

INCREASED USE OF RECLAIMED ASPHALT PAVEMENT (RAP) IN WA



Translating and implementing findings from recent Austroads research into Main Roads specifications

Background

Main Roads Western Australia (Main Roads) currently permits the use of up to 10% RAP in intermediate course asphalt. The outcomes from a 3-year Austroads project completed in 2016 included guidelines on how to design asphalt mixes with higher (>15%) levels of RAP. WARRIP investigated current materials and practice, in addition to plant capability in the Perth metropolitan area, resulting in the development of *draft Engineering Road Note 13B: Asphalt Mix Design with RAP* (ERN 13B).

What have we learned?



Test results from Perth asphalt suppliers during a period of 12 months showed variation in the properties of RAP stockpiles.



The adoption of a RAP management plan and improved RAP management practices reduce variability.



There is a range of types of batch and drum asphalt plants in Perth. Each plant varies as to how RAP is added into the plant and how much can be added without compromising mixing efficiency.



The Queensland Department of Transport and Main Roads (TMR) is also moving to implement higher amounts of RAP based on the Austroads project. Main Roads and TMR collaborated in the development of ERN 13B.



What has happened?

- Developed *Draft Engineering Road Note 13B: Asphalt Mix Design with RAP*, which outlines 3 levels of RAP content that can be incorporated into the design of intermediate course asphalt.
- Proposed amendments to Main Roads Specifications 201, 510 and 511 to accommodate higher amounts of RAP.
- Workshopped and circulated ERN 13B and amendments to specifications to industry for comment.

PROCESS TO ENABLE THE USE OF RAP OUTLINED IN ERN 13B

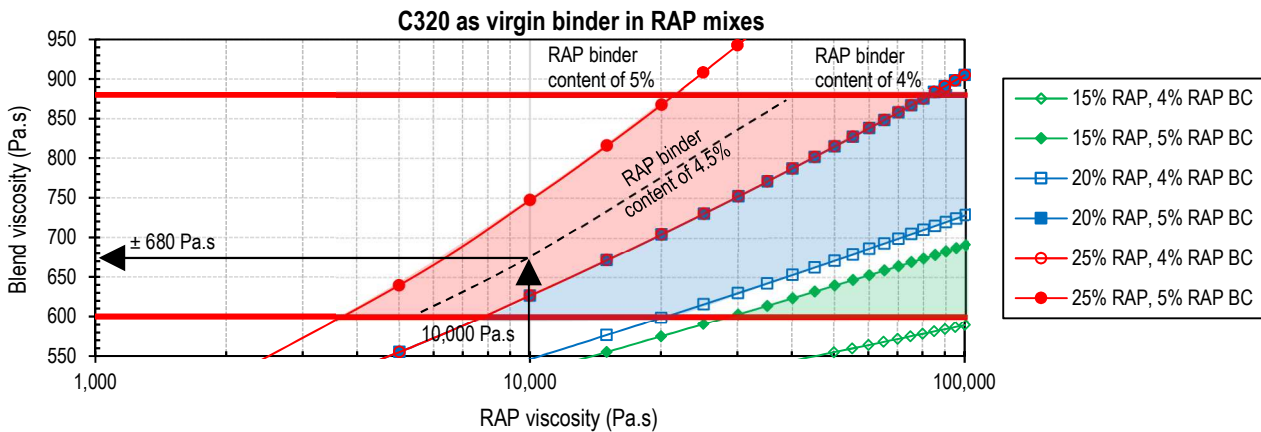
Hierarchy of RAP use levels	Level 1 ≤ 10% RAP	Level 2 11 to 25% RAP	Level 3 26 to 40% RAP
Requirements	Refer to Specification 510	Material Asphalt mix design process and testing Plant validation	
Asphalt mix approval	No additional approval required	Asphalt mix approval	



ERN 13B

ERN 13B is aimed at intermediate course asphalt that is produced with unmodified binder. Noteworthy requirements are:

	Level 2	Level 3
Class binder or blended in line to target viscosity	✓	✓
Nominate target grading	✓	✓
Fractionate into coarse and fine grading	✗	✓
No natural sand	✓	✓
No rejuvenating products	✓	✓
Viscosity based design of blend	✓	✓
Viscosity range limits same as Queensland's'	✓	✓
Helpful charts to assess applicable virgin binder to use	✓	✓
Heating of fractions before addition of binder to simulate production process	✗	✓



Validate the ERN 13B process with industry partners before finalisation and publication of guidelines.



Investigate the effects of high RAP content in mixes incorporating polymer-modified binders.

Future Considerations

What applications are best suited for high RAP content asphalt to ensure consistent consumption in WA?

What environmental, social and economic benefits can be derived from the specification of high RAP asphalt?