

**WMA Trials**  
**RPF Progress Report**

May 2009 – George

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# Lower energy pavements

- It is a reality for Durban.
- Combined opportunity
  - Tools
  - Materials
  - People



# Re-defining Residual Value

- Streets paved with green gold.
- Selective milling.
- Securing stockpiles of RA.
- Strategic placement of stockpiles within the City



Not to the dump!!!!!! Not to the  
site yard!!!!!!

# Sustainable?

- Our linear quarry (+6000km) allows us to form strategic RA stockpiles throughout the City.
- Rotating **65000 m<sup>3</sup>** RA in last 2 years.
- Screening our strategic stockpiles of RA and utilizing for:
  - Foamed-bituminized base or sub-base layer
  - Straight run RA in base for sidewalks
  - HMA
  - **WMA**

# RA into **WMA**

- 85% RA + 15% c/dust through KMA.
- 50% RA + 50% G5
- 100% RA
  
- Standard of 10% to 15% RA as routine into **HMA**
  
- Trials with 30% RA into **WMA**
- Trials with 20 % RA into **WMA**
- Trials with 10% to 15 % RA into **WMA**

# Lessons learnt from Brackenhill

- Careful selection of trial sites – grades and variable support.
- Reduce trials to one mix per day
- Comprehensive plant trial mixes
- Develop detailed template covering entire process.





