountainous R - Rolling S - Soft	Optional	Not Required
coastal_inland	Indicator if the road section is coastal or inland.	Not generally collected	This field has not typically been collected for local authority databases.	char(1) C - Coastal I - Inland	Optional	Not Required

Carriageway Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
est_mmp	Estimated mean monthly precipitation.	No data collection requirements	Not generally used for previous local authority databases.	char(2)looks up on cway_est_mmp	Optional	Not Required
asset_owner	Unique identifier for the asset owner.	The owner of the carriageway section.	This will normally be defined as “L” for Local Authority, “C” for crown roads i.e. State Highways etc.	char(3) looks up on asset_owner	Optional	Compulsory
left_lanes	The number of lanes on the left hand side of the road.	The number of lanes on the left hand side of the road from the centreline.	This would only be of use for wide non-divided carriageways, as divided carriageways are split by side any way.	smallint(1) >=1 and <=9	Optional	Not Required
right_lanes	The number of lanes on the right hand side of the road.	The number of lanes on the right hand side of the road from the centreline.	This would only be of use for wide non-divided carriageways, as divided carriageways are split by side any way.	smallint(1) >=1 and <=10	Optional	Not Required
lighting_category	Lighting category code for the road section.	No data collection requirements	This is the lighting code that would apply to the road section from the latest lighting code for roads and pedestrians. Very minimal use at present.	char(3) D P1 - Pedestrian 1 P2 - Pedestrian 2 P3 - Pedestrian 3 P4 - Pedestrian 4 looks up on lighting_category	Optional	Not Required
collect_name	The person or organisation who collected this data.		The audit fields do keep a record of the logon name and details of this. But the person entering the data may not be the person that collected it.	Char(3) Looks up on organisation	Optional	Compulsory

Carriageway Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
collect_date	The date the person or organisation collected this data.		The audit fields do keep a record of the logon date.	date	Optional	Compulsory
travel_direction	The permitted direction of travel for the road section.	The default entry is both, therefore you need to change this if the road section only permits travel in one direction.	The allowable lookups may need to be reviewed for AT roads, as the travel direction will most likely always be increasing i.e. the displacement of the road section increases as you drive down it. It may be appropriate to use a heading, such as eastbound only etc. Therefore the look ups may need to include Northbound, Southbound, Eastbound and Westbound only.	char(1) B – Both D- Decreasing only I - Increasing only B - Default Value	Compulsory	Compulsory
traffic_link_id	Unique traffic link identifier.	System generated	For use in the traffic estimation module.	integer(10) >=0 and <=999000	Optional	System Generated
condition_wt	Calculated condition weighting from assessment.	No data collection requirements.		Decimal(5,3) >=0 and <= 99.999	Optional	Not Required
condition	The overall condition of the road section.	An overall condition score from 1 to 5 for the whole road section for all assets, or as defined.	This field allows for an overall condition to be recorded for the carriageway section. It can be a windshield condition assessment, or one that is calculated and weighted from other recorded asset conditions. Generally populate with default value “U”, unless contractually required under a maintenance contract.	Char(1) 1- Excellent 2 - Good 3 - Average 4 - Poor 5 - Very Poor U- Unknown U - Default value	Compulsory	Compulsory

Carriageway Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
condition_date	The date the condition of the asset was established.	The date the condition survey was undertaken.	The value of this field needs to be considered, as it is mostly populated with default data, therefore being of no real value.	date	Compulsory when certain conditions are met	Compulsory when certain conditions are met
likelihood_wt	Calculated likelihood weighting from assessment.	No data collection requirements.	Use for risk assessment, when defined in the assessment module.	Decimal(5,3) >=0 and <= 99.999	System Generated	System Generated
risk_likelihood	Likelihood of the risk identified in the risk assessment.	No data collection requirements	For the risk analysis being undertaken in the assessment module, the allocated risk likelihood of a defined risk event occurring. The value of populating field with a default value needs to be considered. Generally populate with default value "U".	Char(1) 1 - Rare 2 - Unlikely 3 - Possible 4 - Likely U - Unknown U - Default value	Compulsory	Compulsory
consequence_wt	Calculated consequence weighting from assessment.	No data collection requirements	Use for risk assessment, when defined in the assessment module.	Decimal(5,3) >=0 and <= 99.999	Optional	Compulsory when certain conditions are met
risk_consequence	The consequence of the asset failing, or risk event occurring.	No data collection requirements	For the risk analysis being undertaken in the assessment module, the allocated risk consequence of a defined risk event occurring. The value of populating field with a default value needs to be considered. Generally populate with default value "U".	Char(1) 1 - Insignificant 2 – Minor 3 – Moderate 4 - Major 5 - Extreme U – Unknown U - Default Value	Compulsory	Compulsory

Carriageway Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
risk	The risk of the asset failing, or overall risk for the road section.	No data collection requirements	The overall risk for the road section of a risk, or multiple risks occurring as set up in the assessment module. The value of this field needs to be considered when populated with defaults. Generally populate with default value "U".	Char(1) 1 - Very Low 2 - Low 3 - Medium 4 - High 5 - Extreme U - Unknown U- Default value	Compulsory	Compulsory
risk_date	Date the risk value was last updated.	No data collection requirements	The date will come through form the assessment module, if this is where the assessment was done.	date	Optional	Compulsory when certain conditions are met
easting	Easting value at the start of the road section.			decimal(12,4) >=-99.9999 and 9999999.9	Optional	Optional
northing	Northing value at the start of the road section.			decimal(12,4) >=-99.9999 and 9999999.10	Optional	Optional
easting_end	Easting value at the end of the road section.			decimal(12,4) >=-99.9999 and 9999999.11	Optional	Optional
northing_end	Northing value at the end of the road section.			decimal(12,4) >=-99.9999 and 9999999.12	Optional	Optional
gps_date	The date when the GPS data was collected.			date	Optional	Optional

Carriageway Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
gps_by	The organisation that collected the GPS data.			Looks up on organisation	Optional	Optional
gps_method_id	Unique identifier for GPS method used.			1-Generic GPS device (+/- 5 m) 2-User clicked on map (+/- 10m) 3-Update from RAMM Map (+/- 10m) 4-Unknown (no accuracy) 5-Taken from asset (no accuracy) 6-Default (no accuracy)	Optional	Optional
map_gps_date	Populated when new GPS coordinates are supplied by the user.	No data collection requirements	When new coordinates are replaced/ inserted into the map before a new map is supplied by RAMM.	date	Optional	System Generated
map_gps_by	The logon of the person who set the map_gps_date.	No data collection requirements	When changes are made to the map co-ordinates the logon of the person who made the changes.	varchar(20) Default Value = User	Optional	System Generated
map_import_date	Populated with the date of the Critchlows map.	No data collection requirements	Map import date	date	Optional	System Generated
map_import_by	The logon of the person who ran the initial population of the map.	No data collection requirements		varchar(20) Default Value = User	Optional	System Generated
rnm_edit_date	The date this section was last changed using network manager.	No data collection requirements	This keeps a record of when the last change to the road section was made using network manager.	date	Optional	System Generated

Carriageway Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
rnm_edit_by	The logon of the person who made the last network manager changes.	No data collection requirements		varchar(20) Default Value = User	Optional	System Generated
vested_date	The date the road section was vested to Council.	No data collection requirements	This information should be obtained for all new roads, through the regulatory process.	date	Optional	Compulsory when certain conditions are met
notes	General comments for information not contained above.	Record comments for things that are out of the ordinary, and could make it easier for people in the future.	Be careful not to record to much in this field, as you can easily sort or filter on this information. Avoid the use of commas, dashes, slashes and hyphens.	varchar(255)	Optional	Optional
as_tip_note	General tip for the assessor.	No data collection requirements	This field is not currently being used at all.	varchar(255)	Optional	Not Required
added_on	added_on is the date that the data was added to the database.	This field is not required for data collection	This date is automatically assigned if you are adding data via RAMM for Windows. If you are using the RAMM Manager Import facility you need to add the date to this column in dd/mm/yyyy format.		System Generated	System Generated
added_by	added_by is the RAMM username of the organisation that entered the data.	This field is not required for data collection.	added_by is automatically assigned if you are adding data via RAMM for Windows. If you are using the RAMM Manager Import facility you need to add your RAMM username to this column.		System Generated	System Generated

Carriageway Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
chgd_on	chgd_on is the date that the data was changed in the database.	This field is not required for data collection.	This date is automatically updated if you are changing data directly in RAMM for Windows. If you are using the RAMM Manager Import facility you need to add the date to this column in dd/mm/yyyy format.		System Generated	System Generated

5.2 Carriageway Surfacing Data Dictionary

Surfacing Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
c_surface_id	c_surface_id is the unique asset id assigned to the surfacing asset. For new surfaces being added to RAMM, this is set to 0 and RAMM assigns a c_surface_id once the asset is added to RAMM. For existing surfacings that are currently being updated in RAMM, the current c_surface_id needs to be used as reference to ensure the correct surfacing is updated.	For data collection of new surfacings, c_surface_id is not required. For data collection for existing surfaces which are being reconstructed, the current c_surface_id is required.	For importing large quantities of data through RAMM Manager Import facility, set c_surface_id = 0.	0-99999	Compulsory	Compulsory
road_id	road_id is the RAMM road_id of the road that the surfacing is on.	Use the RAMM carriageway table list to obtain this information. If you do not have this information, provide the full roadname as a minimum.	Ensure that the road_id provided on the RAMM update sheet correlates with the road name shown on the carriageway list.	Looks up table roadnames	Compulsory	Compulsory
start_m	start_m is the start location of the surfacing (seal join) in metres relative to the location on the road that the surfacing start position is located on.	Use either a calibrated measuring wheel or a calibrated vehicle tripmeter to collect start_m.	When adding surfacing data, it is considered best practice to review the underlying surfacing layers and match up to the new top surface seal joins to ensure accurate reporting in treatment length summarisation and ensure the data is easier to view in grid format. This may require start and end displacements of underlying seals to be adjusted by up to 10m.	0-99999	Compulsory	Compulsory

Surfacing Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
end_m	end_m is the end location of the surfacing (seal join) in metres relative to the location on the road that the surfacing end position is located on.	Use either a calibrated measuring wheel or a calibrated vehicle tripmeter to collect end_m.	Refer to start_m	1-99999	Compulsory	Compulsory
start_name	start_name is the description to be used for the start location of the surfacing.	Typically this field is simply "SEAL JOIN.	Avoid populating this field if possible. A standard SQL routine can be used to provide appropriate start and end names if required.	Free text	Optional	Not Required
end_name	end_name is the description to be used for the end location of the surfacing.	Typically this field is simply "SEAL JOIN".	Avoid populating this field if possible. A standard SQL routine can be used to provide appropriate start and end names if required.	Free text	Optional	Not Required
northing	northing is the GPS reading (in northings and eastings) at the START of the surfacing.			decimal(12,4) >=-99.9999 and 9999999.9	Optional	Optional
easting	easting is the GPS reading (in northings and eastings) at the START of the surfacing.			decimal(12,4)>=-99.9999 and 9999999.9	Optional	Optional
northing_end	northing is the GPS reading (in northings and eastings) at the END of the surfacing.			decimal(12,4) >=-99.9999 and 9999999.9	Optional	Optional

