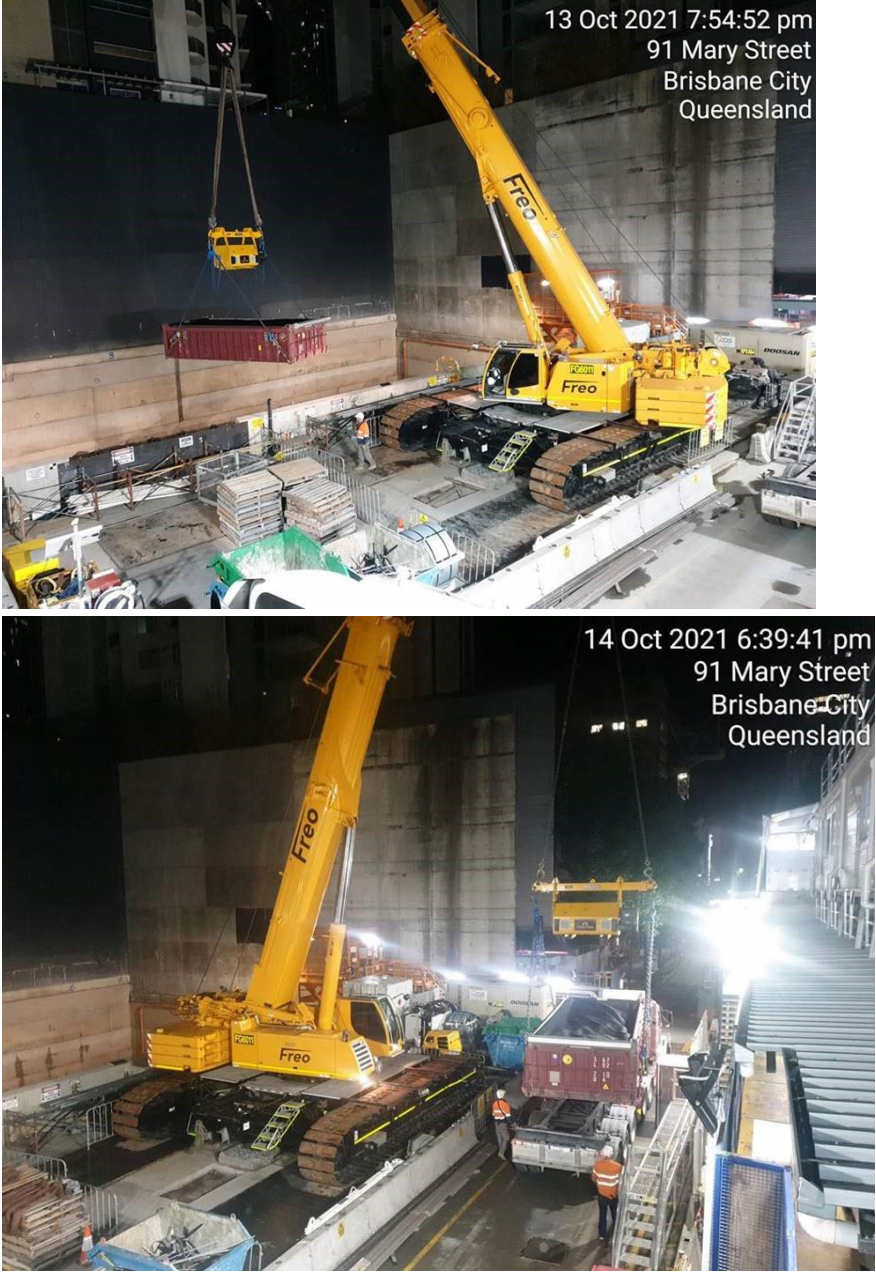


CBGU CASE STUDY – CROSS RIVER RAIL TSD

Item	Details
Subject	Verton 'Everest SpinPod 7.5'
Site	Albert Street station
Package of work	Provision of a remote-controlled tagline used for rigging
Subject matter expert	James Maher
Date of completion or implementation	June 2021 - current
Overview	<p>The Verton 'Everest SpinPod 7.5' (SpinPod) is a remote-controlled load orientation device that eliminates the need for human-held taglines, traditionally used to orientate a suspended load.</p> <p>It uses gyroscopic technology to rotate loads in either direction, with a 20 – 100 tonne rotational capacity.</p> <p>The SpinPod has been used at Albert Street's Lot 1 (main station entrance) site since June 2021. The site is located in the heart of Brisbane city, surrounded by high density commercial and residential towers and busy inner-city streets. The worksite involves excavating 50m down – the deepest undertaken in Brisbane's history – necessary to house the future station building and access to underground rail platforms. Use of the SpinPod has delivered safety, productivity, program, community and environmental benefits.</p> <p>Cross River Rail is the first major infrastructure project in Australia to use the Everest SpinPod 7.5.</p>
Challenge or opportunity	<p>There are 19 props (retention bars) spanning throughout the Lot 1 shaft. These props are required to retain:</p> <ul style="list-style-type: none"> • The walls of the shaft during excavation and construction • The neighbouring hotel car park • The dividing wall between Lot 1 and Lot 2 (underground cavern). <p>These props created physical barriers when lifting and lowering materials in and out of the shaft. The SpinPod overcame this barrier by:</p> <ul style="list-style-type: none"> • Using gyroscopic technology to precisely remote-control up and down movements of the loads • Using a magnetic compass inside the SpinPod to hold alignment of the load away from the metal props. <p>This ensures loads are lifted up and down safely without contacting the props.</p>