Research & Development



**RELATIONSHIP  
AND DESKTOP**

**AGREEMENTS  
AND  
PROTOCOLS**

**MIX  
DESIGNS  
AND PLANT  
RUNS**

**SITE AND  
PAVEMENT  
SELECTION**

**POST  
CONSTRUCTION**

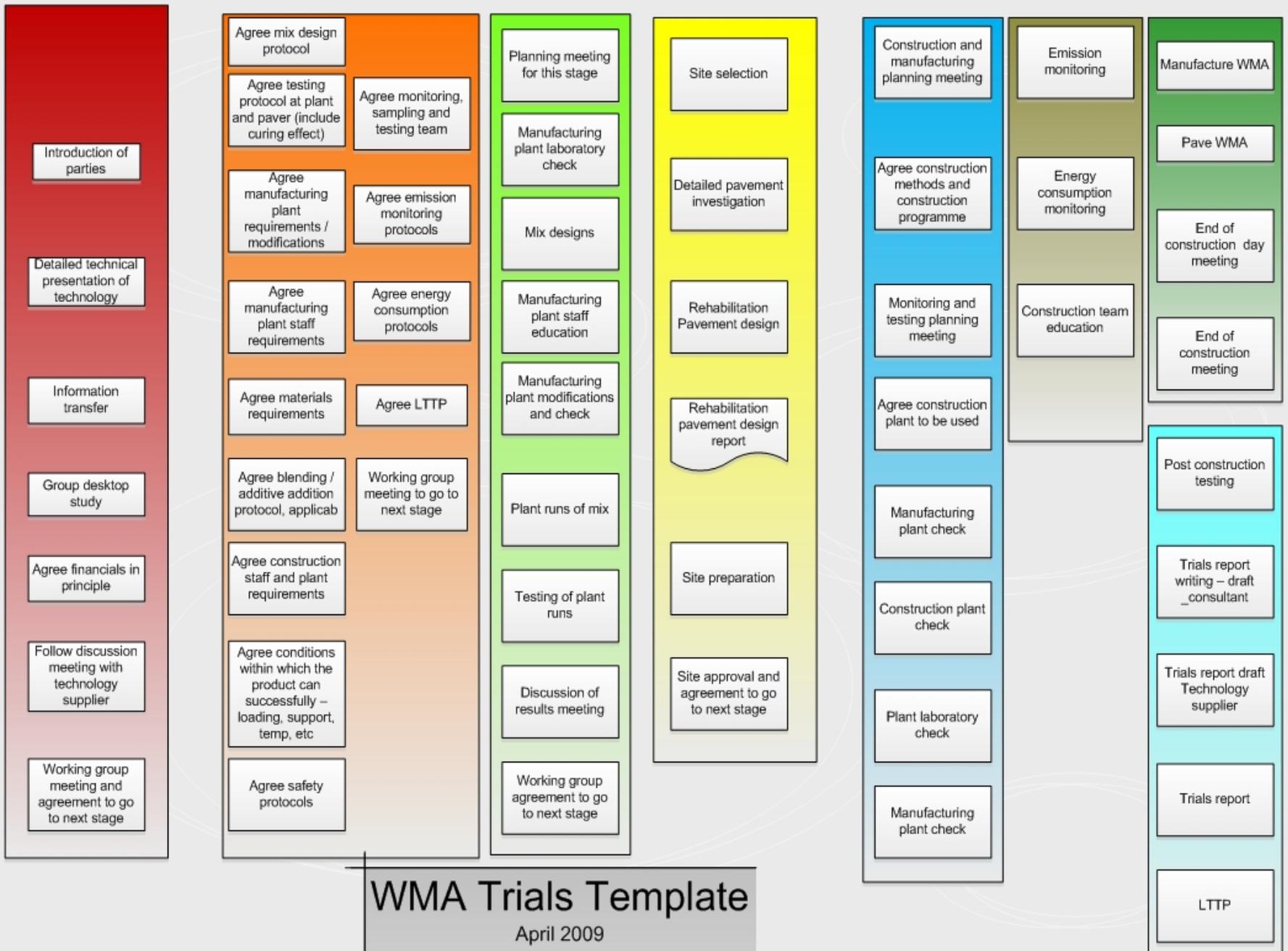
**CONSTRUCTION**

**EMISSIONS  
AND  
ENERGY**

**MANUFACTURING  
AND  
CONSTRUCTION  
PLANNING**



Warm Mix Asphalt Trials  
South Africa  
Template Version April 2009



**Planning meeting for this stage**

**Manufacturing plant laboratory check**

**Mix designs**

**Manufacturing plant staff education**

**Manufacturing plant modifications and check**

**Plant runs of mix**

**Testing of plant runs**

**Discussion of results meeting**

**Working group agreement to go to next stage**

Mix Designs and Plant runs

# Further detail: Protocols for specialist areas.

- We have further identified specialist areas for which we have written up further detailed protocols viz
  - Mix design and testing: **Wynand Nortje & Herman Marais**
  - Manufacturing: **Frank Swift**
  - Construction: **Mike Walsh**
  - Emissions: **Kevan Rocher**
  - Safety: **Kevan Rocher**
  - LTTP: **Tony Lewis**
- All will evolve and improve with further iterations of trials.

# Leicester Road

- Trials are being undertaken in terms of the template.
- 1 km long industrial road – dual carriage-way each 8m wide
- 450 heavies per day – 20 year EAL =  $7 \times 10^6$
- Mill and replace 80mm base AE2 modified 19mm continuously graded HMA and 50mm **WMA**.
- Each c/way to be split into 3 by 300 tonnes sections (600 tonnes per mix).
- Lab mix designs complete.
- Plant trials in progress.



# WMA Leicester Road Trials Team

- **Much Asphalt:**  
manufacturing (batching plant)
- **National Asphalt:** paving
- Technology suppliers:
  - **SASOBIT:** Sasol
  - **Rediset:** Akzo-Nobel
- Specialist plant: **Bomag Asphalt Manager**



# Construction Programme

- Commencing last week of May 2009.
- North-bound carriageway
  - Day 1 – **HMA** Mix D +10% RA
  - Day 2 – **WMA** Mix D + 10% RA + 1.5% SASOBIT
  - Day 3 – **WMA** Mix D + 10% RA + 2 % Rediset.
- Southbound carriageway
  - Day 4 to 6; same order as above.

## **WMA Interest Group proposes that:**

- Warm Mix Asphalt (**WMA**) is generically defined as: “asphalt that is manufactured and paved at temperatures of at least 20°C lower than conventional hot mix asphalt, with all properties and performance being equal to or better than hot mix asphalt.”
- The template currently being used by **WMA** Interest Group be adopted as a national protocol for the implementation of **WMA** trials in RSA.
- Guideline document be drawn up by the **WMA** Interest Group. Timeline completion by 2010.
- Further trials be undertaken targetting at least one technology from each generic category.
- A national Co-ordinator for **WMA** in RSA be appointed.