



WERRIS CREEK COAL MINE WATER FACT SHEET

BACKGROUND

This fact sheet is designed to provide the local community with information about how the Werris Creek Coal Mine manages water as part of mining operations.

Under our current approvals (Project Approval 10_0059 and Environmental Protection Licence 12290) we are not approved to discharge water off the mine site.

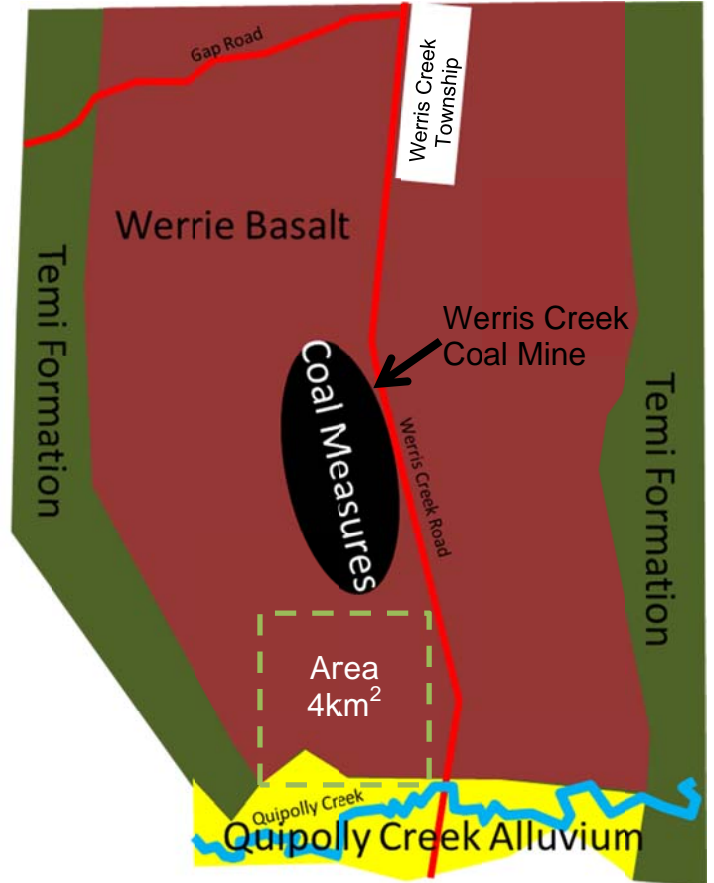
GROUNDWATER AQUIFERS NEAR WERRIS CREEK COAL

Groundwater aquifers near the mine are aligned with the geology of the area; with aquifers located in the Coal Measures, Werrie Basalt and Quipolly Creek Alluvium. We are only mining the coal that is found in the Coal Measures strata located 2km south of Werris Creek town and 2km north of Quipolly Creek.

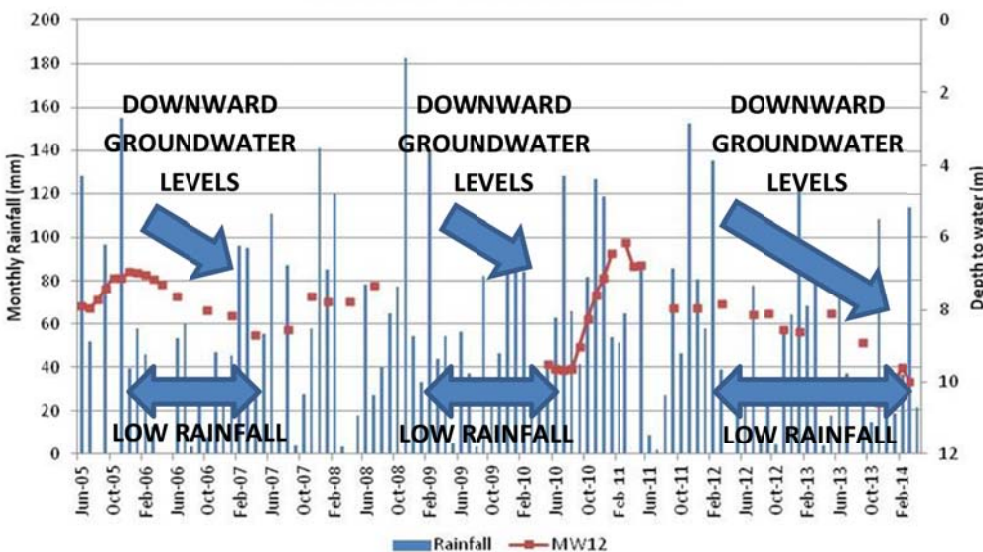
TRENDS IN GROUNDWATER MONITORING

Long term monitoring of both the Quipolly Creek Alluvium and Werrie Basalt aquifers shows that the water levels in the two aquifers are dependent upon the amount of rainfall that falls over the aquifers. Monitoring shows that after a rainfall event, water levels rise and in the dry periods the water levels in the aquifers fall (as indicated below).

