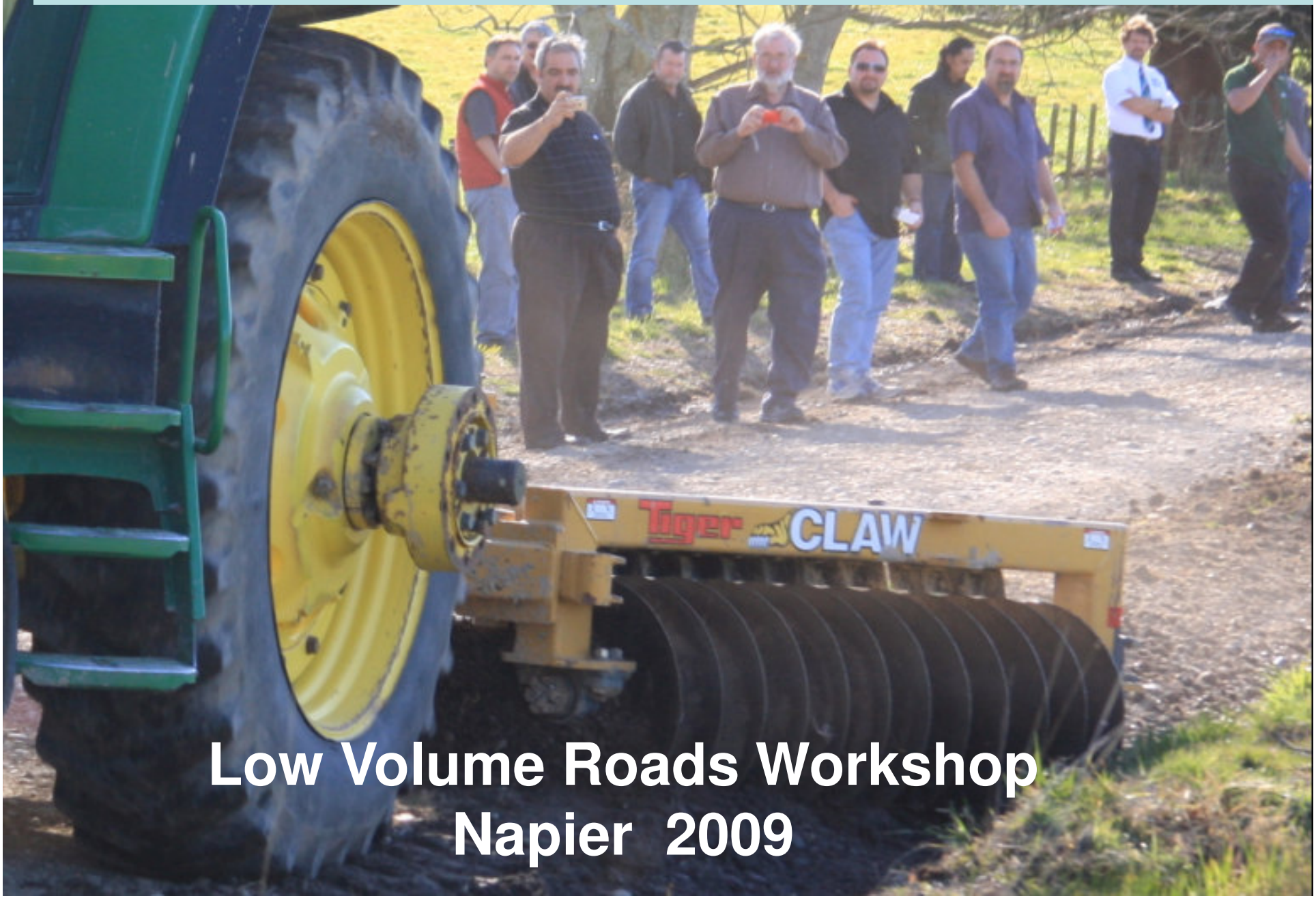
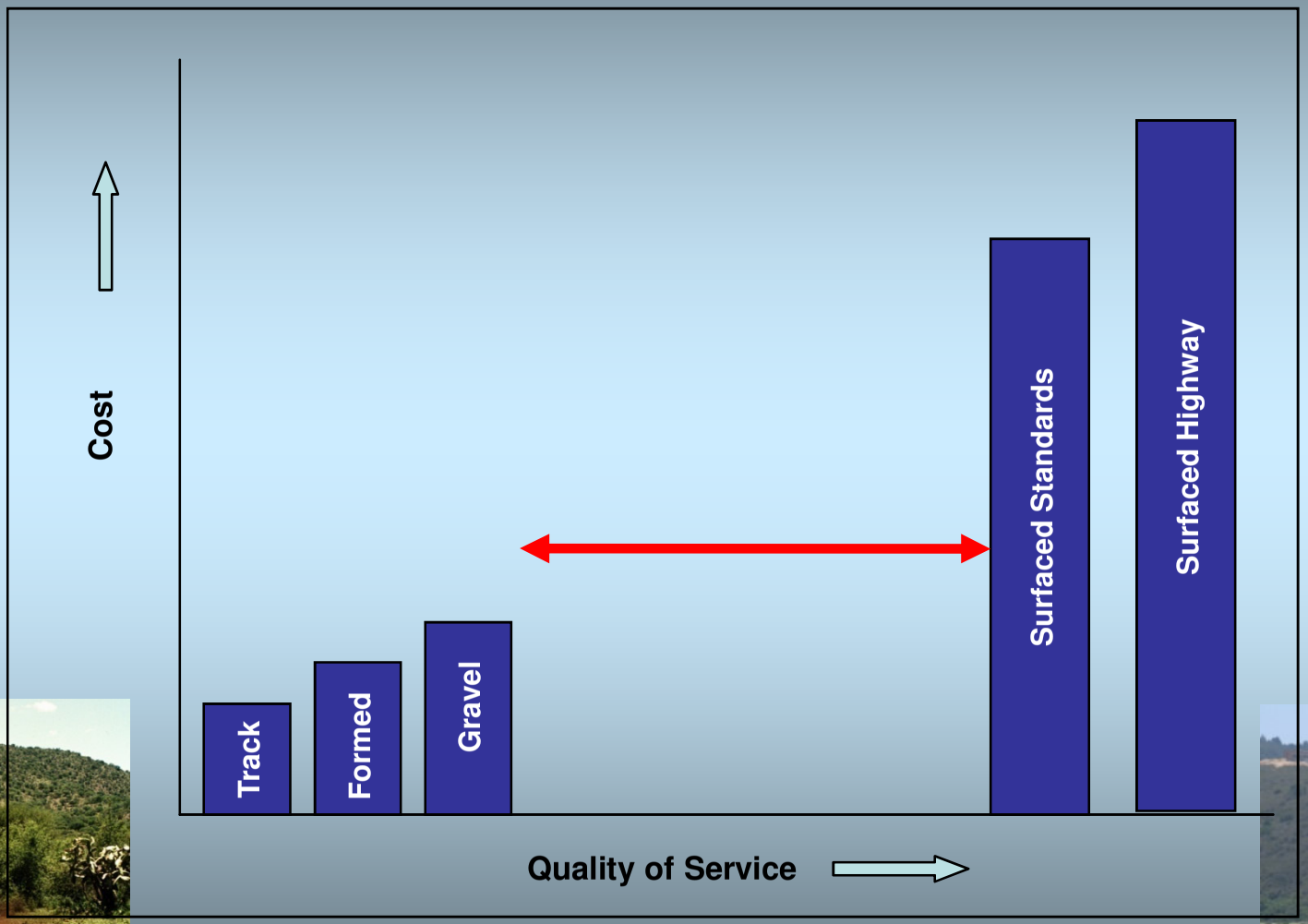
Bridging the quality gap – Gerrie van Zyl



