



# PRODUCTS & SERVICES

## CAPABILITIES STATEMENT



WE OPEN THE WAY



# REUSING ONE OF OUR MOST VALUABLE ASSETS WITH RAP.

RAP is recovered from milling old asphalt pavements and reprocessed so that it can be reused to produce new asphalt.

*By using RAP we will reduce the demand for non-renewable raw materials like bitumen and aggregates.*

Image: Screening RAP into different fractions

Asphalt is 100% recycleable, which means that at the end of its service life, it can be reused to produce new asphalt. Reclaimed Asphalt Pavement (RAP) should not be considered as a waste but an engineered product. Therefore, RAP should not be disposed of but reused in the production of new asphalt.

## *“Trade in your old asphalt pavement for a new one.”*

The aggregate in the RAP was produced to a specification. Through milling and reprocessing it can be reused to produce new asphalt.

The bitumen in the RAP will have undergone hardening, mainly through oxidation during its service life. By reheating the RAP it will comeingle with virgin bitumen making it suitable for reuse.

**The practice of reusing RAP is a well proven technology, incorporated in specifications across the world and offers the following benefits to road asset owners and society:**

- By reusing RAP we will help preserve our scarce non-renewable raw materials like bitumen and high-quality aggregates for future generations and keep RAP out of landfills.
- By reusing RAP we reduce the energy and green house gas emissions generated during the extraction and processing required in the production of virgin materials.
- The value of RAP is in the new materials it replaces - bitumen and aggregates. This does not only include the cost of producing these materials but also the transport and heating less the cost of processing the RAP. The best economical return on RAP is to reuse it in asphalt and not use it for a low value material in other applications.

- Reclaimed asphalt can improve the performance of the pavement because:

- a. The aged binder in the RAP helps stiffen the asphalt so it can withstand rutting under heavy traffic at high road surface temperatures.
- b. The RAP aggregate is precoated with the aged binder so it makes the asphalt less sensitive to the binder stripping from the aggregate due to moisture.

## MAKING ASPHALT MORE SUSTAINABLE

During the manufacture of the new asphalt, heat from the virgin aggregates transfers to the RAP, reactivating the aged binder. Most of our COLAS plants use bitumen foaming systems to improve the coating of RAP and the virgin aggregates during plant mixing. This helps improve the workability of the asphalt during placement. The use of the foam bitumen systems also helps reduce the mixing temperature of our asphalt which is a win-win for the environment.

RAP can be used in conjunction with other secondary waste materials like recycled crushed glass, steel slag, fly ash, and crumb rubber from old tyres to reduce the demand for virgin materials and produce new asphalt, without compromising the overall performance of the asphalt.

## HOW MUCH RAP CAN BE REUSED?

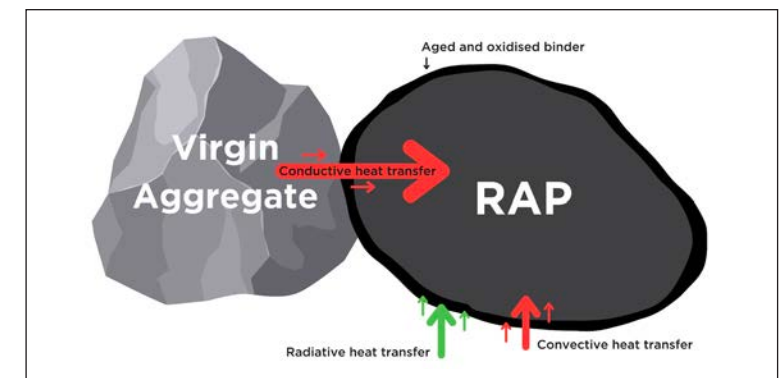
**The use of RAP must not compromise the quality or performance of the new asphalt that is produced. The amount of RAP that can be reused will depend mainly on the following factors:**

- The availability of suitable asphalt for reuse;
- The capability of the asphalt plant to rejuvenate asphalt;
- The type of mix and/or binder type used in the new asphalt.

The incorporation of up to 15% RAP in dense graded asphalt will have little or no influence on the performance properties of the mixes.

**At COLAS we strive to optimise the amount the RAP we use in our mixes so that we achieve the same, if not better, performance of our mixes. To do this we:**

- Monitor the quality of our processed RAP on an ongoing basis by measuring binder and moisture contents, gradings, and recovered properties of the aged binder;
- Conduct laboratory-based performance tests on our mixes like tensile stress ratios, wheel tracking, fatigue and modulus



Schematic showing the heat transfer between the virgin aggregate and RAP





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