

# Australia



**Name:** Australian Tunnelling Society (ATS)

**Type of Structure:** The ATS is an industry based Technical Society of Engineers Australia (EA) and is affiliated with the Australian Shotcrete Society, the NZ Tunnelling Society and the International Tunnelling Association (ITA).

**Number of Members:** 640 Members, 54 Gold and Silver Corporate Members and 6 Platinum Sponsors.

## ASSOCIATION ACTIVITIES DURING 2018 AND TO DATE

During the last year the Australian Tunnelling Society (ATS) has continued to promote the benefits of the underground environment through a range of activities, events, publications and working groups.

**Activities and Events:** During 2018 the ATS held its Tunnel Design and Construction Short Course in Melbourne in which featured technical presentations by leading experts on topics relevant in Australia and with a knowledge of international practices. The David Sugden young tunneller's Award was presented to Matthew Bennett. The top three 2018 David Sugden paper authors (including the winner) and the recipient of the 2017 Neyland Award will undertake a speaking tour of ATS Regional Groups in 2019.

The ATS holds monthly technical sessions run by its Regional Group and is involved with initiatives undertaken by the Australian Shotcrete Society (AusSS) such as the use of shotcrete for ground support. Two one day workshops were run in 2018, one discussing the "Emerging trends in tunnelling" and the other, in conjunction with the AuSS, "Lessons from recent Sydney tunnels"

The ATS is a contributor to the Austroads Tunnel Task Force which consists of jurisdictional representatives from around Australia and New Zealand. The Task Force is responsible for considering all aspects of tunnel planning, design, construction, operation and maintenance. It co-ordinates updates to the Guide to Road Tunnels and co-ordinates the development of technical research projects.

**Publications:** The ATS Journal was published twice in the last calendar year in conjunction with Tunnelling Journal. The Air quality working group published a suite of 12 information documents on

"Managing Silica in tunnels". The ATS has also completed the digitising of historical papers from all Australian Tunnelling

conferences, these now being available on the ATS web site for members only.

**Working Groups:** During 2018, the ATS Air Quality Working Group (AQWG), a collaborative platform enabling industry and regulatory bodies to work together, have been developing information on health strategies for managing silica dust exposure in tunnels which will be publicly launched early 2019.

The ATS has a number of members active in ITA Working Groups with 1 Animator, 2 Vice Animator, 7 Participating members and approximately 8 Corresponding members.

## CURRENT TUNNELLING ACTIVITIES

**Image 1:** CPB/Samsung/John Holland JV is continuing with the design and construction of the \$A2.7bn M4 East project (WestConnex Stage 1B) in Sydney. The project includes twin 3-lane road tunnels, each 5.5km in length and utilised 18 roadheaders to mine the tunnels through Hawkesbury Sandstone and Ashfield Shale. The project is planned for completion by 2019.

**Image 2:** LendLease/Bouygues JV is continuing with the design and construction of the \$A2.65bn NorthConnex

in Sydney, twin 9km long road tunnels linking the M1 to the M2 and M7 motorways. The project is planned for completion by 2019. The project utilised 17 roadheaders during tunnel excavation.

**Image 3:** CPB/Samsung/Dragados JV is continuing with the design and construction of the \$A4.3bn New M5 project (WestConnex Stage 2) in Sydney. The project includes twin 3-lane road tunnels, each 9km in length and has utilised 18 roadheaders to mine the tunnels through Hawkesbury Sandstone and Ashfield Shale. The project is due to open to traffic in 2020.

**Image 4:** Salini-Impregilo-NRW JV has commenced the design and construction of the \$A1.15bn Forrestfield Airport Link in Perth. The project includes twin 8km tunnels excavated by two TBMs and three stations. TBM excavation is underway.

**Image 5:** Sydney Metro City and South West Tunnels and Station excavation contract has been awarded to the John Holland/CPB/Ghella JV. The contract involves the design and construction of twin running tunnels, each 15km long, between Chatswood and Sydenham and six new underground stations. Five TBMs have been ordered and four commenced excavation during 2018.

**Image 6:** In December 2017 the CPB/John Holland JV was awarded the West Gate Tunnel Project which includes the design and construction of twin three lane road tunnels under the suburb of Yarraville in Melbourne. Two 15.5m diameter TBMs have been ordered for the excavation of the 2.8km long eastbound tunnel and the 4km long westbound tunnel and will commence excavation in 2019. The project





is scheduled to be completed by the end of 2022.