Since the peak in 2012, groundwater levels have declined by approximately 4m in a 4km² area south of the mine and north of Quipolly Creek (as indicated right). That is equivalent to **4,800 megalitres (ML ie. million litres)** that has left the local groundwater systems along Quipolly Creek and Werrie Basalt aquifers as a result of low rainfall recharge.



Geology of the Werris Creek area



Relationship Between Rainfall and Changes in Groundwater Level

MINE WATER STORAGES

The mine has five dams onsite with a combined capacity of **755ML**. We are currently permitted by a water license (WAL 32224) to extract 211ML of groundwater per year from the minesite; however only **100ML** per year has actually been intercepted in pit.

We do not use or even have enough storage onsite to capture all of the **4,800ML** of groundwater that has been lost from those aquifers since 2012.

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SOURCES OF WATER AT WERRIS CREEK COAL

Rainfall runoff contributes the majority of water that collects in the open cut void. The main source of the excess water in our onsite dams was the high rainfall in 2011 and 2012. Since 2013 rainfall has been below average (Quirindi annual average rainfall is 681mm) and less runoff has been captured in pit.

Year**	Rainfall	Void Water from Runoff*
2009-2010	605 mm	726 ML
2010-2011	817 mm	981 ML
2011-2012	794 mm	952 ML
2012-2013	786 mm	943 ML
2013-2014	498 mm	597 ML
2014-2015	513 mm	616 ML

* Indicative based upon 2014 Surface Water Model but varies in space and time due to rain intensity, duration and surface moisture content; ** Period 1st April to 31st March.

WATER USE AT WERRIS CREEK COAL

The main use of water at the mine is dust suppression on haul roads, within the crushing plant and at the train load out facilities. On average water carts use 350ML of water per year on haul roads for dust suppression.

We also use water to manage potential spontaneous combustion areas within the pit, in particular the former underground mine workings. Water is used to cool the ground in those areas so that it is safe to operate and mine the coal.

As we do not use a Coal Washery to clean the coal after mining; excess water has to be stored in dams onsite which are now near full capacity.



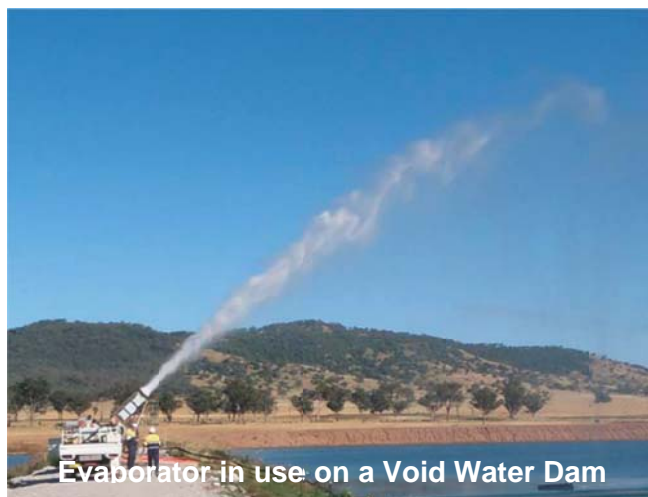
Water Cart undertaking dust suppression at an Excavator Load Face and Haul Road

POTENTIAL AGRICULTURAL IRRIGATION OF VOID WATER

We have installed Evaporators to help reduce the excess of water stored in our onsite dams. The Evaporators spray water into the air as a fine mist increasing the surface area of the water available to be evaporated. Excess void water is expected to continue until 2018 when the coal measure geology changes from mining downslope to mining upslope.

Following comments from the local community about the possibility of using the excess water for agricultural purposes instead of evaporation, we have made an application with the Department of Planning and Environment and the Environment Protection Authority to allow the transfer of water off the mine site for agricultural use. A determination on the application is likely to occur during 2015.

Analysis of the void water quality at the mine has determined that it is suitable for both irrigation and livestock watering in accordance with the ANZECC (2000) guidelines.



Evaporator in use on a Void Water Dam