PROGRESS WITH WARM MIX ASPHALT

WMA INTEREST GROUP



FIRST WMA TRIALS BRACKENHILL ROAD NOV 2008

Already extensively reported at RPF

- 2.2 km trial using 6 different mixes:
- 1.Control mix
- 2. Control mix with 10% RA
- 3. "Warm mix" with 1.5% SASOBIT
- 4. "Warm mix" with 10% RA and 1.5% SASOBIT
- 5. Recycled mix with 20% RA
- 6. Recycled mix with 30% RA and 2% EXP 1655 wax



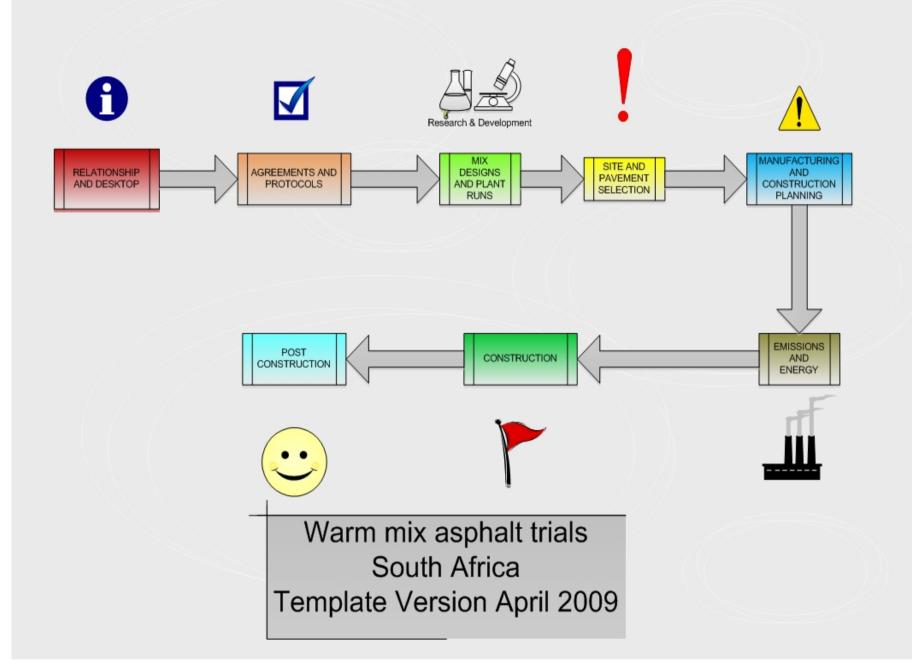




First LTPP survey July 2009



WMA performing well to date



Aaree mix design Construction and protocol Emission Planning meeting manufacturing Manufacture WMA monitoring for this stage Site selection planning meeting Agree testing Agree monitoring, protocol at plant sampling and and paver (include testing team curing effect) Manufacturing Pave WMA plant laboratory Introduction of check parties Agree construction Energy Agree methods and Detailed pavement consumption manufacturing Agree emission investigation construction monitoring plant monitoring programme requirements / End of protocols Mix designs modifications construction day meeting Detailed technical presentation of Agree Agree energy technology Manufacturing Monitoring and manufacturing Rehabilitation consumption Construction team plant staff testing planning plant staff Pavement design protocols education education meeting End of requirements construction meetina Manufacturing Information plant modifications Agree materials Agree LTTP Agree construction transfer Rehabilitation and check requirements plant to be used pavement design report Post construction Agree blending / Working group testing Group desktop additive addition meeting to go to study Plant runs of mix protocol, applicab next stage Manufacturing plant check Agree construction Trials report Agree financials in staff and plant Site preparation writing - draft principle requirements Testing of plant consultant Construction plant runs check Follow discussion Agree conditions meeting with within which the Trials report draft Site approval and technology product can Technology Discussion of agreement to go supplier successfully supplier results meeting to next stage Plant laboratory loading, support, temp, etc check Working group Working group meeting and Agree safety agreement to go Trials report agreement to go protocols Manufacturing to next stage to next stage plant check WMA Trials Template LTTP April 2009

