

# MOBILE OPERATIONS THE ACE IN THE HOLE FOR FAMILY BUSINESS

A family quarry operation specialising in softer rock aggregate is making strides with the latest mobile crushing and screening technology. **Damian Christie** visited SBI Cranbourne Quarries.

**S**BI Cranbourne Quarries is located in Melbourne's southeast. The third generation family business originally started in partnership with Stevenson Brothers Industries in the 1950s and specialised in brick sand, packing sand and topsoil supplies. In the 1970s, the two Stevenson brothers dissolved their partnership with current proprietor Kerry Williamson, who formed a new partnership with his father-in-law Bill Stevenson. After Bill passed away in 1986, Kerry leased the Cranbourne

quarry for a time before he reassumed control of the 64 hectare site. He brought in his son Paul Williamson as the site's general manager and decided to concentrate not just on extracting sand but the sedimentary rock deep beneath it.

"It ticks all the right boxes for lower base, for grading and permeability," explained Paul Williamson. "The difference with the sedimentary rock from basalt or granite is in the way it was originally formed. It's typically

in the hardness, it's a softer material. But having said that, it's suitable as a Class 4 product in road base."

Paul Williamson added that the sedimentary aggregate is more cost-effective to process, both for the producer and the purchaser. "Pretty much everything that goes out the gates here is a lot easier to process and lay down for the end user," he said.

To date, SBI Cranbourne Quarries' road base has been used in a variety of local and



The R155 is able to handle larger material thanks to an open feed design that allows for free flow of material and high volume capacity.

regional projects. These include the Western Port Highway (the former Dandenong-Hastings Road), the EastLink tollway between Ringwood and Frankston, the \$759 million Peninsula Link project (a 27 kilometre road link between EastLink at Carrum Downs and the Mornington Peninsula Freeway at Mount Martha) and the 90km access road for the entire transfer pipeline for the Victorian Desalination Plant on the Bass Coast. Paul Williamson added that the other advantage of using the sedimentary aggregate as road base is that with resources in Victoria "depleting, it's a case of whatever's taken out here takes the pressure off the bigger, higher grade quarries" and "there is going to be less of a carbon footprint. You're not going to be hauling trucks from the lower hills of the Dandenong Ranges on Wellington Road. From that point of view, it's more environmentally friendly".

The fixed plant at the Cranbourne quarry comprises a primary jaw crusher, a secondary cone crusher and a tertiary cone crusher which produces 20mm and 40mm base materials. However, like most quarries, SBI Cranbourne has recognised that savings can be made by putting "mobiles down the hole". To that end, the company has in the last 18 months invested in upgrading its mobile crushing and screening plant and equipment, bringing in two McCloskey machines - a J50tc jaw crusher and a R155 heavy duty screen - and relocating its crushing operations closer to the quarry face. This has enabled SBI Cranbourne to raise the throughput of its mobile operations from 400 tonnes per hour with a hired Extec C12 (now the Sandvik QJ340) machine to 600 tonnes per hour with the J50tc and R155.

### MOBILE HEAVYWEIGHTS

The J50's Telsmith jaw is one of the largest jaws in the mobile market today. It measures 50" x 26" (1270mm x 660mm) and it is even possible to adjust the jaw setting while the crusher is in operation. This is made possible by having a unique "hydraulic toggle". The crusher features a direct hydraulic drive and a hydraulic closed side setting (which can close to under 50mm and be opened up to 350mm). It also boasts a folding Hardox hopper (with 6.8m<sup>3</sup> level capacity and 10.2m<sup>3</sup> gross capacity) mounted over a vibrating feeder with pre-screen, including auto-regulated feeder speed. A 48" conveyor is provided as standard and folds hydraulically for transport and maintenance. The conveyor is also adjustable to discharge height,



The McCloskey J50tc jaw crusher (formerly the C50c) boasts a folding Hardox hopper mounted over a vibrating feeder with pre-screen and a 42" conveyor.



SBI Cranbourne Quarries has in the last 18 months invested in two McCloskey machines - a J50tc jaw crusher and a R155 heavy duty screen - and relocated its crushing operations closer to the quarry face.

offering the largest stockpile capacity for a tracked crusher. The J50 is powered by a 261kW (350 hp) Tier 3 Cat C9 engine. It also features a user-friendly Danfoss control system with colour screen and waterproof operator's control panel.

