

SHOTCRETE

CASE STUDY



SSL was engaged to undertake sprayed concrete lining (SCL) works to reline two sections of Victorian brick-lined rail tunnels in Hastings. The works comprised:

- 22.5 m section within Hastings Tunnel
- 16.5 m section within Bo Peep Tunnel

Preparation works by others included hit-and-miss notch formation and associated steelwork, providing connection points for the required crown mesh. These notches were completed in hand-sprayed dry concrete, followed by a regulating layer applied using ME1 robotic spraying.

SSL then installed two layers of mesh from haunch to haunch before completing the full lining thickness using wet-sprayed concrete, again utilising robotic application to improve efficiency, quality and safety.

CLIENT

Volker Fitzpatrick

LOCATION

Bo peep & Hastings tunnels

COMPLETION DATE

2025

SECTOR

Rail/ Tunnels

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CHALLENGE / SCOPE

RESTRICTED ACCESS & LOGISTICS

Access through Warrior Square Station and the limited RRAP availability posed significant challenges. All entry points were congested, with tight clearances and minimal laydown areas. This required:

- Carefully engineered lifting and loading strategies
- Detailed logistics planning
- Close coordination with station operations
- Active management of public interfaces

HEALTH & SAFETY IN CONFINED ENVIRONMENTS

The programme demanded multiple concurrent activities within confined work zones and a very tight possession schedule. This required stringent health and safety controls to ensure safe and efficient progress.

WATER INGRESS & HISTORIC SHAFT LOCATIONS

Both tunnel sections were affected by substantial water ingress and were situated beneath historic 'hidden shafts' flagged by Network Rail for urgent remediation.

To mitigate this, SSL applied a Cemrok 50 AA regulating layer, which significantly reduced water ingress and provided an improved substrate for the wet-spray concrete lining.



THE PROCESS



COLLABORATIVE PLANNING

Comprehensive collaborative planning meetings were held at SSL's yard prior to mobilisation. These sessions involved all stakeholders and allowed the team to:

- Identify and resolve issues early
- Coordinate launch plans, plant movements, deliveries and lifting operations
- Integrate on-track and off-track activity planning

This proactive coordination ensured a seamless and efficient operation on site.

EXPERIENCE-LED EXECUTION

Drawing on SSL's experience in comparable rail tunnel environments, lessons learned from previous projects were applied to optimise methodology, sequencing and safety control measures.

Our highly skilled and experienced workforce ensured that works were delivered safely, efficiently and to programme.

IN HOUSE BATCHING AND PLANT

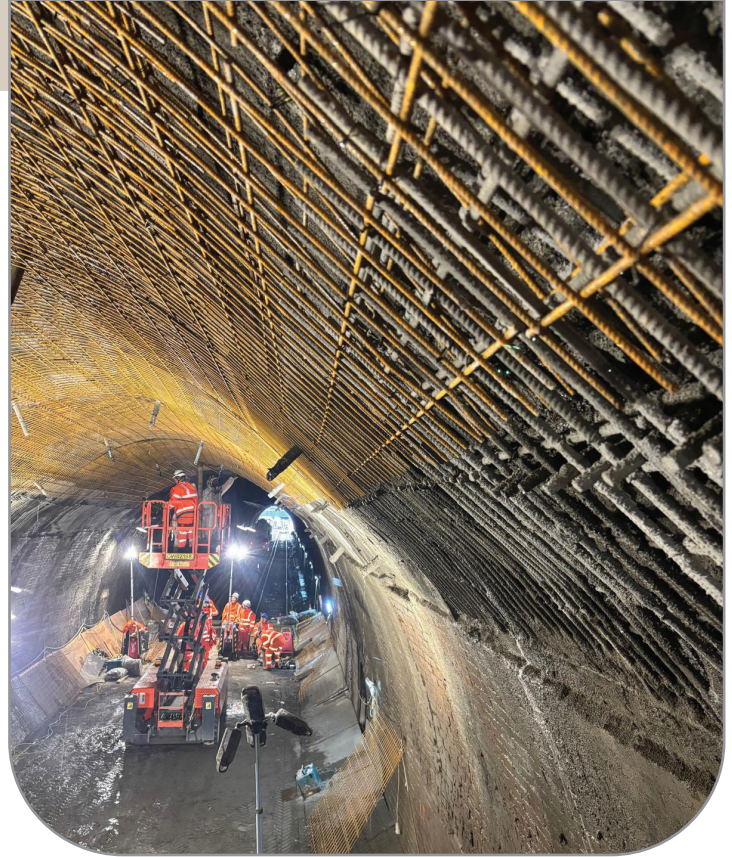
All wet sprayed concrete was batched and controlled from our own batching plant at our headquarters in Kent. This meant the concrete could be produced within the tight parameters we required, with all testing and QA completed and zero waste on the project. SSL's extensive in house Plant including all major items such as Pumps and Robots gives us confidence in performance and maintenance of the key items meaning no breakdowns and assurance on project delivery.

CONCLUSION / SOLUTION / OUTCOME

The project was completed on time and incident-free, despite the highly constrained access, challenging environmental conditions and strict possession windows. The client expressed strong satisfaction with the quality of work and overall delivery performance.

MATERIALS USED

- ✓ Dry Spray
- ✓ • Cemrok 50 AA
Selected for its proven performance in reducing water ingress and its reliable application characteristics. Previous positive feedback from nozzlemen supported its reuse on this scheme.
- ✓ • Wet-Spray Mix
A proven combination of admixtures was used within SSL's 10 mm P480 mix design:
- ✓ • SikaFume®-50S
- ✓ • ViscoFlow®-3500 SC
- ✓ • SikaTard®-930
- ✓ • Sigunit® L-5601AF @ 8%
- ✓ • Xypex Admix C-500 NF
This blend produced a homogenous mix that pumped and sprayed consistently with no fall-outs, allowing continuous and reliable progress.





WHAT OUR CLIENTS HAVE TO SAY:

Shotcrete demonstrated exceptional professionalism and efficiency during the 9-day blockade in Hastings, successfully applying 40 linear meters of sprayed concrete to two tunnels. Their collaborative approach with Walker Construction was key to meeting extremely tight time scales without compromising quality. Throughout the project, their commitment to health and safety was evident, and their positive attitude made them a pleasure to work with

Jordan Dunning
Assistant Project Manager

THANK YOU

FOR YOUR INTEREST IN SHOTCRETE.

SHOTCRETE

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