**Image 7:** In December 2017 the Melbourne Metro Tunnels and Stations PPP contract was awarded to the Cross Yarra Partnership comprising John Holland/Lendlease/ Bouygues and Capella Capital. The contract involves the design and construction of twin running tunnels, each 9km long, between Footscray and South Yarra and five new underground stations. Four TBMS will commence the excavation of the running tunnels during 2019. The section between the two CBD stations will be mined by roadheaders.

**Image 8:** In June 2018 the M4-M5 Link Main Tunnel Works Contract (WestConnex Stage 3A) was awarded to the Lendlease-Samsung-Bouygues JV for the design and construction of twin 3 and 4 lane road tunnels each 7.5km in length. The project is planned to open in 2023.

**Image 8:** In December 2018 the Rozelle Interchange Contract (WestConnex Stage 3B) was awarded to the John Holland-CPB Contractors JV for the construction of a predominantly underground interchange to link the proposed M4-M5 Link Tunnels with the existing Anzac Bridge, Iron Cove Bridge and the future Western Harbour Tunnel. The project is planned to open in 2023.

## FUTURE TUNNELLING ACTIVITIES

### Kidston Pumped Storage Hydro - Queensland

The 250MW Power Station will include

1.5km of tunnels, three 250m deep shafts and an underground power house. Contract award is expected in May 2019.

### Cross River Rail - Brisbane

The tender for the Tunnels, Stations and Development PPP contract closed in October 2018 and is expected to be awarded in Q2 of 2019. This contract will include the construction of twin running tunnels each 5.9km long and four underground stations.

### Snowy 2.0 Hydro Project - New South Wales

Tenders for the 2000MW civil works contract which will include 27km of TBM tunnels closed in November 2018. Contract award is expected in Q1 2019.

### North East Link - Melbourne

There will be a road link between the existing M80 Ring Road and the Eastern Freeway. It will include twin tunnels each 5km long. Tenders are expected to be called in the second half of 2019.

### Inland Rail Project - South East Queensland

The 126km long Gowrie to Kagaru section of the Inland Rail Project in south east Queensland will include three single track rail tunnels totalling 8.5km in length. The Inland Rail Project is a 1700km freight rail link from Melbourne to Brisbane. Tenders for this section of the project are expected to be called in the second half of 2019.

### Western Harbour Tunnel - Sydney

Tenders for the second under harbour road tunnel in Sydney to connect the proposed Rozelle Interchange

(WestConnex Stage 3b) with the existing Warringah Freeway on Sydney's North Shore are expected in 2020.

### Northern Beaches Link - Sydney

This road tunnel will connect the northern beaches area of Sydney with the Warringah Freeway and the proposed Western Harbour Tunnel.

### F6 Extension Stage 1 - Sydney

Twin 3-lane road tunnels, each 4km long, from the New M5 (WestConnex Stage 2) at Arncliffe to Kogarah. Tenders are expected to be called in Q3 2019.

### Sydney Metro West - Sydney

This will be a new metro style underground rail line between Parramatta and the Sydney CBD which will include twin running tunnels, each 22km long.

### Shoalhaven Pumped Storage Hydro - New South Wales

The 235MW power station will include 1.2km of tunnel and a 580m deep shaft. Tenders are expected in Q1 2019.

## STATISTICS

### 1. Length or volume excavated - % mechanized/% conventional during 2018

- Length of bored tunnels by TBM completed in 2018 (excluding pipejacking): 6,546m
- Volume of mined tunnels completed in 2018: 2,833,727m<sup>3</sup>

### 2. Amount (USD or EUR) of tunnelling/ underground space facilities awarded in 2018

- USD5,050 million or EUR4,470 million

### 3. List of tunnels completed:

- No tunnels completed during 2018

### 4. List of tunnels under construction

- NorthConnex, Sydney, NSW;
- WestConnex Stage 1B (M4 East), Sydney, NSW;
- WestConnex Stage 2 (New M5), Sydney NSW;
- Forrestfield Airport Link, Perth, WA;
- Sydney Metro City and Southwest, Sydney, NSW;
- WestGate Tunnel, Melbourne, Vic;
- Melbourne Metro Rail Project Tunnel and Stations PPP, Melbourne, Vic;
- WestConnex Stage 3A (M4-M5 Link), Sydney, NSW;
- WestConnex stage 3B (Rozelle Interchange), Sydney, NSW.