



## Snowy 2.0 main works begin

Snowy 2.0 has commenced a new phase of construction - work is now underway at Tantangara, where excavation will take place for the headrace tunnel portal. Initial activities include clearing vegetation, preparatory road works along the edge of Tantangara Road, geotechnical investigations, installation of erosion sediment controls and bulk earthworks.

In a similar process to the construction of the Main Access Tunnel portal, an opening will be cut into the hillside. The portal is initially excavated in two-metre lifts, with the rock face supported as each section is completed. After excavation, the next step is preparing the site to build the cradle where the tunnel boring machine (TBM) will be assembled.

Over at the Main Access Tunnel at Lobs Hole, the construction of the TBM cradle has been completed and all TBM components have been delivered ready for assembly with the help of two cranes - one 300 tonnes, the other 750 tonnes.

At the front of the TBM is a large steel structure called the cutterhead, which rotates against the rock face. Measuring 11 metres in diameter, the cutterhead contains 66 replaceable metal disk cutters and metal scrapers that break the rock into small chips. Due to its mammoth size and combined weight of 380t, the cutterhead was broken down into five segments for transport; four outer and one centre segment. These segments are welded together onsite using continuous welding, 24-hours-a-day.

Once assembled, the cutterhead is tilted from its horizontal position to vertical and lifted with the 750t crane into place in front of the TBM shield that has been assembled in the cradle. Work has also started on the portal for the Emergency, Cable and Ventilation Tunnel, or the cable tunnel for short. The 1.7 kilometre tunnel is one of two access tunnels to the underground cavern and provides critical airflow, as well as access for people and materials into the underground power station during construction. It will also provide the conduit for high voltage cables for power generated by Snowy 2.0.

The first concrete segments for Snowy 2.0's tunnels will be manually produced at the Polo Flat factory, with an automated carousel system to be established. Construction of the \$55 million facility by Snowy 2.0 principal contractor Future Generation Joint Venture has progressed well. The last stages of fit-out, including installing gantry cranes, are underway. There are five large sheds at the Polo Flat facility, including a concrete batching plant, a precast building to manufacture the segments, storage areas for raw materials and finished segments, along with vehicle parking areas, offices and workshops. There are also 3.5km of internal roads. The segments will create around 14,500 concrete rings that will line the tunnels linking Tantangara and Talbingo dams to the new underground power station.

Hiring is underway for a range of positions across the Snowy 2.0 project. Principal contractor Future Generation is looking for experienced tunnel workers including TBM operators, grout operators, driller operators, loader operators and shotcrete operators. There are also a number of full-time engineering, hospitality and other roles available. More information at [www.futuregenerationjv.com.au](http://www.futuregenerationjv.com.au)



## Snowy 2.0 video update



Check out the latest progress from the Snowy 2.0 construction site!

## Interactive online learning – NEW!



Take a sneak peek at our new Next Generation Education Hub - it's an online education portal with a range of learning opportunities for students of all ages and stages.

Generations of school children have experienced the wonder and excitement of the Snowy Scheme and the power of water as it flows through dams and hydro power stations to generate clean, renewable energy.

Now we're expanding the experience with the Next Generation Education Hub, which has been developed in line with the Australian curriculum and offers study material across the STEM subjects, as well as history and geography - all through the lens of the original Snowy Scheme and the Snowy 2.0 expansion.

Explore our [Next Generation Education Hub online](#).

## Burrungubugge remote repairs



In a remote part of the Snowy Mountains, Snowy Hydro and its contractors have been carrying out complex and important improvements to a 125-metre deep intake shaft. The Burrungubugge intake shaft is a critical part of the Snowy Scheme, diverting water from the Gungarlin and Burrungubugge rivers into the Snowy-Eucumbene tunnel directly below.

This tunnel transfers water more than 23km from Island Bend Pondage to Snowy's central storage, Lake Eucumbene, where it can be used to generate electricity on either the

Khancoban or Tumut side of the mountains.

A project is currently underway to increase the longevity of the Burrungubugge intake shaft, using an innovative new method to repair a long-term defect. To safely access the repair location - 80m down the narrow, 1.8m diameter shaft - a purpose-built access hoisting system has been designed and installed. The work includes welding repairs to nine circumferential joints, followed by the application of more than eight tonnes of concrete grouting between the liner and the wall for extra support.

Finally, a layer of 4mm carbon fibre wrapping will be applied to the inner surface of the shaft at the point of highest stress - think of a similar process to that of fibreglassing - which will provide a further 40 years' design life of reliable operation.

More than 20m high, the access system includes a multi-level work stage and a separate two-person access cage to allow work to occur safely in the confined space. At any one time, four people can work down the shaft. The hoist was constructed and commissioned in Western Australia earlier this year by specialist mining contractor RUC Cementation. It was then taken apart and transported in more than 450 pieces to the Snowy Mountains, before being reconstructed and commissioned at the worksite.

The narrow, deep intake shaft is a tight work environment, which means ventilation is important. A specifically-designed heating and ventilation system has been installed to provide comfortable and safe working conditions. The total system requires enormous power to operate - the team needed to install over two megawatts of diesel power generators to power the hoist and all of its systems.

Multiple cameras provide live footage of all aspects of work done in and around the shaft to the hoist operators, whose principal job is to ensure the safety of the workers in the shaft.

The work area is normally underwater, as it is at the same elevation as the surface of Lake Eucumbene. For this job, the water level in the shaft was lowered by shutting down the diversion capability of the Snowy-Eucumbene Tunnel and partially draining the structure using a precise level monitoring and control system.

The unique nature of this job required a project team made up of local and global specialists. In addition to RUC, Snowy Hydro has engaged ESI Alphatec, Insituform Pacific RIGCOM, Coates Hire and local companies including Cooma Cranes and A&D Scaffolding.

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## Summer energy savers

With warm weather here, now is the time to let nature help keep your energy costs down. More sunshine and longer daylight hours are just the right conditions for hanging clothes out in the fresh air. The clothes dryer is one of the biggest drains on energy, so use it sparingly. Air conditioners are another energy-hungry appliance, contributing up to 40% of energy use. Close off rooms not in use and when the cool change arrives, switch off the aircon and open up the house to welcome in the breeze.

**Tips to reduce energy use by Red Energy's Lucy Aston:**

1. Smart use of air conditioners. Use the timer function to switch off overnight and during the day, and limit use to the hottest times. Clean filters at least twice a year and replace when worn out. Filters filled with dirt and grime add up to 15% more energy to power the unit.
2. Insulate your home. Wall and roof insulation keeps warm air from escaping in winter and traps cool air inside during summer. Draft-proofing doors and installing blinds on windows will also help.
3. Use less hot water. Wait for a full load before using the dishwasher and skip the drying cycle. When handwashing dishes, rinse in cool water and keep your mixer tap on cold to avoid generating hot water. Limit time under the shower and install a three star-rated showerhead to help conserve water.
4. Check your lights. With the average Australian home using 6% of its energy to power the lights, it makes sense to switch off lights in rooms you're not occupying. Solar-powered lights in the garden and motion-sensor security lights will help reduce energy use outside.

[Red Energy](#) is 100% Australian-owned and operated. For more information about its great plans, go to [redenergy.com.au](http://redenergy.com.au) or call 131 806.



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