



TECHNICAL REVIEW OF LOCAL ROADING  
in  
TASMAN DISTRICT COUNCIL  
FINAL Report

Review Team

A handwritten signature in blue ink, appearing to read 'Rebecca George'.

.....  
Rebecca George, Technical Auditor, NZ Transport Agency

A handwritten signature in blue ink, appearing to read 'Max Aves'.

.....  
Max Aves, Manager Roding Assets, New Plymouth District Council

Reviewed By

A handwritten signature in blue ink, appearing to read 'Julian Chisnall'.

.....  
Julian Chisnall, Principal Advisor Investment Monitoring, NZTA

Approved By

A handwritten signature in blue ink, appearing to read 'Marianne McMillan'.

.....  
Marianne McMillan, Investment Monitoring Manager, NZTA

## DISCLAIMER

This is a **FINAL** report. It has been prepared in the discharge of the NZ Transport Agency's legal responsibility to audit the performance of approved organisations in relation to activities approved by the NZ Transport Agency.

The findings, opinions and recommendations in the report are based on an examination of a sample only, and may not address all issues existing at the time of the review. So readers are urged to seek specific advice on particular matters and not rely solely on the report.

While every effort has been made to ensure the accuracy of the report, it is made available strictly on the basis that anyone relying on it does so at their own risk without any liability to the NZ Transport Agency.

## KEY STATISTICS

Total length of local roading network:	1700.5 km
Total length of sealed roads:	927.4 km
Total length of unsealed roads:	773.1 km
Total number of Bridges (plus length)	460 (7411.0 m) Restricted: 29, Timber: 6
Total cost of District Land Transport Programme 2008/09: maintenance and renewals (NZ Transport Agency plus local authority):	\$6.693 million
Total cost of District Land Transport Programme 2008/09: improvements (NZ Transport Agency plus local authority):	\$1.332 million
Base financial assistance rate:	49%
Population (2006 Census – Source: <a href="http://www.stats.govt.nz">www.stats.govt.nz</a> )	44,625
Roading cost 2008/09 (NZ Transport Agency plus local authority) as a proportion of Council's Operating Expenditure: Source: <a href="http://localcouncils.govt.nz">localcouncils.govt.nz</a>	24%
Number of Local Road Crashes in 2009:	Fatal            2 Serious Injury    10 Minor Injury      38 Non Injury        107
Estimated Social Cost of Local Road Crashes on Tasman District Council's network in 2009 (from CAS):	\$20.40 million

## Contents

1	EXECUTIVE SUMMARY .....	1
1.1	Review Dates .....	1
1.2	Scope of Review .....	1
1.3	Review Conclusions .....	1
2	RECOMMENDATIONS .....	2
2.1	Recommendations .....	2
2.2	Suggestions .....	2
3	REVIEW FINDINGS .....	3
3.1	Review Objectives and Principal Findings .....	3
3.1.1	Objective 1: Progress since last review .....	3
3.1.2	Objective 2: Level & Quality .....	3
3.1.3	Objective 3: Meeting Needs .....	3
3.1.4	Objective 4: Reliability of Road Assessment & Maintenance Management Database ...	4
3.1.5	Objective 5: Progress towards long-term programme .....	4
3.2	Previous Reviews .....	5
3.3	Management Systems .....	6
3.3.1	Policy and Planning .....	6
3.3.2	Resourcing .....	7
3.3.3	Monitoring .....	8
3.4	Pavement Management Systems .....	9
3.4.1	RAMM Database .....	9
3.4.2	Treatment selection .....	10
3.4.3	Traffic Count Data .....	11
3.5	Pavement Maintenance .....	12
3.5.1	Sealed Network Condition Trends .....	12
3.5.2	Pavement Maintenance Programme .....	16
3.5.3	Unsealed Road Maintenance .....	19
3.6	Environmental Maintenance & Safety Issues .....	20
3.6.1	Bridges & Structures .....	20
3.6.2	Road Corridor & Traffic Services .....	22
3.6.3	Minor Improvements .....	23
3.6.4	Safety Management .....	23
3.7	Subdivision Management and Land Use .....	26
4	METHODOLOGY .....	27
4.1	Scope of Review .....	27
4.2	Authority to Review (NZ Transport Agency Requirement to Audit) .....	27
4.3	Review Team .....	27
4.4	Fieldwork .....	27
4.5	Consultation on the Draft Report .....	27
5	ACKNOWLEDGEMENTS .....	28
	Appendix A – Audit Plan 2009/10: Technical Review of Tasman District Council	
	Appendix B – Comments on the Draft Report from Tasman District Council	
	Appendix C – Comparative Expenditure Charts	

This page is intentionally blank

# **1 EXECUTIVE SUMMARY**

---

## **1.1 Review Dates**

The road maintenance programme for Tasman District Council was reviewed between 19 and 22 July 2010. This review was conducted as part of Performance Monitoring Unit's business plan for 2009/2010 financial year.

## **1.2 Scope of Review**

- To review progress since the last technical review.
- To assess whether the level and quality of road maintenance being carried out by Tasman District Council is realistic and acceptable.
- To determine the extent to which Tasman District Council's structural and corridor maintenance programme is meeting (not exceeding) maintenance needs.
- To determine the extent to which Council's road assessment & maintenance management database is able to provide reliable reports and treatment selections.
- To determine whether in light of answers to the above questions there is progress towards achieving a balanced whole of life maintenance programme.

## **1.3 Review Conclusions**

The audit team were of the view that Tasman is in the sort of condition that could be expected of a well managed network. Council clearly understands the importance for their network of being proactive and they are well-placed to effectively deliver an appropriate Level of Service to the community.

The Tasman network has a large unsealed portion that is particularly susceptible to horticulture and forestry impacts and there was good recognition by Council of these pressure factors on its network.

The network and its pavements are well understood, with the one weakness being major drainage. Improvement of drainage will require an increased focus on maintenance items such as high shoulders and gradual creation and reinstatement of water tables, on both the sealed and the unsealed rural networks.

The standard of services delivered is consistent across the four contract areas and across both maintenance contractors. Professional services are well supported and prioritised by the long standing local consultant.

There has been good progress with the RAMM database and our findings should be easily addressed.

Good ownership with smart buyer capability is apparent within both Council and their consultant. As the new team continue to establish, we expect the balance of ownership to re-orient more towards Council. The new transport team is well placed to deliver a balanced whole of life maintenance programme.

## 2 RECOMMENDATIONS

---

The following is a summary of our recommendations and suggestions. In some cases, this section of the report may carry an abbreviation of the full wording. The appropriate section of the report should always be referred to for the full statement in its context.

### 2.1 Recommendations

We recommend that Council:

- a) Reviews treatment lengths, to ensure reliable treatment selection analysis can be undertaken (refer section 3.4.1);
- b) Develop and implement a programme to improve rural road network drainage standards (refer section 3.5.2.); and
- c) Continues to adopt and act on the findings of the 2009 RISA review (refer section 3.6.4).

### 2.2 Suggestions

We suggest that Council:

- a) Implement the recommendations of their consultant's 2009 RAMM Annual Audit Report, including consideration of these Technical Audit comments (refer section 3.4.1); and
- b) Introduce consistent on site bridge naming and identification (refer section 3.6.1).

## 3 REVIEW FINDINGS

---

### 3.1 Review Objectives and Principal Findings

#### *3.1.1 Objective 1: Progress since last review*

**To review progress since the last review.**

The findings of the previous Technical Audit are now of historic interest only. Interim reviews looking at RAMM database condition (1998) and Asset Management Planning (2007) have found the Tasman network and its management structure well progressed, but with opportunities for improvement remaining. Some of these have been discussed and noted as part of this current review.

#### *3.1.2 Objective 2: Level & Quality*

**To assess whether the level and quality of roading maintenance being carried out by Tasman District Council is realistic and acceptable.**

The current level and quality of roading maintenance activity being carried out by Tasman District Council is realistic and acceptable with the exception of rural roadside drainage, which requires a sustained and systematic approach to effect network wide improvement (refer section 3.5.2).

#### *3.1.3 Objective 3: Meeting Needs*

**To determine the extent to which Tasman District Council's structural and corridor maintenance programme is meeting (not exceeding) maintenance needs.**

Council's current structural and corridor maintenance programme is well matched to the needs of the network. Where there are weaknesses they have been identified by the new asset management team and correction processes have commenced.

Council's staff is well able to manage network needs and their ability to identify and deliver the structural and corridor maintenance programme will only improve with network familiarity.

**3.1.4 Objective 4: Reliability of Road Assessment & Maintenance Management Database**

**To determine the extent to which Council's road assessment and maintenance management database is able to provide reliable reports and treatment selections.**

Council's RAMM database is well managed by the consultant. There remain areas in need of improvement, but these are prioritised by the consultant for Council with clear explanations. We expect Council to progress these.

Good progress has been made with the database and it can be considered more reliable than most. Treatment lengths are discussed in detail (refer section 3.4) and we recommend they be reviewed.

