



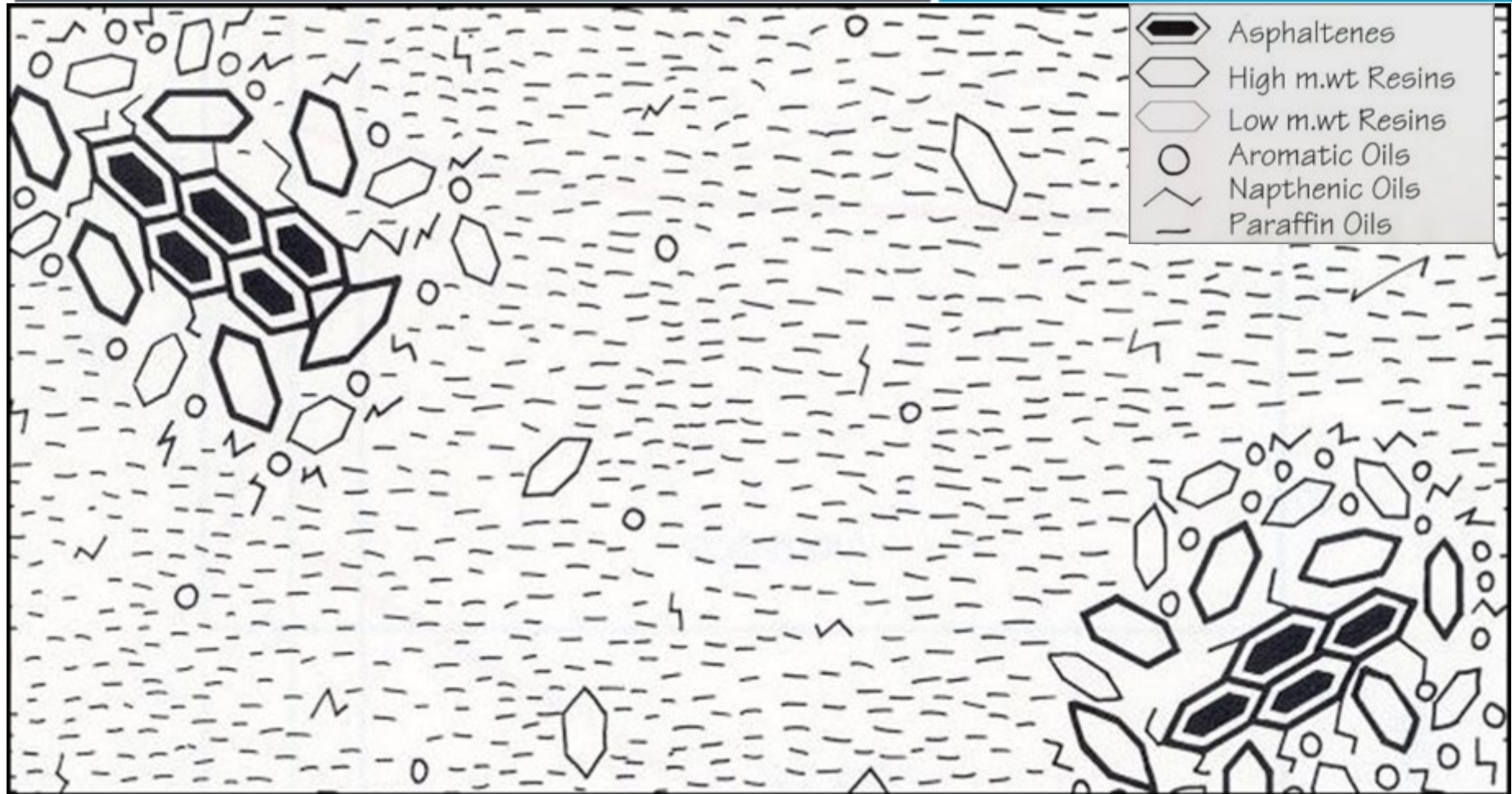
SUSTAINABLE ROAD MANAGEMENT USING SURFACE ENRICHMENT TECHNIQUES



- What products are available?
- What makes up bitumen and how its affected by oxidation?
- What is an emulsion and what makes them superior to conventional hot bitumen?
- Why SERT is superior to conventional SEST?
- What Is JetBlack?(PME)
- Cool Pavements.
- Pavement selection – treatment selection?
- How SERT and Jetblack can be less of a burden on the environment as well as the rate payer dollar?
- Case studies and Questions?

