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Client:
TMR and Colas

**Report on failure of reseal on Millaa Millaa
Malanda Road**

Final Report

Date: 22nd August 2018
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Date 10 August 2018

Report - Failure of polymer modified reseal on Malanda-Millaa Millaa Road Chainages 12500 -13260 (Schedule B TMR Contract CN8735) and Chainages 14520 – 15680 (Schedule C TMR Contract CN 8735),

EXECUTIVE SUMMARY

At the request of Colas and TMR an independent investigation into the failure of the S35E polymer reseal on Millaa Millaa – Malanda Road has been carried out by Mr. John Patane and presented in this report.

The polymer resealing works on this road were carried out by Colas under TMR resealing contract CN 8735. This resealing contract, CN 8735 also included PMB resealing of other state controlled roads within the Far North District of TMR in the Tablelands locale. Other PMB resealing works were also completed on other state controlled roads in the Innisfail locale by Colas under TMR contract, CN 8524.

The specific concerns within those contracts are the seals that stripped/ failed on;

Millaa Millaa – Malanda Road
Kennedy Highway
Palmerston Highway
Henderson Drive

This report provides the investigation results for the failure on Millaa Millaa – Malanda Road. The investigations of the other 3 sites are provided in separate reports.

The Millaa Millaa – Malanda Road resealing works were located to the south and north side of the township of Tarzali. The works on the south side of Tarzali comprised resealing using S35E polymer binder with 10mm aggregate and was completed on the 11 and 14 June 2018. The works on the

north side of Tarzali comprised resealing using S35E polymer binder with 14mm aggregate and was completed on the 14, 15 and 16 June 2018. The initial failure on the south side of Tarzali was stripping of the aggregate (loss of aggregate from the reseal exposing the binder) in the wheel paths on the reseal works completed on the 14 June 2018. The initial failure on the north side of Tarzali was stripping of the aggregate, across wheel paths and the full width of the lane in places.

The initial aggregate stripping on the reseal north side of Tarzali was noted on the 22 June 2018 along longitudinal joints of the reseal spray runs and on the uphill north bound lanes at the commencement of the slow overtaking lane. The stripping was recorded as minor. Rain on the site was recorded on 22 June 2018. The site inspection by TMR on the 25 June 2018 recorded significant stripping on Millaa Millaa – Malanda Road and Kennedy Highway. Sweeping of the loose aggregate from stripped reseal areas of Millaa Millaa – Malanda Road and Kennedy Highway works was undertaken on each day between 26 June 2018 to 4 July 2018 with the exception of the Sunday 1 July 2018. During sweeping works of the 4 July 2018 on Malanda-Millaa Millaa Road, the traffic management allowed traffic to be stopped on the south bound lane on the exposed binder. During the midday temperatures the exposed binder softened and adhered to vehicle tyres. As the vehicles moved from the stopped area the adhered binder lifted from the road.

The investigation suggested the stripping of the aggregate of the sprayed seal works on Millaa Millaa – Malanda Road was related to a combination of the following:

Spray sealing at a time of year not favourable for sealing works, particularly in Tableland areas.

Selection of treatment type in particular the aggregate size used on the underlying variable surface texture depth of the existing 10mm seal prior to resealing.

The adopted spray rates for the 14mm reseal did not consider the traffic volume difference between the slow and fast lanes of the overtaking section .

The seal designs were not in accordance with the current TMR seal design method.

The cold conditions in the early life of the reseal were below average temperatures. The rain also impacted the early life performance.

Insufficient cutter content for the weather conditions at time of spraying and in the early life of the seal.

The lifting of the seal binder appears to be related to traffic management during brooming of the loose aggregate after reseal stripping. The traffic management allowed the south bound traffic to be stopped on the exposed binder where stripping of aggregate had occurred. The vehicle tyres could adhere to the exposed binder and contribute to the seal binder lifting. Stopping of traffic on new seals should be avoided.

The lifting of the seal binder and poor adhesion of the reseal binder to the underlying surface is unusual. Further investigation maybe required.