Case Study: Blue Metal Quarry; (NSW)

*Reducing Dust, maintenance and water consumption with Gravel Lock **RDC.***

Background

Our Blue Metal Quarry, part of a long-established group servicing stemming products and quarried materials to the Hunter mining, civil and construction industries. Our business has built a strong reputation for reliability, quality and consistency across our product range, while continually investing in operational improvements to enhance site safety and environmental performance.

The quarry's main entrance road and weighbridge access are among the highest trafficked areas on site, servicing both internal heavy haulage and external customer trucks. Prior to treatment, the unsealed pavement exhibited rapid surface degradation, dust generation and frequent loss of fines. The road was watered often and rarely graded, resulting in surface conditions deteriorating quickly, with dust and loose material reducing visibility and traction resulting in increased operational costs and unsafe braking and conditions.



Treatment Overview

To address the challenges, Gravel Lock Australia's **RDC** (Road Dust Control) was selected as a long-term dust suppression and surface stabilisation solution. The treated access road services approximately 400 truck movements per week, highlighting the need for a durable and low maintenance surface capable of withstanding continual heavy vehicle traffic.

RDC is a biodegradable, non-toxic, hygroscopic liquid product that draws and retains atmospheric moisture, reducing evaporation and helping maintain the pavements optimum moisture content. The result is a more stable surface with less dust, fewer maintenance interventions and improved traffic safety.

On Tuesday 2nd September 2025, Gravel Lock supervised the initial application across two areas.

Area	Description	Length/ Size	Application Method (water cart)	Result
Area 1	Main Entry/ exit haul road	2.1 km (13000m^2)	Treated first with a single dilution of 20% RDC: 80% water, followed by a single daily 10% RDC: 90% water applications for the following four days. RDC maintenance (10% RDC: 90% water) watering has since reduced to once every 10 days.	Sustained dust suppression, minimal surface loss, smoother haul road surfaces.
Area 2	Weighbridge and internal loop	~200m (2000m^2)	Treated at 3 litres/m^2 of straight RDC	**No** watering to date with surface fines stabilised and dust free. This surface condition is expected to last over 9 months.

Both Areas received a 100 to 150mm roadbase overlay that was lightly rolled prior application. RDC was then applied and the surface finished with a smooth drum roller until a tightly bound well sealed surface was achieved.







Results and Observations

The case study represents a short-term evaluation following the September 2025 RDC treatment, with long term monitoring continuing to confirm performance trends.

- **Immediate dust control:** The treated sections delivered a visible and measurable reduction in air bourn dust within hours of application. Visibility on the quarry entrance road and around the weigh bridge were improved substantially, contributing to safer vehicle operations.
- **Improved surface performance:** The road surface quickly developed a tighter more uniform structure with reduced loose aggregate. This has resulted in a smoother running surface and improved traction under braking and acceleration.
- **Improved skid resistance (observational):** Although not laboratory tested in this trail, the treated surface (3 litre/m^2 around the weigh bridge) appears to offer better tyre contact and braking response. Whilst not so easily visually identified in the diluted areas, Gravel Lock Australia has confirmed that this outcome is consistent with other RDC- treated pavements and is expected to continue enhancing overall pavement safety.
- **Enhanced traffic safety:** Reduced dust and improved traction have enhanced safety for both site personnel, quarry trucks and light vehicles interactions.

- **Reduced maintenance demand:** Watering frequency has been cut from multiple daily applications to roughly one maintenance application every 2 weeks on the main entry / exit road, while the weigh bridge area has required no maintenance watering to date.
- **Long term outlook:** Based on early performance, RDC is expected to maintain effective dust mitigation and surface cohesion over the medium to long term, delivering sustained maintenance and environmental benefits.








Resheet & compact.

First treatment (dilution 20%)

No dust 3 months

(Only maintenance spray as required)

Conclusion

The application of diluted and straight **RDC** at Blue Metal Quarry has delivered a clear improvement in operational costs, efficiency, safety and environmental performance.

Through reduced water cart usage, and improved pavement strength, the site has achieved a more sustainable and cost-effective road management strategy.

"*The results speak for themselves, far less dust, safer conditions for trucks and light vehicles and a pavement that's holding up well without the usual wear or maintenance. We've cut right back on water cart use and interactions with traffic, which means lower costs, less downtime and more efficient operations overall.*" ***Operations Manager***