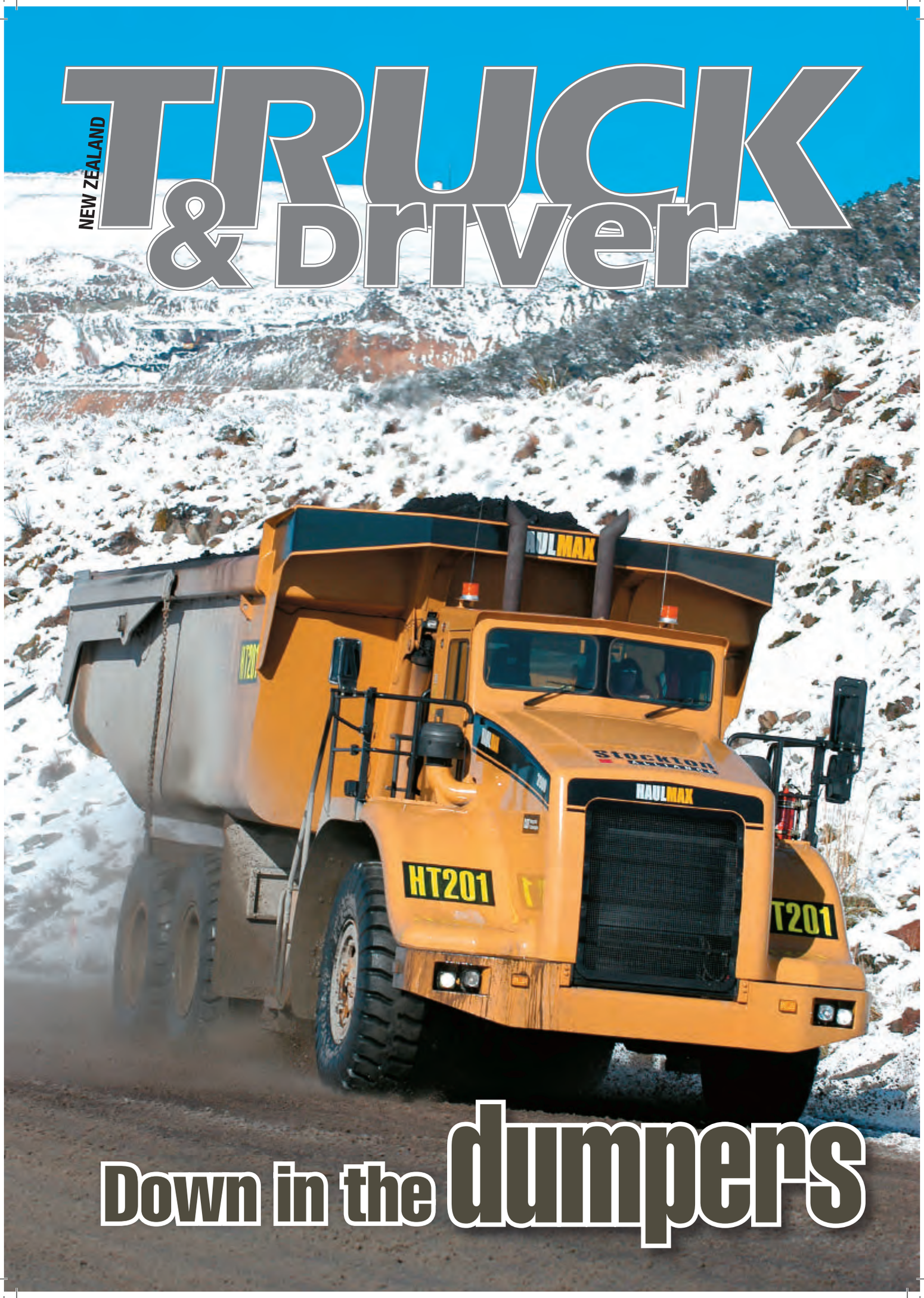
NEW ZEALAND
TRUCK & Driver



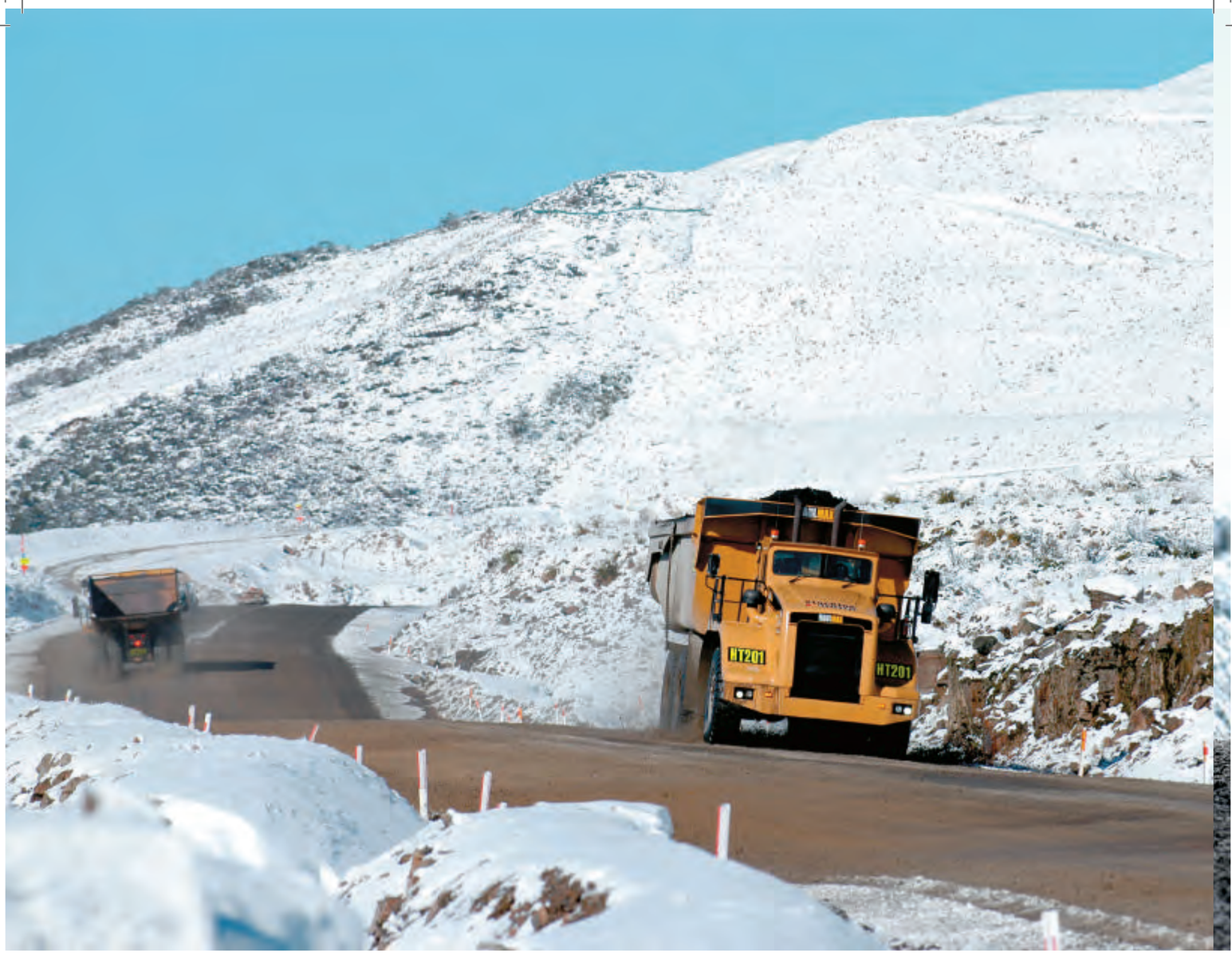
Down in the dumpers

Down in the DUMPERS

Story **Brian Cowan** Photos **Gerald Shacklock**

Solid Energy's Stockton opencast coalmine is home to a whole fleet of super-sized boys' toys…with few more impressive than the new Haulmax 3900 dumptrucks

New snow blankets coal stockpiles as a Haulmax 3900 receives another load. At up to 1000 metres above sea level, the Stockton plateau cops more than its share of extreme weather



The Stockton mine's main haul road, the "2 to 5," drops 400 metres along its 7.5km length. The Haulmax 3900's rear brake swept area of over 10 square metres keeps 130 tonnes all up well under control on the downhill run

WE'RE AT SOLID ENERGY'S STOCKTON OPENCAST COALMINE NORTH of Westport before 8am on an extraordinarily bright, clear morning. Following a fall of 10 centimetres of snow overnight, everything's mantled in white.

Some 800 metres above sea level, the Stockton plateau – normally a landscape more like the surface of a rocky asteroid – has been transformed.

Yesterday, ***New Zealand Truck & Driver*** tester Trevor Woolston copped a full range of wild weather swings during a day of driving here. But today – when we're planning to take photographs and talk to some of the plant operators – the conditions are close to perfect.

At the stockpile site, where we're waiting for a trio of dumptrucks to arrive, a Caterpillar 992K loader is moving towards what look like several white hillocks....but are in fact mounds of coal, exposed as the six-metre-wide blade takes its first bite at one of them.

The area the loader is working on is known as the Iran stockpile. Its first customers this morning are three Caterpillar 773 dumptrucks, temporarily diverted from carting away from a coalface further up the plateau while snow's being graded from their access road.

