



# PRODUCTS & SERVICES

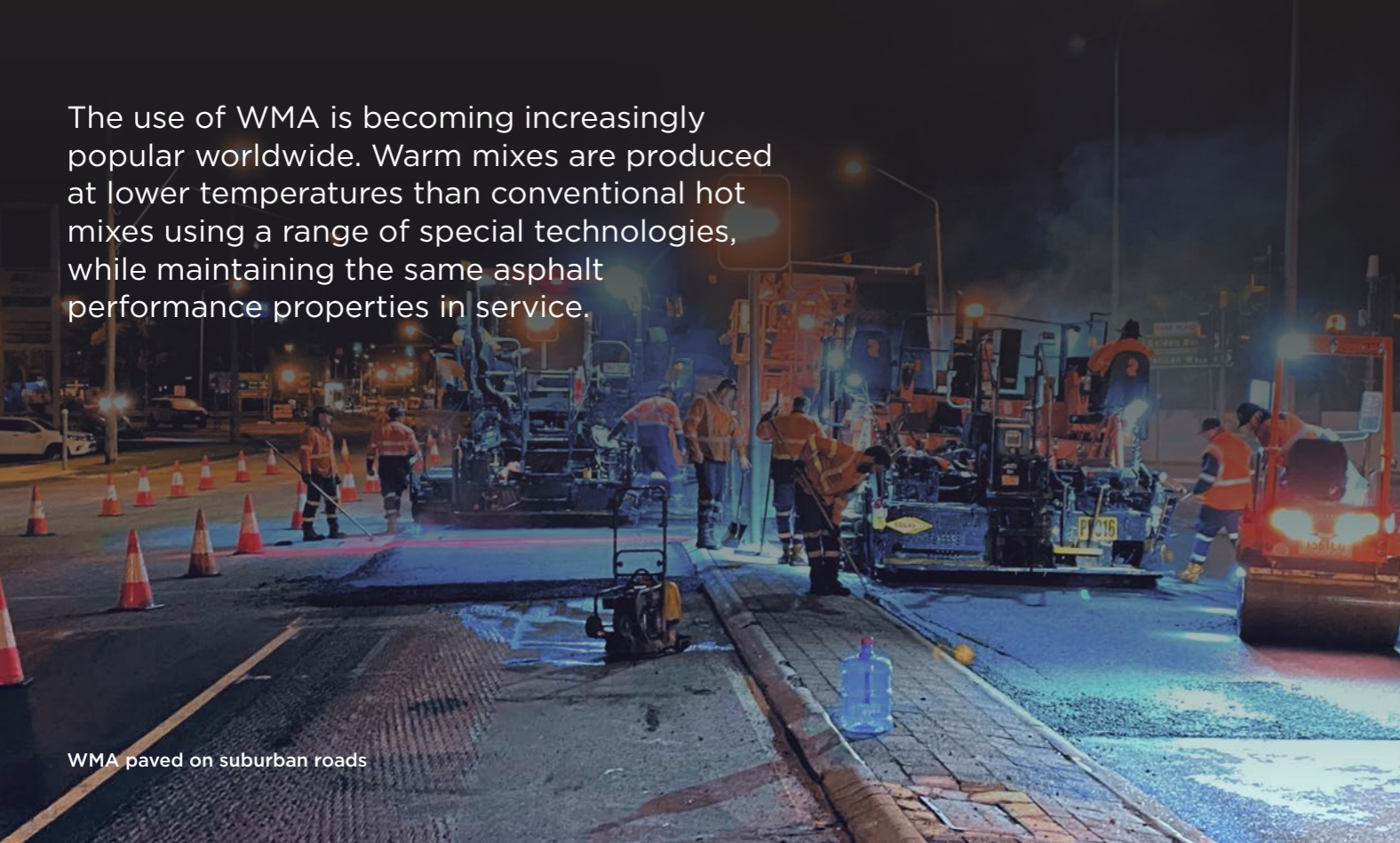
## CAPABILITIES STATEMENT



WE OPEN THE WAY

# THE FUTURE IS WARM.

The use of WMA is becoming increasingly popular worldwide. Warm mixes are produced at lower temperatures than conventional hot mixes using a range of special technologies, while maintaining the same asphalt performance properties in service.



