

Within the proposed mining area, groundwater is contained in a range of hydrogeological environments. These are:

- Hard rock aquifers within the Permian and Triassic rocks, which form the upland areas and underlie the study area; and
- Alluvial and colluvial aquifers associated with the unconsolidated sediments which occupy the drainage lines dissecting the area of investigation.

The strata above the coal seams are tight, with low potential for significant groundwater movements. The coal seams are considered to have the greatest aquifer potential within the hardrock sequence.

The entire W2CP target area of mining represents only 6% of the catchment area of the Gosford-Wyong Water Supply Scheme and avoids all the important surface features and the water scheme infrastructure. Only a fraction of this 6% of

catchment area (about 1% of the catchment) involves lands relating to alluvial valley systems. In addition, the small project area that will be subject to mining has been carefully designed to ensure that mining can proceed while safeguarding catchment functions. As longwall panel geometry (particularly width) and mining depth are major mine planning factors in determining surface subsidence impacts from mining, the impact on surface water flow has been an important consideration at the design stage, and has been taken into account in preparing the W2CP mine plans.

A hydrogeological investigation was begun in 1997 which investigated groundwater in Yarramalong and Dooralong Valleys. The study investigated groundwater extracted from monitoring wells and registered bores located within the area.

While groundwater is an important issue to the communities within the Project area, investigations indicate groundwater is not an extensively utilised resource in the proposed mine area. Nevertheless underground mining has the potential to affect shallow groundwater resources. Groundwater management was also regarded by the community to be an important factor in recent gas exploration activities in the locality.

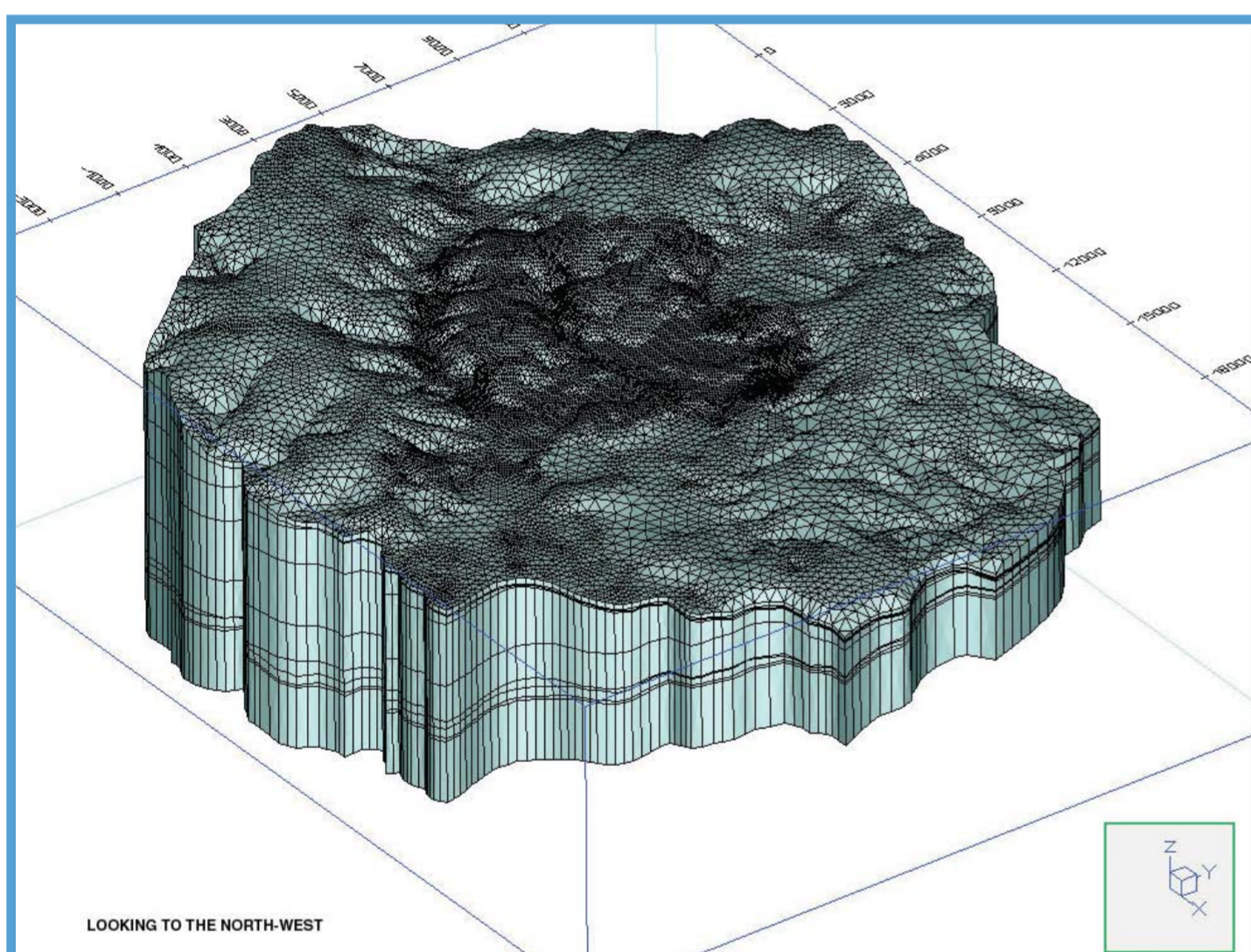
W2CP has commissioned Mackie Environmental Research to undertake further groundwater investigations, particularly relating to the assessment of potential impacts on alluvial groundwater systems.