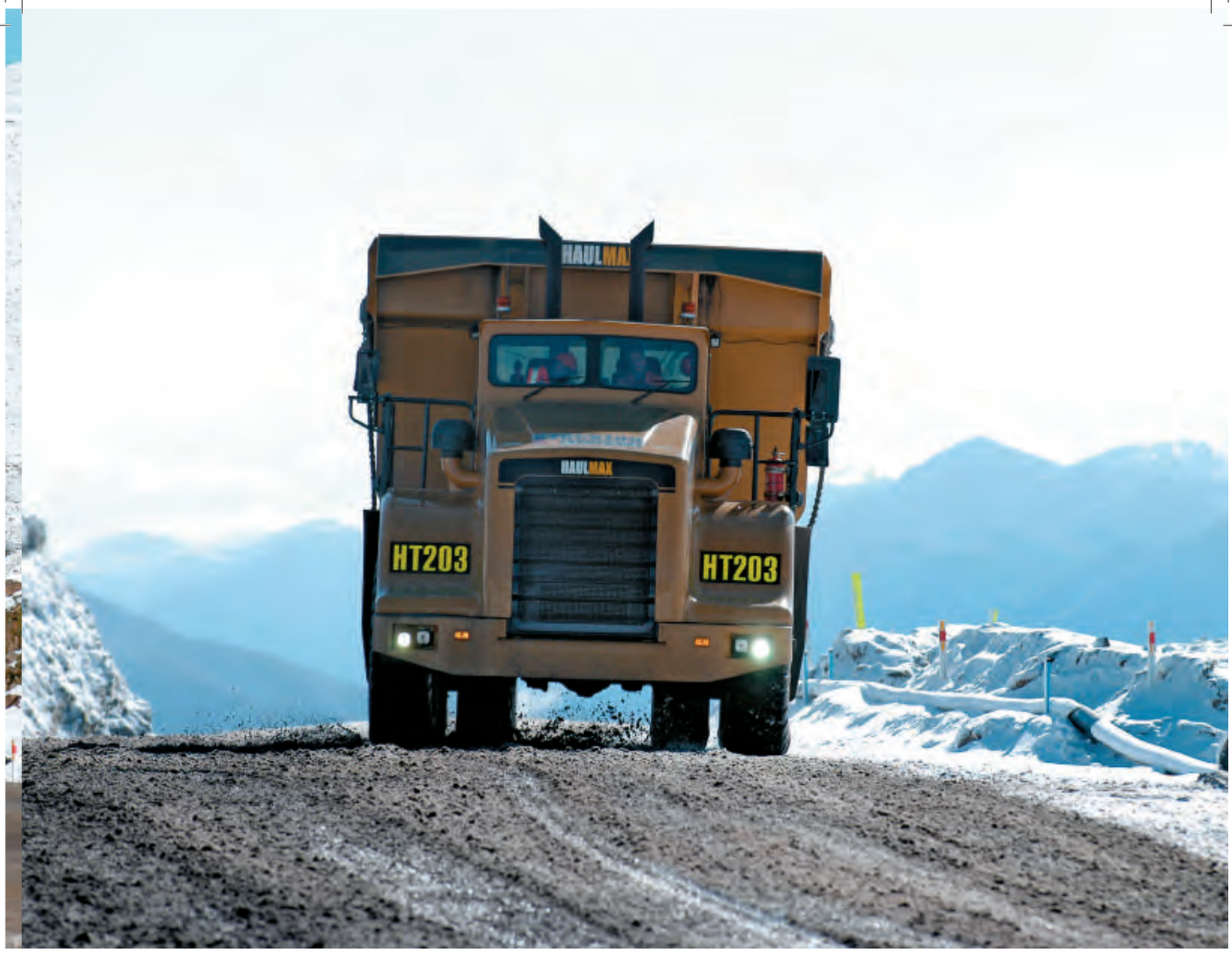
Waiting in line behind the 773s are the primary reason we're at Stockton, a trio of the new Haulmax 3900 dumpers being operated by Stockton Alliance – the partnership between Solid Energy and Downer EDI Mining NZ, responsible for operating the mine.

The coal in the stockpiles has come straight off a nearby face and will be carted from here three kilometres to the processing/washing plant – the loadout area for which is known as Station 2. From there it's carted along the main haul road to Station 5, at the top end of the aerial ropeway which transfers it down the ridge to the rail loading facility on the banks of the Ngakawau River. In the shorthand of the site, the 7.5km haul road journey is known as "the 2 to 5."

With a bucket capacity of around 20 tonnes of coal, the 992 loader needs little more than two and a half scoops to fill the 773s to their 55-tonne payloads.

The Haulmax 3900s swallow close to four scoops. As the next step up the mine pecking order they boast a payload of close to 80 tonnes – their size fitting between the 773s and the Big Daddy Caterpillar 777s, whose 100-tonne payload capacity sees them primarily tasked with carting the rock overburden stripped off to reach the coal seams.

The Haulmaxes differ in more than name from the Caterpillars, which have a classic two-axle off-highway truck layout. Instead,



As the snow melts, conditions on the upper haul tracks become slushy...but firm rock underneath and the trucks' excellent traction keep things steady

the 3900s are 6x4s, with a more obvious truck-like chassis, tipper body and cab layout.

And, despite having a huge commonality of drivetrain and wear components with the CAT dumpers, they're built not in the USA, but in Wynyard, Tasmania.

Say where? That's a helluva long way from CAT HQ in Peoria, Illinois – but the location of the Haulmax operation makes great sense when you realise that Caterpillar's world centre for underground mining equipment manufacturing is at Burnie, 10km away.... and the Haulmax site adjoins the regional airport, an hour's flight from Melbourne.

A comparatively new company, Haulmax was set up in Queensland in 2003 to fill a niche in mining trucks – building units dedicated to longer haul cycles (up to 50kms) on comparatively narrow roads. The shift to Tasmania was made just three years ago.

