

Smooth Travel Exposure

November 2019



KEY POINTS

Smooth Travel Exposure:

- ✓ Annual STE results generated by RAMM Manager are the official source for TLA annual mandatory measure reporting for road condition and their annual reporting
- ✓ Smooth Travel Exposure is a customer outcome measure indicating 'ride quality'
- ✓ It is the percentage of vehicle travel on roads below a defined roughness threshold
- ✓ STE is used and reported in many places by the transport sector
- ✓ STE results are generated annually at the end of a financial year
- ✓ State highways calculate the annual STE based on the '20m' high-speed data, and the '100m' roughness data is used for local road networks
- ✓ The STE results in the PMRT are presented by road classification to support asset management and investment decision-making
- ✓ The treatment length table includes a calculation of the smooth length (m) of a treatment length based on the STE thresholds for tactical planning purposes

Smooth Travel Exposure is a customer outcome measure indicating 'ride quality'. It is an indication of the percentage of vehicle travel on roads below a defined roughness threshold.

INTRODUCTION

This overview document is intended to provide high level support and direction to better understand Smooth Travel Exposure, where it is used and reported, and how it is calculated. Any relevant current industry guidance and case studies have been referenced, where they provide more detailed assistance.

WHAT IS SMOOTH TRAVEL EXPOSURE?

Smooth Travel Exposure (STE) is a customer outcome measure indicating 'ride quality'. It is an indication of the percentage of vehicle kilometres travelled on a road network with roughness below a defined upper threshold level. The threshold varies depending on the traffic volume band and urban/rural environment of the road.

WHERE IS STE USED & REPORTED?

The primary users of STE are as follows:

- **Central Government:** Cabinet Office circular CO (15) 5: Investment Management and Asset Performance in the State Services, issued 29 June 2015 includes Smooth Ride (%) STE as a functionality asset performance measure.
- **Ministry of Transport:** The Ministry of Transport transport indicators framework includes VKT and STE.
- **NZTA:** The Statement of Performance Expectations includes STE targets for state highways and local roads. NZTA gathers the TLA TL STE results through its annual achievement returns process and they are included in the NZTA annual report as % smooth ride. SH's STE results are determined via the annual National Pavement Condition report. Historical TLA and SH STE results are available for sector use via the online NZTA data dashboard.
- **Local Government:** STE is a mandatory non-financial performance measure (NFPM) that TLAs must report against to their communities in terms of performance vs target as a part of their annual report.
- **DIA:** The mandatory NFPMs were put together by the DIA to give local authorities a framework that they can use as a self-assessment mechanism. This framework includes Performance Measure Two (condition of the sealed road network): the average quality of ride on a sealed local road network, measured by STE.
- **TLAs:** TLAs may report STE results in their annual report. TLA AMPs generally include STE as a measure. Annual TLA STE results are generated by the TLA via RAMM and are submitted to NZTA as part of the annual achievement returns for their annual reporting.
- **REG:** ONRC Amenity Customer Outcome 1 – STE. The ONRC PMRT calculates STE results and presents them by ONRC classification (along with other measures) for use by TLAs to assist with the development their triennial AMP business case for their Long Term Plans and the National Land Transport Programme.

HOW ARE THE ANNUAL STE RESULTS GENERATED?

The transport sector uses two methods to generate the annual STE results:

- **State Highways via the 'National Pavement Condition Report'**: This annual report includes the state highways' STE results by classification and other indicators.
- **Local Road Networks via RAMM NZTA STE Report**: This is used by each TLA to calculate the STE result at a network level for both their annual reporting and NZTA annual achievements returns.

The calculated result is not stored in RAMM, and the STE result is only available by generating the RAMM NZTA STE report in RAMM Manager.

STE results generated by RAMM Manager should be the official result for TLA annual mandatory measure reporting for road condition and annual reports.

HOW IS STE CALCULATED?

The threshold for smoothness, measured as NAASRA roughness, varies depending on whether it's urban or rural and on the traffic volume band as shown below.

Smoothness Threshold Levels (TLA & State Highways)

	Vehicles per day	NAASRA
Urban	< 500	<= 180
	500 – 3,999	<= 150
	4,000 – 9,999	<= 120
	>= 10,000	<= 110
Rural	< 1,000	<= 150
	>= 1,000	<= 130

The primary calculation uses carriageway sections as defined in RAMM, the latest AADT estimate to determine the VKT and the applicable roughness pass/fail threshold.

VKT formula:

$$\frac{\text{Estimated AADT} \times \text{section length (m)}}{1000} \times 365 = \text{VKT (km travelled)}$$

STE formula:

$$\frac{\text{VKT with roughness} < \text{threshold}}{\text{Total VKT}} \times 100 = \text{STE (\%)}$$

The latest roughness records within the carriageway section are tested against the relevant threshold. The length of roughness records is proportioned to the length of the carriageway section.

State Highway vs Local Road STE

The main difference is that TLAs use the latest '100m' roughness data and State Highways use the latest high-speed '20m' roughness data.

ONRC PMRT STE

STE is also calculated and reported in the **ONRC Performance Measure Reporting Tool (PMRT)** by road classification.

The STE calculation uses the latest reading from either the HSD or 100m roughness survey depending on the reading date. Therefore, the results from the PMRT calculation may be different from the RAMM calculation, which only uses 100m roughness readings.

The results in the PMRT focus more on enabling TLAs to interrogate their STE results to support asset management and investment decision-making.

PMRT does not provide an overall network result for annual reporting.

Treatment Length Smooth Length

The treatment length table includes a field with the calculated length (m) of smooth road per treatment length for tactical planning purposes. The length of smooth road for each treatment length is determined by interrogating each latest roughness record against the most relevant treatment length threshold.

CONCLUSION

Smooth Travel Exposure is a customer outcome measure indicating 'ride quality'. It is an indication of the percentage of vehicle travel on roads below a defined roughness threshold.

Annual STE results generated by RAMM Manager are the official source for TLA annual mandatory measure reporting for road condition and annual reporting. State highways calculate the annual STE based on the '20m' high-speed data, and the '100m' roughness data is used for local road networks.

The ONRC PMRT STE is calculated using 20m HSD or 100m data and is reported by road classification to assist with investment decision making. PMRT does not provide an overall network result for annual reporting.

REFERENCES

Cabinet Office circular CO (15) 5: Investment Management and Asset Performance in the State Services
 DIA Non-Financial Reporting Measures
 NZTA Statement of Performance Expectations
 ONRC Performance Measures

REG is a collaborative project between Local Government and the NZ Transport Agency.

For more information, please contact:

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