Low Volume Roads Workshop
Napier 2009

Road user perception

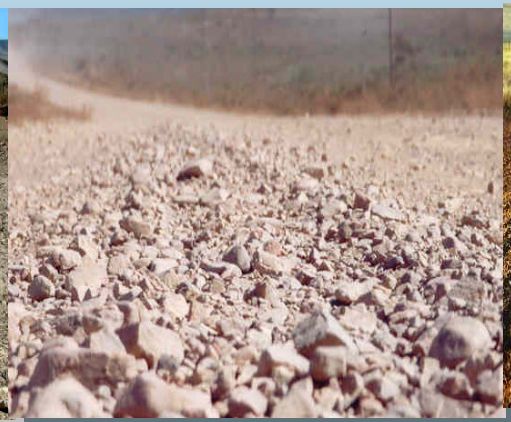


Our experience

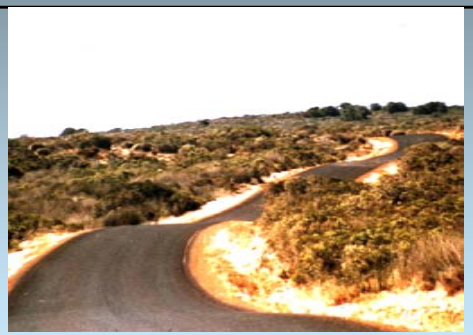
Accessibility

Improving track to formed roads

Mobility & Safety:
Gravel roads still not good enough



Efforts to bridge the “Gap”



Resistance to reduce standards

- **Geometric standards**
- **Shorter design life**

LVR requires real engineering

"I have always felt that it is easier to design a pavement for a high volume rather than a low volume road. On the low volume road we are continually striving for low cost, which makes our design extremely sensitive from the standpoint of thickness, quality of pavement and surfacing materials, geometric design, and many other factors."

Eldon Yoder

Studies towards appropriate standards

SADC Guideline on Sustainability for Low Volume sealed roads

- Politically supported
- Socially acceptable
- Environmentally sustainable
- Institutionally possible
- Financially attainable
- Technologically appropriate
- Economically viable ?

SABITA:Traffic Actions

… selection of appropriate seal types

- **Turning/ Braking**
  - Sand
  - Double
  - Cape
  - Asphalt/ Epoxy
  - Blocks
  - Concrete

SABITA: Gradient

… selection of appropriate seal types

- **Shoving**
  - Braking, curves
  - Thickness
  - Base type
- **Erosion**
  - Kerbs?
- **Constructability**