**3.1.5 Objective 5: Progress towards long-term programme**

**To determine whether in light of answers to the above questions there is progress towards achieving a balanced, whole of life maintenance programme.**

Members of the new asset management team are actively engaged in familiarising themselves with the Tasman network. They are stepping up as network owners, both questioning and critiquing the advice and recommendations given. We expect that if this level of ownership is sustained and broadened to the internal elements affecting the network, then Council will be well on its way to achieving a balanced whole of life maintenance programme that will deliver value for investment to both NZTA and the local Tasman community.



### **3.2 Previous Reviews**

The last Technical Review, by NZTA or its predecessor organisations, was in April 1998 – this is considered to be of historical interest only, due to the passing of time, legislative changes, and staff changes.

The 1998 review included consideration of the RAMM database. It noted minor data discrepancies requiring attention and recommended review of the surface life tables, but otherwise concluded that the integrity of the database was satisfactory. The RAMM database is discussed later in section 3.4 of this review.

In September 2007, NZTA commissioned a desktop review to assess the standard of Asset Management Plans (AMP) across New Zealand. The 2006 Tasman District Council Roding Activity Management Plan (RAMP) was assessed as being at an overall “Basic to Intermediate” stage with the Financial Information element described as Excellent. Key areas of weakness were identified as Risk Management, Assets and Data, and Process of Development.

Council’s current AMP, Transportation Activity Management Plan (TAMP), is dated 2009 and identifies the improvements since the 2006 version was reviewed and outlines an improvement programme.

Although the TAMP notes that “Council does not have a Risk Management Plan”, it does clearly outline the “Integrated Risk Management” framework and process currently under adoption.

### 3.3 Management Systems

#### 3.3.1 *Policy and Planning*

An Activity Management Plan (AMP) gives effect to Local and Central Government high level strategies, through detailing specific plans and programmes for management of the asset and delivery of the service. By using reliable asset information Local Authorities will be able to identify and deliver critical services to communities more effectively and efficiently.

Council has made good progress with development of its TAMP and the latest version shows clear linkages between Community Outcomes and the adopted Levels of Service.

Council understands the role of policy and strategy development and has:

- developed a Maintenance Intervention Strategy;
- regularly reviews its Forest Impact Strategy;
- reviewed its Roding Policy Manual;
- is currently reviewing its Engineering Standards; and
- is considering how best to respond to irrigation and other private assets informally crossing the road corridor.

The matter of sustainability of some of Council's very low trafficked routes was recognised in discussion and is identified in the 2009 TAMP, but in Council's view does not yet warrant development of a formal policy.

Council is co-operating with NZTA and industry to develop routes suitable for High Productivity vehicles (as permitted under the Vehicle Dimensions and Mass Amendment 2010). In discussion with industry, routes have been identified. A particular risk for Tasman is the susceptibility of its pavement layers to deterioration and their extreme sensitivity to minor changes in traffic composition and moisture content.

Awareness of these risks and the economic impact for the entire region drive Council in its wish to proactively manage its pavements. The challenge with this pro-active approach, particularly in the current funding regime, is to build an evidence base that is robust and able to stand the test of scrutiny. To effectively support a proposal that may otherwise seem premature, Council will need to collect experience and evidence of behaviour beyond the proposed sites and from across the network.

The NZTA expects that all approved organisations will have an endorsed procurement strategy and be using the Procurement Manual by 1 October 2010. From this date, the Competitive Pricing Procedures will be withdrawn and will no longer be valid for procuring activities funded through the NLTP. It is considered best practice that procurement strategies cover at least a three-year NLTP work programme. Tasman DC had commenced development of its Procurement Strategy and the document has since been endorsed by NZTA and approved by Council.

Development of Council's procurement strategy will create another opportunity to look at how Council manages the asset. Its preparation will demonstrate that Council knows and understands the needs of the network and its services and has given consideration to how this can and should be delivered.

This audit team were of the opinion that Tasman DC is well placed to achieve a balanced whole of life maintenance programme.

### **3.3.2      *Resourcing***

A level of independence is required to enable Council to critically assess and determine the future direction of the road asset and meet its obligations under the Land Transport Management Act (LTMA). Council needs to satisfy itself that they have sufficient resources to plan, programme, supervise and monitor the network and its maintenance, whether this is as a direct report or through its professional services consultant.

Council is encouraged to have a “smart buyer” approach to selection of services (both professional and physical). Such an approach requires Council to:

- Assess competition for the work being tendered;
- Define the outcomes sought on Council’s behalf;
- Define the performance required of suppliers; and
- Critically assess and monitor the outputs it receives.

The Transport team is a relatively new team to the Tasman network and is in the process of transitioning the balance of responsibility from the consultant (and elsewhere in Council) back into their team. We were confident that the team has sufficient technical knowledge to act as a “smart buyer” and confidently critique the advice it receives.

The contracts officer at Council submits funding applications, but there remained a question as to who at council has delegation to apply for funds and who prioritises funding allocations. We noted the need for improved clarity over where delegations sit within Council – particularly where there is asset overlap (such as with development and with water courses) and as some decision making is transitioned back to Council from its consultant.

Council has benefitted from continuity of service in their professional services consultant. There is clearly a high level of familiarity with the network and high levels of ownership. The risk of such an arrangement is exposure to loss of institutional knowledge and intellectual property in the event of eventual change. Council has acknowledged the risk of so much knowledge sitting outside of its purview and is acting to minimise the risk. Appropriate processes should be put in place to protect systems and processes developed for the ongoing management of the asset, including a transition process.

The consultant is the engineer to the contract and has direct delegation for management of the contractors, but the new asset team has encouraged greater discretion for the contractors, with the professional services consultant backing away from the detailed planning of the work programme. We believe that it is appropriate for the contractor to have greater discretion over the delivery of the work programme.

Maintenance of the Tasman network is broadly structured into four geographical areas and separate bridges/structures contracts. We encourage Council to regularly review this arrangement to ensure that it continues to provide optimal value for Council and the community.

We were satisfied that Council has adequate knowledge and resources to efficiently manage the Tasman Road network and assets.

### **3.3.3      *Monitoring***

Council has a geographically dispersed, predominantly rural network. To understand it and respond appropriately, Council needs a sound and robust monitoring process, collating relevant information and appropriately applying it to the ongoing maintenance and development of the asset.

Network videoing was discussed as a useful tool that can provide a snapshot, at a point in time, of the network shoulders and surfaces. With consideration, such footage can be usefully applied to improved management of the maintenance contract, improved customer service and the broader management of the asset.

Council collects a wide range of traffic count information using an independent contractor. We noted the use of single tube counters on rural routes and discussed the merits for Council, with improvements in technology, of also collecting axle (Heavy vehicle) and speed information.

Modern technology, particularly improvements in data capture, manipulation and presentation, creates opportunities for improved asset management. Council has made good use of its geospatial information. We encourage Council to continue to develop and effectively exploit this technology for understanding of the road asset and adjoining land uses. Large dispersed networks are finding benefits from aerial photography and corridor video in both their day to day operations and longer term planning.

The challenge for Council, in monitoring the network, is to balance the quantity and frequency of data collection/observations to provide best value and optimal efficiency.

### 3.4 Pavement Management Systems

#### 3.4.1 RAMM Database

Council operates a RAMM 2008 database and uses this for its pavement, footpath and bridge asset information. Retaining wall information has yet to be captured (but this is identified as a desired improvement in the AMP and is underway) and streetlight information is stored in an alternative database (Confirm).

The RAMM database is managed and maintained by an external consultant with full reporting back to Council. A 2009 "RAMM Annual Audit Report" to Council, from its consultant, indicated the state of the database as generally well maintained and suggested prioritised improvements to some aspects of the information in order to add value to the database.

Previous NZTA reviews and currently available audit queries support the finding that the Tasman database is well maintained. The relevant fields are populated and the database is generally able to provide accurate and reliable reports.

There are a number of long treatment lengths, beyond 2km and 5km long. Excessively short or long treatment lengths should, where practical, be avoided. They can reduce the reliability of treatment selection and the value of roughness rating information, to the point that it is negligible and the data collection investment is virtually wasted. We recommend this situation be addressed.

Council needs to review its longer treatment lengths and split them into more manageable lengths. Lengths less than 2km can more accurately represent the length sealed each season and any age related deterioration (as noted through condition and roughness rating).

Council's Annual Achievement return (based on RAMM) indicates that the sealed network length overdue for resurfacing is about 14% of the total sealed network and that Council currently resurfaces about 8%. The highest proportion of "overdue" surfacings is in the Rural C (27%) and Urban C (29%) Treatment Lengths – these represent the 1000–5000 vehicles per day roads, but currently appear to be included in Council's forward programme considerations. The total quantity of "overdue" resurfacing is greater than the annual resurfacing programme, but well able to be managed within Council's current programme.