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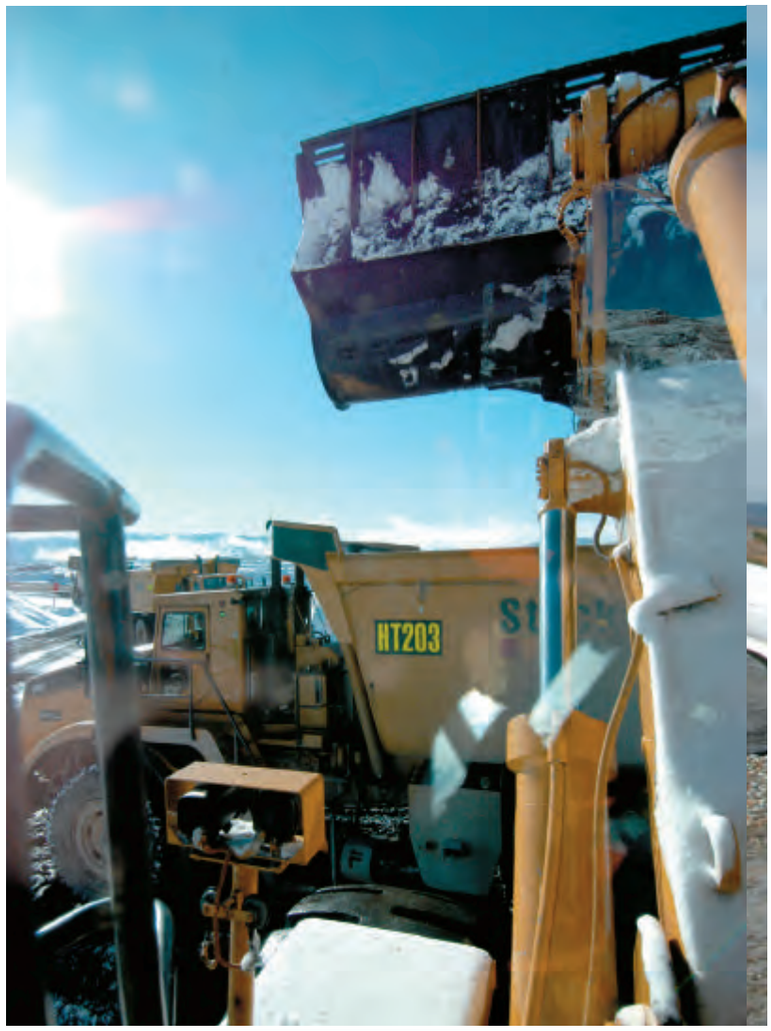
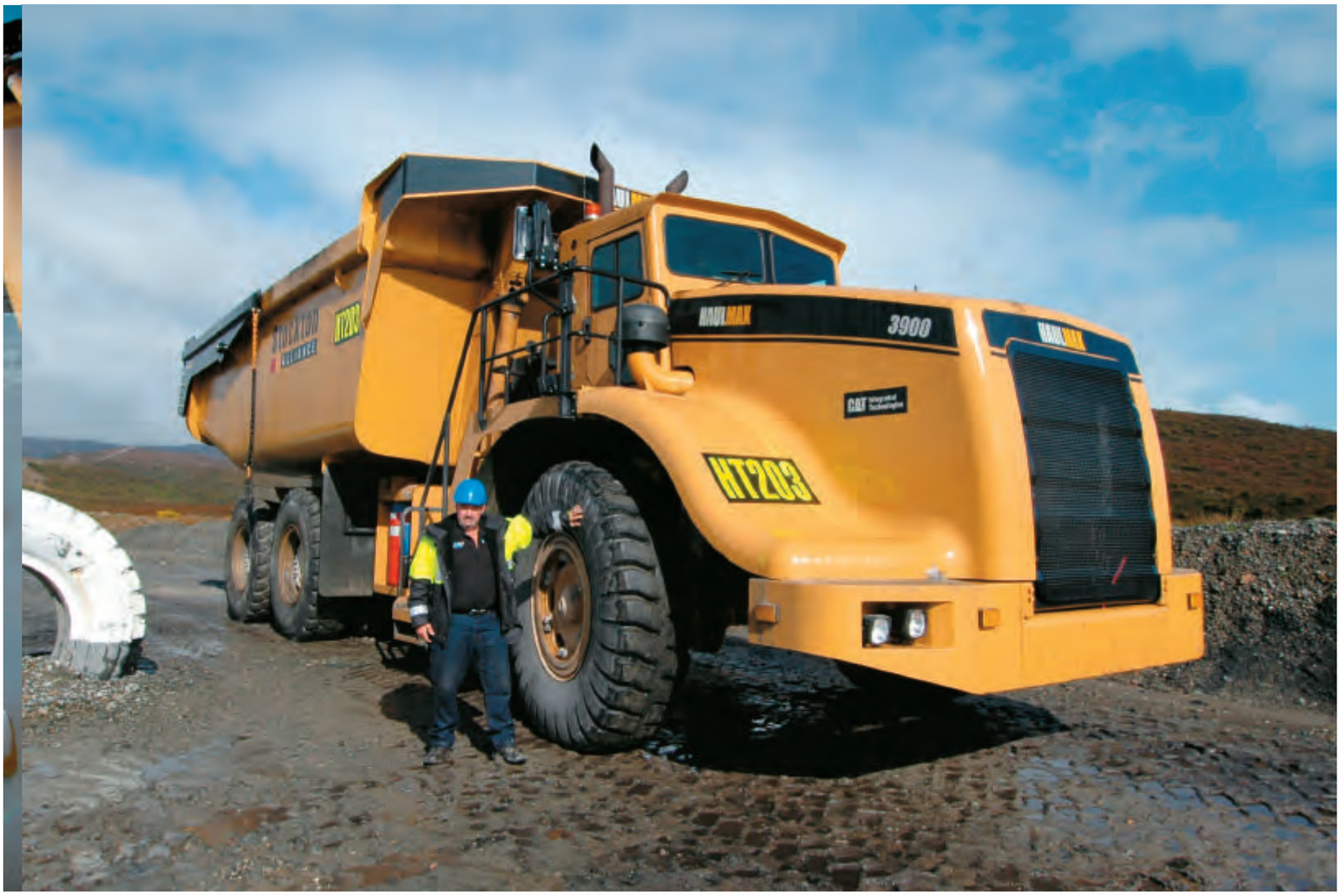
Some 95% of the wear-related parts of a 3900 are shared with the CAT dumptrucks and associated equipment. This includes the C27 ACERT V12 engine, seven-speed automatic transmission, axles, brakes and general control systems. From the point of view of an operation like Stockton Alliance, the commonality of essential parts across the fleet is a real bonus.

At Stockton, the 3900s are used primarily on "the 2 to 5" haul road. Though its length doesn't fit the design profile of the models, its overall 1-in-20 downhill gradient fully loaded does, for the units are fitted with Caterpillar's clever ARC (Automatic Retarder Control) system. This integrates engine, transmission and the multi-disc brakes on the truck's axles in an operator-friendly package.