SABITA:Maintenance capability

… selection of appropriate seal types

SABITA: Environment

… selection of appropriate seal types

- **Population Stresses**
- **Community needs**
- **Climate**

Result

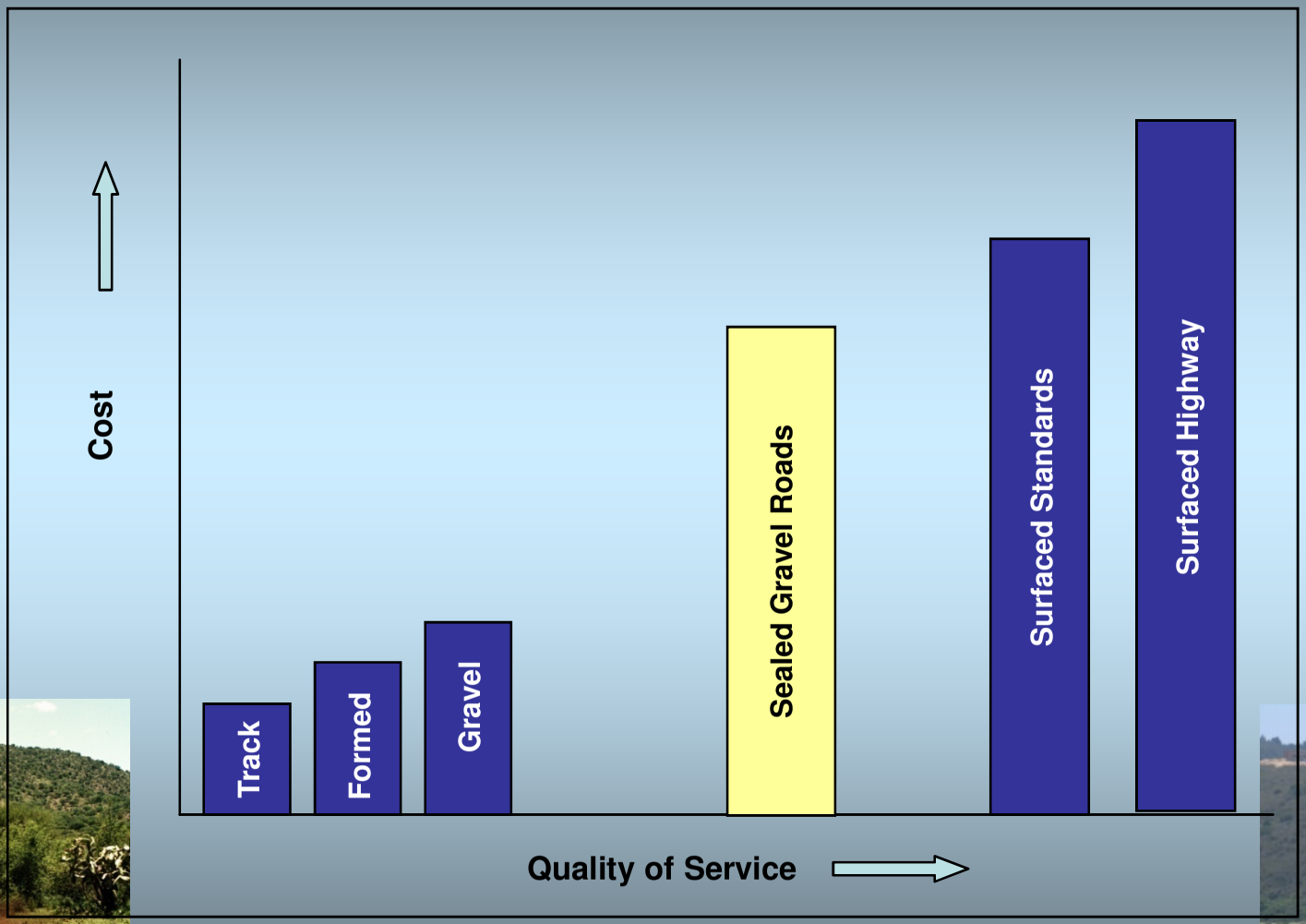
- **Numerous success stories**
- **But also**

Continuous poor performance

Main reasons

- Practitioners not using “Guidelines”
- Poor design (Drainage/ pavement structure)
- Poor construction and QA
- Maintenance

Efforts to bridge the “Gap”