Default surface lives have previously been an area requiring increased emphasis and understanding by councils. Accurate surface lives will increase the quality and accuracy of treatment selection reporting – particularly where there maybe a greater life remaining than that indicated by industry established defaults. We encourage Council to regularly review and update the surface lives to ensure that they appropriately reflect the local conditions of their network.

Areas for particular attention and ongoing consideration include Treatment Lengths (TL), surface lives and the capture of remaining structures.

#### **Recommendation:**

**That Council reviews treatment lengths, to ensure reliable treatment selection analysis can be undertaken.**

**Suggestion:**

**That Council implement the recommendations of their consultant's 2009 RAMM Annual Audit Report, including consideration of these Technical Audit comments.**

**3.4.2 Treatment Selection**

Council should be able to demonstrate how the road maintenance, renewal and capital works minimise the life-cycle costs of their network assets – i.e. how they are providing best value for the community's investment.

NZTA looks for evidence based submissions and performance prediction modelling is one of the tools that can help. Council should ensure they maintain a high level of core data integrity (asset inventory, condition, cost and traffic data). The NZTA's Planning, Programming and Funding Manual (PPFM) is very clear on this point *"Only once confidence in these elements is complete should organisations consider moving onto advanced predictive methods of long term planning."* (Chapter F2 Transport Planning, F2.4, pages F2-17).

The Treatment Selection Algorithm (TSA) is a key tool for assessment and national comparison of Approved Organisations and their Roading Programmes. Regardless of other advanced programme development techniques used by authorities (such as dTIMS) NZTA requires submission of a TSA assessment in support of the proposed maintenance programme (*PPFM, Chapter 7.4 Supporting information for road operations, maintenance and renewal programmes, Page C7-5*).

Despite Tasman having run TSA in 2008, this information was not submitted in LTP Online (LTPO). If Council is concerned about gaining access to full funding then we encourage it to maximise all opportunities by providing robust supporting information, particularly those required by funding rules.

We note that the Pavement Performance information attached in LTPO was dated November 2006 and reports on the third year of dTIMS modelling on the Tasman network. Again this was supported with detailed reporting to Council outlining areas where they can add value to its database and model outputs.

Models with an increased level of sophistication (such as dTIMS) require a higher level of data integrity and ongoing maintenance of that information. The dTIMS technical report noted the reliance of the predictive modelling on accuracy of the network inventory. It noted inaccuracies of pavement and surface dates and reiterated the importance of Traffic Count and Loading Data to the dTIMS process.

The database has been developed further since this model was run. Much of the pavement and surface information has been improved and continues to be considered. There remains the opportunity to improve the quality of pavement loading information – collecting heavy vehicle or axle count information.

Regardless of the treatment selection tool, Council needs to be confident that the stored data is relevant, reliable and provides a suitable foundation for decision making and forecasting. Council has made good improvements to its RAMM database. This progress needs to continue, with the database

being customised (with appropriate quality control) to the local conditions and this local knowledge then applied to improve the understanding of the network and its specific needs.

We were satisfied that Council's current programme development is adequate for Council's purposes – both in identifying works and managing/balancing expenditure. Council's Road Asset & Maintenance Management (RAMM) database is able to provide reliable reports and treatment selections.

### ***3.4.3 Traffic Count Data***

NZTA expects that Council will maintain their core asset information so that it is sufficiently complete for its expected use. There needs to be consideration of appropriate and ongoing renewal/replacement of the collected data, in particular information about traffic use and distribution.

We encourage Council to populate the heavy vehicle (HCV) data fields in RAMM with actual vehicle classifications, or at least collect sufficient data to demonstrate a reasonable level of confidence in the default values used. dTIMS models (in particular) are more sensitive to the proportion of heavy vehicles and require the use of actual vehicle classifications.

Council needs to ensure that its traffic counting programme is adequately capturing (both quality and quantity) the seasonal and annual variation on its network as well as the extremes arising from erratic loading (such as occurs with forestry operations, dairying or other changes in land use). We encourage Council to clarify the rationale for traffic data collection and formalise its data collection programme.

To assist local authorities, the NZTA has recently developed a traffic counting module "Traffic Count Estimation" (included in RAMM 2008 and later versions). The module can recommend traffic count sites, improve estimates by incorporating annualisation and seasonal factors, extrapolate counts across the link and calculate traffic growth rates.

### 3.5 Pavement Maintenance

#### 3.5.1 Sealed Network Condition Trends

The NZTA's PPFM (pF7-13, section F7.9, July 2009) requires annual roughness and condition rating, of "all sealed roads carrying more than 500 vehicles per day", with lesser trafficked roads rated at least every two years. Low volume routes with high proportions of heavy traffic should also be surveyed annually. This philosophy generally allows the identification of "at risk" routes (those carrying either heavy or high volumes) earlier in the deterioration cycle.

There are fewer than 500 vehicles per day (vpd) on 81% of the Tasman network (and less than 100 vpd on 46%). Council regularly carries out both condition and roughness rating (high speed data) – Partial network rating is alternated with full network rating. The rating frequency is appropriate and results indicate reasonable consistency between successive surveys. However we note the need for attention to quality control and encourage Council to consider the change in 2008/9 results and how they relate to 2010 surveys (when they are available).

As part of the NZTA's monitoring of the implementation of approved activities and to meet its statutory responsibilities, the NZTA requires various reports from approved organisations. One of these is Annual Achievement Reporting (due 31 July, annually), which requires a summary of Council's most recent pavement rating information. The following range of graphs and tables demonstrate network trends derived from annual returns to NZTA by Tasman District Council for the 2008/9 year.

The STE, CI and PII indicators are derived from the input data shown below in Table 1.

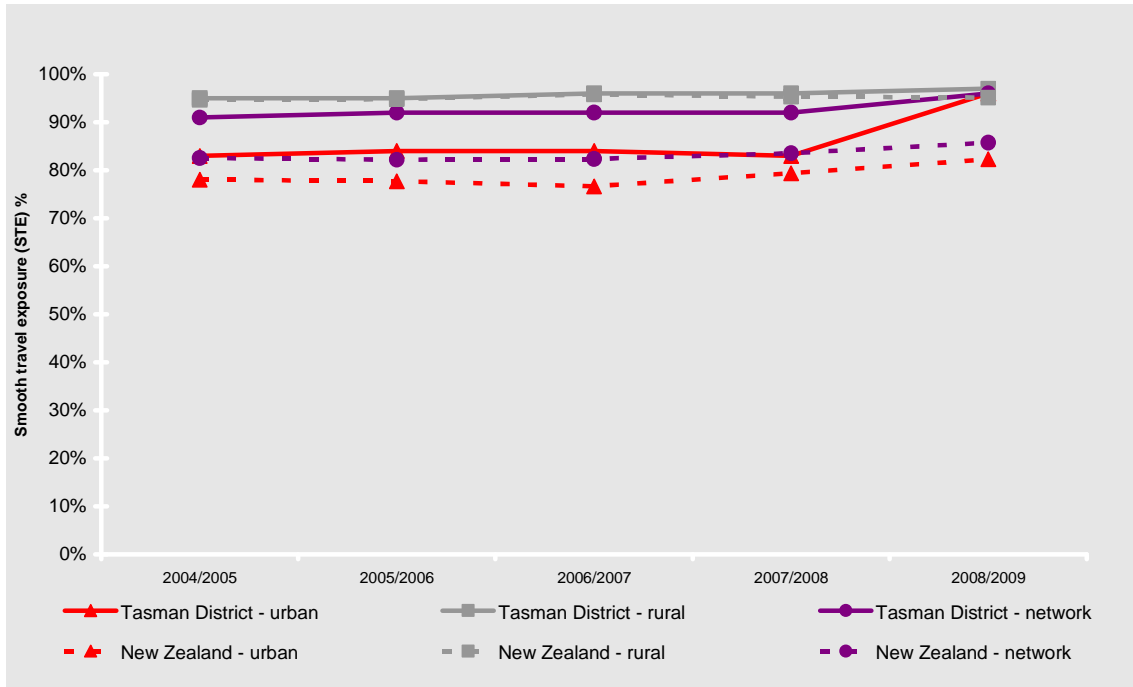
**Table 1: Input Data to Pavement Indicators**

Indicator	Input Data
<b>Smooth Travel Exposure (STE)</b> (Note – no weighting of data.)	Percentage of travel undertaken on sealed roads with roughness less than 5.71 IRI (150 NAASRA counts/km).
<b>Condition Index (CI)</b>	%age of alligator cracking %age area of scabbing %age area of potholes %age area of pothole patches %age area of flushing
<b>Pavement Integrity Index (PII)</b>	As for Condition Index (CI), plus %age of Rutting Average roughness %age of Shoving