Surfacing Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
easting_end	easting is the GPS reading (in northings and eastings) at the END of the surfacing.			decimal(12,4) >=-99.9999 and 9999999.9	Optional	Optional
gps_date	gps_date is the date that the start and end data was collected.			date	Optional	Optional
gps_by	gps_by is the organisation that collected the data.			Looks up on organisation	Optional	Optional
gps_method_id	gps_method_id is the ID of the method that was used to collect the data and indicates both the type of equipment used and the accuracy of that equipment.			1-Generic GPS device (+/- 5 m) 2-User clicked on map (+/- 10m) 3-Update from RAMM Map (+/- 10m) 4-Unknown (no accuracy) 5-Taken from asset (no accuracy) 6-Default (no accuracy).	Optional	Optional

Surfacing Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
surface_date	surface_date is the date that the surfacing was carried out.	This information can be obtained from the surfacing contractors sealing/paving records. In some instances, a long surfacing treatment is carried out over a number of days. Please use the last date of surfacing as the surface_date.	surface_date is the primary key for allowing accurate surface structures to be created from the c_surface table. It is important that the dates are accurate and in the correct chronological order for multi layered surfacing projects (such as membrane seals under asphalts). If you are entering a seal and the date of construction is only estimated, use 01/01/XXXX as the surface_date.	dd/mm/yyyy	Compulsory	Compulsory
removed_date	removed_date is the date that the surface was removed.	This information must be provided when an existing surface is milled as part of an asphaltic concrete resurfacing project, or a surface is recycled as part of a pavement rehabilitation project.	Ensure that the underlying surfacings of any asphaltic concrete surfacing projects have not been milled off (removed). If the surfacings have been milled off, then the date that the milling work was completed, is the removed_date. This also applies for any surfacings recycled or removed as part of pavement rehabilitation works.	dd/mm/yyyy	Compulsory when certain conditions are met	Compulsory when certain conditions are met
surf_width	surf_width is the average width of the surfacing to the nearest 0.1m.	surf_width is ONLY required when the surface treatment is NOT full width.	For offset and partial width surfacings, ensure that the carriageway width is updated and seal widths do not create "strip seals" when top surface is regenerated after the next full width resurfacing treatment.	decimal (3,1) (surf_width >= 0.5, < = 60.0)	Compulsory	Compulsory when certain conditions are met

Surfacing Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
full_width_flag	full_width_flag is a means of signalling if the surfacing extends across the full width of the carriageway.	Please tick this if the surfacing is full width.	Please tick this if the surfacing is full width.	Y, N Y- Default value	Compulsory	Compulsory
surf_offset	surf_offset is the distance measured to the nearest 0.1m from the LHS of the sealed carriageway to the LHS of the surfacing being collected.	offset only needs to be collected if the surfacing is NOT full width or for non-full width surfaces that are not flush with the LHS edge of sealed carriageway.	Offset seals require careful manipulation when loading into RAMM as they will greatly affect the surface structure table if entered incorrectly. Consider only adding offset seals if they are a significant width (>2.5m) over a significant length (>100m) otherwise these surfacings should be entered into the maintenance cost table as maintenance cost. Never enter surfacings with a negative offset.	0 to 60 0 - Default	Compulsory	Compulsory
design_life	design_life is the estimated expected design life of the surfacing in years.	design life should be provided with the surfacing design available from the design consultant or the surfacing contractor.	Ensure the design life reflects the likely estimated life of the surfacing given AADT, % HCV, traffic stresses, etc. If a surfacing spans a major change in traffic volume, then consider adding the surfacings as two separate records with separate design lives. Design life only needs to be entered when the expected life is different to the modified default life.	1 to 60	Not required	Compulsory when certain conditions are met
design_expiry					System Generated	System Generated
default_life					System Generated	System Generated

Surfacing Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
default_expiry					System Generated	System Generated
mod_default_life	mod_default_life is the revised life in years which can be updated by a database administrator at any time.	For new surfacings, this data is system generated, where modified default lives have been defined.	This field reflects the expected life for a given surfacing type, pavement use, and security zone. It can be updated by making changes to the surface life table found in RAMM Manager/Maintenance/ Lookups/Surface Material. This is required to be populated/setup by Auckland Transport. Once this is done then the modified default lives will be populated when the surfacing status update tasks are run via RAMM Manager.	1 to 80	Optional	System Generated
mod_default_ expiry					System Generated	System Generated
surf_material	surf_material is the material type of the surfacing.	Use as-built data or contractors surfacing records to collect this information.		Looks up on surf_material	Compulsory	Compulsory
surf_function	surf_function is the function of the surfacing in terms of seal coat number.	For first coat seals (on new pavement reconstruction-excluding membrane or waterproofing seals) use 1. For second coat seals (seals immediately placed over a first coat seal-not be confused with 2 coat seals) use 2. For membrane seals use M. For all other seals over a 2nd coat or a reseal, use R.	Note that surface_date will dictate the chronological order of multiple surface layers in RAMM, not the surf_function. Be careful of membrane seals which must be treated as surf_function M, and typically feature underneath all first coat AC's. Also if previous surfacings have been removed (refer removed_date) then this may change the surface function of the surfacing that you are adding.	1-First Coat Seal 2-Second Coat Seal M-Membrane Seal R-Reseal	Compulsory	Compulsory

Surfacing Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
surf_depth	surf_depth is the depth of the most recent surfacing layer.	For chipseal surfacings, this does not need to be provided. For all asphaltic concrete, slurry and concrete surfacings the depth of the surfacing needs to be recorded. Obtain this information from the mix design and/or contractors surfacing records.	All mix type surfacings require a depth. Chipseal surfacings can be entered as depth = 0.	0-500 0 - Default	Compulsory	Compulsory
use_calc_depth	A flag which determines if the depth of the seal should be calculated or provided.	This flag should be set to N for chipseals and Y for Asphaltic Concrete.		Y=Yes N=No Yes - Default	Compulsory	Compulsory
chip_size	chip_size is the grading size of the biggest chip for a chipseal, or the top size aggregate in a mix surfacing.	Use sealing records or seal designs to obtain this information-usually included in the as-builts.	Ensure that the larger chip size for multicoat seals is entered in this field.	0 to 40	Compulsory	Compulsory
chip_2nd_size	chip_2nd_size is the grading size of the smallest chip for a multicoat chipseal.	Use sealing records or seal designs to obtain this information-usually included in the as-builts.	Ensure that the smaller chip size for multicoat seals is entered in this field.	0 to 40	Compulsory when certain conditions are met	Compulsory when certain conditions are met
pave_source	pave_source is the quarry that the aggregate used for chip sealing or asphalt mix is sourced from.	Use sealing records to obtain this information-sometimes it is included in the as-builts. Note that this is NOT the name of the organisation that owns the quarry or the AC plant, it is the source of the aggregate (quarry name).	Ensure that the data provided is in fact the quarry source and not the name of an organisation. Each quarry produces aggregates with unique geological properties-by having accurate pave_source data these properties can be investigated further if required.	Looks up pave_source	Compulsory	Compulsory

Surfacing Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
surf_binder	surf_binder is the binder type used in the surfacing (both asphalts and chipseals).	Use sealing records or seal designs to obtain this information-usually included in the as-builts.	Ensure that the surf_binder provided is compatible with the surface_material and surf_function.	Looks up on surf_binder E180 E80 B180 B80 B60 PORT WATR	Compulsory	Compulsory
flux	flux is the amount of flux in pph used in the binder.	Use sealing records or seal designs to obtain this information-usually included in spray dockets or seal designs.	If no flux is used, enter 0	0 to 9 0 - Default	Compulsory	To be confirmed
cutter	cutter is the amount of cutter in pph used in the binder	Use sealing records or seal designs to obtain this information-usually included in spray dockets or seal designs	If no cutter is used, enter 0	0 to 20 0 - Default	Compulsory	Compulsory
cutter_type	cutter_type is the type of cutter used in the binder.	Use sealing records or seal designs to obtain this information-usually included in spray dockets or seal designs.	If no cutter was used, leave blank	KERO-Kerosene OTHR-Other TURP-Turpentine	Compulsory when certain conditions are met	Compulsory
adhesion	adhesion is the amount of adhesion in pph used in the binder.	Use sealing records or seal designs to obtain this information-usually included in spray dockets or seal designs.	If no adhesion is used, enter 0	0 to 5 0 - Default	Compulsory	Compulsory
surf_adhesion	surf_adhesion is the type of adhesion used in the binder.	Use sealing records or seal designs to obtain this information-usually included in spray dockets or seal designs.	If no adhesion agent is used, leave blank.	Looks up on surf_adhesion	Compulsory when certain conditions are met	Compulsory

Surfacing Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
additive	additive is the amount of additive in pph used in the binder.	Use sealing records or seal designs to obtain this information-usually included in spray dockets or seal designs.	If no additive is used, enter 0.	0 to 99 0 - Default	Compulsory	Compulsory
surf_additive	surf_additive is the type of adhesion used in the binder.	Use sealing records or seal designs to obtain this information-usually included in spray dockets or seal designs.	If no additive agent is used, leave blank.	Looks up on surf_additive	Compulsory when certain conditions are met	Compulsory
polymer_mod_pcnt	polymer_mod_pcnt is the percentage of polymer modification in the binder.	Use sealing records or seal designs to obtain this information-usually included in spray dockets or seal designs.	If there is polymer present in the binder, then this data must be entered.	> 0, <=99	Optional	Compulsory when certain conditions are met
elastic_recovery		Not required	Not required		Not required	Not Required
softening_point		Not required	Not required		Not required	Not Required
rate	rate is the residual application rate in litres per sq. m for chipseals OR the % binder in a mix type surfacing.	Use sealing records or seal designs to obtain this information-usually included in spray dockets or seal designs.	Ensure that the rate that has been provided matches the surf_material.	0.2 to 9.99	Optional	Compulsory
sealed_area	sealed_area is the calculated total area in sq. m of the surfacing.	This is typically the length x width of the surfacing, however sometimes additional area is surfaced (side roads, car parks, etc.), and must be included in this total area.	Ensure the difference between length x width is not significantly different to sealed_area, and if so, investigate why.	1 to 99999	Optional	Optional
sealed_area_ok	Defines if the measured sealed_area field is OK.	If the sealed_area is measured including all the add on pieces then the field should be Y otherwise N.		Y=Yes N=No N - Default	Compulsory	System Generated

Surfacing Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
contract_number	Contract Number of the Sealing, Project or AWPT Contract.	Obtain the Contract Number from the Contract documents.	Important Information for filtering out data by contract.	Free format 20 Characters long	Optional	Compulsory
organisation	Sealing Contractor	The Contractor Responsible for sealing under this contract.		3 character lookup which looks up on the organisation table.	Optional	Compulsory
surf_spec	Contract end user spec code.	The specification covering the way the contract is managed and warranted.		10 Characters long and looks up on the surf_spec table.	Optional	Compulsory
polished_stone	The polished stone value of the largest chip.	This is laboratory tested from stockpile samples.		0 to 99	Optional	Compulsory
average_dim	Average Least Dimension of largest sealing chip. Only required for chipseals.	This is laboratory tested from sealing chip stockpile samples.	This should fit within the envelope for the chip grade.	0.01 to 99.99	Optional	Compulsory when certain conditions are met
recycling	Does this seal contain recycled material?	Only populate if recycled components are present in the surfacing such as the use of slag chip, recycled rubber, recycled asphalt.	Set to False if no recycled materials were used. Set to yes if recycled materials were used.	T = True F = False F - Default	Compulsory	Compulsory when certain conditions are met
pct_recycled	Percentage of Recycled material.	Only required if recycled materials used.	Only required if recycled materials used.		Optional	Compulsory when certain conditions are met