Sealed Gravel Roads: Success stories

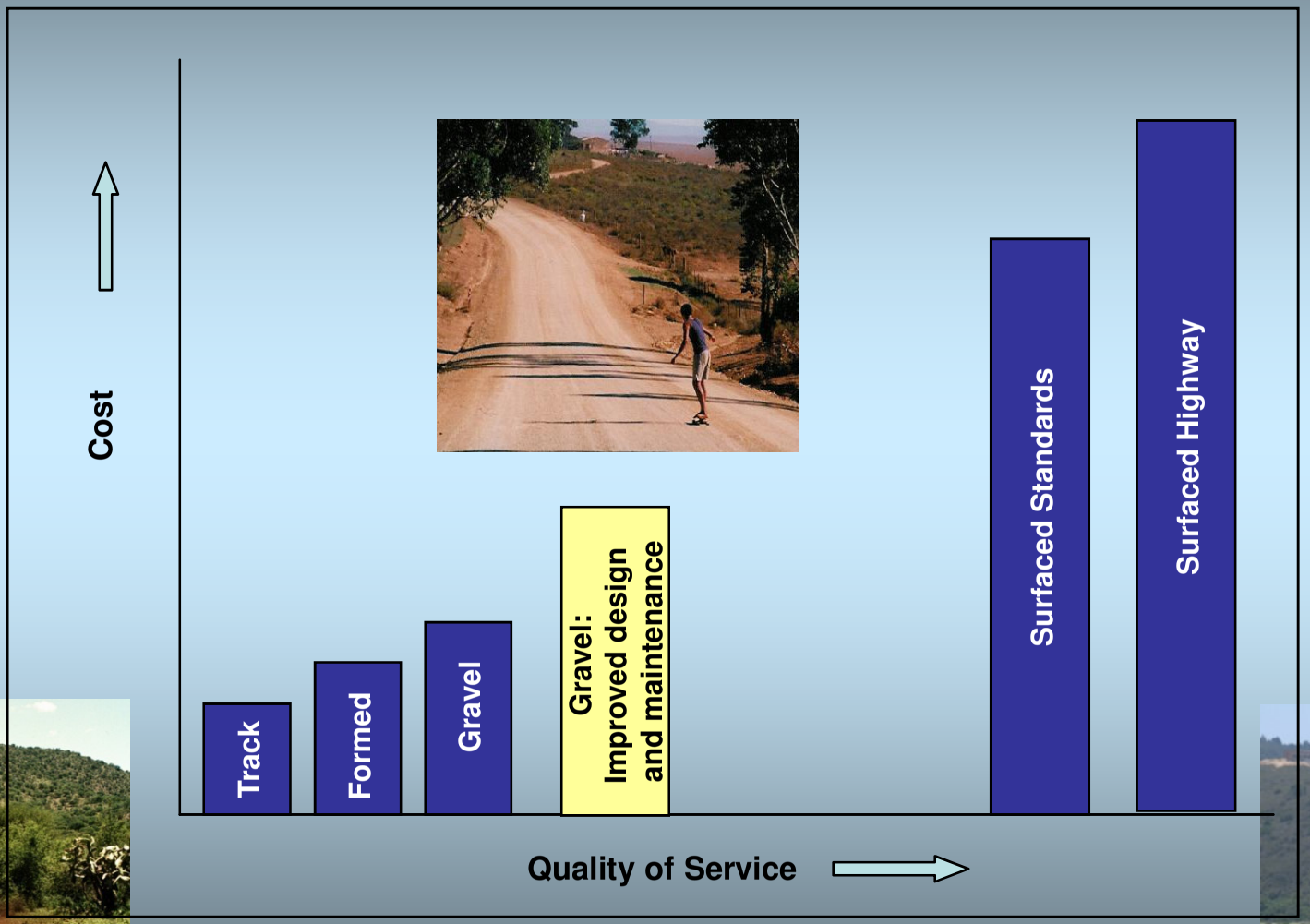
Graded Aggregate Seal

Labour intensive seals: Success stories (Slurry bound Macadam)

Reclaimed Asphalt on gravel roads

Sealed gravel road: Failures

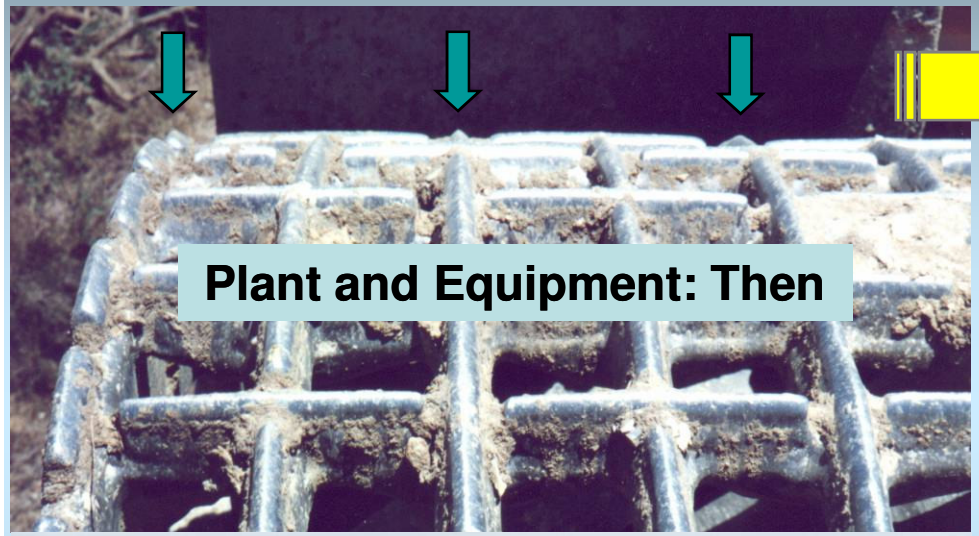
Efforts to bridge the “Gap”

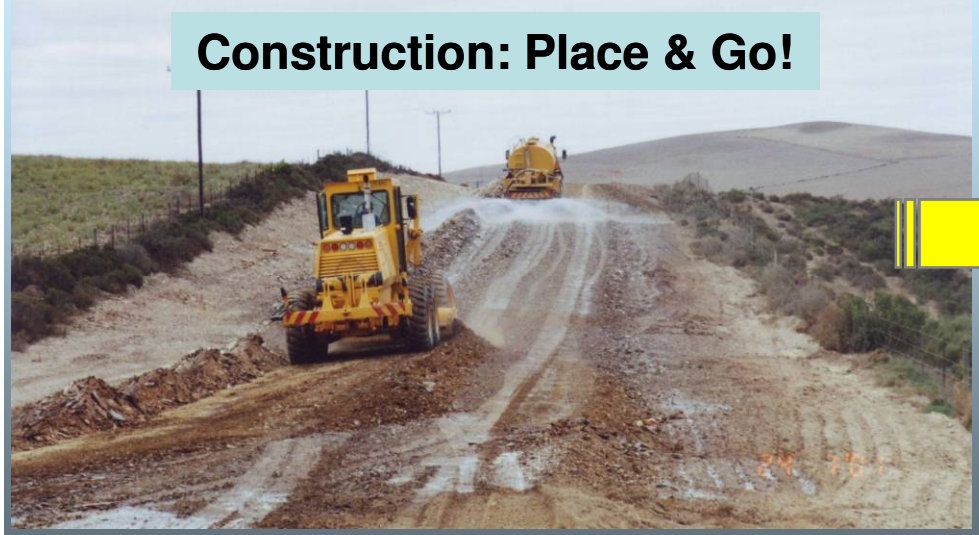


Western Cape Efforts

- Processes and management systems
- Training
- Equipment
- Design
- QA
- Monitoring