Item	Details
	<p>Another challenge presented by Albert Street’s inner-city location is working near live traffic and pedestrians. It was not possible to build a wall or screen between traffic and people due to line-of-sight issues.</p>
Response	<p>The SpinPod had been used to a limited degree in the United Kingdom and the Albert Street Lot 1 Superintendent was aware of this from his previous work experience in the United Kingdom.</p> <p>Knowing that the supplier, Verton, is a Brisbane-based company, the Superintendent contacted them to discuss using their SpinPod at Albert Street. The Albert Street Crane Lifting and Safety teams were also engaged in these discussions.</p> <p>Ultimately, Verton manufactured a bespoke bar and spin pod suited to the weight of loads being lifted at Lot 1.</p>
Stakeholder engagement	<p>The Albert Street community and stakeholders were a key consideration when deciding to use the SpinPod. The construction team was always looking for ways to improve the construction methodology to avoid impact to stakeholders as much as possible.</p> <p>The use of the SpinPod allowed the construction team to load skip bins at the excavated level as opposed to surface level.</p>
Results	<p>The SpinPod resolved the issue of spoil double-handling, as it hooks on an oversized (six-and-a-half-metre long) shipping container which is lowered into the shaft, where it is loaded, lifted back to the surface and directly transported onto a haulage truck.</p> <p>The use of a shipping container also improved productivity as it allowed 1,700 tonnes of spoil to be removed in 24 hours, 400% more than the previous 350 tonnes removed using the previous methodology.</p> <p>The SpinPod also mitigated the risks associated with working next to live traffic and pedestrians, as it allowed loads to be transported between the site and live traffic and pedestrian areas in a single, controlled movement.</p> <p>In addition, by increasing productivity, the SpinPod saved a potential five months on program. Keeping noise at the bottom of the shaft also reduced noise on street-level.</p>

Item	Details
	<p>Furthermore, the SpinPod reduces hook time by up to 50 percent and reduces down time by up to 20 percent. It also reduces the number of riggers required to orient and control suspended loads, generating cost benefits to the project.</p> <p>By removing traditional taglines, the use of the SpinPod also prevents safety incidents such as crush injuries, hand injuries and back strains, improving safety outcomes on site.</p>
Status	<p>The SpinPod was used at Albert Street's Lot 1 from June 2021 - April 2022 during the excavation phase, mainly to remove spoil. It has since been used to support station construction, mostly by transporting various materials in and out of the site, which will continue until the station building is finished.</p>
Innovation	<p>The SpinPod is very new to Brisbane and Australia. The previous machine (Verton 'Everest SpinPod 6') was used on another high-rise construction project in Brisbane. However, Albert Street is the first Brisbane site to use the new 'Everest SpinPod 7.5'.</p> <p>The SpinPod 7.5 has also been used at a mine site in Western Australia for a short time, however Cross River Rail is the first major infrastructure project in Australia to use it. This reinforces the intention to introduce automation in Australian construction projects.</p>
ESG/Sustainability	<p>By minimising double-handling of plant, use of the SpinPod reduces reliance on mobile plant which reduces fuel and energy consumption as well as traffic on the road.</p> <p>Additionally, as outlined in <i>Results</i> above, the SpinPod reduces spread of dust to ground level by removing the need to transfer spoil into a truck on the surface.</p>
Replicability	<p>The SpinPod can be used for any large, oversized deliveries in the construction industry, in particular, for feeding up and down high-rise construction areas.</p> <p>Additionally, it can be used to construct bridge beams and major infrastructure projects involving a precast installation methodology.</p> <p>The SpinPod is arguably the future of construction of structures within restricted construction sites.</p>