Surfacing Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
surf_recycled_cpnt	Surface Component that is Re-cycled.	Only required if recycled materials used.	Only required if recycled materials used.		Optional	Compulsory when certain conditions are met
surf_reason	Reason for Surfacing	This data will be provided by the database manager.	Correlate the surfacing reasons in the treatment length table with the treatment and enter this data in surf_reason.	Looks up on surf_reason.	Optional	Compulsory
fw_treatment	Forward Work Treatment that applies to this surface.	Not needed	Leave Blank		Not required	Not required
notes	Miscellaneous Notes	Add applicable notes	Enter only applicable comments.		Not required	Compulsory when certain conditions are met
added_on	added_on is the date that the data was added to the database.	This field is not required for data collection.	This date is automatically assigned if you are adding data via RAMM for Windows. If you are using the RAMM Manager Import facility you need to add the date to this column in dd/mm/yyyy format.		System Generated	System Generated
added_by	added_by is the RAMM username of the organisation that entered the data.	This field is not required for data collection.	added_by is automatically assigned if you are adding data via RAMM for Windows. If you are using the RAMM Manager Import facility you need to add your RAMM username to this column.		System Generated	System Generated

Surfacing Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
chgd_on	chgd_on is the date that the data was changed in the database.	This field is not required for data collection.	This date is automatically updated if you are changing data directly in RAMM for Windows. If you are using the RAMM Manager Import facility you need to add the date to this column in dd/mm/yyyy format.		System Generated	System Generated
chgd_by	chgd_by is the RAMM username of the organisation that changed the data in RAMM.	This field is not required for data collection.	added_by is automatically assigned if you are adding data via RAMM for Windows. If you are using the RAMM Manager Import facility you need to add your RAMM username to this column.		System Generated	System Generated

5.3 Footpath Data Dictionary

Footpath Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
footpath_id	Footpath_id is the unique asset id assigned to the footpath asset.	For data collection for new footpaths, footpath_id is not required. For data collection for existing footpaths which are being reconstructed, the current footpath_id is required.	For new footpaths being added via RAMM for Windows, RAMM will automatically assign a footpath_id. For new footpaths being added via RAMM Manager Import Facility, set footpath_id to 0 in the load file. For existing footpaths being updated, ensure that the footpath id that is provided with the update sheets matches the footpath that is being updated.	0-99999	Compulsory	Compulsory
road_id	road_id is the RAMM road_id of the road that the footpath is on.	Use the RAMM carriageway table list to obtain this information. If you do not have this information, provide the full roadname as a minimum.	Ensure that the road_id provided on the RAMM update sheet correlates with the road name shown on the carriageway list.	Looks up on table roadnames	Compulsory	Compulsory
start_m	start_m is the start location of the footpath in metres relative to the location on the road that the footpath start position is located on. The start_m is the distant from the start of the road to the start of the footpath.	Use either a calibrated measuring wheel or a calibrated vehicle tripmeter to collect start_m. Start_m is not required for footpath position R (remote from road). You will need to know what the increasing direction of the road is before confirming the start_m.	Ensure that the footpath start_m is contained within the road length.	0-99999	Optional	Compulsory
start_desc				Free text	Optional	Not Required

Footpath Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
end_m	end_m is the end location in metres of the footpath relative to the location on the road that the footpath end is located on.	end_ m is NOT required for footpaths with type E (ends away from road), J (joins another road), R (remote-starts and ends away from road).	Ensure that an end_m is provided for all footpath position types that require a footpath end_m.	0-99999	Optional	Compulsory when certain conditions are met
end_desc				Free text	Optional	Not Required
side	side is defined as the side of the road that the footpath is located on.	The left side of the road is on your left when you are looking in the **increasing direction** of the road. Avoid the use of Unknown.	Please avoid the use of "U" (Unknown). C: footpath is located in **Centre** of road L: footpath is located on the **Left** hand side of the road R: footpath is located on the **Right** hand side of the road U: footpath position is **Unknown**	C-Centre L-Left R-Right U-Unknown	Compulsory	Compulsory
offset_kerb					Optional	Not required
offset	offset is defined as the distance in metres from the centreline of the road to the footpath.	Offset is the **ESTIMATED** distance (estimated to the nearest 1m) based on observations made from the survey vehicle. Offsets can vary along the length of a footpath as road width or berm width changes-in these situations measure the SMALLEST offset.	offset is critical for plotting footpaths in RAMM Map. View the footpath in RAMM Map to ensure that offset provided matches what is observed in aerial photographs.	0-200	Optional	Compulsory
offset_lhs					Optional	Not required

Footpath Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
offset_kerb_end					Optional	Not required
offset_end					Optional	Not required
offset_lhs_end					Optional	Not required
footpath_position	footpath_position describes the general position of the footpath relative to the road and the road reserve.	Use the guidance notes to ensure you are using the correct code.	Note that for certain types of footpath position, specific data is required (such as other_road_id, other_side, and other_start_m for J footpaths). E: Footpaths **Ends** away from road -J: Footpath **Joins** another road -B: Footpath runs parallel to the road but flush to the road reserve **Boundary** -K: Footpath runs parallel to road but flush with **Kerb** -L: Footpath **Loops** away from road -M: Footpath runs parallel to road and in **Middle** of berm -R: Footpath starts and ends **Remotely** from road -U: Footpath position is **Unknown** -W: Footpath runs parallel to road over **Whole** berm width -P: Footpath ends away from road in a **Park** or Reserve (not generally a roading asset) -S: Footpath is berm footpath for pedestrian **Safety** (used for State Highways)	Looks up on footpath_ position: E J B K L M R U W P S	Compulsory	Compulsory
northing	northing is the GPS reading (in northings and eastings) at the START of the footpath.			decimal(12,4)>= -99.9999 and 9999999.9	Optional	Optional

Footpath Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
easting	easting is the GPS reading (in northings and eastings) at the START of the footpath.			decimal(12,4) >=-99.9999 and 9999999.10	Optional	Optional
northing_end	northing is the GPS reading (in northings and eastings) at the END of the footpath.			decimal(12,4) >=-99.9999 and 9999999.11	Optional	Optional
easting_end	easting is the GPS reading (in northings and eastings) at the END of the footpath.			decimal(12,4) >=-99.9999 and 9999999.12	Optional	Optional
gps_date	gps_date is the date that the start and end data was collected.			date	Optional	Optional
gps_by	gps_by is the organisation that collected the data.			Looks up on organisation	Optional	Optional
gps_method_id	gps_method_id is the ID of the method that was used to collect the data and indicates both the type of equipment used and the accuracy of that equipment.			1-Generic GPS device (+/- 5 m) 2-User clicked on map (+/- 10m) 3-Update from RAMM Map (+/- 10m) 4-Unknown (no accuracy) 5-Taken from asset (no	Optional	Optional

Footpath Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
				accuracy) 6-Default (no accuracy)		
local_name	local_name is the local name that this footpath is known by.				Optional	Not required
length_m	length_m is the length of footpath measured in metres.	The length of most footpaths is simply the end_m - start_m, however there are some exceptions. For footpaths that do not run directly parallel to the road, the length may be different, in which case you will need to collect the length adjustment and length adjustment reason data.	If this is left blank, then the RAMM software will automatically update this value for most types of footpaths. For certain position types, you will need to provide a length as not all footpath position types have an end_m. Where the length_m is not equal to end_m - start_m, you need to populate both length_adjust_m and length_adjust_reason.	0-30000	Optional	Compulsory
length_adjust_m	length_adjust_m is the length that the calculated length (end_m - start_m) needs to be changed by to reflect the true length of the footpath.	For footpaths whose length is not equal to end_m - start_m, you will need to collect the length adjustment information so that the true length of the footpath asset can be entered into RAMM. E, J, R and in some instances B, K and M footpaths required this information to be collected.	Ensure that for footpaths where the length is not equal to end_m – start_m this field is populated. This is typically provided for the following footpath positions: E, J, R, L, A. Typically for all other footpath positions this does not need to be populated.	0-30000	Optional	Compulsory when certain conditions are met

Footpath Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
len_adjust_rsn	len_adjust_rsn is the reason why the calculated length (end_m - start_m) is not the true length of the footpath.	Self explanatory codes provide a description of the reason why the footpath length needs to be adjusted. Guidance notes also provide examples of the various types of reasons for adjusting the length of a footpath asset.	Avoid the use of "UKN" (Unknown). The following lookup codes need to be used: CORNR - Additional footpath on inside of **Corner** ANGLE - Footpath is **Angled** to road COM - Footpath is on a **Common** section- CUL - Footpath ends in a **Cul-de-sac** CYCLE - Footpath is a **Cycleway** DUMMY - Footpath is a **Dummy** of no length AWAY - Footpath ends **Away** from road BYOND - Footpath ends **Beyond** road PATH - Footpath only LOOP - Footpath **Loops** away from road JOIN - Footpath **Joins** another road NONE - **No** adjustments made OCR - Footpath starts and/or ends on **Other Council Road** PARKS - **Parks** and Reserves road PRV - Footpath starts and/or ends on a **Private Road** RAB - Footpath length is affected by a **Roundabout** ISECT - Footpath starts and/or ends at an **Intersection** SH - Footpath is on a **State Highway** UKN - Footpath length adjustment is **Unknown** WW - Footpath position is a **Walkway** WIDEN - Footpath length is affected by road **Widening**	Looks up on len_adjust _rsn-	Optional	Compulsory when certain conditions are met

Footpath Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
width	width is the width of the footpath to the nearest 0.1m.	Width can either be collected with a tape measure or measuring wheel. For footpaths that do not have a regular width along their length, take an average width. Always field check any data provided directly off plans and as-built drawings.	Ensure widths are consistent with typical footpath widths for the area and road type that the footpath is situated in.	0-30000	Optional	Compulsory
area	area is calculated by the software as true length (defined as the footpath length including the adjustment) length_m x width if no other area is provided.	If width x length does not reflect the true area of the footpath, then provide the additional footpath area as extra area (see field "extra area").		0-30000	Optional	Compulsory
footpath_surf_mat	footpath_surf_mat is the predominant surfacing material over the length of the footpath.	Circle the correct surfacing material for the footpath. For footpaths with multiple surfacing types, choose the most predominant surfacing type.		Looks up on surf_mat	Optional	Compulsory
overlay_depth	overlay_depth the depth of the predominant footpath surfacing.	Use as-built information to collect this information. There are maximum and minimum values for surfacing depth for each type of footpath surfacing.		0-500	Optional	Compulsory
chip_size	chip_size is the size of the aggregate of the predominant footpath surfacing.	Use as-built drawings to collect this information.		1-40	Optional	Compulsory

