

4-17. IMPACT ON BOX GUM WOODLAND

Concern:

The White Box-Yellow Box-Blakely's Red Gum Grassy Woodland is listed as critically endangered. The EIS does not clearly explain how groundwater drawdown from the proposed Project will impact these protected woodlands outside the mine site.

This concern responds to the following SEARs for SSD 5765:

- A description of mitigations and
 - Whether these are best practice and represent a full range of measures
 - Whether they will be effective / key performance indicators
 - Contingency plans for residual risks / monitoring and reporting on environmental performance
- An assessment of the likely impacts of all stages of the development, including any cumulative impacts, taking into consideration any relevant legislation, environmental planning instruments, guidelines, policies, plans and industry codes of practice;
- Part 3: Any interference with an aquifer caused by the development does not exceed the respective water table, water pressure and water quality requirements specified for item 1 in columns 2, 3 and 4 of Table 1 of the Aquifer Interference Policy for each relevant water source listed in column 1 of that Table.
- Part 3: impacts to significant water resources or threatened species are minimised to the greatest extent practicable
- Assessment of Lawsons Creek and Price Creek
- DRG, Attachment 2A requires rehabilitation methods including
 - e) monitoring for rehabilitation
 - i) details of triggering intervention
 - l)i) assessment of rehabilitation techniques against objectives
 - m) iii) groundwater assessment for final water level in any tailing storage facility void
 - o) consideration of controls
- DRE/DPE requires a Water Management Strategy that considers
 - the existing surface and groundwater qualities
 - a description of how groundwater and aquatic ecosystems will be monitored, Trigger Action Response Plan and trend identification

DISCUSSION

The White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland is listed as critically endangered. Root systems extract groundwater that is subsequently transpired. The evapo-transpiration 'extinction' depth is set at 3 m (Jacobs (Australia), 2020, pp. 5-141). This means that shallower than 3 m depth, moisture in the soil is able to be accessed for transpiration. Figure 73 of Jacobs (2020) (Figure 1) indicates a lowering of the water table outside the mine site by around 2 km. The impact of a decrease in shallow groundwater availability in these areas is not explicitly covered in the EIS. Groundwater levels can be shallow around the alluvium near BGW01, BGW03, BGW04, BGW05 and BGW06. Based on the drawdown predictions, drawdown beneath the white Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland is expected to be up to 10 m outside the mine site 50 years post mining (Jacobs (Australia), 2020, pp. 5-173). Given the endangered nature of these communities, the potential impacts of drawdown should be adequately assessed.

