NTRO | Case Study

# Light Traffic Crumb Rubber Asphalt Demonstration Trial

## City of Greater Dandenong, 2021 - 2025

## Overview

In May 2021, City of Greater Dandenong in partnership with Tyre Stewardship Australia constructed a demonstration trial, utilising the new VicRoads Section 422 Light Traffic Crumb Rubber Asphalt specification, over a 250m stretch on Church Road, Keysborough. The pavement performance was monitored over a 5-year period from 2021 to 2025, using NTRO's infrastructure measurement fleet vehicles and compared to a control section at View Road, Dandenong. It has been found that over the first 5 years of monitoring the pavement has remained in a good condition overall with no notable defects or failures reported. Overall, since the trial section has remained in a good condition over time and has shown better condition when compared to the control section, there is a positive learning for other councils and shows the promising use case for Light Traffic Crumb Rubber Asphalt.

## Background

In 2019, Victorian Department of Transport and Planning (DTP, formerly VicRoads) together with NTRO (formerly ARRB) developed a new VicRoads Specification - Section 422 Light Traffic Crumb Rubber Asphalt (LTCRA), which allows for the incorporation of crumb rubber into asphalt mixes for lightly trafficked roads such as those owned by local government.

The aim of the modified specification was to assist in increasing the demand for crumb rubber, processed from end-of-life tyres, and in turn reduce tyre stockpiling.

Inclusion of crumb rubber in a DTP specification means that local governments will be able to confidently specify crumb rubber asphalt, and asphalt manufacturers will be able to readily produce large quantities.

City of Greater Dandenong and NTRO constructed a demonstration trial involving the resurfacing and testing of a 250m section of Church Road, Keysborough, laid with crumb rubber asphalt. The asphalt trial was constructed in May 2021 using 35mm of a 10mm LTCRA mix supplied by Fulton Hogan.

The site monitoring included:

- longitudinal profile (for roughness)
- transverse profile (for rutting)
- surface deflection (pavement strength)
- automatic crack detection (extent of cracking)

NTRO used the Network Survey Vehicle (NSV) to collect roughness, rutting and texture data, along with cracking data using its Automatic Crack Detection (ACD) equipment. Strength was measured with a trailer mounted Falling Weight Deflectometer (FWD) device. All data was segmented at 10m road segments for the trial site and the control site.

***Figure 1*** *Church Road during construction – re-surfacing with 35mm depth 10 LTCRA*

Source: NTRO.

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## Outcomes

The results of this demonstration trial show that the majority of 10m road segments have remained in a steady condition and strength over the assessed monitoring period. When compared to the control site, the trial site has shown an overall better performance in terms of condition. Table 1 shows a summary of the pavement condition assessment.

***Table 1*** *Summary of Pavement Condition Assessment*

| | 2021 | 2022 | 2023 | 2025 – Trial site | 2025 – Control site |
|---|---|---|---|---|---|
| Average roughness (IRI) | 1.80 | 1.84 | 1.86 | 1.90 | 3.32 |
| Average rutting (mm) | 1.33 | 1.69 | 1.50 | 1.22 | 1.52 |
| Average surface texture (mm) | 0.54 | 0.60 | 0.71 | 0.84 | 0.72 |
| Average cracking extent (%) | 0.34 | 0.20 | 0.20 | 0.00 | 1.27 |
| Average deflection (mm) | 0.40 | 0.38 | 0.38 | N/A | N/A |
| Average curvature (mm) | 0.08 | 0.09 | 0.07 | N/A | N/A |

***Figure 2*** *Church Road during construction – compaction*

Source: NTRO.