Footpath Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
surf_binder	surf_binder is the binder type that was used in the surfacing of the footpath.	Use as-built drawings to collect this information.		Looks up on table surf_binder	Optional	Compulsory
pedestrian_use	pedestrian_use is an indicative guide of the use of the footpath at the time that the footpath data is collected.	This can be a subjective field to collect, as the use of a footpath can change from day to day, week to week and year to year. As such, the values you can choose allow for this. The general rules apply for footpaths in the following areas: Cul de sacs and dead end streets: use 1-2 Local and sub-collector roads: use 2-3 arterials and collector roads: use 2-4 around shopping precincts: use 4-5 around schools: use 4-5 Recreational areas such as parks and reserves: use 3-4.	Ensure that the pedestrian use data provided correlates to the area the footpath is located in. Defined as: 1=Low 2=Low/medium 3=Medium 4=Medium/high 5=High U=Unknown	Looks up on table footpath_use 1 2 3 4 5 U	Optional	Compulsory
scooter_use	scooter_use is an indicative guide of the scooter use of the footpath at the time that the footpath data is collected.	A scooter is defined as a mobility scooter. The use of mobility scooters is increasing, therefore it is important to collect this information. The general rules apply for footpaths in the following areas:Hospitals: use 2-3Retirement villages: use 2-3Shopping precincts: use 3-4Recreational areas such as parks and reserves: use 3-4All other footpaths: use 1.	Ensure that the scooter use data provided correlates to the area that the footpath is located in. Defined as: 1=Low 2=Low/medium 3=Medium 4=Medium/high 5=High U=Unknown	Looks up on table footpath_use 1 2 3 4 5 U	Optional	To be confirmed

Footpath Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
bicycle_use	bicycle_use is an indicative guide of the bicycle use of the footpath at the time that the footpath data is collected.	The general rules apply for footpaths in the following areas: Schools: use 3-4 Shared pathways: use 3-5 All other footpaths: use 1.	Ensure that the scooter use data provided correlates to the area that the footpath is located in. Defined as: 1=Low 2=Low/medium 3=Medium 4=Medium/high 5=High U=Unknown	Looks up on table footpath_use 1 2 3 4 5 U	Optional	To be confirmed
steps_length					Optional	Not required
extra_area	extra_area is the additional area of footpath over and above the area calculated by the true length_m x width.	It is important that this area is collected as it affects the overall value of the footpath asset. Extra area comes in the form of pram crossings, sealed entrances to carparks and other buildings, and changes in width.		0-30000	Optional	Compulsory when certain conditions are met
total_area	total_area is the total area of footpath and is calculated by adding the extra_area to the true length_m x width area.	This does not need to be collected in the field. This data is automatically generated by the RAMM database once the data is collected.	This does not need to be collected in the field. This data is automatically generated by the RAMM database once the data is collected.	Calculated by the database	Optional	System Generated
constructed	constructed is the date that the footpath was constructed.	This information can be obtained from the surfacing contractors sealing/paving records. In most cases, a footpath is constructed over a number of days. Please use the last date of construction as the constructed date.	This date should not change if the footpath is simply RESURFACED. However, if the footpath is RECONSTRUCTED, then the footpath will need to be deleted from the database and a new record added.		Optional	Compulsory

Footpath Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
age				Calculated by the database	System Generated	System Generated
surface_date	surface_date is the date that the footpath was last surfaced.	Typically the surface_date is the same as the constructed date unless the footpath has been resurfaced since it was constructed. Resurfacing of footpaths is usually limited to asphalt and chipseal footpaths-most other footpaths are reconstructed.	If the footpath has been resurfaced only, then the surface_date will need to be changed, subject to the same surface being placed on the footpath.	Date	Optional	Compulsory
ru_life	ru_life is the remaining useful life of the footpath.				Optional	Not required
rul_reset		Not required to be collected unless specifically instructed	Typically enter "N"	N	Compulsory	Compulsory
condition_wt	Calculated weighting from assessment	This does not need to be collected in the field.		Calc Weight	Not required	Not required

Footpath Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
condition	condition is the condition of the footpath using the 1-5 scale of condition rating.	This is a subjective guide to represent the ***average*** footpath condition over its length. For brand new footpaths resulting from reconstruction or subdivision projects this will be 1. For footpaths requiring immediate replacement this will be 5. Use the guide to assist you in assessing condition of the remaining footpath condition.	Be aware that the condition of as footpath can change-always check the condition date before using the condition data as a guide to the condition of the asset. Defined as: 1-Excellent (new or near new footpath) 2-Good (good condition but not new) 3-Average (aged footpath but still in reasonably good condition not requiring replacement for 5-20 years, some minor repairs) 4-Poor (aged footpath in poor condition requiring replacement in 1-5 years, substantial evidence of repairs) 5-Very poor (aged and deteriorated footpath requiring replacement immediately) U-Unknown (condition is unknown)Default = U	1 2 3 4 5 U	Compulsory	Compulsory
condition_date	condition _date is the date that the footpath condition was assessed.	This is usually the date that the RAMM data was collected, however there may be some exceptions to this.		Date	Optional	Compulsory
likelihood_wt	Calculated weighting from assessment	This does not need to be collected in the field.			Optional	Not required
risk_likelihood		Not required to be collected unless specifically instructed	Typically enter U	1-Rare 2-Unlikely 3-Possible 4-Likely 5-Almost Certain U-Unknown Default = U	Compulsory	Compulsory

Footpath Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
consequence_wt	Calculated weighting from assessment	This does not need to be collected in the field.			Optional	Not required
risk_consequence		Not required to be collected unless specifically instructed	Typically enter U	1-Insignificant 2-Minor 3-Moderate 4-Major 5-Extreme U-Unknown Default = U	Compulsory	Compulsory
risk		Not required to be collected unless specifically instructed	Typically enter U	1-Very low 2-Low 3-Medium 4-High 5-Extreme U-Unknown Default = U	Compulsory	Compulsory
risk_date	Date the risk value was last updated	Not required to be collected	Null	Date	Optional	Not required
other_road_id	other_road_id is the road_id of the road that J footpaths end on.	You only need to collect this data for J Footpaths. Use the RAMM carriageway table list to obtain this information. If you do not have this information, provide the full roadname as a minimum.	Ensure that the road_id provided on the RAMM update sheet correlates with the road name shown on the carriageway list.	Looks up on table roadnames	Compulsory when certain conditions are met	Compulsory when certain conditions are met

Footpath Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
other_location	other_location is the displacement in m along the road that J footpaths end on.	You only need to collect this data for J Footpaths. Use the RAMM carriageway table list to obtain this information. Measure the distance the same way you would with any other asset using a calibrated tripmeter or measuring wheel. Check that you are measuring the distance in the right direction along the other road.	Ensure that the other location displacement provided sits within the road length of the other road. You can use aerial imagery to confirm that the data is correct.	0-99999	Compulsory when certain conditions are met	Compulsory when certain conditions are met
other_side	other_side is the side of the road that the J footpath ends on.	You only need to collect this data for J Footpaths. Make sure you collect the right side of the road in relation to the increasing direction of the road that the J footpath ends on.	Ensure that the other_side provided is correct in relation to the increasing direction of the other road. You can use aerial imagery to confirm that the data is correct. Defined as: C-footpath is located in **Centre** of road L-footpath is located on the **Left** hand side of the road R-footpath is located on the **Right** hand side of the road U-footpath position is **Unknown.**	C L R U	Compulsory when certain conditions are met	Compulsory when certain conditions are met
purpose	purpose is the purpose of the footpath.	Footpath purpose is an onsite assessment of the purpose of the footpath. Typically this field will either be B or F, as there are very few cycle specific footpaths (most cycleways will be used as shared pathways by both cyclists and pedestrians).	Typically this field will either be B or F, as there are very few cycle specific footpaths (most cycleways will be used as shared pathways by both cyclists and pedestrians). Defined as: B-Both (both cycles and pedestrians use the footpath) C-Cycleway (only cycles use the footpath) F-Footpath (the footpath is only used by pedestrians).	B C F	Compulsory	Compulsory

Footpath Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
maintained_by	maintained_by is the organisation that is responsible for the maintenance of the footpath.	For almost all footpaths the maintained_by field will be the organisation responsible for footpath maintenance for the Auckland Transport footpath network, however, there may be some footpaths that are maintained privately, or by other organisations.	maintained_by needs to be updated whenever there is a change in the organisation responsible for maintenance of the footpath.	Looks up on organisation	Optional	Compulsory
asset_owner	asset_owner is the organisation that owns the footpath asset.	For almost all footpaths the asset_owner will be Auckland Transport footpath, however, there may be some footpaths that are owned privately, or by other organisations that need to be in RAMM.		Looks up on asset owner	Optional	Compulsory
standard_rc	This is the unique Identifier for the asset valuation standard replacement cost	Not required to be collected		Looks up on av_standard_rc	Optional	System Generated
use_default_rc	User default replacement cost assigned for asset valuation	Not required to be collected		D – Default U - User	Compulsory	System Generated
original_cost	It is the original cost of installing or constructing the asset	Not required to be collected	Enter the value in the database if the cost information is available.	0-99999	Optional	Not Required
rc_value	It is the replacement Cost of the asset	Not required to be collected		0-99999	Optional	System Generated

Footpath Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
drc_value	It is the depreciated replacement cost of the asset	Not required to be collected		0-99999	Optional	System Generated
annual_drc_value	It is the annual depreciation of the asset	Not required to be collected		0-99999	Optional	System Generated
valuation_date	Date when the last valuation was carried	Not required to be collected		Date	Optional	System Generated
notes	notes is a free text field for collecting any other information about the footpath asset that cannot be inputted into any of the other fields.	Please provide any comments that may assist with the entry of data into RAMM and improve the understanding of footpath attributes that aren't captured elsewhere on the RAMM update form. Some typical comments include: -"FOOTPATH WIDTH VARIES ALONG LENGTH" -"FOOTPATH SURFACING VARIES ALONG LENGTH" -"FOOTPATH SEVERELY DAMAGED" -"FOOTPATH POSITION/OFFSET VARIES ALONG LENGTH" -"FOOTPATH AGE VARIES ALONG LENGTH".	Enter only relevant comments. Enter all comments in CAPITAL LETTERS. Avoid non text and numerical characters in your comments such as / , " ? \ # $ etc.	Free text (255 char)	Optional	Compulsory when certain conditions are met
as_tip_note	It is the general tip for the assessor when assessing the asset	Not required to be collected			Optional	Not required

Footpath Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
bridge_id	bridge_id the footpath is attached to.	Not required to be collected	Where a footpath exists on a bridge, that section is recorded against the bridge. This ensures no double counting of assets for valuation etc.		Optional	Compulsory when certain conditions are met
collect_name	collect_name is the name of the organisation that collected the data.	Use the organisation lookup codes to populate this field, or alternatively provide an accurate description of the organisation that is responsible for collecting the data.		Looks up on organisation	Optional	Compulsory
collect_date	collect_date is the date that the footpath data was collected.	Provide the date that the RAMM data was collected.		Date	Optional	Compulsory
added_on	added_on is the date that the data was added to the database.	This field is not required for data collection.	This date is automatically assigned if you are adding data via RAMM for Windows. If you are using the RAMM Manager Import facility you need to add the date to this column in dd/mm/yyyy format.		System Generated	System Generated