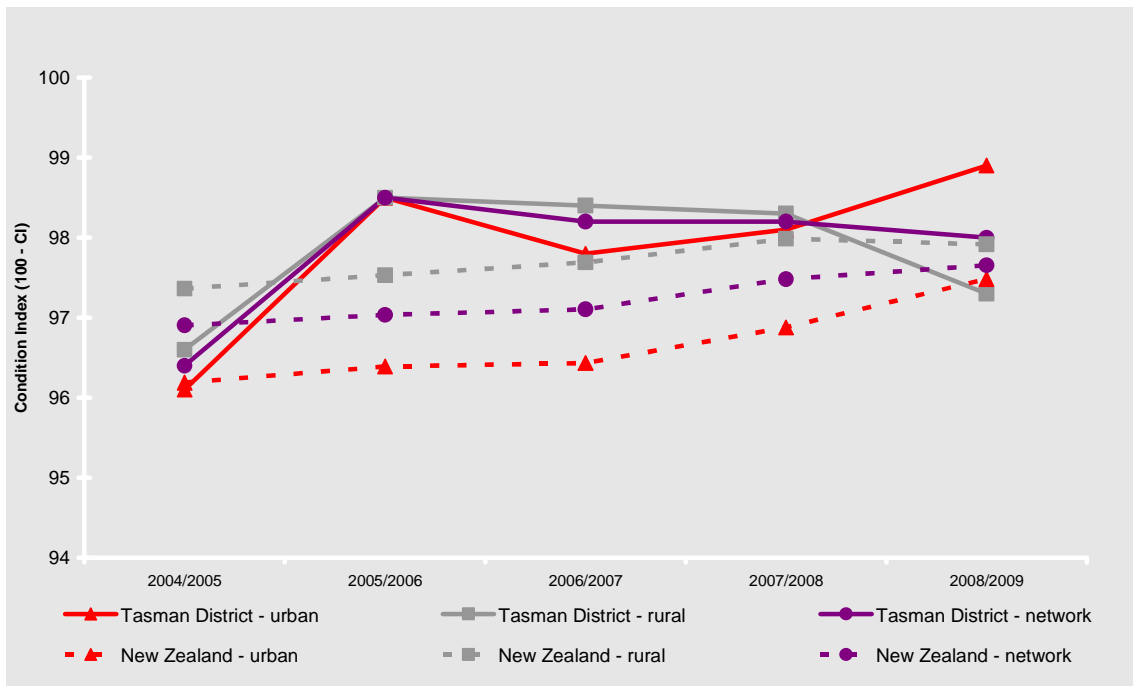
Smooth Travel Exposure (STE) for the Tasman network shows a steady trend with a marked improvement in the urban performance in the most recent survey (2008/09). Data quality should be confirmed and these results compared to the 2009/10 rating information as it becomes available. Overall, and as shown in Graph 1, the STE indicator appears to be tracking slightly better than the national average.



**Graph 1 Smooth travel exposure for all sealed roads**

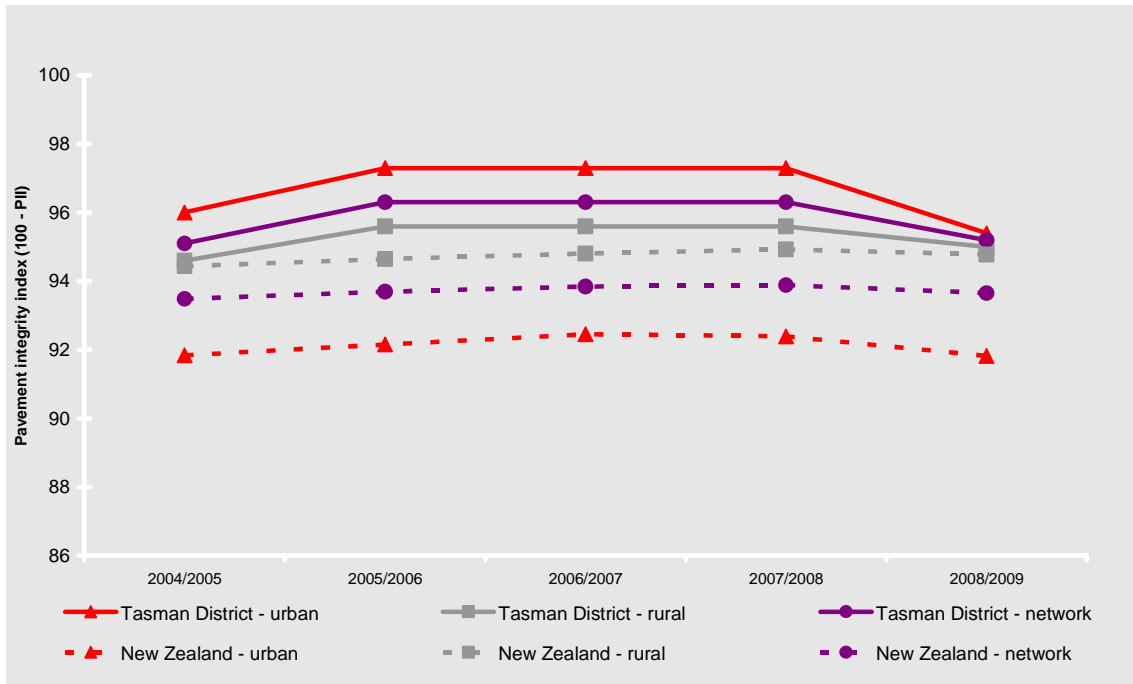


**Graph 2: Surface Condition for all sealed roads**



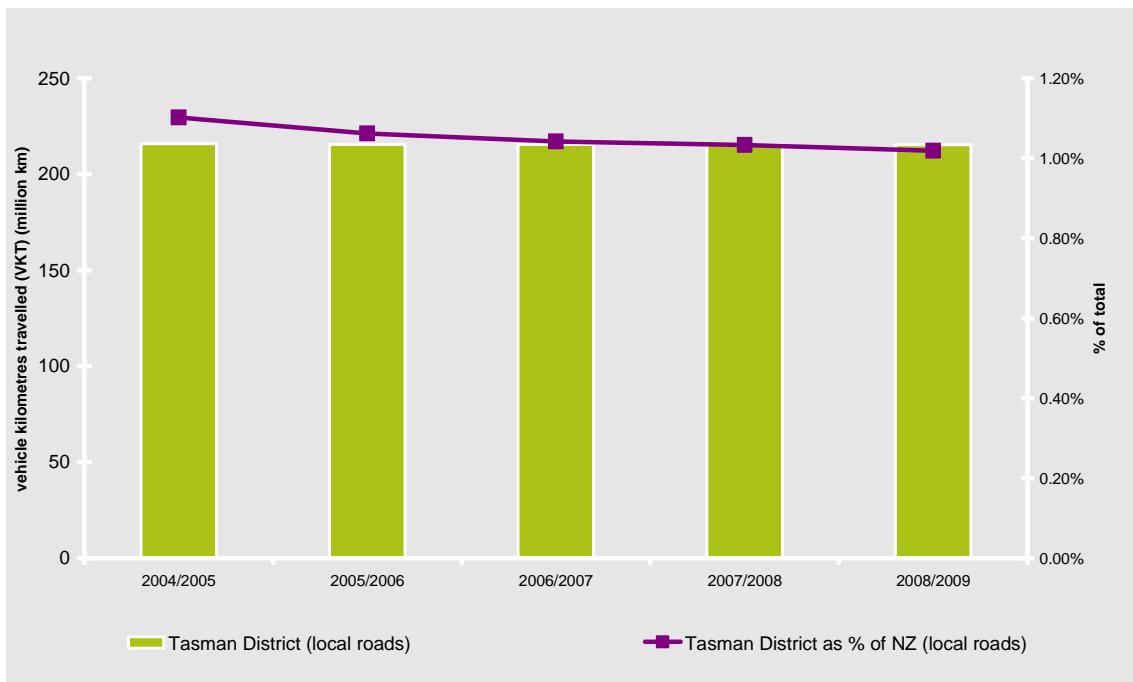
The Condition Index (CI), Graph 2, remains above the NZ averaged value, but has shown a steady decline, indicating an increase in surface faults with urban and rural results diverging at the last survey. In the urban area it was evident that crack sealing had been applied to road openings and general pavement repairs – a timely intervention that can extend the life of a surfacing. This result indicates a decline of the rural surfaces and is a probable pre-cursor to wider deterioration of the rural network.

**Graph 3: Pavement Integrity for all sealed roads**



The Pavement Integrity Index, graph 3, indicates the condition of the deeper pavement layers. The reported data indicates that the both the urban and rural integrity are beginning to deteriorate. This shows the vulnerability of lower pavements and the need for prudent top surface maintenance to maintain Level of Service standards and avoid unnecessary expensive structural repairs.