Lockey Mundy, the driver of one of the 3900s who we hitch a ride with for several cycles, demonstrates: "When you're heading onto a down-slope like the one we're coming up to here, you just put the truck in a particular gear that you know is correct for the



This pic: An empty unit heads back uphill for another load. Comparatively narrow width makes the Haulmaxes ideal for multi-direction haul roads
Above, left: Kylie Smith is one of several women plant operators at Stockton and is also a trainer/assessor for newcomers
Above, right: CAT loader delivers another 20 tonnes of coal to a waiting Haulmax



Super-sized scale of the mining equipment can only be appreciated with a human to compare it with

gradient, with the engine running at 2100rpm.

"The right-hand stalk balances the retarder – just tap it back and forward to adjust it. Compared with older dumptrucks that had manual retarders, this system saves you so much strain during the course of a shift."

The brakes on the front axle are dry, but those on the rear two are oil-cooled. A subsidiary radiator/cooler system fitted to the Stockton Alliance 3900s ensures further reliability for the system, which is working hard for most of the length of "the 2 to 5," with its 400-metre drop in elevation.

A Caterpillar-developed engine compression brake has recently become available for the C27 engine and is likely to be offered with the Haulmax 3900 in the future, but the integrated ARC seems to work fine in the Stockton environment.

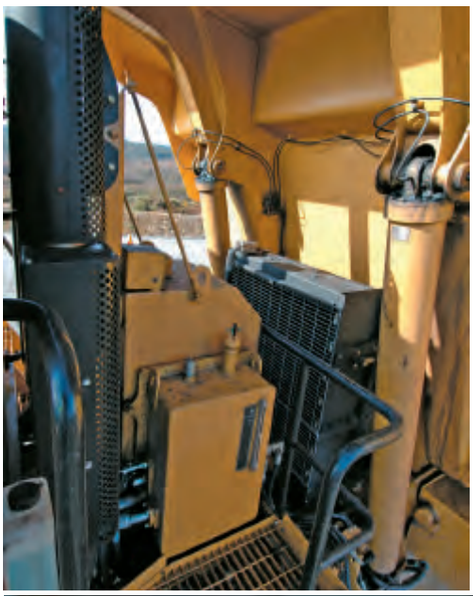
Rated at a gross 587kW (787-horsepower), the V12 C27 meets EPA Tier 2 emissions regulations. The fuel system uses CAT's MEUI mechanically-actuated electronic unit injectors. The company's seven-speed auto transmission has much in common internally with a standard car auto, being based on planetary gearsets and with a torque converter connection to the engine flywheel...though this transmission has the added wrinkle of individual automated control circuits for the clutch packs in the interests of smoother shift action and extended service life, while the torque converter locks up at around 8km/h.

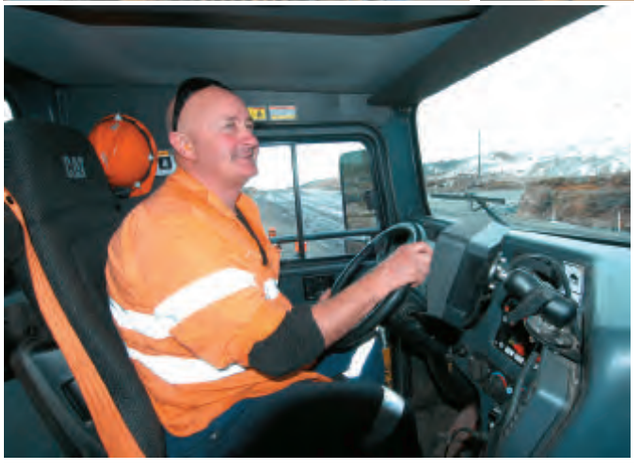
The Haulmax 3900 cab is surprisingly like a conventional truck or even a light vehicle in its layout, with a near-vertical steering wheel in front of a simple instrument panel and the lever for the auto transmission looking like that on most cars – even down to the separate positions for first, second and D.

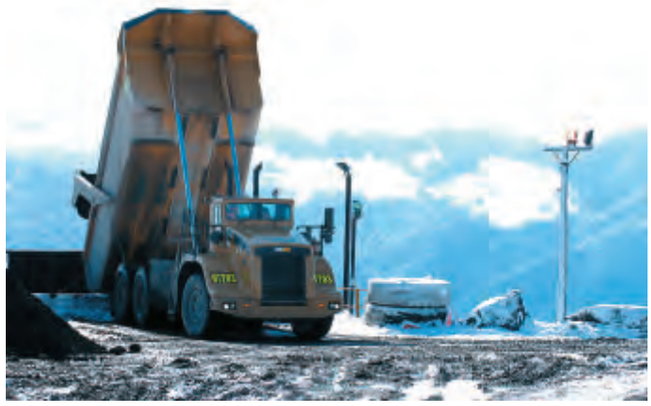
Mundy has been working at Stockton for three years – two years with the previous contractor, Kaipara Mining, and now just over a year with Stockton Alliance. He left his previous profession as an ag. plane pilot in the Westland area to take up machine operating, a move he explains as "just a change: Things in the topdressing business were getting pretty quiet in this neck of the woods and I was keen to have a go at something different."

He says that working at night-time on the plateau can be "challenging. We (the Haulmax crews) have it fairly easy at the moment because we're mainly on "the 2 to 5," which is well-graded and wide. It's tougher at night working on the less-well-formed roads close to the faces further up.

"We occasionally get fog up here. When the visibility drops below 60 metres work has to stop. Any driver can call fog when it settles in. Because the fog is more often found on the upper part of the site, above Station 2 at 800 metres, the 3900s on the run to Station 5 aren't affected as much."