Footpath Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
added_by	added_by is the RAMM username of the organisation that entered the data.	This field is not required for data collection.	added_by is automatically assigned if you are adding data via RAMM for Windows. If you are using the RAMM Manager Import facility you need to add your RAMM username to this column.		System Generated	System Generated
chgd_on	chgd_on is the date that the data was changed in the database.	This field is not required for data collection.	This date is automatically updated if you are changing data directly in RAMM for Windows. If you are using the RAMM Manager Import facility you need to add the date to this column in dd/mm/yyyy format.		System Generated	System Generated
chgd_by	chgd_by is the RAMM username of the organisation that changed the data in RAMM.	This field is not required for data collection.	added_by is automatically assigned if you are adding data via RAMM for Windows. If you are using the RAMM Manager Import facility you need to add your RAMM username to this column.		System Generated	System Generated

5.4 Loading Data Dictionary

Loading Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
road_id	road_id is the RAMM road_id of the road that the traffic loading is counted/ estimated/ defaulted on.	Use the RAMM carriageway table list to obtain this information. If you do not have this information, provide the full roadname as a minimum.	Ensure that the road_id provided on the RAMM update sheet correlates with the road name shown on the carriageway list.	Looks up on table roadnames	Compulsory	Compulsory
carrway_start_m	carrway_start_m is the start of the carriageway relating to the road origin. It identifies the section of road where the traffic loading count / estimate / default is located. This is measured in metres relative to the road origin.	Use the RAMM carriageway table list to obtain this information. If you do not have this information, provide the location of the count as a minimum.	Ensure that the carriageway_start_m provided on the RAMM update sheet correlates with the carriageway section under the roadname shown on the carriageway list. If data is loaded through RAMM Manager then carrway_start_m is automatically assigned.	Looks up on table carriageway , 0-99999	Compulsory	Compulsory
latest	This field describes whether the traffic loading row is the latest for the current location (in terms of physical counts) or the carriageway section (in terms of estimates and default values). There can be only one latest count either a count, estimate or default value (if no estimate or count is available).	Any new physical counts or estimates resulting from subdivision data collection would need to be identified with a latest tag.	Ensure that the values used comply with the allowable value list. If not populated, default to L (Latest). Database processes which are run by RSL should check the latest status for counts.	L or N Default = Latest N= not latest	Compulsory	Compulsory

Loading Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
location	location is the displacement of the physical count in metres relative to the location on the road that the count is located on. The location is the distance from the start of the road to the start of the physical count on site.	Use either a calibrated measuring wheel or a calibrated vehicle tripmeter to collect location. . You will need to know what the increasing direction of the road is before confirming the location.	Ensure that the location is contained within the road/ carriageway length. Not required to be populated for estimates. Default values get populated with the carriageway_start_m.	0-99999	Required for Count "'C"	Required for Count "'C"
direction	This field describes the direction/ lane in which the count was undertaken.	You will need to know what the increasing direction of the road through the road schedule before confirming the direction/ lane.	Ensure that the direction/lane is correctly populated especially for divided carriageways containing more than one lane in one direction. Estimates can only be populated with "B"- Both Lanes.	L (left lane) R(right) B(both) L1 (Left lane 1) L2(Left lane 2) L3(Left Lane 3) L4(Left Lane 4) L5(Left Lane 5) R1(Right Lane 1) R2(Right Lane 2) R3(Right Lane 3) R4(Right Lane 4) R5(Right Lane 5)	Compulsory	Compulsory

Loading Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
count_site_id	This field describes the unique count site used for NZTA networks and the traffic estimation module.	Not required to be collected	Not required to be populated unless using traffic estimation module or on NZTA networks. Permanent count location site id information is usually added into the notes field.	1-9999999999	Not required	Not required
survey_date	Date when physical traffic count was ***started*** or estimate was revised/added.	Use tube and permanent count download information from contractors to determine start date for the analysis and reporting in case of physical traffic counts.	Ensure the date field is correctly populated as this determines whether a count or estimate is the latest or not. For physical count data, this is the date when the count was started for analysis/ volume purposes. For estimates the date when the estimate was revised/ added due to new roads or carriageway sections created. Default dates are created automatically when the RSL update processes are run for new/ amended carriageway sections in the loading table.	dd/mm/yyyy	Compulsory	Compulsory
load_status	Lets you know if the row is a physical traffic count or an estimate.	Any values obtained from a physical traffic count are known as a count while any data added through desktop analysis e.g. in the case for new subdivision roads is called an estimate.	Every carriageway section requires a traffic count estimate which will need to be populated in the traffic count table.	C (Count), E (Estimate) or D (Default) Default = C	Compulsory	Compulsory

Loading Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
default_category	This field describes the category used for default values used in loading data based on the carriageway hierarchy and urban_rural type.	Not required to be collected	If urban_rural and carriageway hierarchy type in carriageway table are correct this should not be required to be checked.	RO- Rural Other RS-Rural Strategic UA- Urban Arterial UO - Urban Other	Not required	Not required
pc_car	This field describes percentage of traffic that are cars.	Ensure raw download data classifies according to the NZTA 2011 classification system, based on which percentages are calculated.	Check totals of individual categories add up to 100%.	0-100	Required for Count "'C"	Required for Count "'C"
pc_lcv	This field describes percentage of traffic that are light commercial vehicles.	Ensure raw download data classifies according to the NZTA 2011 classification system, based on which percentages are calculated.	Check totals of individual categories add up to 100%.	0-100	Required for Count "'C"	Required for Count "'C"
pc_mcv	This field describes percentage of traffic that are medium commercial vehicles.	Ensure raw download data classifies according to the NZTA 2011 classification system, based on which percentages are calculated.	Check totals of individual categories add up to 100%.	0-100	Required for Count "'C"	Required for Count "'C"
pc_hcv_i	This field describes percentage of traffic that are heavy commercial vehicles type 1.	Ensure raw download data classifies according to the NZTA 2011 classification system, based on which percentages are calculated.	Check totals of individual categories add up to 100%.	0-100	Required for Count "'C"	Required for Count "'C"

Loading Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
pc_hcv_ii	This field describes percentage of traffic that are heavy commercial vehicles type 2.	Ensure raw download data classifies according to the NZTA 2011 classification system, based on which percentages are calculated.	Check totals of individual categories add up to 100%.	0-100	Required for Count "'C"	Required for Count "'C"
pc_bus	This field describes percentage of traffic that are buses.	Ensure raw download data classifies according to the NZTA 2011 classification system, based on which percentages are calculated.	Check totals of individual categories add up to 100%.	0-100	Required for Count "'C"	Required for Count "'C"
esa_mcv	This field describes the equivalent standard axles (ESA) per medium commercial vehicles.	Not required to be collected	Not required to be populated as it is a calculated field when manual entry is done, usually populated with a zero when loading through import files.	0.000-99.999	System generated	System generated
esa_hcv_i	This field describes the equivalent standard axles (ESA) per heavy commercial vehicles type 1.	Not required to be collected	Not required to be populated as it is a calculated field when manual entry is done, usually populated with a zero when loading through import files.	0.000-99.999	System generated	System generated

Loading Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
esa_hcv_ii	This field describes the equivalent standard axles (ESA) per heavy commercial vehicles type 2.	Not required to be collected	Not required to be populated as it is a calculated field when manual entry is done, usually populated with a zero when loading through import files.	0.000-99.999	System generated	System generated
esa_bus	This field describes the equivalent standard axles (ESA) per heavy commercial vehicles type 2.	Not required to be collected	Not required to be populated as it is a calculated field when manual entry is done, usually populated with a zero when loading through import files.	0.000-99.999	System generated	System generated
pc_heavy	This field is the sum of the pc_mcv, pc_hcv_1, pc_hcv_2 and pc_bus fields.	Ensure raw download data classifies according to the NZTA 2011 classification system, based on which percentages are calculated.	Check totals of individual categories add up correctly to pc_heavy.	0-100	Compulsory	Required for Count "'C"
esa_heavy	This field calculates the ESA per heavy vehicle categories (MCV, HCV1, HCV2 and Bus).	Not required to be collected	Not required to be populated as it is a calculated field when manual entry is done, usually populated with a zero when loading through import files.	0.000-99.999	Compulsory	Required for Count "'C"
load_method	This field describes the loading survey method.	Not required to be collected	Not required to be checked.	C,E,S,U, V and W	Not required	Not required

Loading Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
counter_desc	This field describes the counter type used for collection of the loading data.	Not required to be collected	Not required to be checked.	Varchar(20)	Not required	Not required
duration	This field describes the number related to the analysis period used to obtain ADT values for physical counts.	Use tube and permanent count download information from contractors to determine duration of analysis period in case of physical traffic counts. The duration the tubes are actually placed out on site as this is usually longer than the analysis period.	Ensure the analysis period is correctly populated for physical counts based on data obtained from contractor. For estimates indicate duration based on ADT volume.	1.0-999.9 e.g. 7.0	Required for Count "'C"	Required for Count "'C"
duration_type	This field indicates whether the analysis period is in days or hours.	Use tube and permanent count download information from contractors to determine duration in case of physical traffic counts. The duration the tubes are actually placed out on site as this is usually longer than the analysis period.	Ensure the unit for the analysis period is correctly populated for physical counts based on data obtained from contractor. For estimates indicate duration based on ADT volume.	D(Days) or H(hours)	Required for Count "'C"	Required for Count "'C"
start_time	This field indicates the start time of the analysis period in 24.00 hour format.	Use tube and permanent count download information from contractors to determine start time in case of physical traffic loading counts.	As counts loaded into RAMM are for the 7 day period not required to be populated.	HH:MM	Not required	Not required
site_name	This field describes the site where the count was undertaken, associated with NZTA networks. Permanent site location ids have usually been included in the notes field.	Not required to be collected	Not required to be populated as added into notes field.	Char(10)	Not required	Not required

Loading Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
confidence	This field describes the statistical confidence of count readings. Only associated with count type "C".	The contractor must ensure Quality Assurance checks as per AT traffic count service requirements are carried out.	Check QA reports obtained from contractor to ascertain data integrity. Field not required to be populated.	0-100	Not required	Not required
survey_number	This field describes the unique header for the Traffic loading file.	Not required	Not required	1-99999	Not required	Not required
est_derived_from	This field describes the method used to populate new loading estimates.	Does not need to be collected	Add Estimate if default values do not give you the approximate classification categories due to unique commercial vehicle flow characteristics of the road, e.g.. near a quarry, CBD areas etc.	C (Counting system) L (Local Knowledge) M (Measured Flow) T(Transport Model)	Not required	Required if estimate is added/ updated
notes	This field includes general comments relevant to the traffic loading count.	Use tube and permanent count download information from contractors to determine location description of physical traffic counts.	The notes field is usually populated with the location description.	varChar(255) e.g. approx.100 m east of Wairere Road-outside No 26	Not required	Optional

