

Anvil Hill Water and Catchment Area

Anvil Hill Open Cut Coal mine will have a significant and detrimental impact on the ground and surface-runoff systems of the lower Catchment to Wybong Creek and will have a flow on effect to all the agricultural businesses, community members and ecosystems reliant on these waters for existence.

Wybong Creek

Wybong Creek is the most westerly catchment for the Goulburn/Hunter River System, flowing in to the Goulburn River. It flows from confined headwaters through a partly confined valley and then into a wider valley, the site of the proposed Anvil Hill mine (DLWC2002). It is also highly connected to an alluvial aquifer system (DIPNR 2005). Wybong Creek has been assessed as a highly stressed stream (category S1) due to high levels of extraction and high environmental stress (DIPNR 2005), and currently has a cease to pump order on it due to cessation of environmental flows.

Anvil Hill mine impact on Wybong Creek

The proposed mine has a disturbance area of 2000 hectares and covers the largest surface water area direct Catchment of the Wybong Creek. This Catchment consists of Big Flat Creek, Anvil Creek, Clarks Gully, alluvials and surface and groundwater catchments. Anvil Creek and Clarks Gully would be destroyed by the proposed mine. The proposed mine site also includes the Sandy Creek Catchment surface and ground water, which flows directly into the Hunter River (Anvil Hill Project Community Consultative Committee presentations by Umwelt Consultants).

At least 90-95% of the proposed mine site area involves surface and groundwater Catchment flows east to west and into the Wybong Creek systems, and the entire site is a recharge area for the alluvial and deeper groundwater aquifers of the lower Catchment of Wybong Creek ("The majority" Umwelt Consultants presentation to CCC Feb 8 2006). The rocky sandstone and conglomerate outcrops within and bordering the proposed mine site are an extensive system of surface and groundwater Catchment, channeling rainfall run-off into the various creek lines within the proposed mine site and recharging groundwater aquifers. This entire system of water Catchment would be cut off from the Wybong Creek Catchment by open cut mining of this site, exacerbating the already problematic low environmental flows in Wybong Creek and resulting in a higher incidence of cease to pump orders on the creek. This in turn will have a direct and immediate negative impact on the agricultural activities on the Wybong Creek alluvial and connected ecological systems.

Anvil Hill mine impact on alluvial within the proposed mine site

Open cut mining involves the initial removal of relatively impermeable confining layers, which is later replaced with spoil. This mining practice results in the temporary draining of local and regional aquifers; the temporary period will be at least 21 years for the proposed mine. With declining water tables, a number of potentially degrading environmental impacts can occur such as reversal of groundwater flow, causing loss of seeps, springs and base flow (DIPNR 2005).

Mining which removes alluvium to reach coal beneath has an obvious impact on an alluvial aquifer, requiring the water to be removed during the mining. It is very unlikely for the alluvial aquifer to be successfully restored. Mining within close proximity to an alluvial can also fracture the confining layers through blasting effects, with similar results as for mine subsidence (DIPNR 2005).

There is clearly a potential for long term damage to major streams, aquifers and dependant ecosystems by nearby coal mining (Draft Guidelines for Management of Stream/ Aquifer Systems in Coal Mining Development- Hunter region 2002 - DIPNR 2005). DIPNR has therefore prepared a draft guideline document on management of stream and aquifer systems in Coal Mining development (DIPNR 2005). Wybong Creek system and its associated alluvial is categorized as Schedule 3 in the Draft Guidelines for Management of Stream/ Aquifer Systems in Coal Mining Development- Hunter region 2002. As a category 3 this document recommends the alluvial of Wybong Creek as an exclusion zone to mining.

Post open cut mining

Current mine rehabilitation practice seeks to reinstate the land surface to that approximating the pre-mining geomorphology. However, whilst a covering layer of topsoil and vegetation is provided, the underlying unconsolidated aggregate will be characterized by an altered mineralogy, permeability, porosity and weathering characteristics. As time proceeds, the depth of weathering will increase, groundwater levels will re-saturate and the climate may begin to impose characteristics upon the soil, vegetation and watershed system that override the earlier dominant influences that operated prior to mining (DIPNR 2005). The rehabilitation is largely cosmetic and typically does not last.

As Open Cut Mining typically has low overburden (surface soil) to coal ratios, a large void is usually left in the final landform (DIPNR 2005). The Anvil Hill mine proposal has the lowest overburden ratio of any potential mine in planning, this will result in a very large void. These voids typically become saline sinks capturing both surface run-off and saline groundwater from within the coal seams and associated rocks (DIPNR 2005). The long-term implications of these final voids and their impact on the surrounding hydrology, dependent ecosystems and the community are largely unknown (DIPNR 2005).

Adjoining land uses

Various agricultural and residential activities are reliant on Wybong Creek and related surface water run-off and groundwater aquifers. The proposed Anvil Hill mine will also have a negative impact on scenic amenity and current land uses, including:

- Vineyards;
- Cattle Grazing-fattening-breeding;
- Horse studs;
- Olive groves;
- Lucerne- stock feed and other cropping activities on Wybong Creek alluvial;
- Rural residential subdivisions- life-style blocks approximately 10 to 40 hectares in size;
- Tourism developments- area adjoining proposed mine site is zoned Scenic protection and is environmentally sensitive.