Item	Details
Other potential benefits or applications	Verton is a Brisbane-based supplier. Use of the SpinPod at Albert Street contributes to use of local content in the project's supply chain which aligns with the Queensland Government's Best Practice Principles.
Compiled by	Nazlee Salami
Photos	 <p data-bbox="579 517 1458 1787">13 Oct 2021 7:54:52 pm 91 Mary Street Brisbane City Queensland</p> <p data-bbox="579 1133 1458 1787">14 Oct 2021 6:39:41 pm 91 Mary Street Brisbane City Queensland</p> <p data-bbox="579 1794 1458 1854"><i>Figures 1 & 2 The SpinPod in use as a skip filled with spoil is lifted to the surface at the Lot 1 site in Albert Street, Brisbane</i></p>

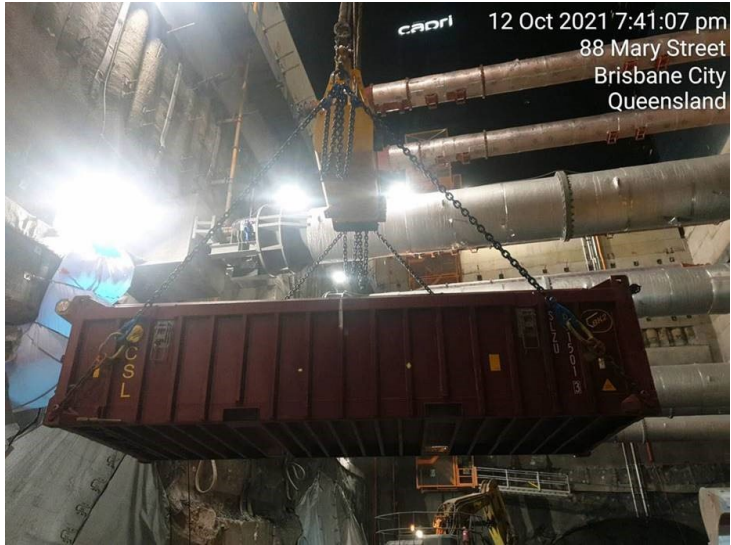


Figure 3 - The SpinPod in use as a skip filled with spoil is lowered into the Lot 1 site in Albert Street, Brisbane

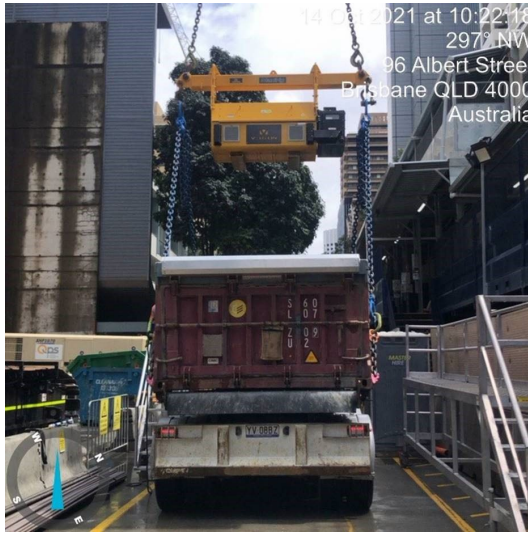
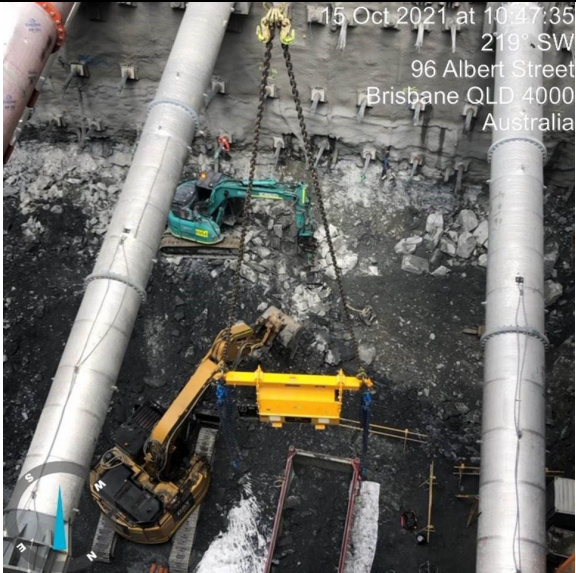


Figure 4 - The SpinPod in use as a skip filled with spoil is loaded onto a spoil truck at the Lot 1 site in Albert Street, Brisbane

Item	Details
	<p data-bbox="893 226 1157 358">15 Oct 2021 at 10:47:35 219° SW 96 Albert Street Brisbane QLD 4000 Australia</p>  <p data-bbox="579 824 1433 880"><i>Figure 5 - The SpinPod in use as a skip is filled with spoil inside the Lot 1 site in Albert Street, Brisbane</i></p>