Top left: Supplementary air/oil radiator soaks up heat from brake-based automatic retarder system
Top right: Providing safe and easy access around engine and various maintenance points has been a priority for Haulmax designers
Above left: Driver Lockey Mundy "felt like a bit of change," so swapped the cockpit of a topdresser for the cab of a mining dumptruck
Above right: Twin hydraulic rams raise the Haulmax's massive body quickly and smoothly

Stockton Alliance works on a crew basis, with a grouping of vehicles and operators sharing the same shift roster of three days, four nights on/seven days off that is the fundamental pattern for the site. The approach allows everybody to learn each other's habits and preferences in terms of loading and manoeuvring

The round trip on "the 2 to 5" takes around 35-40 minutes for the three Haulmax 3900s on the run. At a maximum unit payload of 77t, this means that they're shifting 340t per hour, neatly balancing the similar hourly capacity for the ropeway.

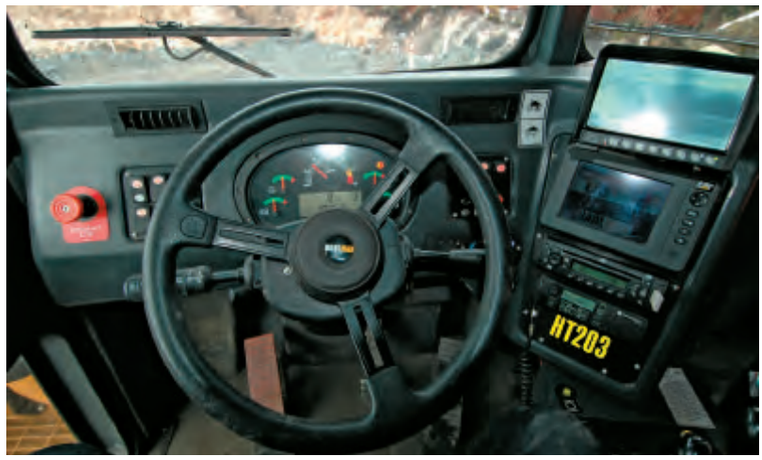
Stockton Alliance works on a crew basis, with a grouping of vehicles and operators sharing the same shift roster of three days, four nights on/seven days off that is the fundamental pattern for the site.

As Lockey explains, the crew approach allows everybody to learn each others' habits and preferences in terms of loading and manoeuvring.

Taking off loaded, he holds the transmission in the lower gears and manually shifts through them before slotting the lever into D.

As we head down to the transfer bins he comments on the spaciousness and comfort of the cab and points out the fully-adjustable air-suspended seats. Closer to the ground, the 3900's independent front suspension and rear A-frame axle assemblies soak up most imperfections before they even reach the seats: "It

Above: The snow is beginning to get churned up as another truck is loaded. Note the simple chain tailgate lift on the Haulmax
Right: Apart from the left-hand drive position, this has a lot in common with our highway trucks. Screen at top on right gives a view of loading progress



jolts a bit more over the worst bumps when it's empty, as you'd expect, but you can't complain about how it feels with a load up, eh?

"This is luxury. The aircon works brilliantly, the seat is so comfy, the ride is great. There's also a good stereo set, with a CD player and a USB port for memory sticks. We get a couple of good FM stations up here, but I generally leave it off during the day – there's too much radio traffic. It's better at night time."

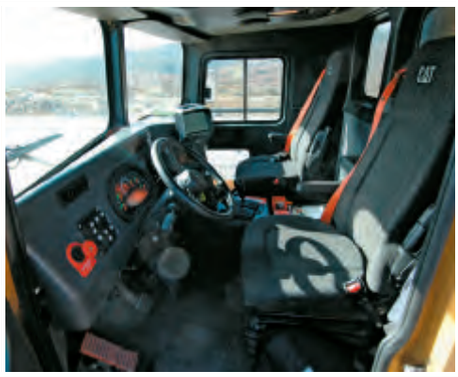
Maximum speed on the flat is 60km/h, though 50 is the mandated maximum on "the 2 to 5," while particular sections are signposted at various lower speeds.

The drivers have found a couple of little things with the 3900 that require attention, says Lockey: "For example, the mudflaps don't extend out quite far enough, meaning we get a bit of mud splashing up onto the mirrors. Extended flaps will sort that problem."

The mirrors, he adds, are very good – large and steady, an important attribute in a big machine where a lot of the work involves backing up to bins or into position for a loader.

He does comment however on quite a blind spot to the left rear, the result of a quite narrow door window with solid bodywork behind it: "You have to lean quite a way forward to see around it and the inertia reel on the belt tends to limit the amount you can move."

The dump body controls are on a similar quadrant to the gearshift and are common to the Caterpillar dumpers. Action of the Haulmax-developed twin front-of-body rams is very simple, very smooth and quick. And there's no need for a complex tailgate release, as Haulmax has settled for a simple pull-chain link through the chassis to the tailgate that opens it as the body lifts. There are no problems with locking claws getting knocked around and jamming – a risk particularly when rock's being carted.



Top: Automated loading at Station 2 means driver doesn't have to leave cab, a boon in Stockton's often-challenging weather
Above left: Scale of the machine is again evident. Bonnet tipping is simple, and access for maintenance well thought out
Above right: Air seats, effective airconditioning and surprisingly fluid truck suspension make for a pleasant working environment

The tipping action is very smooth: "It's quite a high body and comparatively narrow, but it goes up beautifully and the load slides out nicely," says Lockey.

At the dump bins, he swings wide to line the truck up: "Because these 3900s have a longer wheelbase and more conventional steering, their turning circle isn't quite as tight as classic offroad dumpers like the 775s and 777s, so they've had to widen this area a bit."

At the dumping area on the second loop the front tyres are beginning to sledge on the slushy snow at full lock. But Lockey reckons that the feedback from the tyres and the steering is good enough that it can easily be felt and the necessary correction made.

He finds the brake and accelerator pedals to be very responsive, with good feel. The accelerator pedal is also set comparatively low to the floor so that strain on the ankle is minimised.

