

Case Study: Haul Road Managed Service

Dust-A-Side's fully managed haul road service has delivered an annual value creation of over \$9 million and over \$6 million in water cart savings for a mining client.*

**Clients' name withheld to protect privacy*



www.dustaside.com.au

ABOUT THE CLIENT AND THEIR CHALLENGES

Our client is an open-cut coal mine in NSW. With up to 13 million tonnes of coal being extracted annually and over 50 kilometres of haul road, the site is not without its challenges with dust control.

As weather patterns have become increasingly dryer in recent years, our client was looking for ways to reduce the amount of water being used for dust suppression purposes on haul roads.

This was a particularly important challenge for the client to overcome as they do not have access to good water sources on the mine lease and have often relied on additional water supply from other sources at additional cost. Haul truck stoppages and slower speed events were occurring due to excessive wheel generated dust creating low visibility. Haul truck maintenance costs were also increasing.

With our extensive experience in total dust control and haul road management, Dust-A-Side Australia was commissioned to implement trial dust control solutions for the clients' haul roads using our HydroTac product.



WHAT IS HYDROTAC?

HydroTac is a specially formulated biodegradable binder used to bind surface particles together. As a hygroscopic crusting agent, HydroTac is used to contain fugitive dust on haul roads, storage piles and materials handling transfer points.

It can be used as a simple spray-on treatment which is absorbed into the surface material. Or for more permanent results and heavy traffic areas, it can be established into the surface wearing course layer via a stabilisation process.

HydroTac significantly reduces water usage for dust suppression purposes and has been shown to reduce water cart operating hours by up to 80%.

Totally organic, it has no corrosive chloride compounds and is readily biodegradable and therefore environmentally friendly.

OPTIMISING RESULTS - IMPLEMENTATION OF A FULLY MANAGED SERVICE

Dust-A-Side originally supervised the establishment of a HydroTac treatment program and were only managing a few kilometers of haul road. The managed service did not initially continue.

Our full-time managed service commenced in mid October of 2018 after product volumes started to climb beyond expected usage. It was found that the client was not effective in self-managing the HydroTac treatment program.