Loading Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
loading_id	loading_id is the unique asset id assigned to the traffic row.	For data collection of new traffic loading counts, loading_id is not required.	For new traffic loading counts being added via RAMM for Windows, RAMM will automatically assign a loading_id. For new traffic counts being added via RAMM Manager Import Facility, set loading_id to 0 in the loadfile.	0-9999999999	Compulsory	Compulsory
added_on	added_on is the date that the data was added to the database.	This field is not required for data collection.	This date is automatically assigned if you are adding data via RAMM for Windows. If you are using the RAMM Manager Import facility you need to add the date to this column in dd/mm/yyyy format.		System Generated	System Generated
added_by	added_by is the RAMM username of the organisation that entered the data.	This field is not required for data collection.	added_by is automatically assigned if you are adding data via RAMM for Windows. If you are using the RAMM Manager Import facility you need to add your RAMM username to this column.		System Generated	System Generated

Loading Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
chgd_on	chgd_on is the date that the data was chgd in the database.	This field is not required for data collection.	This date is automatically updated if you are changing data directly in RAMM for Windows. If you are using the RAMM Manager Import facility you need to add the date to this column in dd/mm/yyyy format.		System Generated	System Generated
chgd_by	chgd_by is the RAMM username of the organisation that changed the data in RAMM.	This field is not required for data collection.	added_by is automatically assigned if you are adding data via RAMM for Windows. If you are using the RAMM Manager Import facility you need to add your RAMM username to this column.		System Generated	System Generated

5.5 Maintenance Cost Data Dictionary

Maintenance Cost Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
transaction_id	transaction_id is the Unique identifier for the Maintenance Cost Transaction.	Not required for data collection purposes.	Automatically assigned by RAMM.	0-9999999999	Compulsory	Compulsory
batch_id	batch_id is the RAMM batch_id for the Maintenance Cost Batch Header.		Each batch that is entered into RAMM is allocated a unique batch id. Ensure the batch id table is filled in correctly. The batch name must follow the format: YYYY/MM/"Contract #". This relies on accurate Contract setup in RAMM Contractor.	looks up on mc_batch_header	Compulsory	Compulsory
transaction_date	transaction_date is the date that the work was completed.	Provide the date in the correct format (dd/mm/yyyy).	The data must be in the correct dd/mm/yyyy format i.e.: 15/11/2011.		Compulsory	Compulsory
financial_year	financial_year is the financial year (1 July to 30 June) of the transaction e.g.: 2011/12.	Future dates will be rejected.	e.g. 2011/12	1990/91 - 2030/31	Compulsory	Compulsory
cost_group	cost_group is the maintenance cost group code for the activity carried out.	Each schedule item must properly replicate a cost group. Avoid use of OTHER.	Maintenance fault data is provided by the contractor on a monthly basis. This is either transferred via RAMM Contractor or RAMM Manager input function.	Looks up on mc_cost_group	Compulsory	Compulsory

Maintenance Cost Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
activity	activity is the maintenance activity carried out within each specific cost group.	Each schedule item must properly replicate an activity.	Maintenance activity data is provided by the contractor on a monthly basis. This is either transferred via RAMM Contractor or RAMM Manager input function.	Looks up on mc_activity	Compulsory	Compulsory
fault	fault is the maintenance fault code which describes the fault that requires intervention by maintenance.	Each schedule item must properly replicate a fault. Avoid use of UNKNOWN.	Maintenance fault data is provided by the contractor on a monthly basis. This is either transferred via RAMM Contractor or RAMM Manager input function.	Looks up on mc_fault	Compulsory	Compulsory
cost_amount	cost_amount is the cost of the maintenance activity.	Each schedule item/action must properly replicate a cost amount.	Cost amount data is provided by the contractor on a monthly basis for the work that is being carried out. This is either transferred via RAMM Contractor or RAMM Manager input function.	$	Optional	Compulsory
cost_amount_rci	cost_amount _rci is the CCI adjusted maintenance cost amount.		Note that the RCI values need to be kept up to date to ensure that these values are accurate.	$	Optional	System Generated

Maintenance Cost Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
quantity	quantity is the maintenance cost transaction quantity.	Each activity must have a corresponding qty.	Quantity data is provided by the contractor on a monthly basis for each of the work carried out. This is either transferred via RAMM Contractor or RAMM Manager input function.	0.00 to 999999999999	Compulsory	Compulsory
adj_quantity	Adjusted quantity is the converted maintenance cost transaction. quantity	The quantity is altered if the client wishes all measurements to be the same i.e. from m^2 to m			Optional	Not required
qty_unit	qty_unit is the unit of measure.	Avoid use of wrong unit of measure	e.g.. m^2, m3, km, ea.		Optional	Compulsory
failure	failure is the failure category.	Each schedule item must properly replicate a failure.	Maintenance failure data is provided by the contractor on a monthly basis. This is either transferred via RAMM Contractor or RAMM Manager input function.	Looks up on mc_failure	Optional	Optional
asset_id	asset_id is the unique identifier of any asset that the maintenance activity is being carried out on.	asset id only needs to be provided if you are carrying out maintenance work on or around a bridge structure. If you don't know the id of the bridge asset, please provide some additional information about the bridge so this data can be sourced by others.	If the maintenance activity is related to a specific asset, then an asset_id should have been provided.		Optional	Optional

Maintenance Cost Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
northing	northing is the GPS reading (in northings and eastings) of the maintenance activity.			decimal(12,4) >=-99.9999 and 9999999.9	Optional	Optional
easting	easting is the GPS reading (in northings and eastings) of the maintenance activity.			decimal(12,4) >=-99.9999 and 9999999.10	Optional	Optional
gps_by	gps_by is the organisation that collected the data.			Looks up on organisation	Optional	Optional
gps_method_id	gps_method_id is the ID of the method that was used to collect the data and indicates both the type of equipment used and the accuracy of that equipment.			1-Generic GPS device (+/- 5 m) 2-User clicked on map (+/- 10m) 3-Update from RAMM Map (+/- 10m) 4-Unknown (no accuracy) 5-Taken from asset (no accuracy) 6-Default (no accuracy)	Optional	Optional
road_id	road_id is the RAMM road_id of the road that the footpath is on.	Use the RAMM carriageway table list to obtain this information. If you do not have this information, provide the full roadname as a minimum.	Ensure that the road_id provided on the RAMM update sheet correlates with the road name shown on the carriageway list.	Looks up on table roadnames	Compulsory	Compulsory
start_m	start_m is the end displacement in metres of the work relative to the location of the road origin.	Use either a calibrated measuring wheel or a calibrated vehicle tripmeter to collect start_m.	Ensure that an start_m is provided for all work types that require a start_m.	0-99999	Compulsory	Compulsory

Maintenance Cost Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
end_m	end_m is the end displacement in metres of the work relative to the location of the road origin.	Use either a calibrated measuring wheel or a calibrated vehicle tripmeter to collect end_m.	Ensure that an end_m is provided for all work types that require a end_m.	1-99999	Compulsory	Compulsory only when certain conditions are met
length_m	length_m is the length of the activity. In almost all cases, this is simply the end_m - the start_m.	Only provide this data if the work length is not equal to end_m - start_m.	Typically this will be equal to end_m - start _m.	0-99999	System generated	System generated
work_position	work_position is the position where the work took place relative to the centreline of the road facing in the increasing direction.	Avoid use of Unknown and Not Applicable	Good practice is to sort the data by various means (i.e. activity or cost group) prior to loading to ensure that the work_position data is logical.	B Both sides C Centre F Full width L Left N Not Applicable R Right U Unknown	Compulsory	Compulsory
analysis_code	budget code used for financial analysis.	Can be entered where provided by Auckland Transport.	This can be used to roll up costs to budget codes. It can provide total cost to date, and remaining budget can be calculated.	Char(15)	Optional	Optional
external_id	external_id is the External system transaction ID.	If RAMM Contractor is used, then this defaults to the dispatch ID.			Optional	Compulsory

Maintenance Cost Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
added_on	added_on is the date that the data was added to the database.	This field is not required for data collection.	This date is automatically assigned if you are adding data via RAMM for Windows. If you are using the RAMM Manager Import facility you need to add the date to this column in dd/mm/yyyy format.		System Generated	System Generated
added_by	added_by is the RAMM username of the organisation that entered the data.	This field is not required for data collection.	added_by is automatically assigned if you are adding data via RAMM for Windows. If you are using the RAMM Manager Import facility you need to add your RAMM username to this column.		System Generated	System Generated
chgd_on	chgd_on is the date that the data was changed in the database.	This field is not required for data collection.	This date is automatically updated if you are changing data directly in RAMM for Windows. If you are using the RAMM Manager Import facility you need to add the date to this column in dd/mm/yyyy format.		System Generated	System Generated

Maintenance Cost Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
chgd_by	chgd_by is the RAMM username of the organisation that changed the data in RAMM.	This field is not required for data collection.	added_by is automatically assigned if you are adding data via RAMM for Windows. If you are using the RAMM Manager Import facility you need to add your RAMM username to this column.		System Generated	System Generated

5.6 Pavement Layer Data Dictionary

Pavement Layer Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
layer_id	layer_id is the unique asset id assigned to the layer asset. For new layers being added to RAMM, this is set to 0 and RAMM assigns a layer_id once the asset is added to RAMM. For existing layers that are currently being updated in RAMM, the current layer_id needs to be used as reference to ensure the correct layer is updated.	For data collection for new layers, layer_id is not required. For data collection for existing layers which are being reconstructed, the current layer_id is required.	For importing large quantities of data through RAMM Manager Import facility, set c_surface_id = 0.	0-99999	Compulsory	Compulsory
road_id	road_id is the RAMM road_id of the road that the layer is on.	Use the RAMM carriageway table list to obtain this information. If you do not have this information, provide the full roadname as a minimum.	Ensure that the road_id provided on the RAMM update sheet correlates with the road name shown on the carriageway list.	Looks up table roadnames	Compulsory	Compulsory
start_m	start_m is the start location of the pavement layer in metres relative to the location on the road that the pavement layer start position is located on.	Use either a calibrated measuring wheel or a calibrated vehicle tripmeter to collect start_m.	When adding pavement layer data, it is considered best practice to review the adjacent layers. Underlying layers may need to be adjusted due to earlier measuring errors and to ensure that the pavement layer records align with treatment lengths.	0-99999	Compulsory	Compulsory

Pavement Layer Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
end_m	end_m is the end location of the pavement layer in metres relative to the location on the road that the pavement layer end position is located on.	Use either a calibrated measuring wheel or a calibrated vehicle tripmeter to collect end_m.	Refer to start_m	1-99999	Compulsory	Compulsory
start_name	start_name is the description to be used for the start location of the pavement layer.	Not required.	Typically this field is "START OF" followed by the name of the job.	Varchar (35)	Optional	Not Required
end_name	end_name is the description to be used for the end location of the pavement layer.	Not required.	Typically this field is simply "END OF" followed by the job name.	Varchar (35)	Optional	Not Required
layer_subgrade	Flag to indicate if the record relates to a pavement Layer or a Subgrade Layer.	Determine whether you are dealing with the pavement or subgrade. Typically work on new subdivisions will contain both where rehabs of existing roads will just be pavement layers.		L - Layer S=Subgrade Default	Compulsory	Compulsory