Construction Plant & Quality Control





Controlled Construction Processes

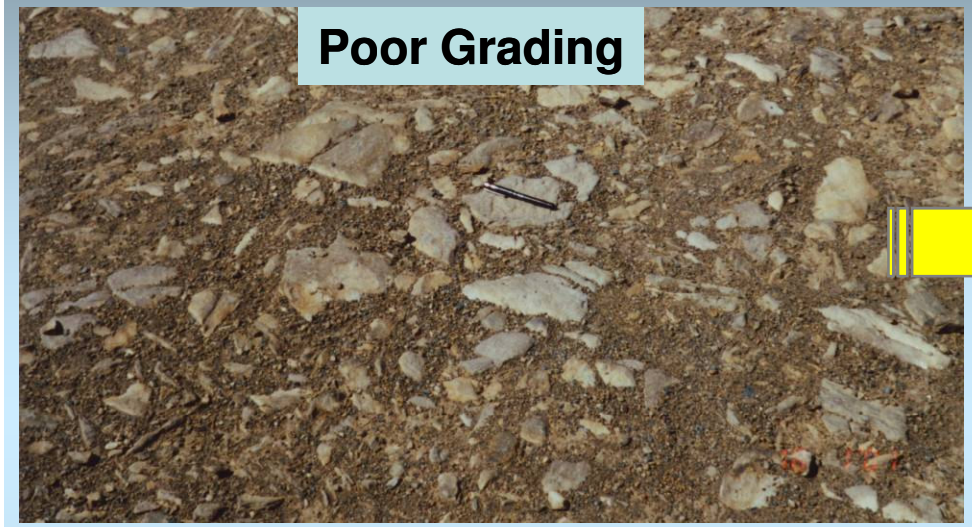
Effective Grid rolling

Remove Oversize Manually

Pneumatic Roller Final Compaction

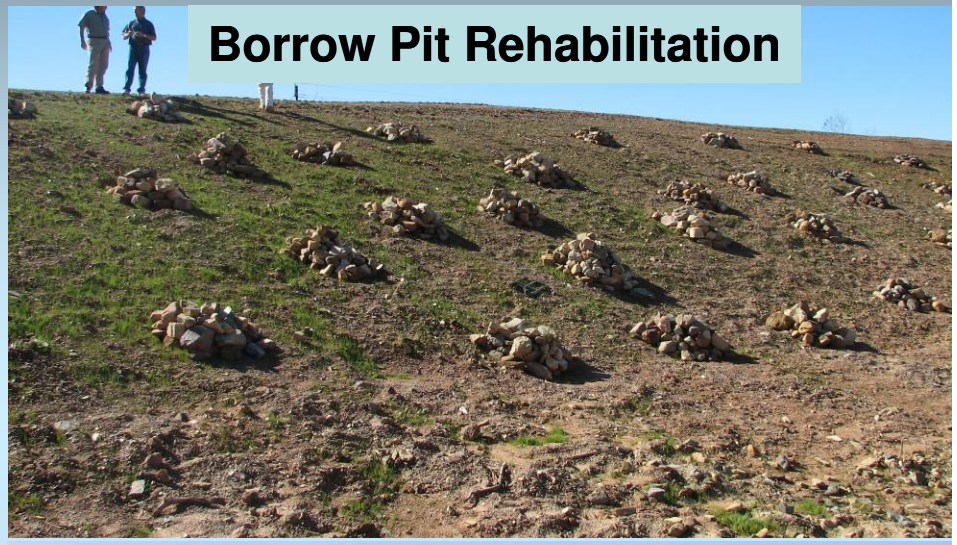
Wet Rolling (Slushing)