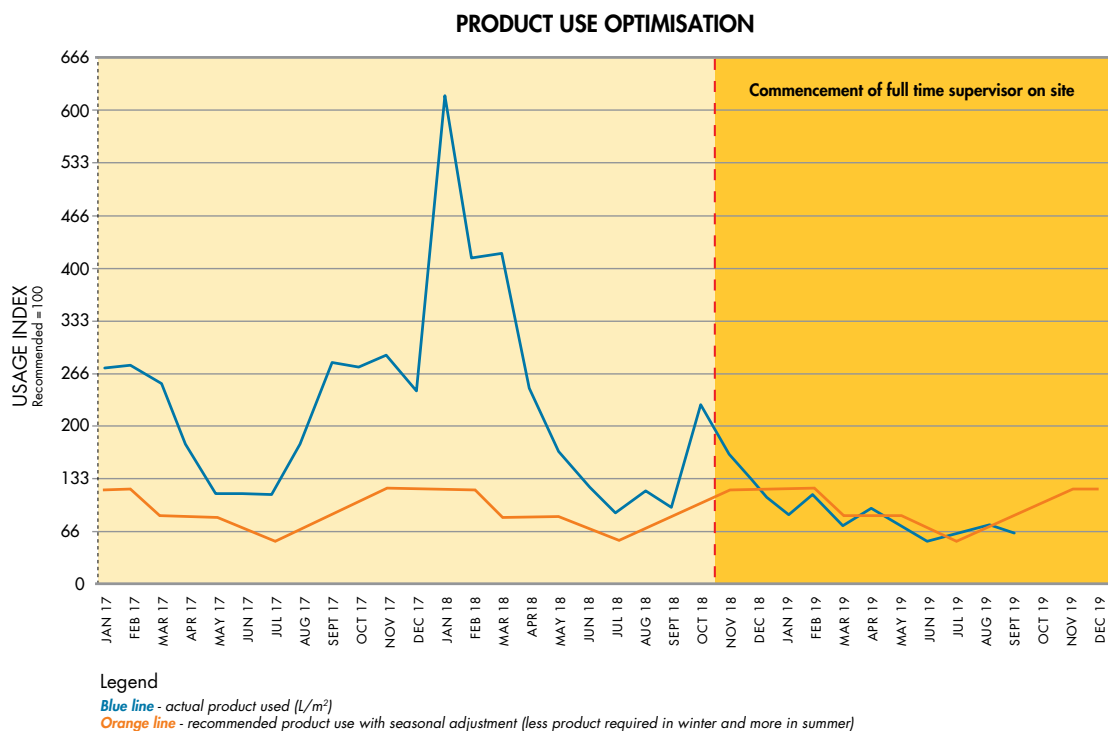
FLEXIBLE CONTROL

Dust-A-Side's fully managed service incorporates:

- A project supervisor full-time onsite who is responsible for:
 - > Training and mentoring operators on how to correctly apply HydroTac and how frequently to do so.
 - > Ongoing operator training (grading and water cart operation) of our maintenance program.
 - > Introducing and training of spot-spraying techniques to reduce overwatering of roads, resulting in a massive improvement of incidents of truck slides.
 - > Client reporting, analysis and optimisation of service to minimise costs of the service and maximise cost savings elsewhere i.e. reduced plant operating costs, reduced road maintenance costs, less re-sheeting and less water spraying.
- A nine week summer validation program designed to improve haul road productivity and water savings.
- Live water tracking and daily reports of HydroTac usage.
- Bulk delivery and on site storage solutions. 55,000L tanks delivered and installed near mine standpipe areas. HydroTac is pumped from tanks through separate pipe on the water stand pipe into water carts.
- Telemetry system and water pipe flow metres which are used to measure and log product usage/water usage.
- Remote control dosing systems used by water cart operators to apply the correct HydroTac dose to their cart. The product is mixed in the water cart, not premixed with water in holding tanks.



Once these controls were implemented full-time on site, the managed service significantly reduced the volume of product being used each month, as illustrated in the graph below.



QUANTIFIED RESULTS

Over a period of 12 months, the fully managed service delivered by Dust-A-Side contributed to enormous cost savings and other flow on benefits for the client.

Successful management of water and HydroTac usage was brought back on target at the planned L/m2 rate.

HydroTac usage was also managed to be within the budget, whilst still increasing the area covered to also include light vehicle roads.

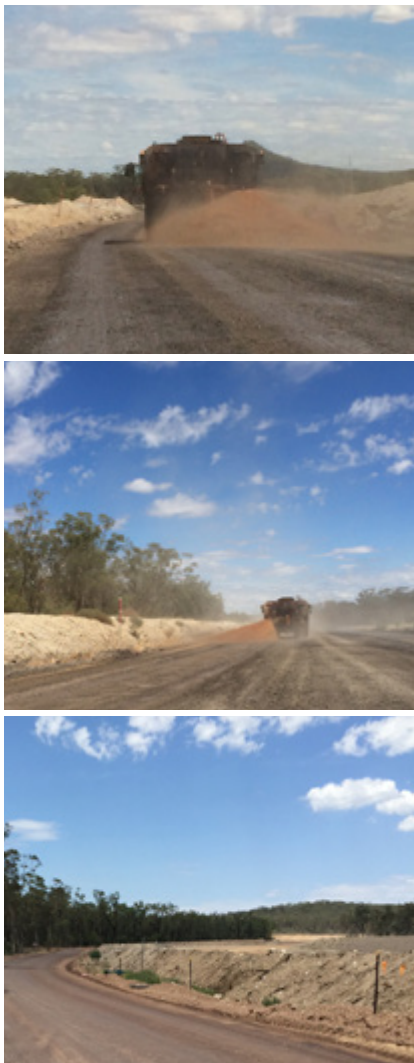
Additional savings are highlighted in the following graphs and tables.