- Rubberised bitumen bandaging.
 - Although not an enrichment product it is a critical pre-treatment material for the more cracked pavement.
- Straight enrichment.
 - Cutback bitumen or emulsions.
- Rejuvenation.
 - Similar to the enrichment, however has added oils to replace lost component or bitumen.(SERT)
- Seal Coat (PME)
 - JetBlack a blend of polymer modified emulsion and mineral filler.
 - JetCool, a new Seal Coat product developed for reduction of pavement temperature.

What makes up bitumen and how its affected by oxidation?

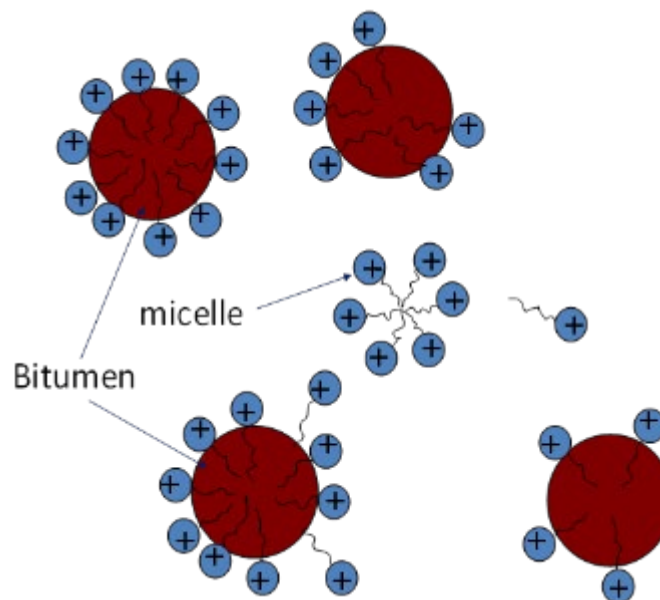
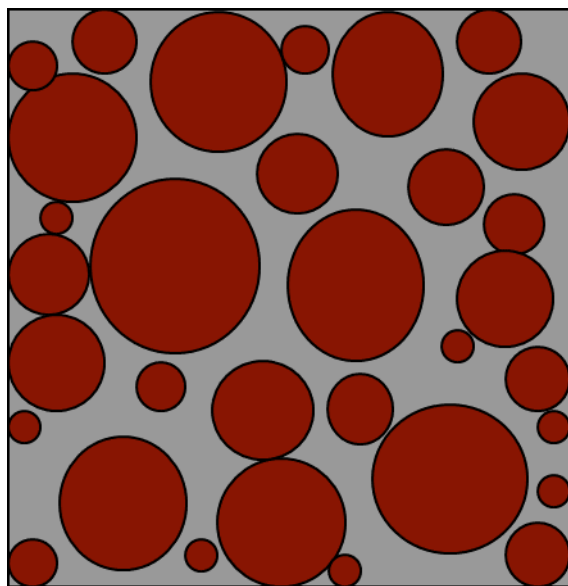


(adapted from The Shell Bitumen Handbook)