Pavement Layer Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
layer_date	layer_date is the date that the pavement layer was built.	The layer date is the primary key for allowing accurate pavement structures to be created from the pavement_layer table. This information can be obtained from the contractor's construction records. Generally the layers will be put down over a number of days/weeks. The final roll date of each layer should be what is used.	It is important that the dates are accurate and in the correct chronological order for multi layered pavement projects. If you are entering a layer and the date of construction is only estimated, use 01/01/XXXX as the layer_date. If no roll dates are provided, then ensure that the top pavement layer date is at least 1 day before the 1st coat surfacing date, with any previous layers dated accordingly.	dd/mm/yyyy	Compulsory	Compulsory
removed_date	removed_date is the date that the pavement layer was removed.	This information must be provided when an existing layer is removed as part of a reconstruction project, or a layer is recycled as part of a pavement rehabilitation project.	Ensure that the removed_date is applied to all layers which have been removed as part of construction and not just the top layer. Depth of reconstruction / recycling will determine how many layers are affected.	dd/mm/yyyy	Compulsory when certain conditions are met	Compulsory when certain conditions are met
offset	Offset is the distance measured to the nearest 0.1m from the LHS of the sealed carriageway to the LHS of the layer being collected.	Offset only needs to be collected if the Pavement Layer is not full width.	Offset layers need careful manipulation especially when adding them to the LHS. This will mean all existing layers will need to be moved and have an offset added.	0 to 60 Default = 0	Compulsory	Compulsory

Pavement Layer Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
width	width is the average width of the pavement layer to the nearest 0.1m.	Pavement Layer width is collected using a calibrated measuring wheel. It is the average distance along the length of the layer from edge of seal to edge of seal measured to the nearest 0.1m. For uniform width seals, this is straightforward to collect, however for layers with varying width, this needs to be collected by taking the average of the total number of readings taken at 50 to 100m intervals (depending on the variation). For layers whose widths vary greater than 0.5m over a 100m length, consider collecting these as separate records.	Width is only required when the pavement layer is not the full carriageway width.	0 to 99	Compulsory when certain conditions are met	Compulsory when certain conditions are met
full_width_flag	full_width_flag is a means of signalling if the layer extends across the full width of the carriageway.	Please tick this if the pavement layer is full carriageway width.	Full width flag must be checked for all full width pavements, and unchecked for non-full width pavements.	Y - Yes N - No N - Default	Compulsory	Compulsory
estimate_status	This is a flag which indicates if the pavement layer data is based on known or estimated data.	Enter either E for Estimated or K for Known	Generally, all new pavement data should be K. Historic data that has been estimated will be tagged E	E - Estimate K-KnownDefault	Compulsory	Compulsory
layer_strength	The strength of the layer measured in CBR or UCS.	This information should be gained from laboratory test results. Endeavour to provide layer strength as CBR instead of UCS.	Subgrade CBR strength needs to be provided for all new layers.	0 to 120 for CBR 0 to 999 for UCS	Optional	Compulsory when certain conditions are met

Pavement Layer Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
cbr_ucs	The method used to measure the layer strength.	This information should be gained from laboratory test results.		C - CBR U - UCS C - Default	Compulsory	Compulsory
pave_subgrade	Subgrade material	the material at the subgrade level that the pavement is built on. This is only applicable to new roads.		Material Types e.g. CLAY Looks up on pave_subgrade	Compulsory when certain conditions are met	Compulsory when certain conditions are met
thickness	The thickness of the pavement material.	This data can be gained from the construction records and is measured in mm.	The value will depend upon the type of material used. Every pavement material has a lower and upper level value for thickness. Thickness does not need to be provided for subgrade layers.	0 to 99999.	Compulsory when certain conditions are met	Compulsory when certain conditions are met
pave_material	The material used to construct the pavement layer.	This data can be gained from the construction records.	This field can be left blank for subgrade layer records.	Looks up on the pave_material	Compulsory when certain conditions are met	Compulsory when certain conditions are met
pave_source	The quarry that produced the pavement material.	This data can be gained from the construction records.	Record the name of the quarry, not the organisation or company name that supplied the material.	Looks up on the pave_source	Optional	Compulsory

Pavement Layer Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
recycling	Does this layer contain recycled material?	Only populate if recycled components are present in the layer such as slag metal, recycled AC, recycled basecourse as shoulder material.	Set to False if no recycled materials were used. Set to yes if recycled materials were used.	T- True F - False F - Default	Compulsory	Compulsory when certain conditions are met
pct_recycled	Percentage of Recycled material.	Only required if recycled materials used. This is an approximate % for the amount of recycled materials used in construction of the new pavement.	Only required if recycled materials used.	0-30 (inclusive)	Optional	Compulsory when certain conditions are met
surf_recycled_cpnt	Layer Component that is Re-cycled.	Only required if recycled materials used.	Only required if recycled materials used.	Looks up on surf_recycled_cpnt	Optional	Compulsory when certain conditions are met
pave_spec	Contract end user spec code.	The specification covering the way the pavement construction contract is managed and warranted.		looks up on the pave_spec	Optional	Optional
reconstructed	Flag that determines if the layer remains undisturbed or is reconstructed.	Most new layers will go in as undisturbed. Existing layers may get reconstructed with the addition of lime or cement.	Additional data manipulation is required when granular overlays have been stabilised as part of the rehabilitation project. Some of the underlying pavement layers will need to be tagged as reconstructed if the stabilisation depth exceeds the overlay depth.	U -Undisturbed R-Reconstructed U - Default	Compulsory	Compulsory

Pavement Layer Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
plan_no	The plan number on the construction drawings.	Easily obtained from the Construction drawings. Some pavement construction projects do not have drawings especially if the work is essentially in-situ.	Not all pavement layers will be provided with a plan number.	Free form 20 Characters long	Optional	Optional
design_life	Design Life of the new Pavement.	This information can be gained from the pavement designer.	This data is only applicable to newly designed pavements.	0 to 80	Optional	Optional
design_esa	Estimated Design ESA (Equivalent Standard Axle) for the new pavement.	This information can be gained from the pavement designer.	This data is only applicable to newly designed pavements.	0 to 99	Optional	Optional
fw_treatment	Forward Work Treatment that applies to this pavement layer.	Not needed	Leave blank		Not Required	Not Required
notes	Miscellaneous Notes	Add applicable notes	Enter only applicable comments.		Not Required	Compulsory when certain conditions are met
added_on	added_on is the date that the data was added to the database.	This field is not required for data collection.	This date is automatically assigned if you are adding data via RAMM for Windows. If you are using the RAMM Manager Import facility you need to add the date to this column in dd/mm/yyyy format.		System Generated	System Generated

Pavement Layer Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
added_by	added_by is the RAMM username of the organisation that entered the data.	This field is not required for data collection.	added_by is automatically assigned if you are adding data via RAMM for Windows. If you are using the RAMM Manager Import facility you need to add your RAMM username to this column.		System Generated	System Generated
chgd_on	chgd_on is the date that the data was chgd in the database.	This field is not required for data collection.	This date is automatically updated if you are changing data directly in RAMM for Windows. If you are using the RAMM Manager Import facility you need to add the date to this column in dd/mm/yyyy format.		System Generated	System Generated
chgd_by	chgd_by is the RAMM username of the organisation that changed the data in RAMM.	This field is not required for data collection.	added_by is automatically assigned if you are adding data via RAMM for Windows. If you are using the RAMM Manager Import facility you need to add your RAMM username to this column.		System Generated	System Generated

5.7 Roadnames Data Dictionary

Roadnames Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
road_id	This is the unique road_id that is assigned to the road.	Not required to be collected in the field.	This generally is a system generated number. Where you want to keep the road id numbering consistent within the old legacy council area, then the assigned road id will have to be updated to the next sequential number in the assigned series.	Integer(6)	Compulsory	Compulsory
sh_ne_unique	State Highway element code	Not required	N/A		Optional	Not required
road_name	The legal name of the road.	Add the Council approved name to the database.	Ensure the name that is added to the database is that approved by Council. Use the road vesting/ road naming documentation received from Council. In some cases the physical street name blade may be incorrect and should not be relied upon.	35 Characters	Compulsory	Compulsory
suburb	The name of the suburb the road is located in.	The name can be obtained from a local map. List all suburbs if a road passes through multiple suburbs (i.e.: Great North Rd).	To ensure consistency, check what is recorded for roads near to the road being added, or the road it comes off. Record the suburb at the point of origin of the road in the suburb field of the roadnames table if the road passes through more than one suburb. Ensure that the correct suburb that the road passes through is captured in the carriageway table.	25 Characters	Optional	Compulsory
town	The town the road is located in.	The name can be obtained from a local map.	To ensure consistency, check what is recorded for roads near to the road being added, or the road it comes off.	30 Characters	Optional	Compulsory

Roadnames Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
postal_code	The postal code that relates to the road.	Postal code confirmed from office	This is the postal code used for mailing purposes.	4 Characters	Not Required	Not Required
sh_state_hway	Not required				Not Required	Not Required
sh_element_type	Not required				Not Required	Not Required
sh_ref_station_no	Not required				Not Required	Not Required
sh_rp_km	Not required				Not Required	Not Required
sh_direction	Not required				Not Required	Not Required
sh_common	Not required				Not Required	Not Required
sh_int_rnd_no	Not required				Not Required	Not Required
sh_ramp_no	Not required				Not Required	Not Required
sh_ramp_type	Not required				Not Required	Not Required
sh_ramp_hier	Not required				Not Required	Not Required
external_name	A local name used for car park, walkway/cycleway.	If there is a sign posted name, or well known local reference that is different to the database road name, then collect this information and populate this field. i.e. Countdown Car Park etc.	This is generally only populated where there is a common well known name that is different to the road name.	35 characters	Not Required	Optional

Roadnames Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
external_id	External ID that may link to another asset system.		This field can be used to provide a linkage between one system to another. For example in the legacy Manukau database this field was used to provide a link between the RAMM road id, and that used in Councils GIS system. Any population of this field requires specific instruction from Auckland Transport staff.	10 characters	Not Required	Compulsory when certain conditions are met
road_region	The road controlling authority region code.	The region code is obtained from the NZTA Programme and Funding Manual.	This code is populated using the NZTA allocated code for the individual road controlling authority. Currently this is populated with the previous local government organisation codes. The road region for Auckland Transport is Auckland, with a road region code of 2.	2 numbers	Not Required	Compulsory
road_council	The two digit code for the road controlling authority the road is vested to.	This field does not have a data collection requirement and will be populated by a data administrator.	This field is currently unpopulated in the Auckland Transport Database, as a code had not been added for Auckland Council (this will need to be defined and added to the database). Ensure a standard lookup is used for Auckland Council for consistency.	2 numbers	Not Required	To be confirmed

Roadnames Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
road_type	This defines the type of road asset.	This field will be populated by a database administrator.	The abbreviations to be used are: L - Local Authority (Council) roads C - Car Parks R - Parks and Reserves W - Walkway, or cycleway P - Private Road S - State Highway.	Looks up on road_type	Compulsory	Compulsory
added_on	added_on is the date that the data was added to the database.	This field is not required for data collection.	This date is automatically assigned if you are adding data via RAMM for Windows. If you are using the RAMM Manager Import facility you need to add the date to this column in dd/mm/yyyy format.		System Generated	System Generated
added_by	added_by is the RAMM username of the organisation that entered the data.	This field is not required for data collection.	added_by is automatically assigned if you are adding data via RAMM for Windows. If you are using the RAMM Manager Import facility you need to add your RAMM username to this column.		System Generated	System Generated
chgd_on	chgd_on is the date that the data was chgd in the database.	This field is not required for data collection.	This date is automatically updated if you are changing data directly in RAMM for Windows. If you are using the RAMM Manager Import facility you need to add the date to this column in dd/mm/yyyy format.		System Generated	System Generated
chgd_by	chgd_by is the RAMM username of the organisation that changed the data in RAMM.	This field is not required for data collection.	added_by is automatically assigned if you are adding data via RAMM for Windows. If you are using the RAMM Manager Import facility you need to add your RAMM username to this column.		System Generated	System Generated

