IDS

Infrastructure Decision Support

IDS Sealed Roads Model Data Requirements Guide

We have developed this document to give users a better understanding of the data inputs required to implement the IDS Sealed Roads Renewal & Replacement Modelling Tool. In partnership with Te Ringa Maimoa, we have also included industry best practice guidance for these data items. We encourage you to talk to our IDS team about your specific sealed road networks and requirements.

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DATA ITEM	MODEL USE	IMPORTANCE	RECOMMENDED APPROACH
INVENTORY			
Location Referencing	All Processes	**High.** Locational referencing is critical to accuracy of all model processes.	Undertake data validation of the network to confirm extent, length, ownership, pavement type and geospatial centreline data. **Approach:** Undertake a minimum 5% audit of the network to confirm accuracy and completeness. **Review:** CoreLogic data to validate centreline. **Improvement:** Develop a data improvement plan that addresses the outcomes.
Dimensional Characteristics (width, length)	Cost Calculations	**High.** A key input field for calculation of area and subsequent costing is the width field (tl_width). This width is calculated using the average carriageway widths for the treatment length.	Assess accuracy of carriageway characteristic data eg. width. **Approach:** Undertake a minimum 5% audit of the network to confirm the accuracy and completeness. **Improvement:** Develop a data improvement plan that addresses the key audit deficiencies.
Treatment Length Segmentation	Models Cost Calculations	**High.** Treatment length segmentation is a vital element to ensure robust model outcomes. The accuracy of these in representing homogeneous characteristics in pavement performance is para-mount. Length is an important factor. Ranges should be between 50m to 3000m, and should represent typical renewal lengths.	**Approach:** review treatment lengths annually checking treatment lengths have been updated from annual resurfacing and rehabilitation works, physical works from safety related and capital projects. * TE RINGA MAIMOA
Pavement and Surfacing Records	Models Calibration Cost Calculations	**High.** Type of surface (1st coat or reseal, asphalt or chipseal, etc), existing chipseal layers, pavement type (thin flexible, structural AC, unsealed, bridge, etc.) and thickness along with current ages and achieved lives are important factors in calibrating the models. Accurate recording of treatment timing allows assessment of historic works effects (how the condition changed following treatment) which can be utilised to calibrate the performance models.	**Approach:** Collect and validate annually as part of the as-built process, and contract close out. Ensure all completed work (regardless of funding source) is added to the database. * TE RINGA MAIMOA
CONDITION			
Rutting	**Models.** (Key driver for pavement rehabilitation programme, and indictor of pavement preservation)	**High.** Where HSD is not collected, Maintenance Costs replace Rutting as the key driver for pavement rehabilitation.	**Approach:** Use of a highspeed data vehicle with laser capability to accurately measure pavement rutting. Ensure machine is calibrated, with results validated, prior to network survey commencing.
Roughness	Reporting	**Moderate.** Used as a reporting condition for network health and ONRC measures.	**Approach:** Use of a highspeed data vehicle with laser capability to accurately measure pavement roughness. Ensure machine is calibrated, with results validated, prior to network survey commencing.
Cracking	**Models.** (Key driver for resurfacing programme)	**High.** Cracking levels strongly influence timing for treatments. It is a proxy measure for position in the life cycle.	**Approach:** The preferred approach is use of a highspeed data vehicle with laser capability, that can accurately measure and report pavement cracking. Calibration confirmation is vital, with results validated, prior to network survey commencing. Field validation/verification of cracking data is required to be undertaken when this is introduced. **Improvement:** A transition approach to implement the change will need to be developed.
Potholes, shoving, edge break, pot hole patches	Reporting	**Low.**	In future may be incorporated if defect data from contractors becomes readily available or automated data capture improves to collect defect data in acceptable manner.
Ravelling, Texture	Reporting	**Low.**	**Approach:** Use of a highspeed data vehicle with laser capability to accurately measure ravelling and texture. Ensure machine is calibrated, with results validated, prior to network survey commencing.
Drainage	Not currently used	**Moderate.** Key element in asset deterioration. No models currently in place	**Improvement:** Develop processes to capture drainage activity (timing, location and type) and condition where available. This data will enable model development in future.
Skid Resistance	Not currently used by the model. Some special work done for Waka Kotahi (NZTA)	**Low.**	Collect data where the RCA has a clear policy.
Remaining Life	**Models, Calibration.** Update RAMM design life as part of as-built information if life differs from the default life.	**Moderate.** Remaining Life is taken from RAMM and tracked by the model. Following the first treatment, P17 is used to calculate expected surface lives.	**Approach:** Conduct seal life achievement analysis including review and update Default Lives in RAMM.
STRENGTH	**Models, Calibration.** (Key input in pavement prediction models)	**High.** FWD/TSD/MSD data provides a measure of pavement strength. It is useful to estimate where a pavement is in its life cycle, based on its original design parameters. The model is sensitive to pavement strength.	**Approach:** Collect 10-20% representative sample across all pavement classes. Prioritise and higher frequency on higher class roads. Where FWD/TSD/MSD is not available, categorising the network into Weak, Moderate and Strong using local knowledge and geological/soil maps is highly beneficial.
TRAFFIC, LOADING & GROWTH	**Models, Calibration.** (Percentage Heavy traffic taken from AADT is a key variable in pavement models)	**High.** Number of heavy vehicles is a key input in the Rutting model which is the key driver for pavement rehabilitation programme. Traffic growth, particularly future demand and land use impacts is increasingly important.	**Approach:** Robust traffic classification count programme. Every carriageway section should have an estimated traffic count, based on available counts. • A traffic count strategy and annual programme should be established to represent the network. A small percentage of the sites can be control sites, with the balance providing network coverage. * TE RINGA MAIMOA
MAINTENANCE HISTORY	Models Cost Calculations	**High.** Accurate records of "what and where" maintenance work has occurred is required. This provides the basis for economic analysis to be undertaken. Required maintenance effort is often a proxy measure for position in its life cycle, particularly where condition data is not available.	The most important data item to improve upon. Completeness and accuracy of maintenance cost data (including quantity) should be high priority in data quality assessment. Highest priority should be given to heavy maintenance repairs (stabilisation, mill & fill, digouts etc.) and preventative maintenance (drainage works, crack sealing etc.). Renewals should not be included in maintenance costs. * TE RINGA MAIMOA
FWP	**Models, Costs, Reporting.** (The committed year(s) and capital project sites are locked into the model forecasts.)	**High.** Performance of the FWP (in terms of cost and predicted condition) can be assessed. It is recommended the final FWP (following modelling and field drive-over) be run to assess performance.	**Approach:** Update the FWP (particularly current year) prior to modelling. All deferred work will be re-allocated to subsequent years, or work bought forward added.

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