Apart from a comfortable cab, Haulmax has put great emphasis on accessibility right around the machine. Thus not only are the boarding ladders and catwalks generously provided with handrails, but areas that need to be reached for maintenance are also well provided with safe access.

After a while in the cab of the Haulmax 3900, the truck's comfort and comparative ease of operation can dull you to the fact that this is a really big machine. In fact the whole scale of the Stockton operation can distort one's view of reality – and it's only when you see somebody standing close to the two-metre diameter tyres of a Haulmax that you realise that these are very big toys indeed. T&D

THE TREVOR TEST

IT'S 7.15AM AND I'M MEETING PETER Currie from Stockton Alliance at the gate of Solid Energy's Stockton mine. After a very comprehensive orientation video and the reading of a written briefing it's time to start my visit to the opencast mine – producer of high-quality coking coal that's in demand for steel smelting operations worldwide .

I'm here to test the all-new Haulmax 3900 offroad truck, a new Australian-developed model that has only recently joined the Stockton Alliance Alliance fleet.

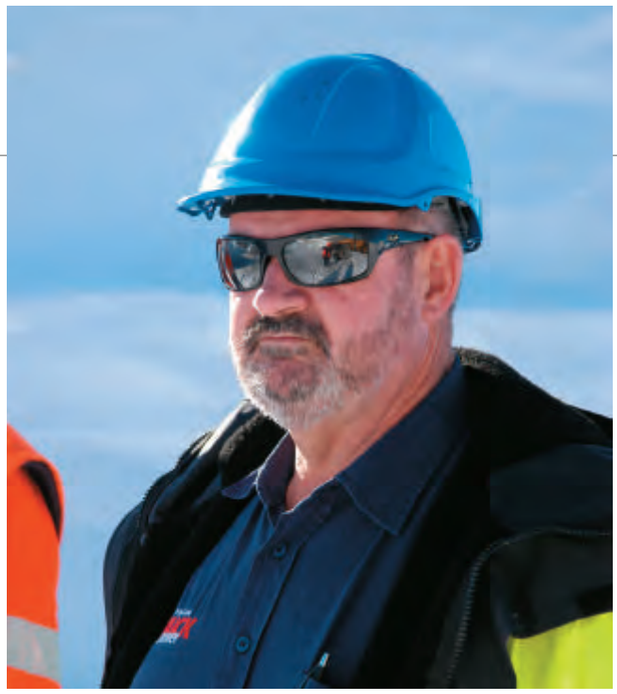
Halfway up the main haul road I meet up with the test truck. Peter has filled me in about my driver training and a couple of thoughts come to mind: One is, "you can't teach an old dog new tricks." On the other hand, the other is "you're never too old to learn."

My teacher is Kylie Smith, a 27-year-old trainer and truckdriver working for Stockton Alliance. Kylie's experience goes back to a stint in the NZ Army's 10 Transport unit, based in Linton, followed by three years here at the Stockton mine. As we take off for my first run in the Haulmax 3900 with 70 tonnes of coal on its back it's quickly obvious that I'm in very good hands.

Today we're running between Station 2 at the upper processing plant and Station 5 at the top of the bucket ropeway that takes the coal a further 400 metres down through the bush to Ngakawau and the rail loading facility.

After a couple of training runs with Kylie at the wheel it's time for the *Trevor Test* to start for real. The first thing that's noticeable is that the driving position's on the "wrong" side of the cab. There must be a reason for it….but I just haven't quite worked out what it is.

It's not a major problem anyway, as once you settle into the driving position and adjust



your seat and steering column and put on your seatbelt, it's a very comfortable fit. These trucks are built for ease of use: It's simply foot on the brake, pull the transmission shift selector into Drive and then off with the brake and onto the go pedal.

That kicks 740hp into life and we're off – back up to Station 2 for our next load. Pulling into the plant it's great to find out that the overhead loading belt is operated from the cab of the Haulmax by way of a simple remote control. There's no need to get out – and risk getting frozen or plodding around in sludge.

Further assistance is provided by an overhead camera which plays back through a screen in the cab. It's easy – within five minutes we've finished loading…without having to shift from the driver's seat.

With another 70-plus tonnes on board we start our descent down "the 2 to 5."

At the top of the haul road's first down-slope, a roadside sign indicates "Haulmax 4," meaning I drop back to fourth gear, pull the transmission shift selector back into manual to hold the selected ratio, and then leave the automatic retarder control to do the rest.

As the revs climb it kicks in to maintain a constant speed. A few hundred metres on the slope steepens, the change noted by a second marker indicating "Haulmax 3" – so it's onto the retarder's manual control to drop down to third gear for the next part of the descent.

Soon it's "Haulmax 4" again so I slip the selector back into Drive, pick up one gear and then back into the gear select position to hold fourth gear for the rest of the decent. At Station 5 I back up to the bins and then power up the massive twin rams. Within seconds the entire 70t is dumped….and the rams are powered back down again.

There's not even a tailgate release as a chain fixed to the chassis and to the front arm of the tailgate pulls it up automatically as the hoist rises.

Looking around the 3900's cab reveals a very well laid-out working environment. Down on the floor are three pedals – the usual two (brake and accelerator) as well as a big emergency stop pedal to the far left. Kylie explains that this is for use when all else fails….and it will bring the truck to an immediate stop.

The brake and accelerator pedal are both to the extreme right of the footwell and are obviously set up for right foot application only. On the dash is also an emergency steering switch – to give the driver the ability to control the truck if the steering fails.

The two levers on the steering column are the retarder to the right and a conventional wipers/indicators and dip switch on the left. To the far left of the dash is a big red emergency engine shutdown button.

