

New Zealand

Name: New Zealand Tunnelling Society
Type of Structure: Incorporated non-profit
Number of Members: 129 individual members, 9 sponsors



ASSOCIATION ACTIVITIES DURING 2022 AND TO DATE

During 2022 the NZTS held a number of evening presentations from industry, including joint events with other NZ societies such as the NZGS and SESOC who we continue to work closely with.

We also held a one day short course focussing on state of the art tunnelling practices which was well attended.

A new President for the society was appointed (Matt Mules) along with a new member of the board and a new committee.

A significant amount of effort (together with our Australian colleagues) has been dedicated to the planning of the Australasian Tunnelling Conference 23' which is to be held in Auckland. We are confident that this will be an excellent event.

We continue to strengthen our ties with other tunnelling societies within our wider region and also to strengthen our influence within the NZ underground industry, including with Worksafe NZ.

CURRENT TUNNELLING ACTIVITIES

Works on the two major tunnelling projects within Auckland were progressed significantly through 2022. Tunnel excavation on the City Rail Link was completed, with the TBM - Dame Whina Cooper - breaking through into the Te Waihorotiu (Aotea) Station in September to complete the twin 1.6km long running tunnels and the station cavern excavation at Karanga a Hape Station was also completed. By the end of 2022, the waterproofing and secondary lining in the station caverns was well advanced and laying of track and rail services was underway.

The Central Interceptor project saw a number of milestones. The main tunnel TBM - Hiwa i Te Rangi - passed safely under the Manukau Harbour and arrived at the PS23 shaft on the Northern shore. The 2.1m internal diameter HDPE lined Link Sewer C was completed and the EPB microtunnel machine - Domenica - upskinned to commence the larger diameter Link Sewer B. There were also a number of shafts which were excavated including the drilling and lining of a 3.5m internal diameter 78.5m

deep GRP lined shaft at Keith Hay Park - the first of this scale in New Zealand.

A number of significant microtunnelling projects were progressed across the country throughout the year. These include the Clinker Place SW upgrade (550m of 1.2m, 3 shafts), Barber Grove to Seaview WW Plant (600m of 1.05m, 4 shafts), Ports of Auckland Outfall (280m of 2.5m, 2 shafts), Corbans Reserve SW Upgrade (684m of 2.1m, 3 shafts), Auckland Hospital Service Trench (240m of 10m deep, 6m wide cut and cover) and Milldale Subdivision (380m of 1.05m, 5 shafts)

2022 also saw the completion of the Hunua 4 watermain - Auckland's biggest-ever water project - after more than a decade of construction. The 31km watermain which ranges in diameter from 1.6 to 1.9m included a 3.0m diameter microtunnelled drive of 1296m - a new Southern Hemisphere record.

FUTURE TUNNELLING ACTIVITIES

The New Zealand Government has endorsed a partially tunnelled light rail system in Auckland with an estimated price tag of \$14.6bn. The 24km Auckland Light Rail (ALR) project will run from the city centre to Mngere and the airport, with up to 18 stations. The detailed business case and preconstruction planning phase for the ALR is now underway and detailed site investigation has commenced.

Also in Auckland, Waka Kotahi NZ Transport Agency, Auckland Transport and Auckland Council are working in partnership to progress the next phase of planning work on the Additional Waitemata Harbour Connections project. A design alliance has been formed to work towards a preferred option for the second harbour crossing, and a significant public consultation programme is being carried out.

As part of the "Lets Get Wellington Moving" programme the Government is moving ahead with a second Mt Victoria tunnel for Wellington as its "preferred choice". The proposed second tunnel will be roughly 14m wide, 650m long, and located about 25m to the immediate north (towards the harbour) of the existing tunnel. The

tunnel will cater for two eastbound (towards the Airport) traffic lanes with the existing tunnel upgraded for city-bound traffic use only

A 230m long road tunnel is to be constructed with road headers and sprayed concrete as part of the Mt Messenger bypass in Taranaki. Physical works are due to commence in the second half of 2023.

The NZ Battery project commissioned by the NZ Government is exploring options for pumped hydro and other potential energy storage projects. One of the main potential schemes being considered is the Lake Onslow Pumped Hydro project, located north-east of the Clutha River, which would comprise a pumped hydro storage project with up to five terrawatt hours of storage capacity and the potential for more than 20km of tunnels. A significant ground investigation campaign has now been carried out and the detailed business case is planned to commence in 2023.

STATISTICS

1. Length or volume excavated - % mechanized / % conventional during 2022

10.9km (95% mechanised, 5% conventional)

2. Amount (USD or EUR) of tunnelling / underground space facilities awarded in 2022 - €151M

3. List of tunnels completed

- City Rail Link
- Clinker Place
- Hunua 4 water pipeline
- Snells Beach Outfall
- Milldale Subdivision
- Corbans Reserve SW Upgrade

3. List of tunnels completed

- Central Interceptor
- Mt Messenger Bypass
- Barber Grove to Seaview Pipe Duplication
- Auckland Hospital Service Trench
- Ports of Auckland Outfall
- Snells to Warkworth WW Pipeline
- Stanmore to Fife SW Upgrade

EDUCATION ON TUNNELLING IN THE COUNTRY

- Three universities in New Zealand offer Civil Engineering Degrees with Geotechnical specialisation - University of Canterbury, University of Auckland and University of Waikato.
- A Tunnelling Short course focussing on Tunnelling in NZ was held by the NZTS in 2022.