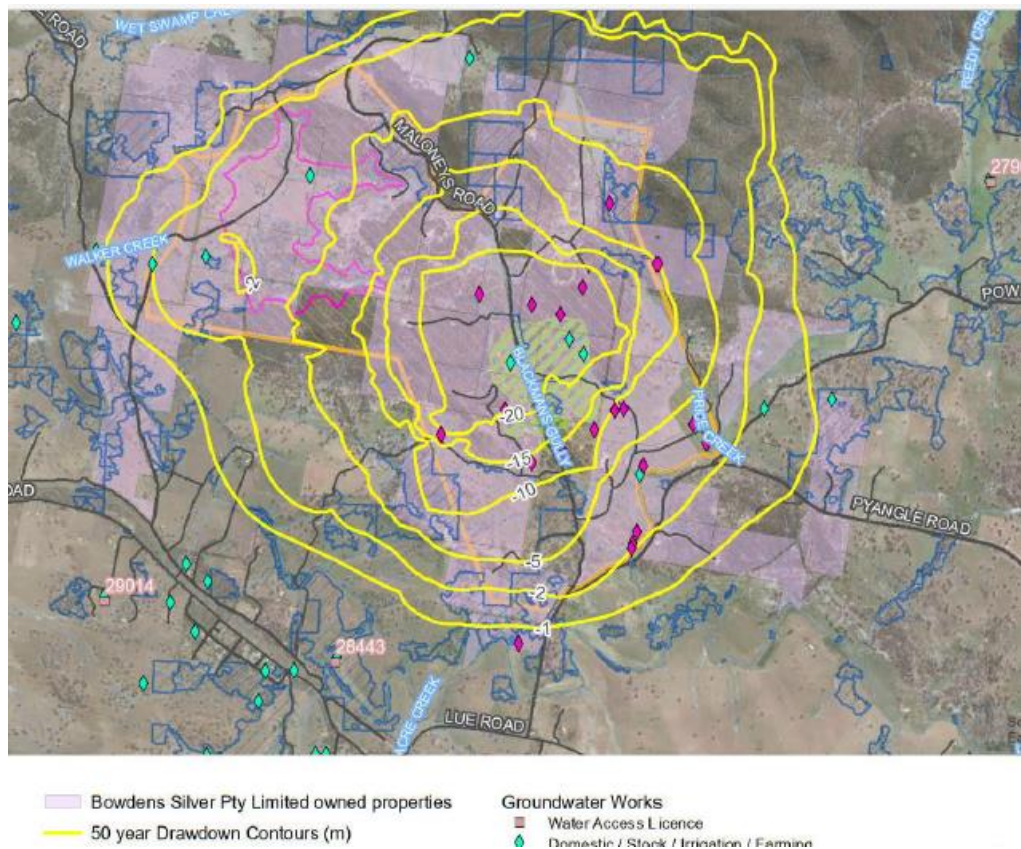


Figure 1: Drop in water table 50 years post mining in metres, showing potential GDE areas shaded in blue. Source: Adapted from Figure 73 from Jacobs (2020) p5-173

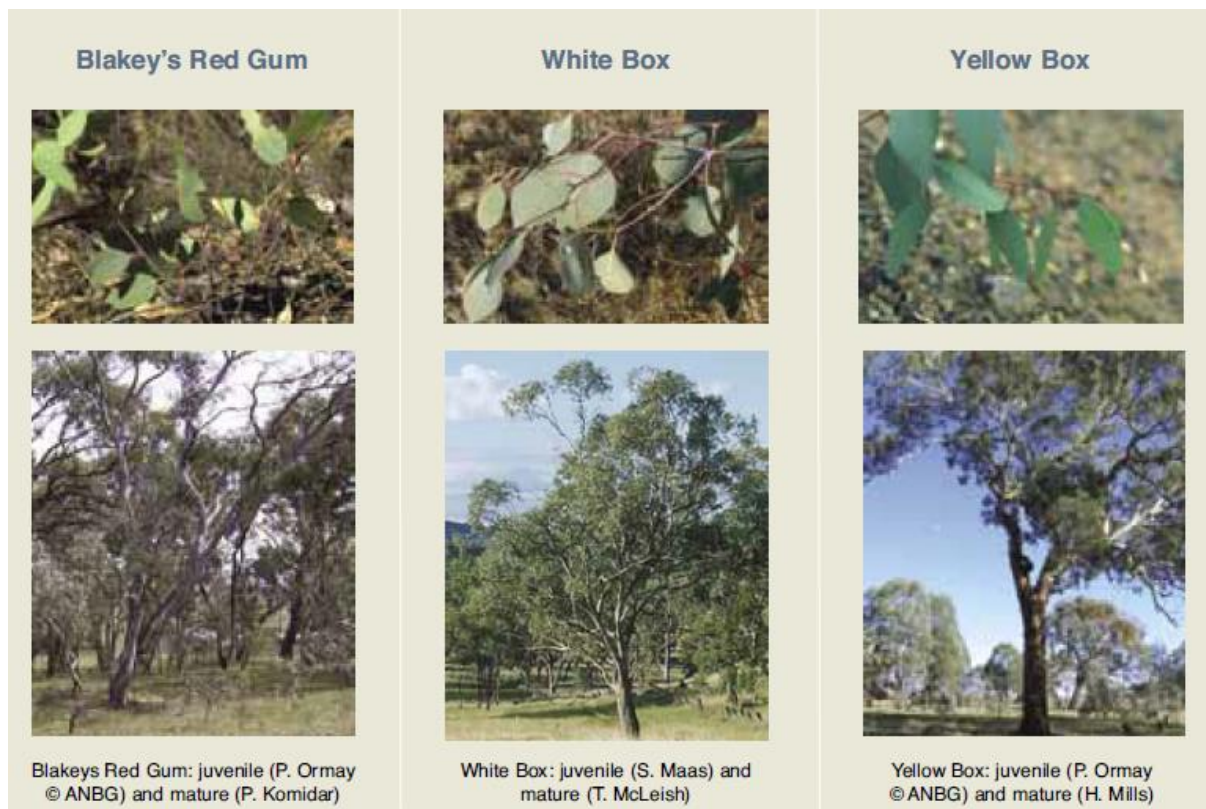


Figure 2: Critically endangered woodland. Source: (DEH, 2006)

