

# USING DIGITAL REHEARSALS TO PRACTICE CRITICAL RISK ACTIVITIES



4D Technology was used for a major lift during a rail and road occupation. Multiple simulations conducted in the planning stage to identify challenges, reduce risk and improve delivery methods.

4D modelling was developed to allow delivery teams to visually sequence works and understand how the planned activities fit within the time and geographical constraints of the site while also assessing and addressing safety risk.

Simulations were presented to the workers to communicate the method and safety controls, allowing those performing the work an opportunity to provide input and raise concerns prior to commencement, in a manner that also reduced language and educational barriers.



Detail down to each person's position and step by step activity sequencing was achieved using the technology. The digital simulation images versus delivery photos provide an insight into the accuracy of the program (left to right).

## The Situation

The Barwon Heads Road Upgrade, Work Package 2 (BHRU2) required a bridge erection over rail. This required a short occupation of both the rail corridor and Barwon Heads Road.

Detailed planning was required to ensure the work was uninterrupted, and that the work could be conducted safely by all participants.

Standard practice for this involves a written method statement and drawings, which is used to communicate the construction methods. A Safe Work Method Statement's (SWMS's) is developed to minimise and manage the inherent safety risk. These 'method statements' are the key communication tool regarding how the activity will be constructed safely.

However, industry experience highlights that many construction workers struggle with understanding the written form of communication, e.g., English as second language, varying levels of literacy.

## The Solution

The benefits and learnings of the LSP 0003/22052020- Improving Occupation Visualisation With 4D Models was reviewed for understanding of 4D model opportunities and what more it could be used for.

On BHRU2 4D modelling was implemented for:

- specific high-risk activities (Working at heights-Installation of Beams)
- the planning stages of the works and enabling identification of specific details like the size of Elevated Work Platforms (EWP) to be procured
- identification and preparing of suitable areas for where the beams could be stored and transported
- works prestart to enable all workers to understand the programming of the works and allow for feedback on any issues, hazards etc that were not initially identified. This method of communication also assisted those workers that had reading or language difficulties.



**Scan QR Code** to watch video of Barwon Heads Road Upgrade, Work Package 2 – Beams Installation Digital Rehearsal

## Benefits and learnings

4D presentations help workers understand high-risk activities before they occur, leading to better hazard identification, feedback and ultimately improved safety controls.

Benefits of using 4D presentations:

- effective in visually presenting a high-risk activity to work crews
- presenting in group training or induction session allows workers to visually understand where their work fits into overall activities
- high level of feedback compared to a written SWMS eliciting conversations with issues, proposed method and safety controls
- aid visual communication and help workers with limited English or literacy skills comprehend work method statements and SWMS
- demonstration of consultation with workers.

During occupation, there were no stoppages and finished 2 days ahead of schedule. Modelling and refining cost \$52K and took 8 weeks. Costs per day during the closure was around \$100K, by preventing half a day of delay the investment in paid for itself. .

**Program Office:** Major Road Projects Victoria  
**Work Package:** Barwon Heads Road Upgrade Work Pack 2

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