**Graph 4: Vehicle kilometres travelled on local roads**



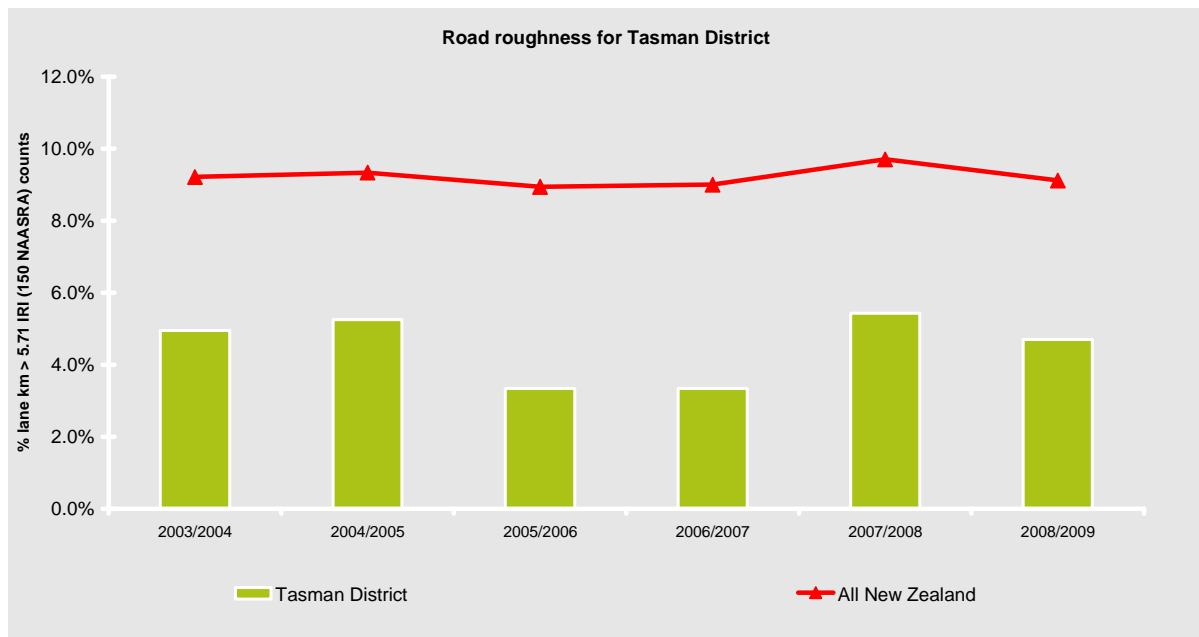
The Vehicle Kilometres Travelled (VKT) shown in Graph 4 is derived from count data recorded in RAMM and as reported by Council in its annual achievement returns. It shows negligible change in the total network travel.

These VKT values are aggregated to produce national values of network use and traffic growth. The accuracy of VKT is dependent upon the quality (and quantity) of the traffic counting programme and the quality of the individual counts collected.

Pavement roughness trends are shown in Graph 5. NZTA considers and compares the extremes of road roughness, i.e. >5.71 IRI (150 NAASRA). Other authorities may also choose to monitor the roughness of their network by trending such results as the average roughness (either NAASRA or IRI) or other values as appropriate to their community stated objectives.

The proportion of Council’s sealed roads exhibiting a roughness count of greater than 5.71 IRI (150 NAASRA) has fluctuated over the last 5 years. It is worth noting the importance of appropriate treatment length selection as this data represents a single roughness figure per treatment section. Overall, the Tasman District Council network has a lower proportion of “rough” roads in comparison with all New Zealand authorities.

**Graph 5: Road Roughness**

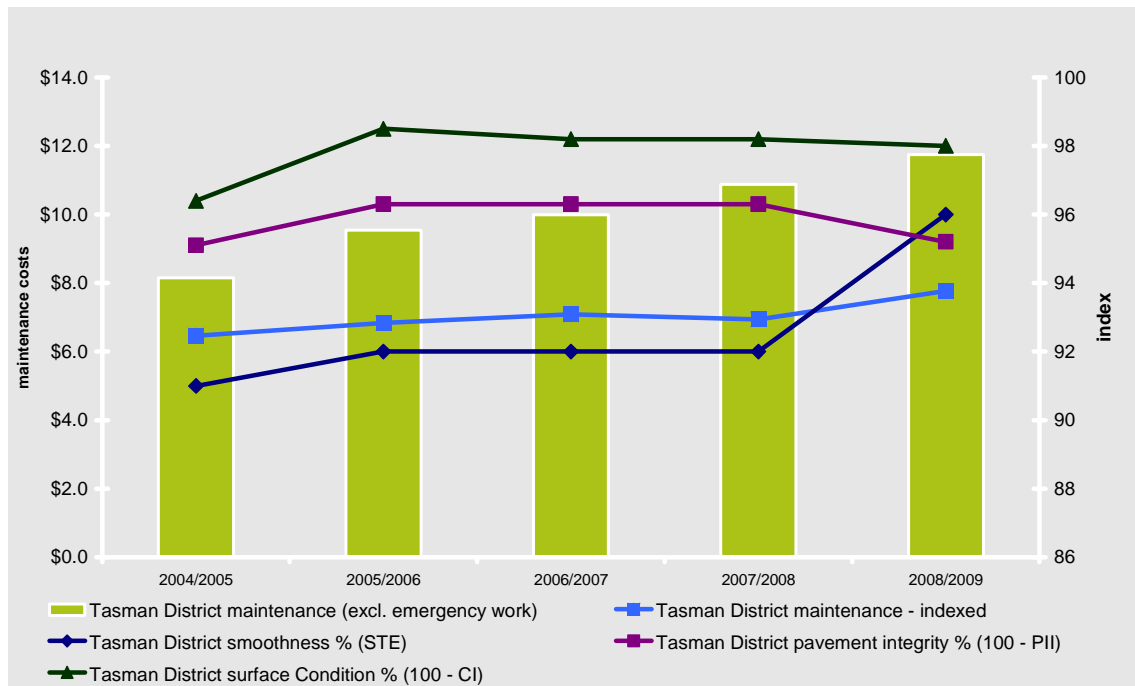


### 3.5.2 Pavement Maintenance Programme

Historically, Council's structural maintenance programme has been resurfacing an average of 75 km per annum, which is very close to the 8% of sealed network per annum indicated as New Zealand good practice and consistent with the recommendations of Council's long term database analysis.

The length of overdue resurfacing reported by the database is dependent on the default life values used and the life expired percentage chosen in the TSA decision factors. The Tasman RAMM data indicates that 14% of the network is overdue for resurfacing. This is more than Council's programmed reseal length, but as discussed in the RAMM data is manageable within the current 10 year programme.

**Graph 6: Sealed network condition vs. indexed network structural maintenance \***

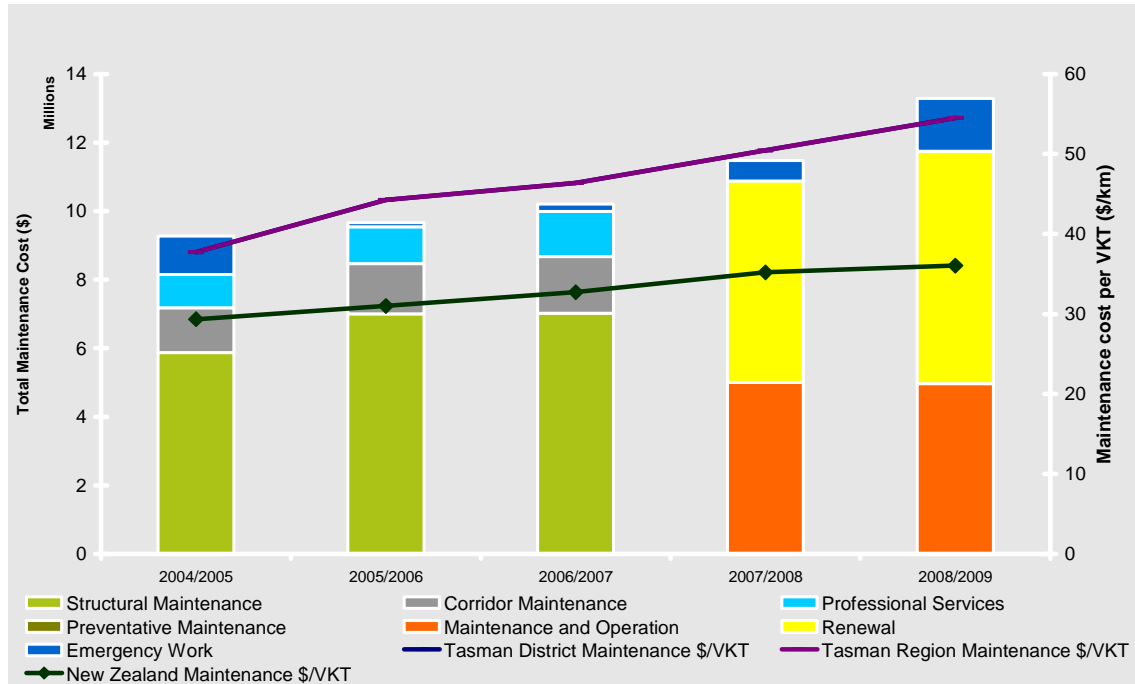


\* For programmes funded through NZTA only

The above, Graph 6, indicates that the current level of investment is maintaining the network condition. This is consistent with the observed network condition and is an indication of good asset management, which will be reinforced by improvement of major drainage. Council needs to ensure that this level of investment is maintained in future maintenance programmes to ensure no long term decline in condition of the asset.