If significant ecosystems cannot access water during times of water scarcity, their health may be temporarily or permanently impacted. Inter-seasonal groundwater level changes in the region are measured at state monitoring bore GW271006 located 18 km northeast of the site. While groundwater is deeper at GW271006 than at BGW56 and BGW31 around Lue, the hydrograph (Figure 3) shows an inter-seasonal variability of up to 1 m. Hydrographs presented in the EIS feature periodic data gaps and the seasonality of groundwater levels near the mine site is not evident in the data presented nor in the discussion of results. Impacts from the proposed mine will be cumulative to these existing groundwater level changes.

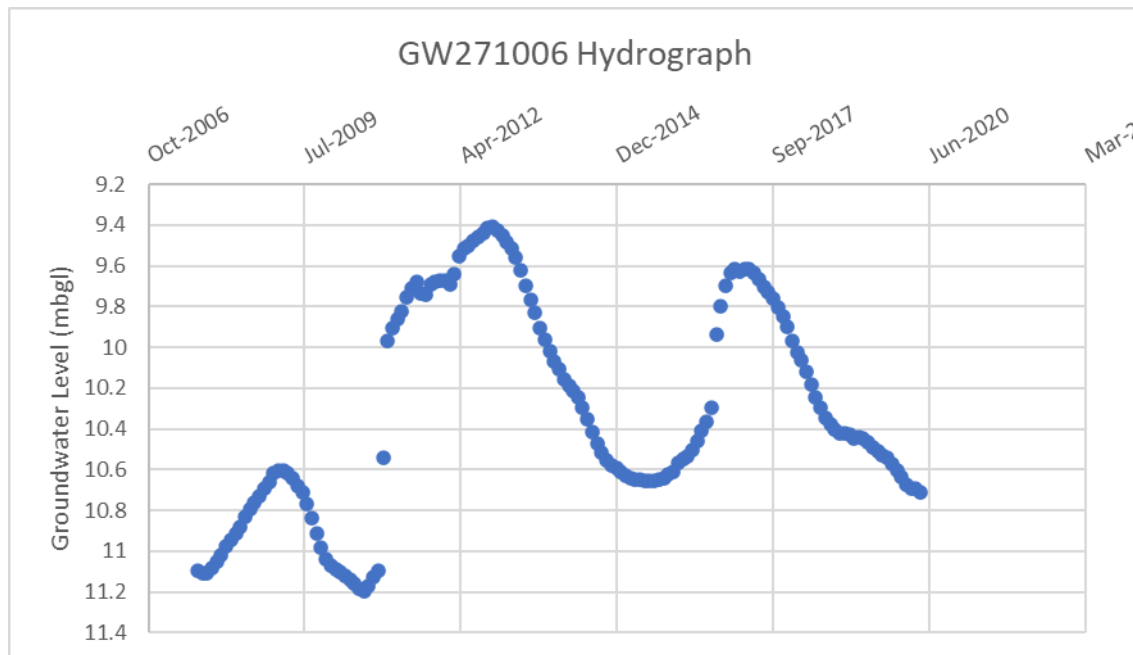


Figure 3: NSW Hydrograph showing natural inter-seasonal variability

REFERENCES

- ANZ Guidelines, 2020. *Guideline values for water/sediment quality*. [Online]
Available at: <https://www.waterquality.gov.au/anz-guidelines/guideline-values>
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- Bowdens Silver, 2020. *Monitoring*. [Online]
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- DEH, 2006. *White Box - Yellow Box*, Canberra: Department of the Environment and Heritage.
- Jacobs (Australia), 2020. *Part 5 - Groundwater Assessment*, Sydney: Silver Mines Pty. Limited.
- R. W. Corkery & Co. Pty. Limited, 2020. *EIS Bowdens Silver Project*, Sydney: Bowdens Silver Pty Limited.