5.8 Traffic Data Dictionary

Traffic Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
road_id	road_id is the RAMM road_id of the road that the traffic count is counted/ estimated on.	Use the RAMM carriageway table list to obtain this information. If you do not have this information, provide the full roadname as a minimum.	Ensure that the road_id provided on the RAMM update sheet correlates with the road name shown on the carriageway list.	Looks up on table roadnames	Compulsory	Compulsory
carrway_start_m	carrway_start_m is the start of the carriageway relating to the road origin. It identifies the section of road where the traffic count/estimate is located. This is measured in metres relative to the road origin.	Use the RAMM carriageway table list to obtain this information. If you do not have this information, provide the location of the count as a minimum.	Ensure that the carriageway_start_m provided on the RAMM update sheet correlates with the carriageway section under the roadname shown on the carriageway list. If data is loaded through RAMM Manager then carrway_start_m is automatically assigned.	Looks up on table carriageway, 0-99999	Compulsory	Compulsory
latest	This field describes whether a count or estimate is the latest count for the current location (in terms of physical traffic counts) or the carriageway section (in terms of estimates).	Any new physical counts or estimates resulting from subdivision data collection would need to be identified with a latest tag.	Ensure that the values used comply with the allowable value list. If not populated, default to L (Latest). The processes which are run by RSL overnight should check the latest status for counts.	L or N L - Default	Compulsory	Compulsory

Traffic Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
count_date	Date when physical traffic count was **STARTED** or estimate was revised/added.	Use tube and permanent count download information from contractors to determine start date for the analysis and reporting in case of physical traffic counts.	Ensure the date field is correctly populated as this determines whether a count or estimate is the latest or not. For physical count data, this is the date when the count was **STARTED** for analysis/ volume purposes. For estimates the date when the estimate was revised/ added due to new roads or carriageway sections created.	dd/mm/yyyy	Compulsory	Compulsory
count_status	Lets you know if the row is a physical traffic count or an estimate.	Any values obtained from a physical traffic count are known as a count while any data added through desktop analysis e.g. in the case for new subdivision roads is called an estimate.	Every carriageway section requires a traffic count estimate which will need to be populated in the traffic count table.	C (Count) or E (Estimate)	Compulsory	Compulsory
time_of_day	This field describes the time of day when count occurred.	Only required to be noted if undertaking a part day count.	Should be noted only if part day count is to be entered into RAMM	AM or PM	Optional	Not required unless part day count completed
count_duration	This field describes the analysis period used to obtain ADT values for physical counts.	Use tube and permanent count download information from contractors to determine duration in case of physical traffic counts. The duration the tubes are actually placed out on site as this is usually longer than the analysis period.	Ensure the duration is correctly populated for physical counts based on data obtained from contractor. For estimates indicate duration based on ADT volume.	24H (24hours), 3H (3hours) or 7D (7 Days)	Optional	Required
week_day	This field describes the day of the week the count/ estimate was done/added, based on the count date. This is a calculated field.	Use tube and permanent count download information from contractors to check the count day.	As this is a calculated field there is no need to populate the data.	1 (Monday) 2 (Tuesday) 3 (Wednesday) 4 (Thursday) 5 (Friday) 6 Saturday 7 Friday	Optional	System Generated

Traffic Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
week_no	This field describes the week the count/ estimate was done/added, based on the count date. This is a calculated field.	Use tube and permanent count download information from contractors to determine the count week.	As this is a calculated field there is no need to populate the data.	1 up to 52	Optional	System Generated
season	This field describes the quarter of the year the count/ estimate was done/added, based on the count date. This is a calculated field.	Use tube and permanent count download information from contractors to determine the quarter.	As this is a calculated field there is no need to populate the data.	Q1, Q2, Q3 or Q4	System Generated	System Generated
location	location is the displacement of the physical count in metres relative to the location on the road that the count is located on.	Use either a calibrated measuring wheel or a calibrated vehicle tripmeter to collect location. You will need to know what the increasing direction of the road is before confirming the location.	Ensure that the location is contained within the road/ carriageway length. Not required to be populated for estimates.	0-99999	Optional	Required for Count "'C"
count_site_id	This field describes the unique count site used for NZTA networks and the traffic estimation module.	Not required to be collected.	Not required to be populated unless using traffic estimation module or on NZTA networks. Permanent count location site id information is usually added into the notes field.	Looks on tc_count_site	Optional	Not required

Traffic Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
adt	This field gives you the Average Daily Traffic volumes for the count ''C" or Estimate "E" based on the count duration.	Use tube and permanent count download information from contractors to determine ADT in case of physical traffic counts. Methodology of collection/ quality assurance as described in contractors methodology.	Check ADT volumes against historic data if available at same location to ascertain data validity. Estimate ADT volumes need to be checked and updated based on latest traffic count ADT. Pavement use bands in the carriageway table also need to cross checked when updating estimates.	1-999000	Compulsory	Compulsory
direction	This field describes the direction/ lane in which the count was undertaken.	You will need to know what the increasing direction of the road through the road schedule before confirming the direction/lane.	Ensure that the direction/lane is correctly populated especially for divided carriageways containing more than one lane in one direction. Estimates can only be populated with "B"- Both Lanes.	L (Left Lane) R(Right Lane) B(Both Lanes) L1 (Left Lane 1) L2(Left Lane 2) L3(Left Lane 3) L4(Left Lane 4) L5(Left Lane 5) R1(Right Lane 1) R2(Right Lane 2) R3(Right Lane3) R4(Right Lane 4) R5(Right Lane 5)	Compulsory	Compulsory
peak	This field describes the average traffic volumes for the peak hour. Only associated with traffic count "C".	Use tube and permanent count download information from contractors to determine the peak hour traffic.	This is information required in relation to traffic modelling, ensure peak volume is added into the notes field.	1-99999	Not required	Required for Count "'C"

Traffic Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
peak_hour	This field describes the peak hour. Only associated with traffic count "C".	Use tube and permanent count download information from contractors to determine the peak hour.	This is important information required in relation to traffic modelling , ensure peak start hour to be added.	Char(5) e.g. 10:00	Not required	Required for Count "'C"
site_name	This field describes the site where the count was undertaken, associated with NZTA networks. Permanent site location ids have usually been included in the notes field.	Not required to be collected	Not required to be populated as added into notes field.	Char(10)	Not required	Not required
location_desc	This field describes the location of the count site.	The contractor report templates must note the carriageway section in where the physical counts are undertaken, and include house number if outside properties.	Check location description matches carriageway section in which counts are undertaken. Not required for estimates. Do not use commas or slashes.	VarChar(35) e.g. Approx.100m east of Wairere Road-outside No 26	Not required	Required for Count "'C"
confidence	This field describes the statistical confidence of count readings. Only associated with count type "C".	The contractor must ensure Quality Assurance checks as per AT traffic count service requirements are carried out.	Check QA reports obtained from contractor to ascertain data integrity. Field not required to be populated.	0-100	Not required	Not required
traffic_ adjustment	This field describes the multiplier for adjusting NZTA Traffic monitoring System AADT to generate Traffic Estimates.	Not required	Not required	decimal (7,6)	Not required	Not required
survey_number	This field describes the unique header for the traffic load file.	Not required	Not required	1-99999	Not required	Not required

Traffic Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
est_derived_from	This field describes the method used to populate new traffic estimates.	Does not need to be collected	Check estimates for new subdivision roads are populated through estimating the number of vehicle trips along the length of road based on the number of properties. Local knowledge, modelling, or the estimation module can be used to update estimates for other sections of road where traffic volumes have changed due to changes in the road network.	C (Counting system) L (Local Knowledge) M (Measured Flow) T(Transport Model)	Not required	Required if estimate is added/ updated
notes	This field includes general comments relevant to the traffic count.	The contractor can also provide the 85th speeds relating to the traffic count for population into this field as well as the permanent count site id, if a permanent count.	Ensure the notes field is populated as given in the AT data template for permanent count sites. Avoid the use of commas and slashes in the notes field.	varChar(255) e.g. Site 44-85th-61	Not required	Required for Count "'C"
traffic_id	traffic_id is the unique asset id assigned to the traffic row.	For data collection of new traffic counts, traffic_id is not required.	For new traffic counts being added via RAMM for Windows, RAMM will automatically assign a traffic_id. For new traffic counts being added via RAMM Manager Import Facility, set traffic_id to 0 in the loadfile.	0-9999999999	Compulsory	Compulsory
added_on	added_on is the date that the data was added to the database.	This field is not required for data collection.	This date is automatically assigned if you are adding data via RAMM for Windows. If you are using the RAMM Manager Import facility you need to add the date to this column in dd/mm/yyyy format.		System Generated	System Generated

Traffic Table Field Name	Field Description	Data Collection Guidance Notes	Database Management Comments	Allowable Values	Required by Software	Required by Auckland Transport
added_by	added_by is the RAMM username of the organisation that entered the data.	This field is not required for data collection.	added_by is automatically assigned if you are adding data via RAMM for Windows. If you are using the RAMM Manager Import facility you need to add your RAMM username to this column.		System Generated	System Generated
chgd_on	chgd_on is the date that the data was chgd in the database.	This field is not required for data collection.	This date is automatically updated if you are changing data directly in RAMM for Windows. If you are using the RAMM Manager Import facility you need to add the date to this column in dd/mm/yyyy format		System Generated	System Generated
chgd_by	chgd_by is the RAMM username of the organisation that changed the data in RAMM.	This field is not required for data collection.	added_by is automatically assigned if you are adding data via RAMM for Windows. If you are using the RAMM Manager Import facility you need to add your RAMM username to this column.		System Generated	System Generated

6 DATA COLLECTION FORMS

Current available Auckland Transport data collection forms are listed within this section. Electronic versions of the forms can be requested from the relevant AT project managers.

Current forms available for tables in RAMM are:

- Barrier/ Fence/ Railing
- Berm
- Bus Shelter
- Bridge
- Carriageway Structure
- Carriageway Surface
- Crossings (Vehicle)
- Drainage
- Footpath/ Cycleway
- Islands
- Minor Structures
- Retaining Walls
- Signs
    - Electronic Signs (User Defined Table, ex ACC)
- Street Lights
- Stormwater (User Defined Table, ex ACC)
- Surface Water Channel

As the structure of the RAMM database changes, the forms will require updating. The user should be aware of this, and confirm the data requirements with the AT project Manager, prior to collection. These forms are provided in good faith by Auckland Transport, with responsibility for their currency remaining with the user.

Any inconsistencies found between the forms and the requirements in the manual shall be reported to the Manager: Asset Systems and Monitoring.