What is an emulsion

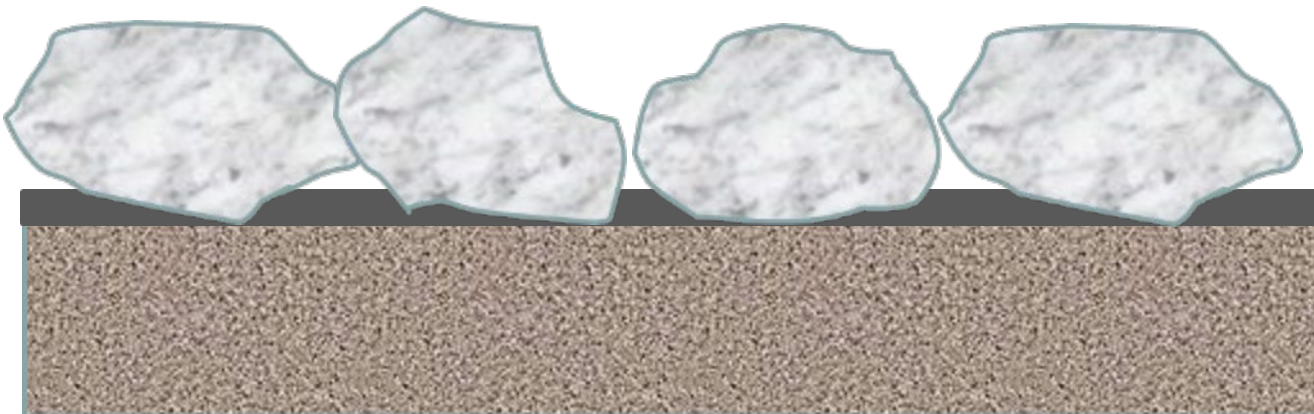
- EMULSION

A suspension of bitumen particles in water containing a surfactant



Why SERT is superior to conventional SEST

- How is SERT Different?
 - Enrichment and Rejuvenation in one application

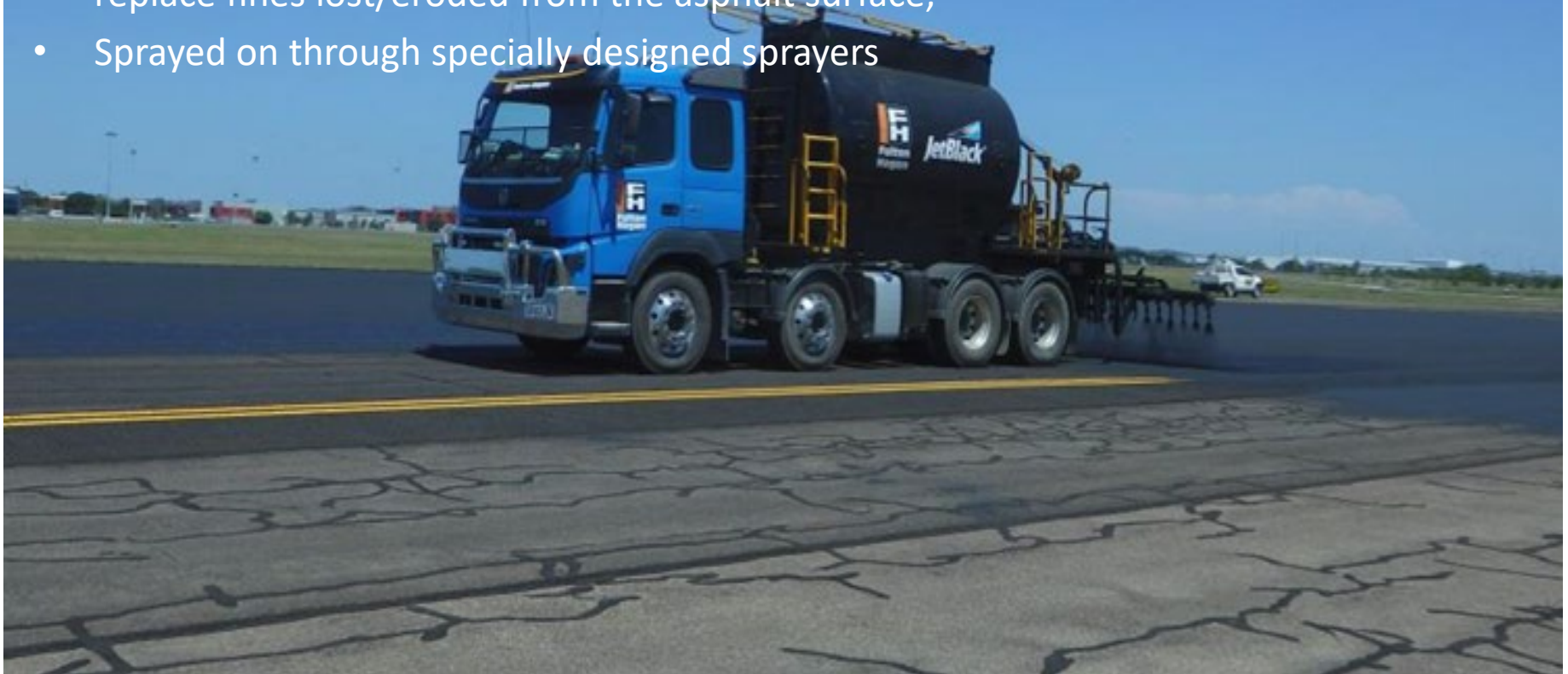


Surface Ravelling Solution



Mineral Filled Seal Coats or PMEs

- A blend of polymer modified emulsion and mineral filler
- Seals the pavement surface with the mixture of emulsion and fillers to replace fines lost/eroded from the asphalt surface,
- Sprayed on through specially designed sprayers



Cool Pavements

A photograph of a light-colored concrete pavement surface. In the background, there is a modern building with a grey facade and large windows. The pavement has yellow painted markings, including a circular area and a rectangular area with the text '50B' in yellow. The text 'JetBlock' is overlaid in large black letters.

JetBlock

TM

A photograph of a dark grey asphalt pavement surface. The pavement has yellow painted markings, including a circular area and a rectangular area with the text '50B' in yellow. The text 'JetCool' is overlaid in large black letters.