Second WMA Trials Leicester Road May/June 2009



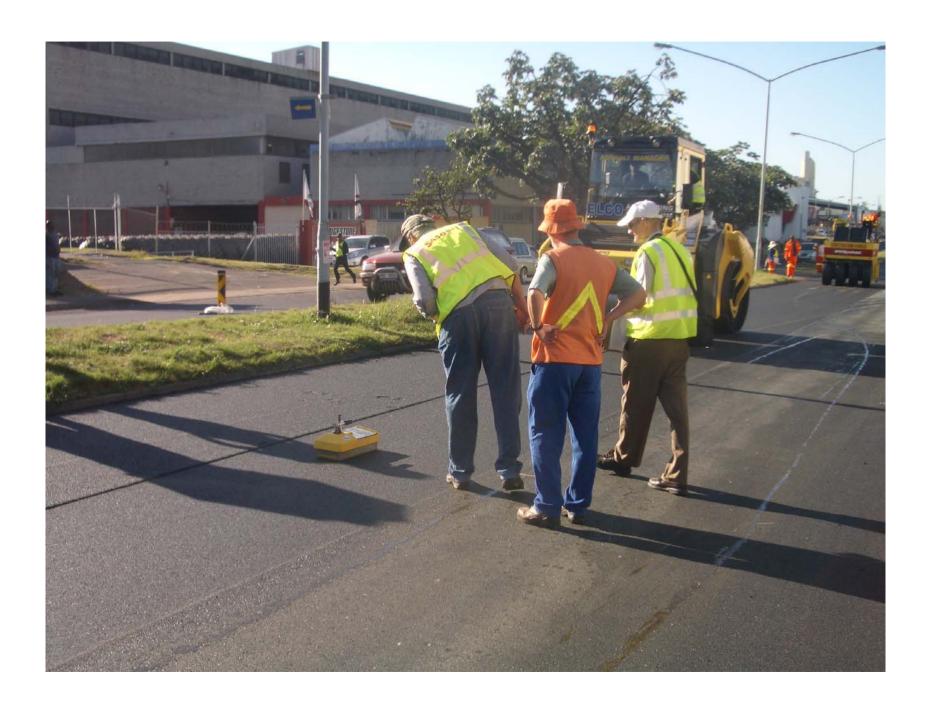
Total quantity of asphalt ± 2 000 tons





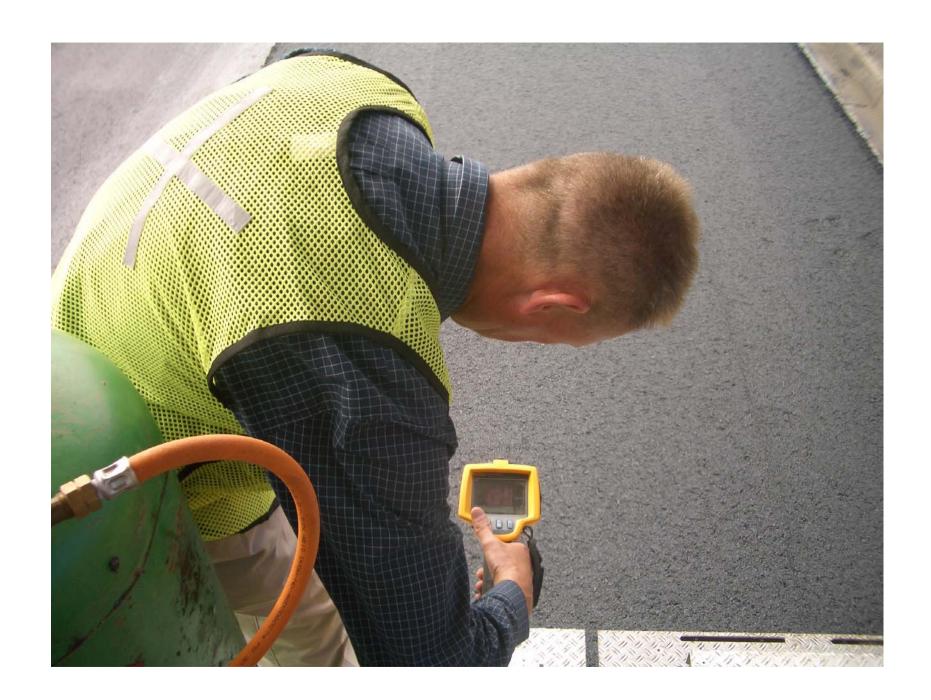


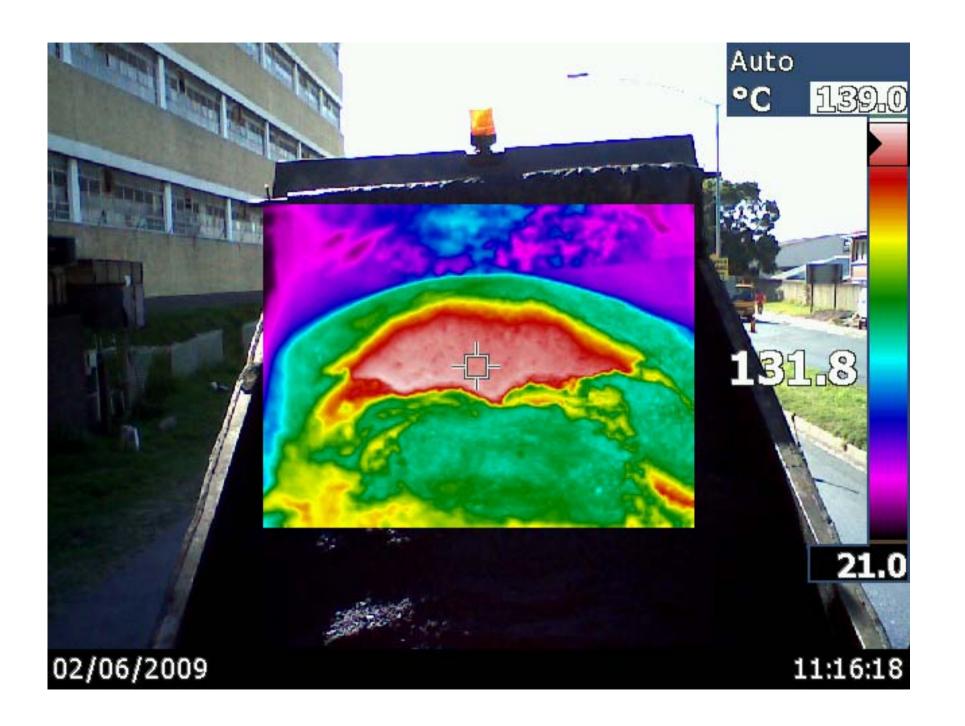


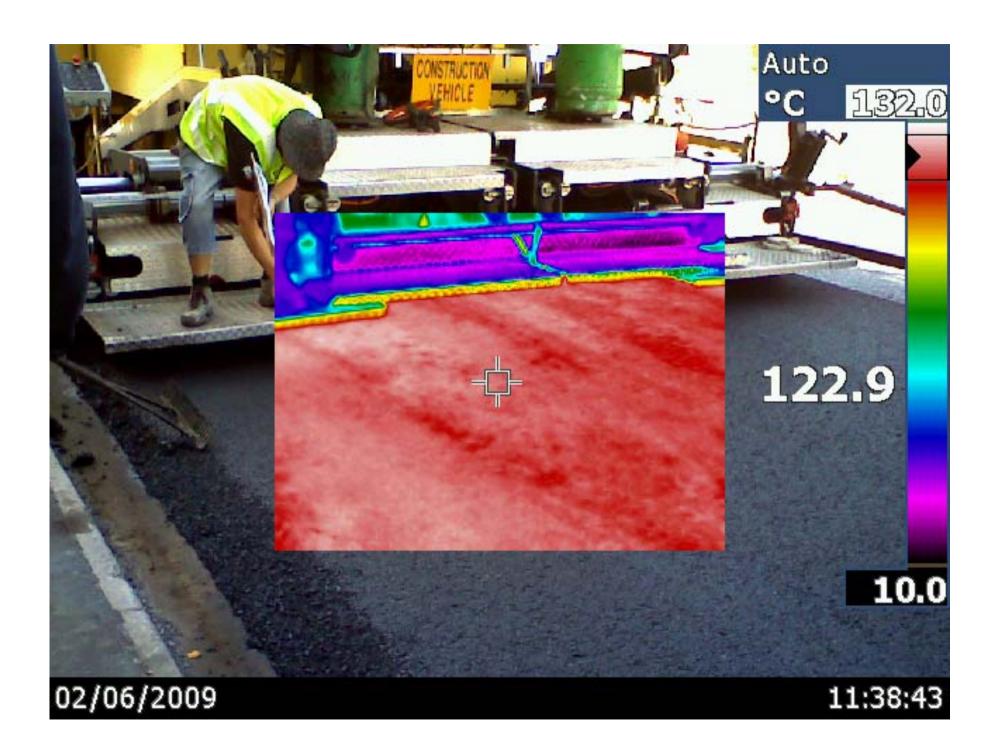




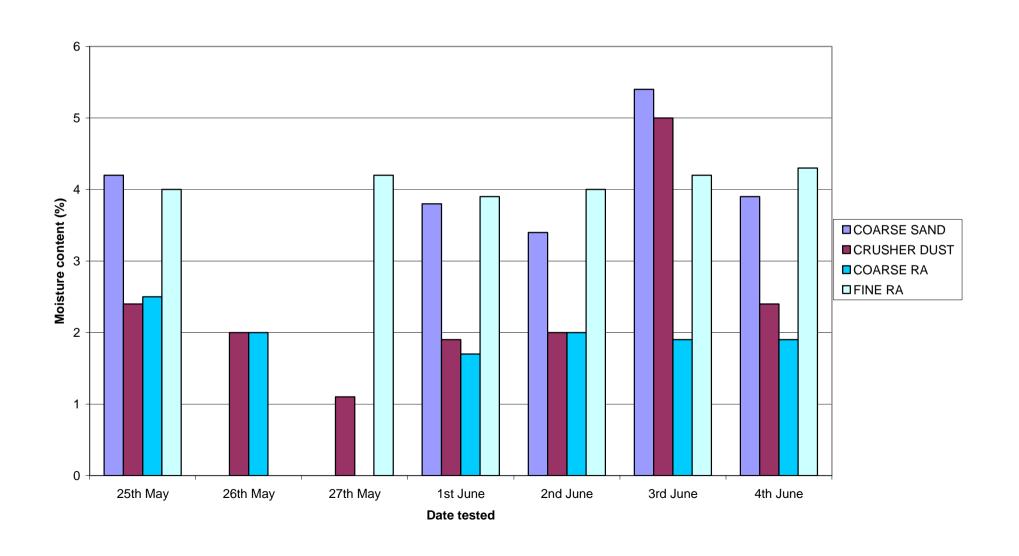






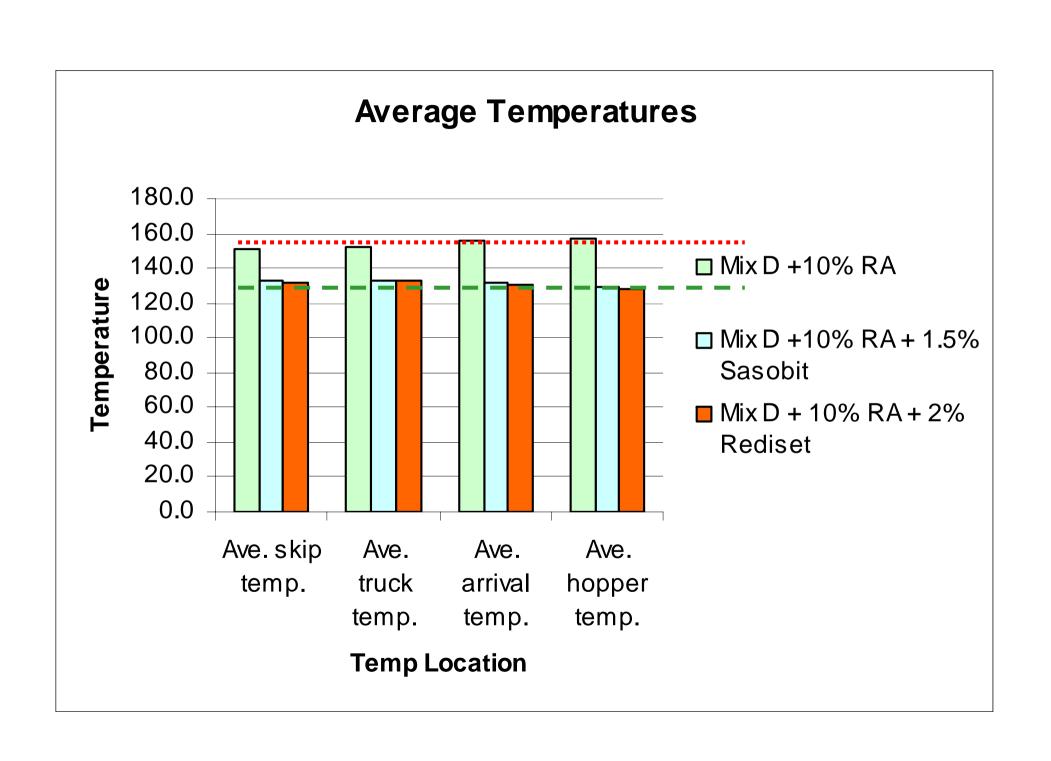


Moisture content of fine aggregate fractions and RA



Temperature range requirements for "warm" trial mixes

| Mix temperature in delivery truck at mixing plant weighbridge | 120°C to 140 °C |