Wearing Course Finish



Borrow Pit Development, Mining & Rehabilitation

Public Participation



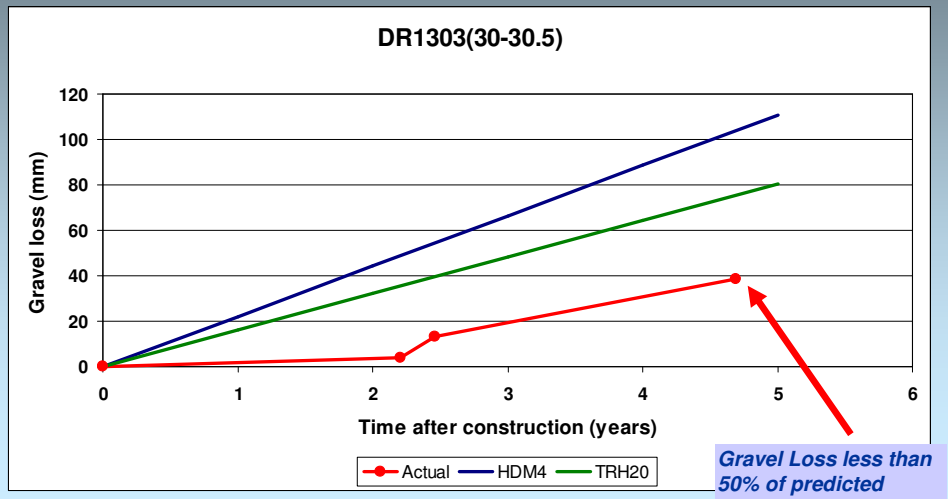
Borrow Pit Rehabilitation

Improved Mining Techniques

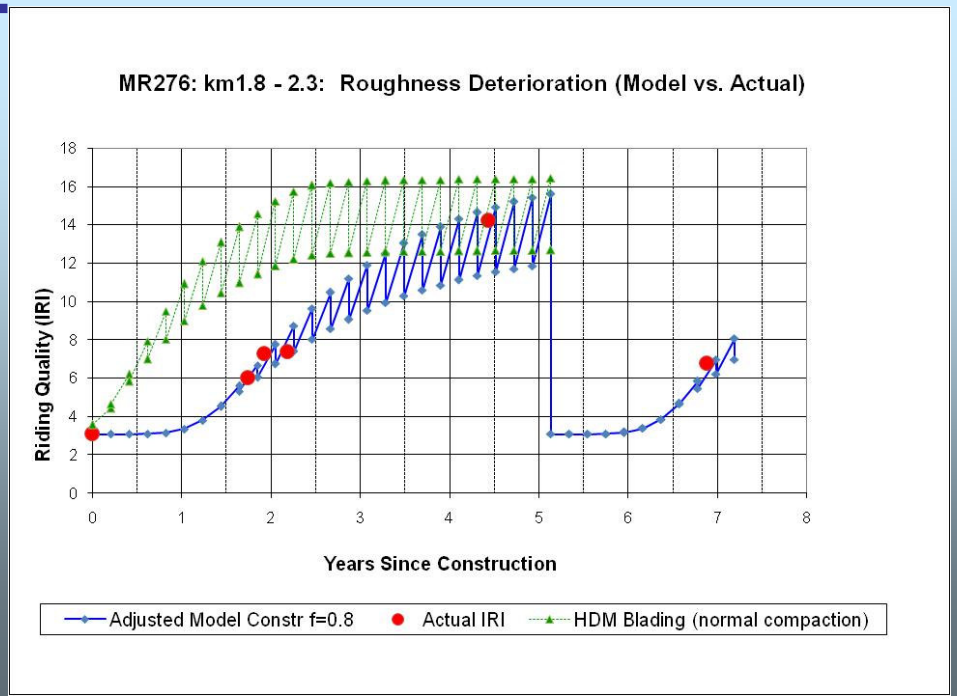
Environmentally friendly toilets

Results

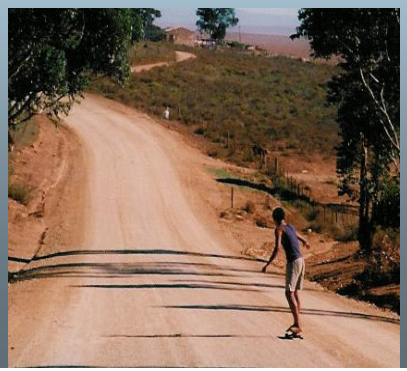
- Reduced gravel loss
- Slow roughness deterioration
- Change in maintenance strategy
- Impact !!!



Gravel Loss less than 50% of predicted



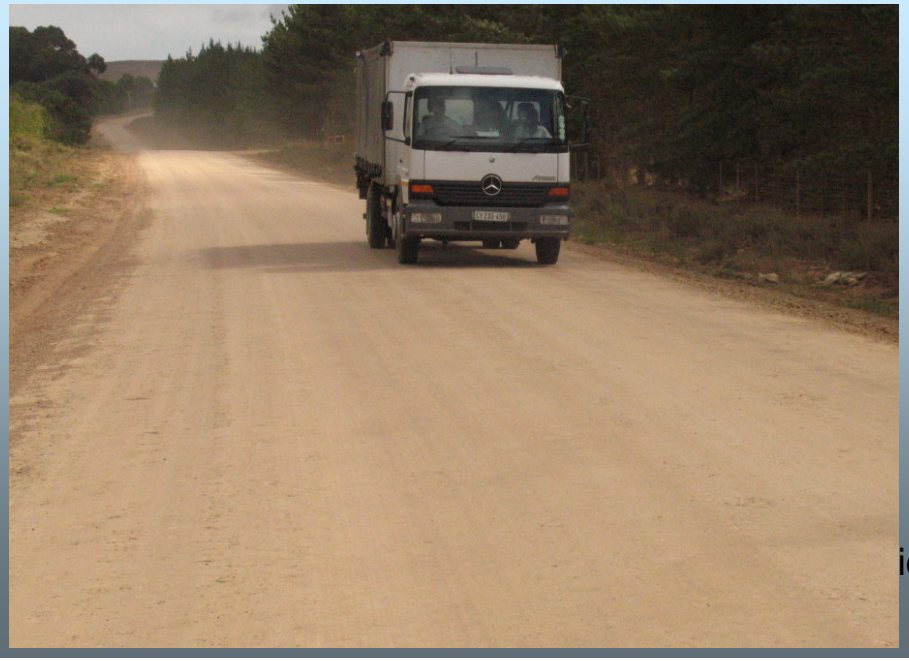
AADT = 323, 19% heavy (2001)



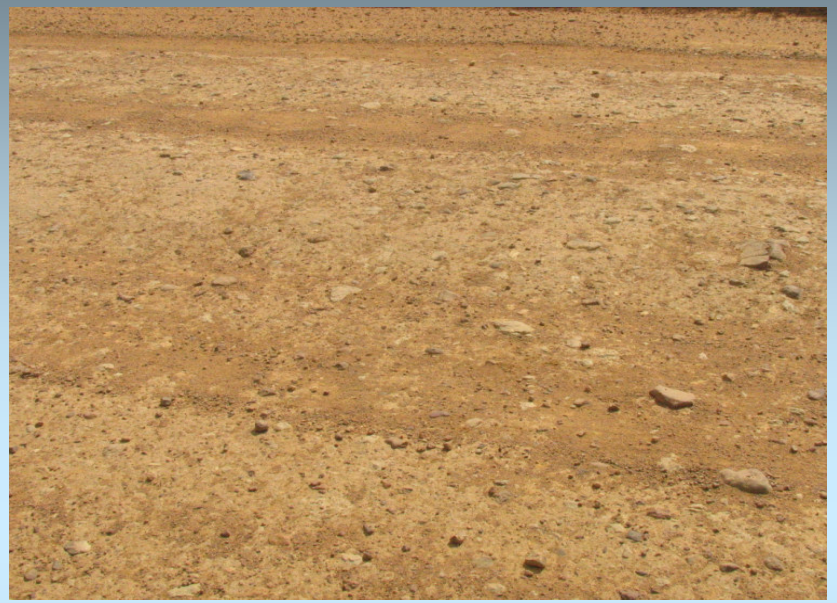
AADT > 500 (2007)

Efforts to bridge the “Gap”