WMA paved on suburban roads

Warm Mix Asphalt (WMA) is essentially the same as Hot Mixed Asphalt (HMA), except that it has been produced at a lower temperature without compromising its ability to be paved and compacted.

WMA helps satisfy the community's need to reduce environmental impact and energy consumption during the manufacture and paving of asphalt.

**Some of the key benefits of reducing HMA mixing temperatures are:**

- Reduction of greenhouse gas emissions, which is good for the environment
- Reduction of fumes and odours, which is safer for everyone in close proximity during paving operations
- Easier for construction of multilayers of asphalt in the same shift
- Increase the durability of asphalt wearing courses in low trafficked environments due to less ageing of the binder



## PRODUCTION & CONSTRUCTION

WMA technologies like foaming, synthetic wax, or surfactants are used to reduce the binder's viscosity, making it easier to compact asphalt at lower paving temperatures. This innovation is also aided by the fact that WMA has a more uniform temperature across the surface of the mat than HMA, and at a lower temperature, the rate of cooling is slower.

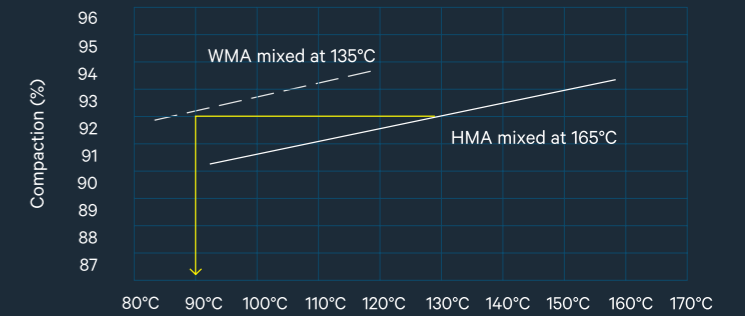
**This leads to WMA having:**

1. More uniform compaction of construction joints.
2. Improved productivity as we can:
  - begin paving the next layer sooner due to shorter cool-down times between layers
  - quicker return to traffic with shorter cool-down times between layers.

A further reduction in the mixing temperature can be achieved depending on the layer thickness, distance between the job site and the asphalt plant, and the ambient paving temperature. Refer to Table 1 for guidelines to lowering asphalt mixing temperatures.

## COMPACTION

The same compaction can be achieved when using WMA technology at lower temperatures.



**Figure 1:** Compaction of asphalt manufactured at different temperatures

Asphalt layer	Mix type	Binder type	WMA technique	Max temperature, C°
<b>Wearing courses if:</b>				
Layer thickness > 40mm	Gap graded	Crumb rubber	FT Wax	165
Job site < one hour from plant	Open graded	Crumb rubber	FT Wax	165
Ambient temperature > 25°C	Dense graded	Crumb rubber	FT Wax	165
	Dense graded	A15E and A10E	FT Wax or surfactant	160
	Dense graded	Unmodified	Foaming	150
<b>Base and intermediate courses if:</b>				
Job site < one hour from plant	Dense graded	Unmodified	Foaming	150
Ambient temperature > 25°C	Dense graded	A15E or A10E	FT Wax or surfactant	160
	EME2	10/20 or 15/25	Foaming or Surfactant	165

**Table 1:** Guideline for reducing mixing temperatures for different mixes and binder types

## MAKING ASPHALT MORE SUSTAINABLE

The use of WMA allows us to reduce our carbon footprint and improve the health of our workers by reducing asphalt manufacturing temperatures. This can further be enhanced by using RAP, rubber from old tyres, and recycled crushed glass without compromising the performance or the overall quality and performance of the asphalt.





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