The R155 heavy duty screen is designed to cope with the heaviest of applications, including primary blast feed, construction and demolition waste, heavy rock, wet sticky clay and fines and boulder clay, up to a feed size of 500mm. The R155 is able to handle larger material thanks to an open feed design

which allows for free flow of material and high volume capacity, a high energy 16' x 5' screenbox, a longer and wider hopper, a Hardox plate apron feeder, and full length impact bars. True to its designation, it has 155 square feet (14m<sup>2</sup>) of screening area. The screenbox includes a woven mesh deck and screen options include punch plate, finger deck and Bofar bar deck.

Paul Williamson spoke highly of the J50 jaw crusher which he said was "incredibly strong, well built and robust". When it comes to processing SBI Cranbourne's

## SPECIAL REPORT - FEEDERS & SCREENS



SBI Cranbourne Quarries, located in Melbourne's southeast, is a third generation family business.

sedimentary rock, he said the pre-screen on the C50 was invaluable.

"Prior to the rock going into the jaw, there is a scalping belt out to the side," Paul explained. "Whatever size the grizzly bars are, we have a pre-screen, we can put a 40mm or a 20mm woven mesh on, so we can have a 20mm or 40mm scalping product coming out the side of the crusher prior to going to the jaw. That really gives us another potential graded product. There was only one other brand apart from McCloskey that offered an independent scalping pre-screen, and it's proved to be a big plus for us."

The J50 has crushed 140mm clean rubble in a 100mm opening and the primary products coming off the R155 screen have been 140mm and minus 40mm materials. For its work on the Victorian desalination project, SBI Cranbourne Quarries has also produced a minus 100mm base off the back of these primary products.

Kirwan Barr, the CEO of MSC Group which handles all orders for McCloskey crushers and screens on the east coast of Australia\*, worked closely with SBI Cranbourne Quarries to set up the J50 and R155 for its mobile operations. He said the addition of a pre-screen to the J50 jaw crusher helped to increase performance.

"Especially when material is wet and sticky, the independent pre-screen works very effectively," he explained. "It ups performance

significantly, particularly if you have a lot of fines in this material, which this type of sedimentary rock does. The other advantage of the pre-screen is the ability to fit a choice of aperture of woven mesh. So you can effectively produce an additional product while at the same time increasing throughput of the jaw crusher."

### **The addition of a pre-screen to the J50 jaw crusher helped to increase performance and productivity.**

Another advantage of the J50 jaw, according to Paul Williamson, was that the control system has not been "overtchnified" and there were still manual features which did not overcomplicate the operation. Kirwan Barr agreed, saying that the waterproof colour screen "tells you everything. You start the crusher up, you press the button, it's fully automated. You go into the menu and see the temperatures, pressures and jaw settings, the full diagnostics on a colour screen. But at the same time we haven't gone overboard. There are still some manual features which make it quicker and easier to manage and do not require as much maintenance".

Maintenance is also integral to MSC's relationship with SBI Cranbourne. At the time of this story, the R155 urgently required a screen media change after some minor damage was detected on one of the woven meshes. MSC was able to deliver the replacement part within two hours from its Melbourne depot at Laverton North. MSC offers a number of types of screen media with the R155: punch plate and heavy duty fingers for the top deck and wire mesh for the bottom. Kirwan added that piano wire screens are also suitable for installation and that a 100mm or 150mm bofar bar (grizzly) top deck can also be fitted to the screenbox.

"McCloskey have a big design focus on ease of serving – right through our whole range of screens and crushers," said Kirwan. "In the R155, you can have two people standing in the engine bay, which you just can't in any other screen."

SBI Cranbourne's mobile operations continue to keep up with infrastructure growth in Victoria. Since this site visit, SBI Cranbourne Quarries have purchased another jaw crusher from the MSC Group. •

**\*NB. McCloskey's mobile plant and equipment is available to the South Australian, Western Australian and Northern Territory markets through 888 Crushing & Screening Equipment.**