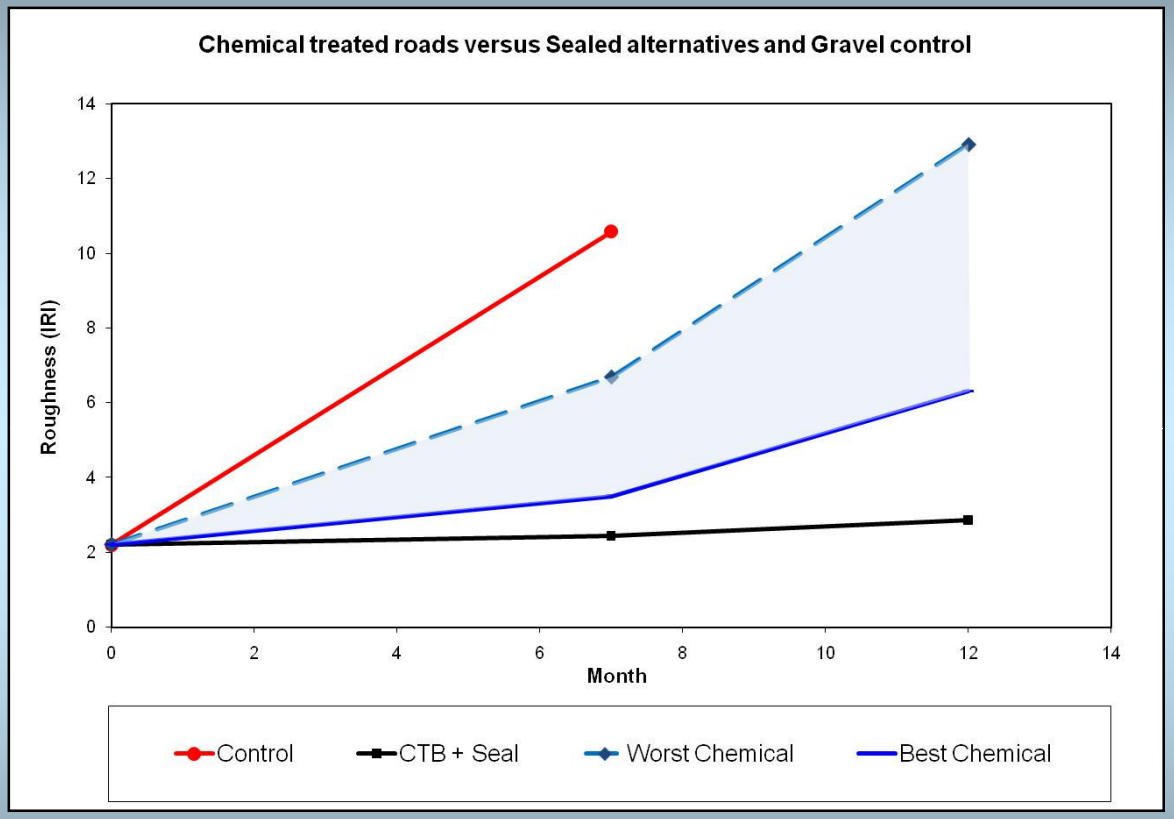
Chemical additives



Chemical additives



Results


Chemical treated roads versus Sealed alternatives and Gravel control
Roughness (IRI)
0
2
4
6
8
10
12
14
Month
0
2
4
6
8
10
12
14
Control
CTB + Seal
Worst Chemical
Best Chemical

Are we learning something ?

Some questions to be answered

- Do we really understand our business ?
- Are we meeting our obligations ?
- Have we stagnated ?

Workshop Topics

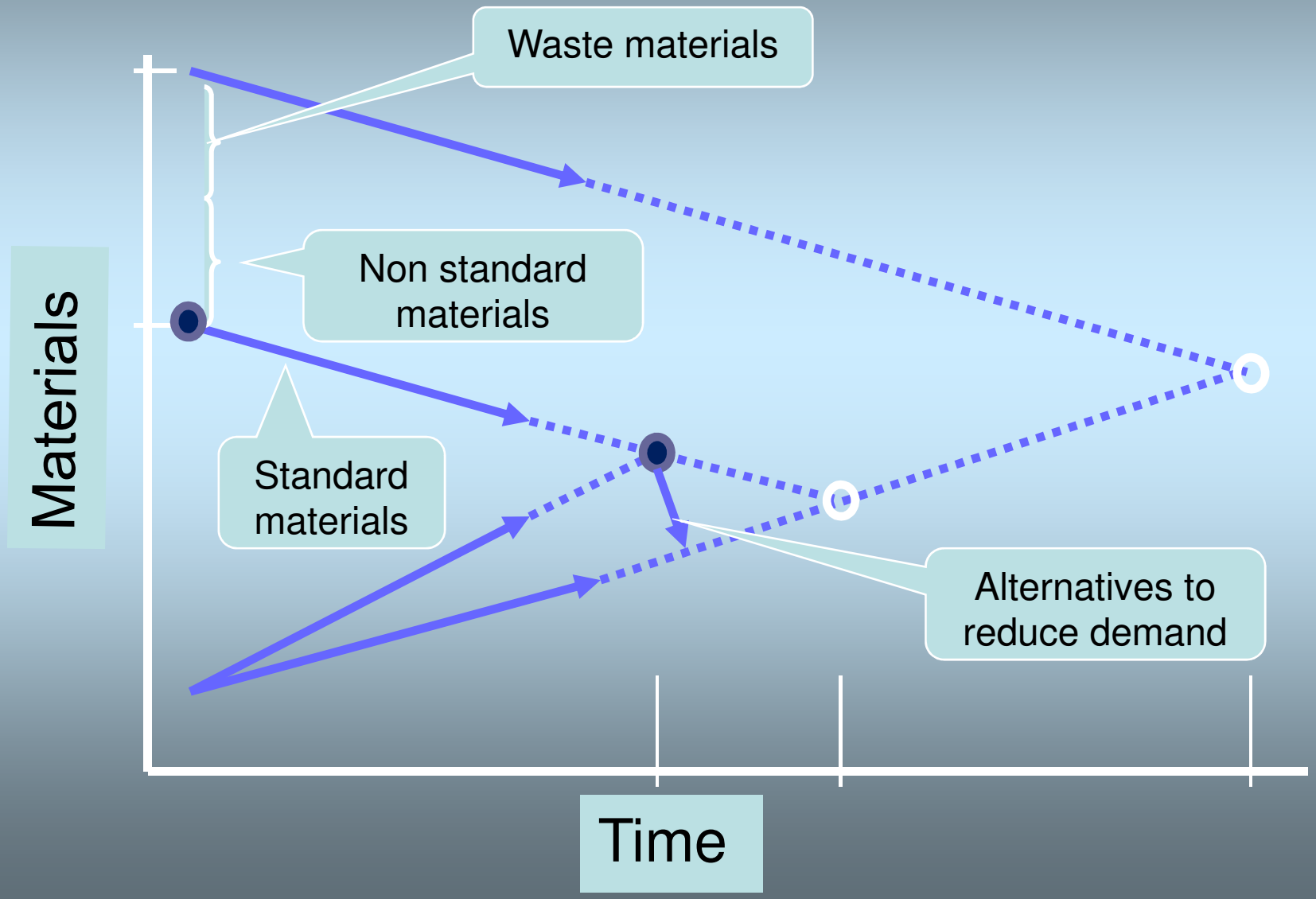
- Safety
- Road user
- Environment
- Appropriate standards/ value for money
- LVR performance
- Best maintenance practice
- Appropriate structures
- Materials and testing

