Pavement condition report user guide

*Aug 2020*

# summary

This report presents the results of the annual network condition survey that WDM undertakes every summer. Some measures are relative to length of network surveyed and some are relative to traffic volumes – see details below.

# Traffic Data

The report uses the most recent available traffic data and applies it to both current and historical measures where applicable.

Note: traffic data availability lags well behind the end of each calendar year.

Example: if you run the report in May 2020, you might expect the HSD (high speed data, ie the raw pavement condition data) to include all surveys up to the 2019/20 summer. However, the most recent available traffic data would be for the calendar year of 2018.

If you run the report a few months later, it would include the same HSD data but would use 2019 traffic data to calculate any measures where traffic is a relevant factor.

# Measures

The following table contains aggregated measures. Some of the reports use colour and arrows to indicate a positive or negative change in comparison to the prior year. The last column in the table below indicates the positive direction of change.

**Glossary**

IL = Investigatory Level: the threshold at which skid resistance may not be sufficient for the particular section of road, and we should consider resealing or maintenance.

TL = Treatment Level: stricter than the investigatory level and requires prompt remedial action.

VKT = Vehicle Kilometres Travelled.

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| **Name** | **Formula** | **Definition** | **Positive Change Direction** |
| Good Skid Exposure IL % | (Sum(Skid Resistance Good Row Count \* skid coefficient Good IL Count \* VKT)) / (Sum(Skid Resistance Good Row Count \* VKT)) | GSE-IL - an indication of the volume of traffic exposed to highway lengths that are currently above the investigation level (less than and equal to 0) for providing good skid resistant road surfaces. This GSE-IL is presented as a proportion of the traffic volume exposed to surfaces with skid resistance better than the investigatory level. The percentage near 100% shows better GSE (a 100% value indicates a 'perfect' network with all areas above the IL). The results are based on the skid site classification. | Up = improvement. |
| Good Skid Exposure TL % | (Sum(Skid Resistance Good Row Count \* skid coefficient Good TL Count \* VKT)) / (Sum(Skid Resistance Good Row Count \* VKT)) | GSE-TL - an indication of the volume of traffic exposed to highway lengths that are currently above the investigation level (less than and equal to -0.1) for providing good skid resistant road surfaces. This GSE-TL is presented in the proportion of the traffic volume exposed to surfaces better than the threshold level. The results are based on the skid site classification. | Up = improvement. |
| Average NAASRA | SUM(NAASRA) / SUM(Roughness Row Count) | Average Roughness - The average roughness is in NAASRA units. The higher the number the rougher the road. | Down = improvement. |
| NAASRA Above Threshold % | Sum(NAASRA Above Threshold) / Sum(Roughness Row Count) | Roughness in excess of a defined upper threshold level for each road category - the extent of the network where smooth travel is not delivered. The average roughness is in NAASRA units. The higher the number the rougher the road. The smaller the percentage of roads (by length) exceeding the threshold level the lower the average roughness. This measure does not account for traffic volumes. | Down = improvement. |
| NAASRA Above 150 % | Sum(NAASRA Above 150) / Sum(Roughness Row Count) | Roughness in excess of a score of 150 - the extent of the network where smooth travel is not delivered. The average roughness is in NAASRA units. The higher the number the rougher the road. The smaller the percentage of roads (by length) exceeding the threshold level the lower the average roughness. This measure does not account for traffic volumes. | Down = improvement. |
| Smooth Travel Exposure % | (Sum(Smooth Travel Exposure \* VKT)) / (Sum(Roughness Row Count \* VKT)) | Smoothness based on NAASRA score below threshold and excluding rows where the pavement type is U (unsealed) - the extent of the network where smooth travel is not delivered. The average roughness is in NAASRA units. The higher the number the rougher the road. The smaller the percentage of roads (by length) exceeding the threshold level the lower the average roughness. This measure does not account for traffic volumes. | Up =improvement. |
| Rutting Greater Than 10mm % | Sum(Rutting Greater Than 10mm) / Sum(Wheel Path) | Rutting greater than 10mm in depth and distribution of rutting (by length) - indicators of performance of the network in terms of resilience. The lower the percentage the better. | Down = improvement. |
| Rutting Greater Than 20mm % | Sum(Rutting Greater Than 20mm) / Sum(Wheel Path) | Rutting greater than 20mm in depth - an indication of percentage of pavement length exhibiting rutting more than the acceptable minimum, which has implications for safety. The smaller percentage the better. | Down =improvement. |
| Skid Resistance Below IL % | Sum(Skid Resistance Good Row Count \* skid coefficient Bad IL Count) / Sum(Skid Resistance Good Row Count) | Skid resistance IL- an indication of the percentage of network length where skid resistance is below the defined investigation level (where average of left and right ESC minus scrim site investigatory level is greater than 0. The lower the percentage the better. This measure does not account for traffic volumes but is used to derive the GSE-IL measure. | Down = improvement. |
| Skid Resistance Below TL % | Sum(Skid Resistance Good Row Count \* skid coefficient Bad TL Count) / Sum(Skid Resistance Good Row Count) | Skid resistance TL- an indication of the percentage of network length where skid resistance is below the defined level of service threshold (where average of left and right ESC minus scrim site investigatory level is greater than -0.1). The lower the percentage the better. This measure does not account for traffic volumes/exposure. | Down = improvement. |
| Wheel Path Texture Below .5 % | Sum(Left and Right WP Texture Below .5) / Sum(Wheel Path Count)) | Texture - A condition parameter that measures the texture depth (Mean Profile Depth or MPD) of the road surface. The report shows the percentage of left and right wheel path mean profile depth less than 0.5mm. A percentage near zero is ideal as less flushing or polishing occurs. | Down = improvement. |

# Description of Sheets Within the Report

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| **Name** | **Description** |
| Measures on Map | Geographical heatmap of the selected measure. |
| Summary Report | Comparison table across all measures and NOCs. |
| Compare to Previous Year | Year-on-year comparison of the selected measure. |
| National Average | Time series view of the selected measure, allowing comparisons across different NOCs, suppliers or ONRC classifications. |
| A vs B | Time series graph and ONRC comparison table for two selected NOCs and one selected measure. |

# Filters Available

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| **Name** | **Notes** |
| Survey Year | All visualisations are designed for a single year selection, except time series graphs. Without a selection, the data will average over the available years. Time series visualisations will provide seven years of history. |
| NOC (Carriageway Area) |  The (Road Assessment and Maintenance Management system) ‘carriageway area’ field in RAMM represents geographically-defined maintenance contract areas. These typically fall under the network outcomes contracts, with the exception of Auckland System Management and Milford which are particular alliance\* contracts. |
| NOC Supplier | These are the roading companies who manage the carriageway areas. |
| Urban Rural | The urban rural classification comes from the traffic information. |
| ONRC Category | The One Network Road Classification (ONRC) is a classification system, which divides New Zealand’s roads into six categories based on how busy they are, whether they connect to important destinations, or are the only route available.<https://www.nzta.govt.nz/roads-and-rail/road-efficiency-group/projects/onrc> |
| Surface Category | The surface category groups provide a high-level grouping of paving methods. |
| Skid Event | Skid event describes the section of road to identify curves, intersections and approaches and more. |
| ADT (10K Groups) | Average Daily Traffic (ADT) is one of the ways road volume is specified. This filter uses the FLOOR\*\* function to create 10,000-kilometre groups. |

 *\** Alliance contracts are where multiple suppliers come together to deliver maintenance and operations. They have different terms from the standard NOC contract.

 *\*\** Floor function change timestamp to date. For numbers, it also removes all numbers after decimal points.