Annualised value creation:

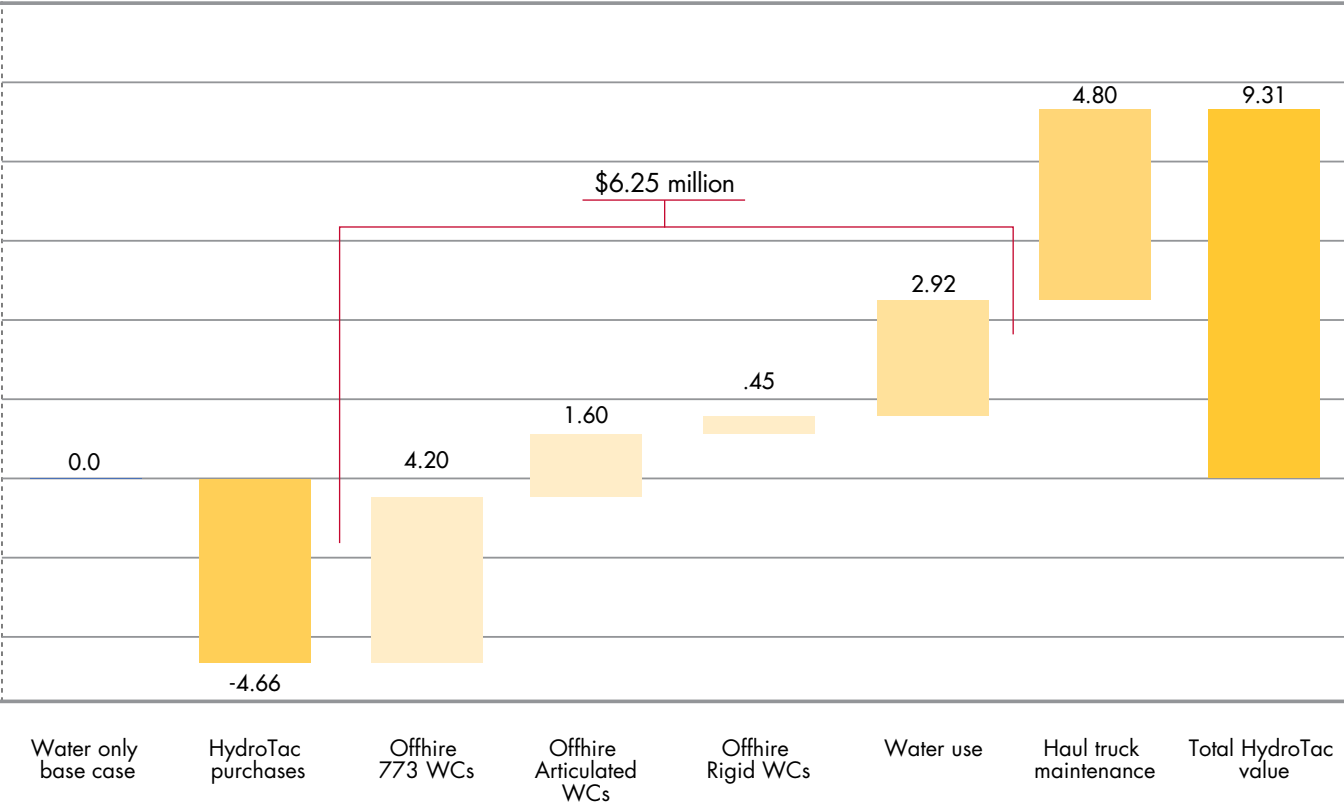
As shown in the graph below, the managed service implemented by Dust-A-Side resulted in an incredible annual value creation of \$9.31 million compared to a base case of using water carts only for dust suppression purposes on haul roads.