Key challenge

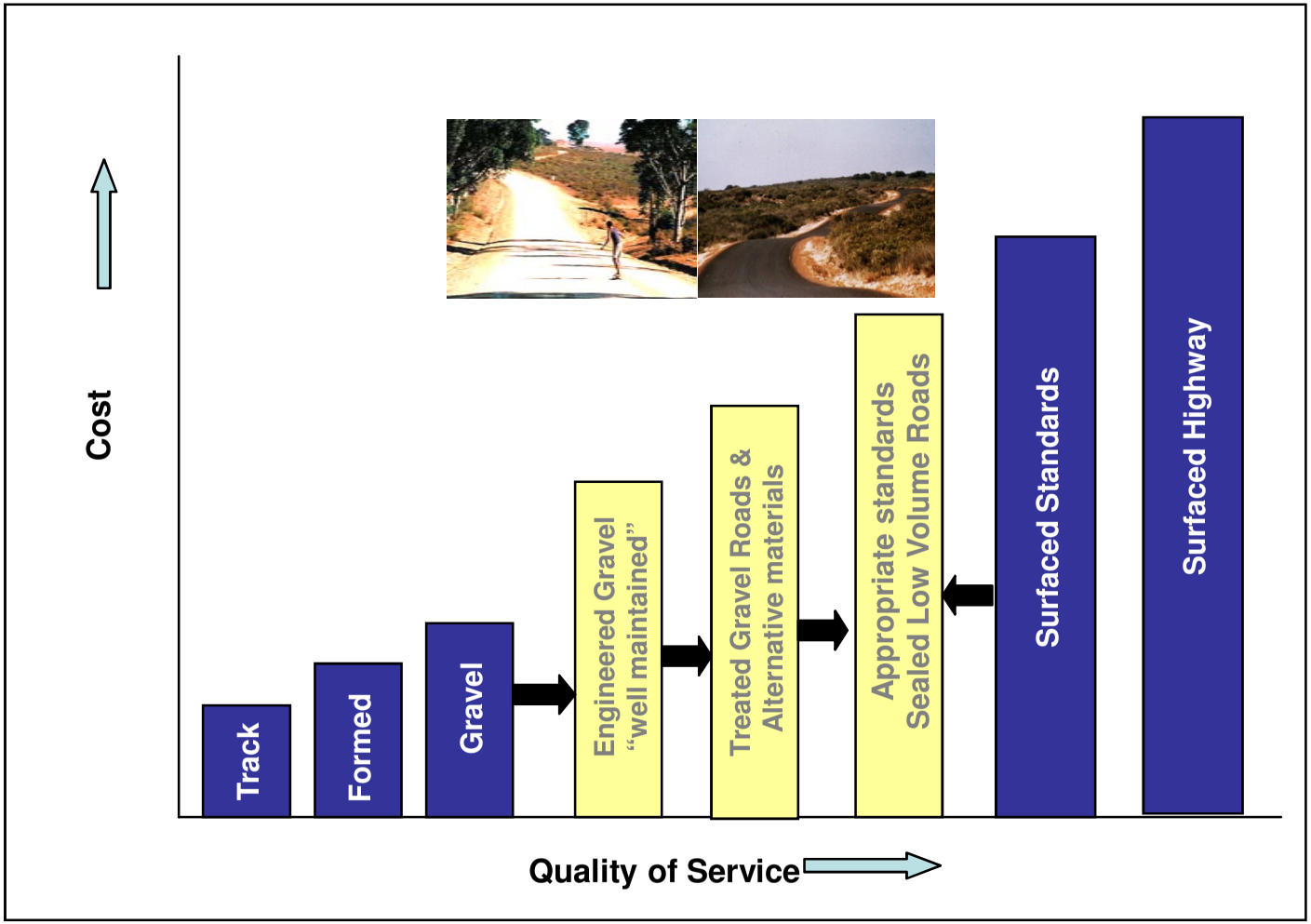
- **What is the best I can do using available**
  - **Materials**
  - Equipment
  - Labour and skills
  - Optimising on in-situ conditions

Ref: Dr J Cook

Optimise materials



We can bridge the “Gap”



Thank you

- Conference committee and organisers
- Presenters
- Delegates

END