The studies will involve consolidation and assimilation of regional aquifer information including aquifer test and monitoring data generated as part of previous regional investigations, numerical computer simulation of the proposed mine development, and prediction of mine water seepage and depressurisation/dewatering impacts on hardrock and alluvial lands.

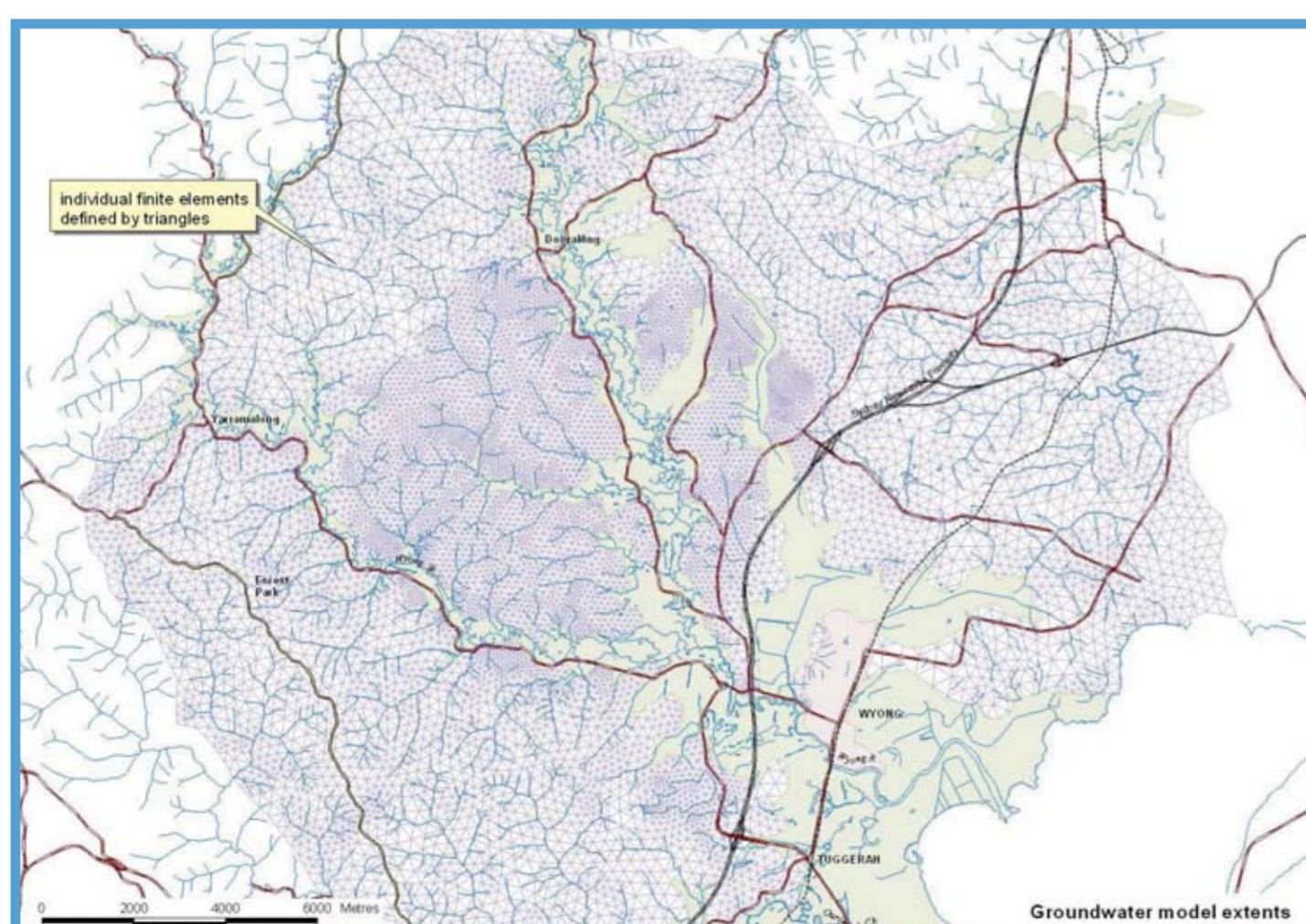
The hydrogeological study will continue and focus on addressing the following issues for the EA:

- potential mining impacts on groundwater condition & usage;
- potential groundwater make;
- potential impacts of subsidence;
- potential impacts and opportunities for saline water management; and
- potential regional impacts.

Investigations to date suggest that potential groundwater risks are dominated by localised and temporary effects and can be satisfactorily managed. Groundwater that will be affected by the mine is well below that which is used for farming and domestic water supplies. The groundwater system will readjust to a new equilibrium over the long term. Water in the mine will be pumped to the pit top at the surface. It is saline and unusable for any domestic or rural purpose without treatment.



▲ Groundwater Model



▲ Groundwater Mesh In Plan