To the right of the main dash is a screen for showing the loading. Under that is the CAT computer diagnostic screen and below that the communications equipment. In the centre console is the transmission shifter and the hoist control – and, behind that, fire suppression system controls and monitors.

Cab access has to be among the best I've seen, with staircases up both sides and a level access deck to the door with substantial handrails all around. It's an OSH inspector's dream, with excellent grip on the steps… so, even in the snowy and icy conditions we experience, there's no risk of slipping while getting in or out.

After a couple more runs it's time for me to give Kylie her truck back. During our test we've experienced heavy rain, snow and bright sunshine, all of which the Haulmax 3900 handles with ease – both loaded and empty.

The successful running of a mining operation like Stockton depends very much on a smooth, quick turnaround. With their excellent driver facilities, ease of operation, generous payload and improved cycle times, the Haulmax 3900s seem to be just what Stockton Alliance was looking for. T&D

SPECIFICATIONS

HAULMAX 3900 6x4

Engine: Caterpillar C27 ACERT V12

Capacity: 26.9 litres

Maximum power: 587kW (787hp) @ 1800rpm

Maximum torque: 3500Nm (2580 lb ft) @ 1400rpm

Engine revs: 2000rpm @ 76km/h in top gear

Fuel capacity: 1000 litres

Transmission: 7-speed Caterpillar Power Shift planetary auto

Speeds in gears: 1st – 12.8km/h

2nd – 17.5km/h

3rd – 23.8km/h

4th – 31.9km/h

5th – 42.8km/h

6th – 57.0km/h

7th – 76.4km/h

Auxiliary brakes: Caterpillar automated retarder control of main disc brakes

Front suspension: Independent, by nitrogen/oil pneumatic cylinders

Rear suspension: A-frame, with nitrogen/oil pneumatic cylinders

GVW: 135,000kg

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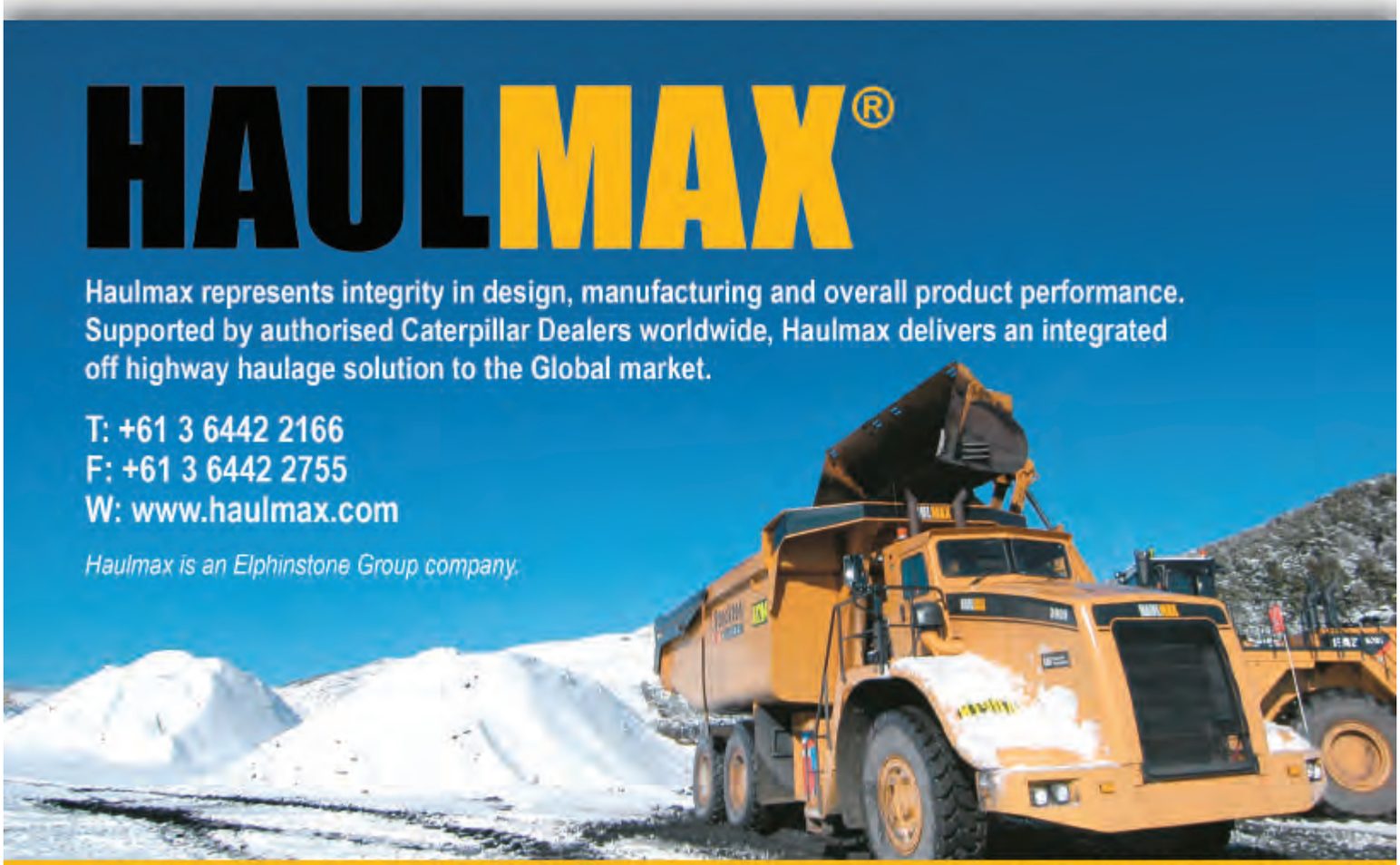

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