Delivering Clean Building Sand with the Powerscreen Chieftain 1700X

Carramar Resources, Western Australia

This case study highlights how Carramar Resources in Western Australia transformed a challenging sand screening operation into a high-performing, specification-driven process.

By replacing an underperforming machine with the Powerscreen Chieftain 1700X, the site significantly increased throughput while delivering a cleaner, more consistent building sand product.

70%+

Increase in Output

From 280 to 484 tonnes per hour

484 TPH

Average Throughput

Measured across peak production

Zero

Blinding After Full Shift

Piano wire deck remained clean

The Challenge

Sand and gravel operations often work with material that appears straightforward at first glance. The feed may already contain a high percentage of fines, suggesting minimal processing is required and a simple screening setup will do the job. On paper, it can look like an easy application. But in reality, even material that seems uncomplicated can present hidden challenges.

Small variations in gradation, moisture or contamination can quickly affect separation efficiency, leading to carryover, inconsistent product quality and reduced output. Turning that feed into a clean, consistent final product – one that meets specification every time – often requires more than just basic screening.

BEFORE: THE PROBLEM

280

Tonnes Per Hour

- ✕ Persistent carryover
- ✕ Blinding across decks
- ✕ Reduced feeder flow
- ✕ Extra reprocessing needed

Even with careful adjustments, the operation could not increase output without sacrificing product quality. In a market where consistency and volume directly influence profitability, this inefficiency was limiting the site's ability to meet demand with confidence.

Carramar Resources Site Requirements

At Carramar Resources in Western Australia, the site's goal is to produce clean building sand that meets specifications every time. The material being processed ranges from 0-100 mm, with approximately 90% already passing through a 6 mm screen, so on paper, it looked like a simple screening application. However, small amounts of unwanted stone and organic contamination were still slipping through the process and reporting into the wrong material stream. This meant the sand was not coming out as clean or consistent as required, resulting in extra handling, reprocessing, and slowing overall production.

Our Approach

We worked alongside the customer to assess the material behaviour and machine configuration, focusing on practical adjustments that would deliver immediate results.

The Previous Equipment

The customer was using a competing machine producing approximately 280 tonnes per hour under the same feed conditions. To avoid overwhelming the screenbox, feeder flow had to be reduced, yet carryover into the mid-grade product persisted. Blinding was also more evident across both decks.

The Solution

To address on-site challenges, we supplied the Powerscreen Chieftain 1700X, a mid-sized tracked mobile incline screen engineered for high-volume applications.

Machine Configuration

The machine was configured with a 40 mm woven-mesh top deck and a 6 mm piano-wire bottom deck. The screenbox angle was set at 34 degrees and could be quickly adjusted to operate in reverse using a hydraulic control lever mounted directly on the screenbox, making setup simple and operator-friendly.

40 mm
Woven-mesh top deck

6 mm
Piano-wire bottom deck

34 deg
Screenbox angle

Reverse operation

The Breakthrough

Running the screenbox in reverse proved to be the turning point. It held material on the deck slightly longer, giving fines more opportunity to pass through the media and eliminating carryover into the mid-grade product.

Measurable Results

The result was a measurable shift in performance. Average throughput increased to 484 tonnes per hour, calculated across three 20-minute peak production periods. The piano wire deck remained clean after a full shift with no blinding, while the impact section of the top deck effectively managed the initial material volume.

70%+
Output Increase

484
Tonnes Per Hour

Zero
Blinding Issues

Output rose by more than 70% while delivering a cleaner, more consistent product. For the operator, this meant fewer adjustments, less rehandling and greater confidence in consistently meeting specification targets.

AFTER: THE RESULTS

484

Tonnes Per Hour

- Cleaner product output
- Zero blinding issues
- No carryover
- Consistent specifications
- Fewer adjustments needed

Hydraulic control lever

Patented screenbox design

POWERSCREEN
A TEREX BRAND

Engineered For More

At the heart of this performance is the patented screenbox design of the Powerscreen Chieftain 1700X - the only machine of its size on the market that can switch from a 4-bearing to a 2-bearing setup on site in just a couple of hours.

4-Bearing Screenbox Advantage

In heavy sand applications, a 4-bearing screenbox will not lose stroke or speed under load, meaning it does not "dampen" like a traditional 2-bearing setup. This allows the screen to maintain aggressive separation even at high tonnages.

Performance Specifications

Running at 1140 rpm as standard, with an adjustable throw of 6.5 mm, the unit delivers an excellent 4.7G of force - a 17.5% increase compared to the previous Chieftain 170 model. This translates directly into improved material stratification and higher throughput.

1140	6.5 mm	4.7G	+17.5%
RPM Standard	Adjustable Throw	Force Output	vs Previous Model

Machine Features

Beyond the screenbox, the machine combines a 4.8 m x 1.5 m (16 ft x 5 ft) screening area, a 5.3 m3 hopper capacity, and 1050 mm feed and main conveyors with hydraulic variable-speed control. Hydraulically folding side conveyors provide generous discharge heights, while the CAT engine delivers reliable power with an available dual-power option.

4.8 m x 1.5 m
Screening area

5.3 m3
Hopper capacity

1050 mm
Feed and main conveyors

CAT Engine
Dual-power option available

Serviceability

Serviceability plays a critical role in uptime. Hydraulic raise-and-lower functionality improves access to the top-deck mesh for maintenance. Self-tensioning side conveyor paddles reduce spillage and eliminate the need for removal during transport. Hydraulic rams fold and unfold the screenbox walkways, enabling fast, efficient setup on site.

MACHINE SPECIFICATIONS

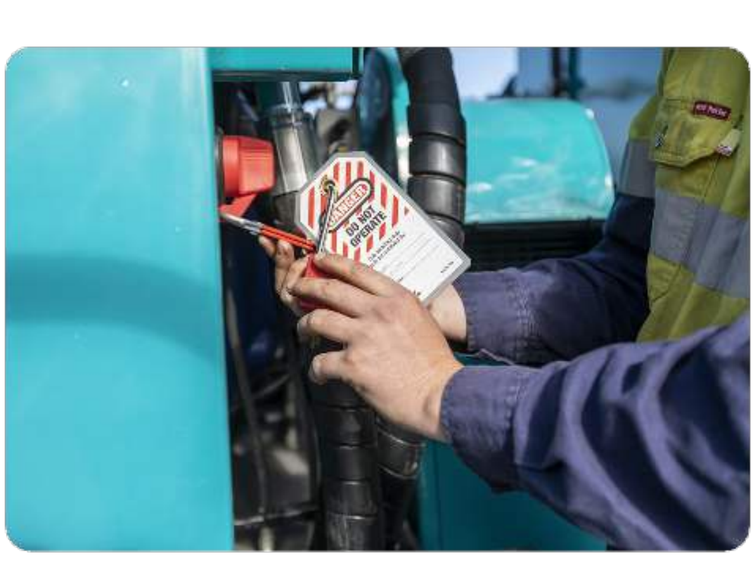
Screening Area	Hopper Capacity	Conveyor Width	G-Force Output
4.8 m x 1.5 m	5.3 m3	1050 mm	4.7G

Safety as Standard

The Powerscreen Chieftain 1700X was supplied with custom guarding across all external conveyors, additional emergency-stop lanyards on both sides of each conveyor, and fire extinguishers mounted directly to the chassis.

These safety features are designed to meet or exceed Australian Standards.

- Custom conveyor guarding
- Emergency-stop lanyards
- Chassis-mounted extinguishers
- Australian Standards compliant



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