Graph 7 below is based upon information from Council's previous final claims for financial assistance, from LTP Online. Changes in work categories (by NZTA in 2008) limit the level of comparison practical until a new history is established. The graph suggests that Council's maintenance costs are rising in line with the regional/national trend and that there is currently a greater spend on pavement renewals than maintenance. When considered in conjunction with the other reviewed data, this suggests that Council's maintenance programme is appropriate for the current need.

**Graph 7: Total maintenance cost and cost per VKT (NZTA + local share)**



This graph and other performance monitoring tools can be accessed on Smartmovez [http://www.smartmovez.org.nz/references/refs/data/road\\_network\\_condition](http://www.smartmovez.org.nz/references/refs/data/road_network_condition)

Using these tools Council can freely select its own peers; establish desired peer groups; make comparisons to; and monitor its own Levels of Service.

Network maintenance is spread across four contracts (two contractors) and appears to provide Council with consistent contiguous results. Street lighting is contracted separately.

The team noted that items such as high shoulder are included in the Lump Sum drainage item. Drainage is a hard item to measure, but as LS it could disadvantage the network, particularly if there is insufficient accountability required or profit present (and given the acknowledged susceptibility of the local pavements to water ingress). We encourage Council to consider and regularly review mechanisms for managing contractors' performance, such that the needs of the network are being met i.e. basis of payment.

Council demonstrated concern and understanding of the susceptibility of its soil types and their geographical distribution. Undoubtedly the overall network condition has benefitted from Council's comprehensive use of culvert markers and identification.

Pre-reseal works are well progressed, with an established lead-in programme that will see a gradual improvement in the network.

In rural areas, we noted some good use of formal concrete channel and encourage its use as a sound technical solution for other high maintenance areas.

The use of asphaltic concrete surfacings is targeted proactively on problem curves and industrial intersections. This was effective use of a higher quality surfacing.

There was discussion about the choice of area wide treatment sites, in particular whether this was maximising the funding flexibility available to Council. A process was agreed between Council and the NZTA region that will move the justification of rehabilitation sites from a theoretical approach to a more appropriate focus on network need.

Weather conditions during our visit were ideal for inspecting the network and highlighted weaknesses in network drainage. Items such as absent water tables and flat, shapeless roads will require an ongoing systematic approach to deliver improvements; whereas other items, such as high shoulder and existing water table maintenance can be addressed through existing maintenance arrangements.

The team noted a need to establish water tables in some areas and in others to re-create water tables progressively lost over time. We encourage further (prudent) use of formal concrete channel, where technical need can be demonstrated.

Council has begun clearly identifying culverts (named marker) and we encourage Council to continue funding this valuable programme. Culvert standards and maintenance were generally to a good standard. However, our overall conclusion is that drainage needs major improvement.

We recommend that Council seek an independent assessment of the network drainage. It should identify priorities, problems and constraints, such as limited road boundary width, and feed these into the maintenance contractors' programmes and Council's forward programme. We expect that such a review would identify a need to upgrade some of the existing drainage, the need to create new drains in some areas and the need for attention to ongoing maintenance items.

With the increasing frequency of extreme events, the importance of drainage in supporting pavement condition is particularly important, accordingly we recommend that Council develop and implement a programme to improve rural road network drainage standards.

**Recommendation:**

**That Council develop and implement a programme to improve rural road network drainage standards.**

### **3.5.3 Unsealed Road Maintenance**

Unsealed roads make up 45% of the Tasman road network. The bulk of this carries fewer than 100vpd, with 235 km of the unsealed network carrying fewer than 30 vehicles daily. As much as 23 % (394 km) of the unsealed network is single lane two-way carriageway (less than 3.7m wide).

Network statistics show that in the 2009/10 financial year Council applied 40,000 cubic metres of aggregate. Based on recent NZ research presented from the LTNZ Gravel Loss Monitoring Project, this quantity should be sufficient to maintain typically anticipated gravel loss across the network.

Those unsealed roads travelled during our network drive-over were in good condition. There was good frequency and location of culverts that were well maintained. However, attention to drainage needs to be continuous.

Council is undertaking unsubsidised seal extensions. We note the need to ensure that these are constructed to an established and/or Council adopted standard – pavement width is sufficient and adequate water tables established.

Council's Maintenance Intervention Strategy clearly states how the "gravel" roads will be managed, states Council's seal extensions strategy and acknowledges there remains areas to be developed. We observe that the public often expect a "gravel" road to be a loose rather than a bound surface and have limited understanding of the improvements that can be achieved with a well managed unsealed pavement.

Modern management of unsealed roads follows the same principles as sealed roads, with a structural pavement and a sacrificial wearing course. For a public used to the term "gravel" roads this may be a foreign concept that limits Council's ability to move beyond "grading" to a more effective approach of managing the running surface. The question of affordability will continue for low volume unsealed roads and we encourage Council to consider how it presents these options to its rate-paying public.

There is a need for more active management of the long term outcomes for the unsealed networks, such as heavy metal programmes in advance of forest harvesting and area wide treatments. This will require a clear understanding of both the costs and usage of the unsealed network – monitoring.

The team encourages Council to further develop its strategy for longer term maintenance of its unsealed roads.

### 3.6 Environmental Maintenance & Safety Issues

#### 3.6.1 Bridges & Structures

There are 461 road bridges on the Tasman road network; including 280 single lane bridges, 6 timber, 3 speed restricted and 26 weight restricted. Information about Council's bridges and culverts is stored in Council's RAMM database. Information on other structures such as retaining walls is not captured and their locations and condition are currently being collated by the maintenance contractor.

Bridge maintenance responsibilities are split between the corridor maintenance contractor (decks, signs, sight rails, guardrails and vegetation) and a separate bridge maintenance contractor (handrails and other structural elements). Whilst guardrails are structural items they are more likely to require ongoing frequent maintenance than other structures such as bridges and retaining walls.

A theme audit by NZTA in 2006, report No. PM06/1251T "Review of Guardrails and Terminals", noted value in using structural inspection contractors to assess ongoing guardrail condition – primarily as they may be better placed to assess corrosion of steel and condition of structural connections. We encourage Council to review its contract structure to ensure that (particularly in more remote areas) the bundling of activities gives Council good value for its investment.

Council has commenced a programme of retrofitting prioritised bridge approaches with guardrail. We encourage continuance of this programme. Some guardrail observed was damaged and had been for some time – there is a need for a more appropriate response to damaged guardrail.

In preference to large culverts and bridges, fords were well used across the network (particularly where routes were duplicated). They were well signed and depth markers were used at some crossings. Fords should also be captured and added to the structures/asset management database.

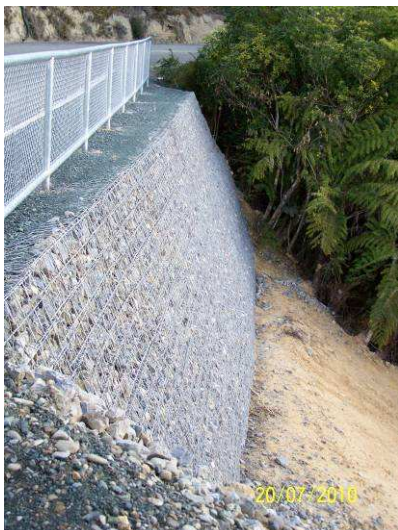


Photo 1:  
All structures need to be added to database



Photo 2:  
All Structures, including retaining walls, need to be included in regular structural inspections



Those bridges observed during the drive over appeared well maintained, both above and below road level. There is an established regular bridge inspection regime and a 10 year bridge replacement programme focussed on the posted bridges.

Current best practice for management of bridges can be found in the NZTA Bridge Inspection and Maintenance Manual (2009) and Table 1 Specification for Bridge Inspection Policy. We encourage Council to ensure that its inspection regime is appropriate for both community affordability and the age and condition of its bridges, acknowledging the particular risk presented by timber and restricted use structures.



Photo 3:  
Posted structures may require more frequent inspection.



Photo 4:  
Timber structures are subject to age-related deterioration and may require closer monitoring.

We encourage Council to build a robust and sound evidence base around the activity at their bridge sites to maximise available funding at times of either replacement or disposal. When considering the continued viability of bridges on low use or no exit routes it may be practical for Council to withdraw from ownership. In some circumstances there may be funding assistance available and the local NZTA office should be included in early discussions.

It was quite noticeable that there is not a consistent approach to naming or identification of bridges across the network. There has been some naming of structures in the past, but there is no current system. Often a bridge or culvert is the only identifiable feature along a route in rural areas. A clearly visible system (names or numbers as suits) can aid contractors, the public and emergency services in correctly reporting and identifying locations, easily improving response times, safety, way finding and the overall level of service. Council currently names and marks its culverts, but has no such system for its bridges. We suggest that Council consistently name and identify bridges throughout its road network.