This figure is calculated by:

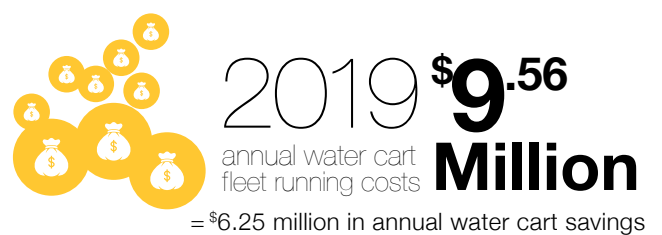
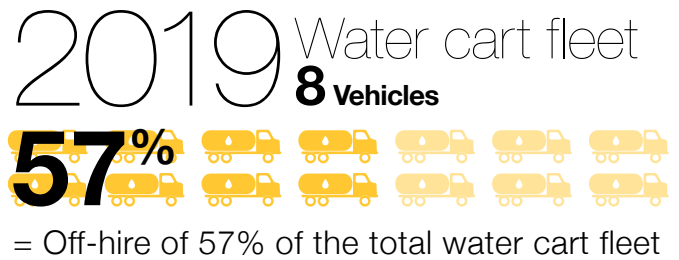
- Combining the annual savings of the off-hire of 6 water carts (\$6.25 million)
- Adding the annual water usage savings achieved by using HydroTac (\$2.92 million)
- Adding the annual savings on haul truck maintenance achieved by using HydroTac (\$4.80 million)
- Offsetting these savings against the initial outlay for the purchases of the HydroTac formulation (\$4.66 million)



ANNUALISED VALUE CREATION



Water cart savings:



Water usage savings:

The significant operational costs savings from reducing the water cart fleet realised over 60% total savings in water used on haul roads, from 10ML per day to 4ML per day.



FURTHER UNQUANTIFIED BENEFITS

- Increased productivity
 - > Reduced dust delay events
 - > Increased transit speeds due to dryer roads (quicker haul circuits)
 - > Increased fuel efficiency due to road condition
 - > Reduced tyre wear
 - > Improved wet weather recovery
 - > Improved ramp safety
- Improved grader efficiency and availability
- Improved water cart efficiency and coverage on dig floors and dumps
- Reduced overall maintenance through road quality
- Reduced flow rates on water carts to stop pitting and rutting for better haul roads
- Improved water cart sprays to maximise road coverage.

FUTURE DELIVERABLES

After a highly successful first year of delivering a fully managed HydroTac service, Dust-A-Side is working with the client on incorporating new deliverables into the scope of work moving forward.

Planned deliverables include:

- Training, mentoring and assessing a dedicated "road crew" of water cart operators and grader operators in the optimal use of HydroTac.
 - > Comprises of 200+ training hours
 - > Aim for a further 10% product saving per m² per year.
 - > Further water savings of 1 million litres per day
- Supply of additional bulk storage facilities during standpipe and fill point relocation.
- Trial of fog cannons for dig floors in order to achieve:
 - > Further dust reduction and management
 - > Further water savings
- Trial of "smart dust monitors" to alert water cart operators on when road needs further application in order to achieve:
 - > Further water savings
 - > Further water cart optimisation

DUST-A-SIDE IS PROVEN TO OUTPERFORM

Dust-A-Side are world leaders in providing holistic road management and dust control solutions to the mining industry.

Talk to us today about arranging an obligation-free technical consultation, complete with preliminary report.

At no charge to you, an advisor from our team will:

- Conduct a thorough inspection of your site
- Assess priority areas including roads, process facilities, conveyors or stockpiles
- Study your current operating practices, processes and systems
- Organise any required NATA-accredited laboratory testing of material and water samples
- Look for opportunities to improve efficiency and reduce costs
- Perform a cost benefit analysis

Following the consultation, our engineer will prepare a preliminary report, detailing recommendations and solutions to meet your needs as well as proposed next steps



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