JetCool

TM

Selection criteria

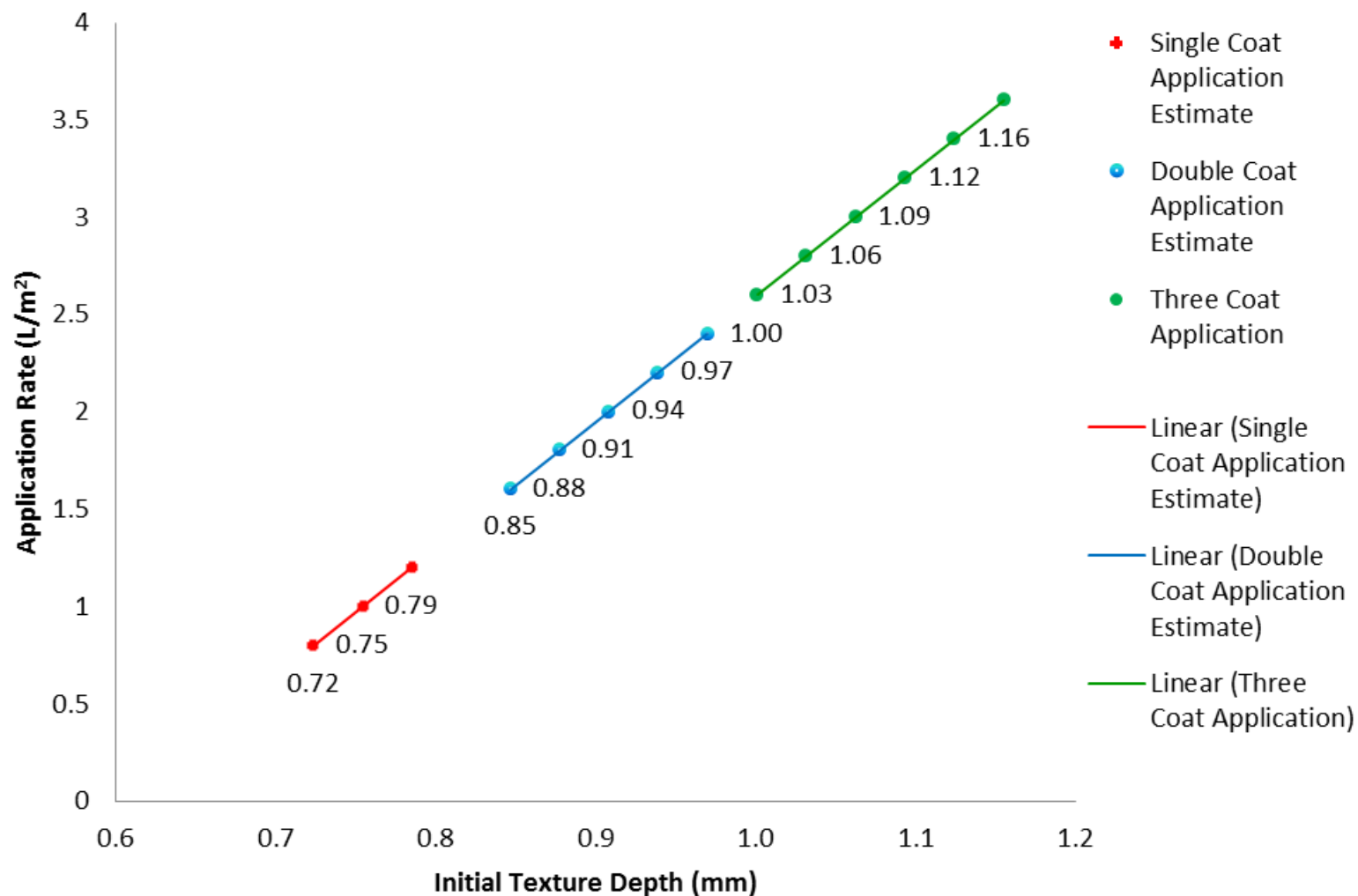


- Fulton Hogan recommends the selection criteria for thin-surfacing treatments by selecting pavements from roads ranging from cul-de-sacs associated with low traffic streets with a 20 year maximum traffic load of 4.0×10^4 ESA up to 1.5×10^5 ESA for local access roads.
- The ages of the roads for selection should be around the 8 year mark for preventative maintenance using SERT.
- JetBlack however pavements that are older or even past their projected design life of 20 years for flexible pavements, can be treated due to the nature and solids content of the Jetblack treatment.
- The pavement surfaces should have little to no pavement failures (1% of the total area), minimal surface failures (7% of the total area) and patch failures (5% of the total area). Other factors excluded pavements with poor profile, steep streets with gradients greater than 5% and high breaking areas for SERT.

- Application rates vary dramatically due to age and surface texture for both products, however over years of experience the following seems to be best fit for these products.
- | | |
|--------------|-----------------------|
| SERT Asphalt | 0.35 l/m ² |
|--------------|-----------------------|
- | | |
|-----------------|----------------------|
| SERT Spray Seal | 0.8 l/m ² |
|-----------------|----------------------|
- | | |
|------------------|----------------------|
| Jetblack Asphalt | 1.0 l/m ² |
|------------------|----------------------|
- | | |
|---------------------|----------------------|
| Jetblack Spray seal | 1.5 l/m ² |
|---------------------|----------------------|
- Trials and inspections are recommended for all treatments.

- The application rate for Jetblack can be tailored to the existing surface texture determined by Sand Circle patch testing to give the wearing course its original texture.
- The next slide is a graph created in a study undertaken at Brisbane City Council, this gives a handy view for designing application rates for individual streets based on surface texture.

Design Chart



- Good option for low traffic areas e.g. residential roads, highway road shoulders etc, where surface deterioration is more attributed to environmental degradation, other than from high traffic loads,
- Cost on par with a spray seal – around the \$2.70-\$3.10/m², on average size sealcoat program. Traffic control is the main variant.
- Predominantly used for the restoration of asphalt wearing courses, but can be used over fine textured spray seals (eg 7mm-10mm),
- Forms a protective barrier to the underlying asphalt or seal, to slow down or prevent further oxidation of the bitumen
- No loose stones to sweep up - neat & tidy operation,
- Beautiful aesthetics, even texture, smoother ride and low traffic noise (ie quieter roads).

