

# THE Waterview Tunnel Project

**CLIENT:**  
**Well-Connected Alliance**

**LOCATION:**  
Waterview, West/Central Auckland

**SPECIALIST COATING TEAM:**  
Topcoat Specialist Coatings Ltd

**PRODUCTS:**  
Ceramicoat, UK  
Sikagard Wallcoat T, Sika (NZ) Ltd  
Emerstop crème, Concrete Plus

**TOTAL AREAS COMPLETED:**

Sika wall Gard T - Ceiling/Sikafoor 2540W floors	95,600m <sup>2</sup>
Ceramicoat - walls	44,500m <sup>2</sup>
Emer crème - Motorway T beam columns	7,000m <sup>2</sup>

*Topcoat Specialist Coatings Ltd played a key role in the successful completion of one of New Zealand's largest infrastructure projects - the NZ Transport Agency's Waterview Connection in Auckland. A specially-commissioned Topcoat team worked on the large-scale and complex project for more than two years. It was a collaborative effort; and along with the other key contractors and suppliers, they were proud to celebrate the tunnel's opening in mid-2017.*

### About the Waterview Connection

Designed to help ease Auckland's growing traffic congestion, the Waterview Connection comprises two 3-lane motorway tunnels, both 2.4km long. Coupled with the Great North Road Interchange, it completes the Western Ring Route - which is one of the NZ Government's roads of national significance (RoNS).

The \$1.4b project features the largest underground tunnel in the Southern Hemisphere. It was delivered by the Well-Connected Alliance; which included the NZTA, Fletcher Construction, McConnell Dowell, Obyashi of Japan, Tonkin + Taylor, WSP, and Beca.

The concrete coatings on the walls and ceilings played a critical role in providing concrete protection and light reflectivity within the tunnels, which are located up to 45m underground.

To ensure drivers are not visually distracted, a black coating is needed for the tunnel ceilings and upper walls. A further epoxy

coating - in a brighter shade - demarcates the side-walls and guides the way for drivers. For additional safety, a total of 18 cross-passages linking the south and north-bound tunnels needed to be coated in safety green.

### Exacting requirements

Following a rigorous tender process, Topcoat was chosen as the preferred specialist coating applicator.

Topcoat already had a successful track record in tunnel projects; having previously worked on the Johnstones Hill tunnels in Puhoi, and Wellington's Arras tunnel.

The company is also the Australasian-licensed applicator for IMC Ceramicoat – a UK-based company that specialises in tunnel coatings, with significant projects completed worldwide.

“Having previous experience in this type of work was certainly beneficial,” explains Mark Ambridge, Topcoat’s GM.

“The tender process was very specific; and the coating systems had to meet stringent criteria regarding vapour permeability and carbonation resistance. In addition, the Ceramicoat Magnolia added the necessary light reflectivity, with an LRV of 84, and provided a 25-year maintenance warranty.”

## The solution

Topcoat’s winning solution was a combination of Sikagard Wallcoat T (in black) for the ceilings, and IMC Ceramicoat Magnolia for the walls. Phil Lowther, from Ceramicoat in the UK, says the project was significant by international standards.

“The Waterview Connection represents another successful project completed by our Australasian partners. The size and scope of this project, along with the technical skill demonstrated by Topcoat, was particularly impressive.”

Topcoat also utilised international expertise when it came to Sika’s products. Sika’s Max Tomblason says the Wallcoat T, which was shipped in from Germany, underwent months of research and testing as part of the selection process.

“We then put forward a very comprehensive QA system,” says Max.

“Once the project was underway, we worked together with Topcoat to carry out the required testing; and prepared detailed reports for the client.”

## Dual crews

The Topcoat team were one of the first sub-contractors on site. The first stage involved high-pressure washing the extensive 88,000m<sup>2</sup> of ceiling, and then applying the Sikagard Wallcoat T.

Explains Mark: “We had two crew alternating every 12 hours; with a day crew using tandem diesel 6000psi waterblasters to clean the concrete surface. They were followed by a night crew applying the coating via Graco spray units. All work was completed off nine-metre elevated platforms and scissor lifts.”

Following this, the Ceramicoat epoxy was applied to 44,000 m<sup>2</sup> of walls to a 4m demarcation line.

“The exact demarcation line was very specific as the tunnel shape was constantly changing contour and angles to support water run-off. The tunnel is like a helix...there is a 45m variance between each end, and at no point is it perfectly level.”

## Quality assurance

Some of the challenges that Topcoat needed to manage included occasional leaks in the tunnel structure, as well as applying an epoxy coating to a cold surface.

“The QA requirements were scrutinised throughout by the suppliers and Well-Connected, to ensure the coating was applied as per the specification,” says Mark.

As well as taking daily records of surface and ambient temperatures; Topcoat was required to carry out ‘dolly tests’ at every 100m, to ensure adhesion of the coating to the substrate.

In addition to the main interior tunnel work, Topcoat completed ancillary parts of the project. A total of 18 cross-passages linking the south and northbound tunnels were also coated in safety green, with designated walking man signage. Another 4,500sqm of coating was applied in the plant rooms and service areas.

## Health & safety

The concrete T-beams supporting the three-lane entrance and exits were also coated with 9,800 sqm Concrete Plus Emer-Stop crème, to provide waterproofing protection.

“That exterior work was also completed at night, working off elevated work platforms to 15m high...which was a daunting prospect in winter conditions.”

David Taylor, the M&E Sub-Alliance Manager with the Well-Connected Alliance, says workforce safety was a key consideration.

“The health and safety of the workforce was critical throughout the project, and Topcoat worked well to uphold the high safety standards that were set across the project.”

As one of New Zealand’s largest-ever infrastructure projects, the Waterview Connection also required high levels of planning to accommodate multiple sub-contractor teams.

“We often had a large number of tradespeople working in the tunnel at any one time, so coordination and cooperation was essential to achieve a successful outcome,” says David.

“The Topcoat team was flexible and worked very well with other teams.”

## Logistical planning

Since its opening in July 2017, the tunnel is proving highly popular with Auckland commuters, and has dramatically reduced the driving time to Auckland International Airport, the CBD and West Auckland.

“The NZTA continues to receive positive feedback from the public regarding the significant impact the project has had on Auckland,” says David Taylor.

Reflecting on the two-year project, Mark Ambridge says he’s proud of what his team achieved.

“The project was challenging from a logistics perspective, as we were required to meet critical timeframes throughout,” says Mark.

“It was testament to the commitment of our entire team – from our operations and admin support through to on-site personnel – that it ran so smoothly.”

He says the project was very much a collaborative effort; and he acknowledges the support from the Well-Connected Alliance, along with the key suppliers of Sika, Ceramicoat, Concrete Plus and Total Access.

Overall, it was a significant achievement for the Topcoat team to be involved in one of New Zealand’s largest-ever infrastructure projects.

“It’s satisfying for us to drive through the completed tunnels and see the results of a very successful project.”