**Suggestion:**

**That Council introduce consistent on site bridge naming and identification.**

Council is well advised in the area of its bridges and structures and the overall condition (beyond that of the posted structures) was sound.

### 3.6.2 Road Corridor & Traffic Services

Network Signage is managed under the area maintenance contracts. Delineation standards were inconsistent across the network, but Council states it is progressively moving to a hierarchy based approach for delineation. In instances where there was inconsistency along a route, it generally erred on the side of a higher standard than might otherwise be required by the volumes and usage present.



Photo 5:  
Regulatory signs in particular should be maintained at an acceptable standard. :



Photo 6:  
There were some aged signs, but many others would respond well to cleaning.

During our visit we noted:

- Regulatory signs were correctly installed, but some are aged and are no longer fit for purpose. The Traffic Control Devices (TCD) Rule, section 3, states the legal requirements, including that such signs be maintained in good repair with adequate retro-reflectivity.
- General sign condition requires attention to cleaning – fitness for purpose is required throughout sign life.
- Bridge end markers – pay attention to their location, as some were inappropriately located behind the guardrail.
- Road Marking was generally to appropriate standards, but suffered additional wear at ice gritting sites and at some local and state highway intersections.
- Detritus was noticeable at a few intersections and this should be improved/reduced. (It was noted that the maintenance contract sets a very high standard for compliance and we encourage Council to consider whether this represents good value.)
- Wildings along the road corridor were limited or still very young. Vegetation control appeared to be well in hand.
- The presence of significant trees within the corridor and close to the road is a feature of parts of the network. These are generally visible, but need to be considered from a risk perspective and at least noted in Council's Risk Management documentation.
- Private accesses were of a range of standards with some extending detritus into the road and others with entrance culverts either absent or requiring remediation sooner rather than later.

Overall the corridor standard was high, with sufficient exceptions to indicate that Tasman District Council is balancing its investment.

### 3.6.3 Minor Improvements

Council fully utilises its minor works allocation. A Programme for 2009/10 was prepared and presented to NZTA, as per funding requirements.

Potential improvements are included in a prioritised system and have included works such as the guardrail programme the team noted during our network drive-over.



Photo 7:  
Low cost improvements, such as addition of splitter islands can improve intersection conspicuity.



Photo 8:  
Network consistency can contribute to improved safety outcomes.

### **3.6.4 Safety Management**

Council has a Safety Management System (SMS), but this is due for review. Council should undertake to update its SMS manual and use the opportunity to reconnect the document with the local regional transport strategy and Government Policy Statement (GPS) on transport. And, based on this update, then review its implementation of Minor Improvements activity.

We did not specifically examine Council's Safety Management System or its processes during our visit. However, many of the issues noted by the Audit team should be considered in the ongoing development and implementation of Council's road safety management.

In preparation for this 2009 Technical Audit, NZTA carried out a Road Infrastructure Safety Assessment (RISA) review of Council's sealed rural network (February 2008). The objective of RISA is to determine how effective the road infrastructure is at providing "safe" passage for users.

The RISA review made five recommendations noting areas of concern such as delineation, shoulder maintenance, hazard protection, and intersection maintenance and form. As RISA is a risk based assessment it was noted that Council will make the best gains by treating the highest volume rural routes first.

Council has responded well to the RISA review and the technical team noted improvements are already apparent in some of the maintenance areas, particularly detritus at intersections (although the same problems also exist at private accesses). Findings of the RISA were common across the remainder of the network with the absence and inconsistency of some signage such as delineation and hazard marking most notable, yet simplest to resolve.

We encourage Council to continue applying the RISA findings to management of its network and accordingly recommend that the findings be adopted and acted upon.

#### **Recommendations:**

**That Council continues to adopt and act on the findings of the 2009 RISA review.**

Both the RISA review and this Technical Audit noted the need for improvement of road side drainage – this was common across much of the network and warrants a separate recommendation as noted earlier in section 3.5.2.

Council uses network and safety audits and network night drives, as well as making use of non-local drivers for the benefit of "fresh-eyes". We support these moves and encourage their continuation as positive contributions to network safety.

Tasman has a strong tourism industry and applies practical initiatives to address their special needs in terms of way-finding and their choice of vehicle. Cyclists, buses, campervans and motorbikes can be encountered on even the most remote parts of the network. Tourism operators voluntarily operate a one-way travel approach along some of the narrow routes (and it seems to work!)



Photo 9:  
Some signs were unique to the Tasman network



Photo 10:  
When GPS systems fail, locals have their own way of helping the tourists get back on track.

Generally there was an awareness of the need for temporary traffic management. Council encourages landowner co-operation by funding the Temporary Traffic Management (TTM) works required when removing roadside trees and shelter belts. Contractors working in the corridor were applying TTM principles to varying standards and this was identified by Council who will now include in regular contractor meetings the staff member that approves TMP's and Road Opening Approvals.

It is fair to say that in comparison to other authorities, our observations indicate that Council is doing pretty well on the safety front.

### 3.7 Subdivision Management and Land Use

Tasman District Council is a unitary authority and subdivision is addressed both in:

- Council's Resource Management Plan; and
- its Code of Practice for Subdivision (which is currently under review).

The subdivision process is managed by a Development Team with support, as required, from asset managers elsewhere in Council. This same team also manage the approvals for other activities and encroachments in the road reserve/corridor.

A wide variety of development activity occurs in Tasman District – residential, industrial, rural horticultural and agricultural. Of particular significance to the road corridor is the forestry activity and any unexpected changes in land use along the unsealed network, such as might arise from dairy conversions.

The guiding document for subdivision and land use development in New Zealand is NZS4404. The current version NZS4404:2010 has now been released. Although initially only a review of the 2004 document this latest release has some fundamental changes and includes significant changes toward achieving sustainable outcomes in both transportation and stormwater management.

Council's published Code of practice was unavailable as it was under review at the time of our visit, but we understand that it is largely guided by earlier versions of NZS4404 with local variations. We encourage broader accessibility to the revised code, such as publishing on Council's website.

Road safety audit is a proactive process to correct hazards (before they are realised). The use of formal safety audits should be considered with developments, particularly where assets are to be vested in Council (whether through the subdivision process or by direct negotiation). Often simple improvements can be made at the planning stage of a development that will reduce maintenance costs across the life of the asset and improve outcomes for all involved. The use of safety audit was added to NZS4404 with this latest review.

At Tasman, there is a well established process around subdivision and land use and it is producing some good quality developments. However this process appeared to include only limited consideration of ongoing maintenance requirements and/or constraints.

There was use of innovative solutions, the success of which is dependent upon the installation detail – however the installation of some was incorrect. There was good use of sustainable technologies, but Council needs to monitor and manage the range of differing assets it accepts to ensure ongoing effective maintenance of the assets.

We encourage greater internal interaction between Council staff around developments to ensure that the life cycle considerations are highlighted and included in the early consideration of developments.

## **4 METHODOLOGY**

---

### **4.1 Scope of Review**

This review was required to report to the NZ Transport Agency on Tasman District Council's maintenance activities on its local roading network as one in a series of regular technical reviews, in conformance with the Investment Monitoring Team's business plan.

The objectives of the review were as detailed in the Audit Plan 2009/10: Technical Review of Tasman District Council (refer Appendix A).

### **4.2 Authority to Review (NZ Transport Agency Requirement to Audit)**

The Land Transport Management Amendment Act 2008, section 95(1)(e)(ii), requires the NZ Transport Agency ("the Agency") to audit the performance of approved organisations in relation to activities approved by the Agency. The NZ Transport Agency's Performance Monitoring Unit's Charter describes the way this statutory requirement will be performed. The charter refers to regular procedural audits and regular technical reviews of road controlling authorities. This report is the result of a technical review.

The Land Transport Management Act 2003, section 95(1)(g), requires Agency staff to assist and advise approved organisations. Technical reviews provide one opportunity for this.

### **4.3 Review Team**

The review team consisted of:

Rebecca George, Technical Auditor (National Office, NZTA);  
Max Aves, Manager Roading Assets (New Plymouth District Council);  
Ken Gilbert, Regional Liaison Engineer (Wellington Region, NZTA); and  
Eddie Anand, Senior Engineer (Wellington Region, NZTA).

### **4.4 Fieldwork**

We visited Tasman District Council on 19 to 22 July 2010. Enquiries made of Tasman District Council were generally limited to the issues covered by the Audit Plan (refer Appendix A).

### **4.5 Consultation on the Draft Report**

Tasman District Council was asked to comment on the draft report. Council's full comments are attached in Appendix B. One fact was changed and this report has been amended accordingly.

## **5 ACKNOWLEDGEMENTS**

---

We are grateful for the time and effort spent by staff from Tasman District Council in preparing for and taking part in the review. The time they spent in discussion with us was appreciated, as was the hospitality extended by the Council.

The contribution provided by Max Aves to the work of the team and the agreement of New Plymouth District Council to make Max available to take part in this review is gratefully acknowledged.

