

Root Cause Analysis

Root Cause Analysis Summary

The M&O Root Cause Analysis (RCA) involved taking key elements of the results of the measurement phase and developing the various causes and subsequent root causes in diagrammatic form. Solutions were then identified to address the more critical root causes. The RCA does not cover all the material identified in the measurement phase; it focuses on opportunities for improvements arising directly from problems identified. This document provides a brief summary of the conclusions reached and recommendations made.

Conclusions and Recommendations

- 1 There are opportunities for cost savings that could possibly achieve up to \$50M in year 3 but this is unlikely to achieve the total flat line target in that time period.
- 2 A formalised value benchmarking process and performance management system is required to understand current performance, identify opportunities and measure improvements over time. This process will necessarily include both quantitative and qualitative elements and be used in trend analysis on the same network and for comparison between networks.

Recommendation: Develop and implement a benchmarking/performance management system that utilises value for money measures over time. It is recognised that different networks have different demands and the benchmarking comparison must take account of such factors. This is probably best achieved by the proposed Asset Management Group (AMG). Targets would include renewal quantities per vkt/lane km and seal life achieved etc. Current condition and LoS measures would be monitored but would not be targets in themselves.

- 3 The current measures for condition and LoS at network or national level do not necessarily reflect the real performance or renewals needs accurately. Management of the network solely by these numbers would probably give a less than optimum result. Engineering skill and experience is required, together with good evidence, processes and quality assurance, to achieve the optimum outcome. This is already being addressed through the annual planning process but further development is proposed to provide incentives to improve value for money.

Recommendations: The optimum annual programme can only be determined from a bottom up inspection and analysis of all candidate sites, maintenance history and appropriate condition measures. We need to develop an appropriate way to understand and address the risk imposed by “flat line “ budgets that limit the amount of renewals undertaken, and the method used to propose and agree renewals programme size in the new environment.

This will likely involve a greater degree of risk being held by the NZTA than at present and the use of suitably trained and expert asset managers to assess renewals programmes

proposed by suppliers in a consistent way across the country, acknowledging the different risk factors in each network and the different risk tolerance on different classifications of state highway.

- 4 Renewals have been carried out earlier than necessary in some cases primarily because of perceived risk of failure by suppliers and NZTA at network level.

Recommendation: Provide a specialist national resource to determine best practice and optimum risk and national prioritisation.

- 5 Current forms of contract model include contractual Minimum Quantities that are locked in for long periods of time and do not necessarily provide the optimum annual quantities.

Recommendation: Ensure contractual flexibility for Minimum Quantities so that these can be adjusted to meet the actual need at the optimum time. Lesser quantities could be contractually specified to provide some degree of certainty to tenderers and so continue to achieve good rates for this work.

- 6 The NPV process for justification of pavement rehabilitation projects is not always being applied accurately potentially programming renewals earlier than actually required.

Recommendations: Develop and implement more robust NPV analytical methods for pavement renewals to drive least cost whole of life treatments and timing, probably including verification of do-minimum options through observation of the performance of sites where treatment is deferred. A project to improve renewal treatment and timing is underway.

- 7 The justification process for resurfacing site selection and treatment selection is not clearly defined or consistently applied.

Recommendation: Develop and implement more robust analytical methods for resurfacing works to drive least cost whole of life treatments and timing. A project to improve resurfacing treatment and timing is underway.

- 8 Budget management processes currently drive expenditure to budget and not necessarily value for money.

Recommendation: Revise the budget process and associated business targets to incentivise value for money rather than spend to budget.

- 9 There are too many network management models and too many versions of these models, resulting in variations in standards, practices and performance.

Recommendation: Develop and implement one new network management model to incorporate the above recommendations and also experience to date with other models. It is recognised that there may be exceptions to the standard model for special circumstances, eg Auckland Alliance.

- 10 Variability in contract management and governance contributes to variability of performance and costs across contracts. Consistent application of strong but fair consequences for non compliance is required.

Recommendation: Create a centralised contract management group to lead, monitor and support this function consistently across the country. This would also encompass the governance function for individual contracts and on a national basis.

- 11 The quality of the contract documents in defining the scope of work and all contractual requirements is critical to the quality and price of tenders and subsequent contract delivery.

Recommendation: Ensure quality contract documentation and tender processes that incorporate national standards.

- 12 Too much pavement and surfacing construction is carried out under adverse conditions at the wrong time of year.

Recommendation: Develop methods to advance the annual timing of renewals and also preclude late construction in adverse conditions.

- 13 Contractor quality assurance systems are not effective.

Recommendation: Create an independent quality control group within NZTA to lead supervision of construction works.

- 14 Pavement design and resurfacing work is minimised and not optimised for whole of life costs through current practice for performance based contracts.

Recommendation: Review the renewals design and procurement process to drive whole of life optimisation rather than minimisation of current costs.

- 15 There are inconsistent practices between the regions leading to sub-optimal practices, and independent action by many regions when a nationwide approach is more likely to yield greater value for money.

Recommendation: Define and require the use of standard processes through the AMG or Asset VAT and its working groups for items such as research or technical development rather than the unilateral development and implementation of regional variation.