Surface Texture JetBlack



Jet Black® over a 14/7mm
spray seal

Picture taken from
RAAF Base Curtin
extremely oxidised
surface treated
with JetBlack to
delay an expensive
asphalt overlay



Picture taken from
Coober Pedy Airport
runway widening . Jet
Black selected to
replace a sand seal
over the new section
of runway and to seal
off the old central
portion of the runway

Jet Black® over a asphalt
pavement



- **Fulton Hogan supports sustainable roads**
- Conserves quality aggregates and bitumen by stretching the resurfacing cycle;
- Topping up depleted bitumen with a high performance polymer modified binder and
- Restoring elasticity to hardened residual bitumen

- There is increasing adoption of sustainable development principles and practice in both developed and developing countries,
- Increasing scarcity of resources requires a more sustainable approach to road construction and maintenance,
- Surface treatments such as SERT™ and JetBlack™ can greatly assist in the conservation of non-renewable resources and the reduction of environmental impact of the pavement maintenance process,

Ceduna Airport, South Australia



Ceduna Airport
February 2016
A pavement of
various texture due
to patching with
areas losing fines .
Jet black was
selected as a cost
effective way of
giving a uniformed
surface with texture
to meet MOS 139
requirements.



Belleria Airport, South Australia



2014 Santos owned airfield Jet Black used as treatment for the extension of the life to the existing seal, locking in ravelling surface as a very cost saving treatment to such a remote airfield.

Westfields Carpark, Adelaide

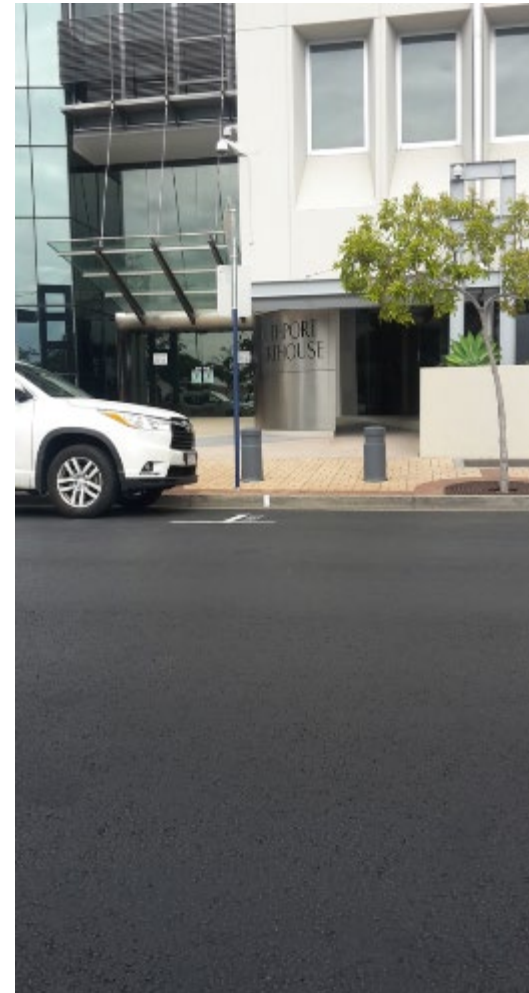


2015 treatment of asphalt car park that had patches placed throughout, Jet Black selected to prevent water penetrating the pavement and giving an aesthetically upgrade to a tired old pavement .

Gold Coast Council Trial Location



Trail for Gold Coast Council February 2016. Very busy street between Southport Court house and a shopping centre car park. Photo on the left shows after initial treatment and on the right 9 months later. Gold Coast Council impressed with product and undertaking additional 65,000 m2 treatments to Council streets.





City of Brisbane

Contact:

Srinath Jayaramaiah

0417 510 150

Year: 2016 : 2018

Total Area treated: 101,814m²

Av application rate: 2.0L /m²

2019: Another 53,208 m²
programed again with a 2 coat 2
litre application.



City of Prospect

Contact:

Dimi Shiraz (08) 8269 5355

Year: 2014: 2016: 2019

Total Area treated: 247,177m²

Av application rate: 1.1L /m²



Port Stephens Council

Contact:

Matthew Heenann

0409 677 582

Year: 2016:2017

Total Area treated: 76,296m²

Av application rate: 1.0L /m²



City of Salisbury

Contact:

Peter Levitt

0413 287 457

Year: 2016: 2017: 2018

Total Area treated: 103,000m²

Av application rate: 1.0L /m²

2 coat application on 30%

QUESTIONS?