**Rebecca George**  
for Review Team



## APPENDIX A

---

### **Audit Plan 2009/10: Technical Review of Tasman District Council**

**Sponsor:** Investment Monitoring Manager

**Project Manager:** Rebecca George, Technical Auditor

**Intended Outputs of the Review:**

A report to the NZ Transport Agency General Manager Regional Partnerships & Planning assessing the findings of the review.

**Review Objectives:**

1. To review progress since the last technical review.
2. To assess whether the level and quality of roading maintenance carried out by Tasman District Council is realistic and acceptable.
3. To determine the extent to which Tasman District Council's structural and corridor maintenance is meeting (not exceeding) maintenance needs.
4. To determine the extent to which Council's road assessment & maintenance management database is able to provide reliable reports and treatment selections.
5. To determine whether in light of answers to the above questions there is progress towards achieving a balanced whole of life maintenance programme.

**Target Audience:**

NZ Transport Agency Group Manager Regional Partnerships and Programmes and Tasman District Council

**Review Team:**

Rebecca George, Technical Auditor (National Office, NZTA);  
Max Aves, Roading Manager (New Plymouth District Council);  
Ken Gilbert, Regional Liaison Engineer (Wellington Region, NZTA); and  
Eddie Anand, Senior Engineer (Wellington Region, NZTA).

**Methodology:**

- Take a copy of Council's 2009/12 LTP and review against past LTPs.
- Check status of Activity Management Plan. Review 2009/12 LTP against Activity Management Plan and Long Term Council Community Plan.
- Review levels of service as for LTP against Activity Management Plan.
- Inspect a sample of the network to assess levels of maintenance (both pavement & corridor), in consultation with Council staff.
- Review Council's road assessment & maintenance management database.
- Review a sample of actual treatment selections against Treatment Selection Algorithm recommendations.
- Assess LTP against all available information. Draw comparisons with other roading authorities.
- Consider influence of local/regional growth on network (e.g. subdivision developments, large industrial developments).
- Review findings of RISA review.

- Review progress on implementing findings and recommendations of previous technical review reports.
- Perform peer review of draft report before sending to Council for formal comment.

**Projected timing:**

<b>Stage/task</b>	<b>Begin</b>	<b>End</b>
Define objectives, methodology	July 2009	Ongoing
Arrangement of fieldwork	May 2010	Ongoing
Fieldwork	<b>19 July 2010</b>	<b>22 July 2010</b>
Prepare draft report for comment by Council	After fieldwork	October 2010
Preparation of final report after council comment	After receipt of Council comments.	Within two weeks

## **APPENDIX B**

---

### **COMMENTS ON THE DRAFT REPORT FROM Tasman District Council**



T606  
Writer's Direct Dial (03) 543 7213  
E-mail: [selwyn.steedman@tasman.govt.nz](mailto:selwyn.steedman@tasman.govt.nz)

18 November 2010

NZ Transport Agency  
PO Box 5084  
Lambton Quay  
Wellington 6145

Attention: Rebecca George

Dear Rebecca

### Technical Review 2010 Response – Tasman District Council

It was a pleasure having the Audit team with us and the report on the visit is well balanced. The new Transportation team is well aware of the areas that required action and have planning and enabling processes in place to systematically work towards improvements to the transportation network as funding allows. We note that the Transportation team is relatively new and the points raised in both the Technical Audit and RISA were identified as matters needing attention. The New Zealand Transport Agency has confirmed our approach which is useful in terms of presenting recommendations to Council.

Recommendations and suggestions are being worked through although only parts of the 2009 RISA report may be implemented due to costs of achievement in such an unforgiving terrain.

Two corrections are required within the document as it is stated that signage and road marking are separate contracts where, in fact, they are incorporated within each of the four existing maintenance contracts.

The Transportation team is motivated in achieving sustainable forward works programme with sound engineering support data and look forward to the streamlining process providing the flexibility in our programme we need.

Yours sincerely

Gary Clark  
Transportation Manager

G:\Asset\Roading\NZTA - from August 2008\T606-NZTA-Technical review-2010-11-18.docx

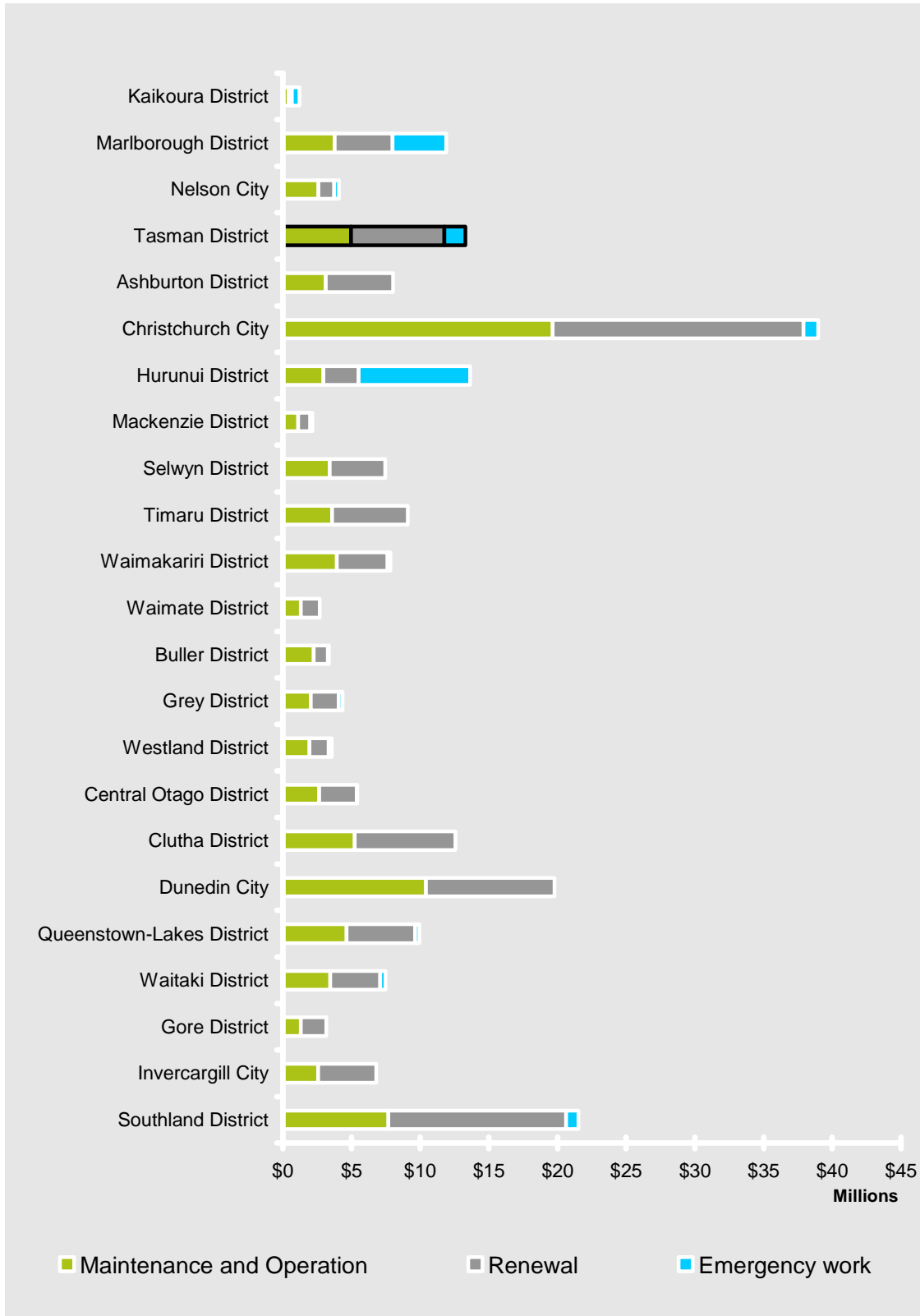
Tasman District Council | Email: [info@tasman.govt.nz](mailto:info@tasman.govt.nz) | Website: [www.tasman.govt.nz](http://www.tasman.govt.nz) | 24 hour assistance

Richmond	99 Queen Street, Private Bag 4, Richmond, Nelson 7030, New Zealand	Phone: (03) 543 8400	Fax: (03) 543 8624
Murchison	92 Tarata Street, Murchison 7002, New Zealand	Phone: (03) 523 1011	Fax: (03) 523 1013
Motueka	7 Hākarewa Place, PO Box 133, Motueka 7141, New Zealand	Phone: (03) 528 2022	Fax: (03) 528 9751
Golden Bay	20 Commercial Street, PO Box 76, Takaka 7143, New Zealand	Phone: (03) 525 0000	Fax: (03) 525 9972

## APPENDIX C

### Maintenance and renewal Costs

Maintenance & operation of local roads (activity class 8) minus emergency reinstatements  
(work category 141)



**New & improved infrastructure for local roads (activity class 12)**