|---|-----------------|
| Mix temperature in delivery truck on arrival at the paver | 120°C to 140 °C |



REPORT ON WMA TRIALS ON LEICESTER

To be posted on Sabita website

- 1. Successful compaction of the 6 trial sections to required min. 92% MTRD nothing unusual in compacting WMA compared to asphalt at conventional temperatures
- 2. Successful use of both SASOBIT and REDISET WMA technologies
- 3. Batch type asphalt mixing plant was fully capable of producing both conventional and "warm" mixes containing 10% RA moisture content of all the mixes well below the required max. 0.5%
- 4. Less fumes, odour at plant and paving site
- 5. Increases "compaction window"
- 6. The quality of the WMA is at least the same as that of HMA

The principal aim of producing WMA containing RA at temperatures at least 20°C below those of conventional mixes was achieved in these trials

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Some of the topics covered:

- WMA technologies
- Mix design
- Sourcing, storage & preparation of materials used in the mixes
- Manufacturing plant
- Paving & compaction

Substantial report:

Could be used as the framework for guidelines on WMA in South Africa

The way forward.....

Carry out further trials to:

- Gather experience with other WMA technologies
- Push the limits re temperature and RA content

Specify use of WMA on full-scale projects

A worthwhile cause....

We're striving to achieve significant:

- Cost savings mix and burner fuel
- Reductions in emissions
- Improvements in compaction window

IMPROVE THE SUSTAINABILITY OF OUR ROAD PAVEMENTS