

Case Study

Lockhart Airport, Queensland

Shell Multiphalte – an essential ingredient in the resurfacing of a remote Australian airport runway



Shell Multiphalte 600/170 was selected for the resurfacing of Lockhart Airport, Queensland, because it's well-suited to high-traffic applications like airport runways and does not degrade during storage or transportation.*

This small but important airport was built during World War II and still serves a remote Aboriginal community of approximately 800 people. An inspection in 2002 found that a total area in excess of 52,000 m², including the runway, apron and taxiway, needed to be resealed.

Long-life solution for remote airport runway

Critical success factors	<ul style="list-style-type: none">- High application rate- High thermal stability- Logistics: long haul transportation, maintaining product quality and safety
Application	Airport runway, apron and taxiway
Volume	120 T
Product family	Shell Multiphalte
Product grade	600/170 Multigrade
Client	Lockhart River Aerodrome Company
Contractor	Pioneer North Queensland Pty Ltd
Project Engineer	Greg White



Shell Bitumen

Case Study Lockhart Airport, Queensland

Fit-for-purpose product

The runway had not been resealed for over 18 years and there was evidence that there had been some loss of aggregate and the binder was brittle. Shell Multiphalte 600/170 was selected as the binder because it:

- Offers the high application rate necessary for holding the aggregate securely in the surface, particularly in heavy duty traffic areas
- Resists flushing and bleeding, even in extreme temperatures and conditions
- Does not degrade during storage and handling.

Meeting the technical challenge

The assessment of the runway showed the condition to be poor; localised depression or 'ponding' (areas of dipping) was evident, in addition to general wear and tear of the existing seal. Shell Multiphalte 600/170 met the technical specifications perfectly.

Pioneer North Queensland responded by creating a 14mm 'correction' seal which was applied to rectify the localised depressions and restore the surface shape. This was followed by the application of a 10mm hot bitumen seal across all the aircraft pavements.



Finally, a special bitumen emulsion – sand seal (overspray) was applied to 'lock-in' the new seal and prevent loose aggregate causing Foreign Object Damage (FOD) hazard to the aircraft.

The binder for the sand seal was a Cationic Rapid Setting (Class 170) bitumen emulsion. The binder spray rates used in the work were significantly higher than those normally applied to roads as aircraft pavements receive heavy-duty traffic during their lifetime, and binder ageing and stone loss must be delayed.



With the provision of heavier bitumen application rates, rolling with a steel drum roller and the addition of a bitumen emulsion - sand seal, Lockhart River airport's new sealed pavements appear flat and very 'full' of bitumen.

The inexperienced observer has even mistaken such seals for asphalt in the past. The result is a very durable, safe surfacing with a long life expectancy.

Remote location proves no obstacle

The airport lies some 800km north of Cairns; its remote location proves something of a challenge for the airport owners, from both a cost perspective and a logistics point of view.

The Shell Bitumen plant in Brisbane, approximately 2400km from the airport, supplied the bitumen. Fortunately Multiphalte is a product that can withstand the challenges of storage and transportation without degradation in quality.

The team made use of intermediate storage facilities to overcome the problems caused by the long distances involved. Five shipments of the product were co-ordinated and dispatched to intermediate storage at the Townsville plant, 1200km north of Brisbane.

It was then transported the final 1200km for delivery to the airport, meeting the desired timeframe for the project efficiently and without compromising standards of quality or safety.

By selecting Shell Multiphalte 600/170, Lockhart airport has constructed a long-life and hard-wearing runway which will serve its remote community for many years to come.

*Provided it is handled in accordance with AAPA Advisory Note 7 - Guide to the Selection, Heating and Storage of Binders for Sprayed Sealing and Hot Mixed Asphalt.

For more information about how Shell Bitumen can help your business, please visit www.shell.com/bitumen

Delivering Innovation to your Advantage.

