Carmichael Mine Project

# Protecting the Doongmabulla Springs


adani™

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## About the Doongmabulla Springs

The Doongmabulla Springs are located in central Queensland and are home to a variety of native plant and animal species that are dependent on groundwater from the Great Artesian Basin.

The Springs are more than 8km from the Carmichael Mine boundary and 11km from any mine activity.

We have undertaken extensive scientific studies that have informed our approach to ensuring we can safely operate the Carmichael Mine without impacting the Doongmabulla Springs or the species that depend upon them.

The site of the Doongmabulla Springs holds cultural significance to the Traditional Owners of the land, the Wangan and Jagalingou People.

*The Doongmabulla Springs, September 2018*

## How are the Doongmabulla Springs protected?

The underground water source aquifer for the Doongmabulla Springs comes from an underground water source that is not connected to the Carmichael Mine.

To protect the Springs and their local species, regulatory conditions state that the water level cannot drop more than 20cm.

The Rewan Formation is a 250-300m underground claystone formation that naturally protects the Springs' water source. It acts as an impervious layer, restricting water from flowing between the underground aquifers.

Over 100 water monitoring bores will be established to observe and protect underground water levels. The information gathered will be reported to regulators and used to ensure our practices are safe and sustainable.

Safeguards have been put in place in case there is seepage from the Great Artesian Basin to the mine site.

Adani Mining must regularly monitor and report to Australian and Queensland regulators on the Springs' water levels to ensure they are protected.

# The source aquifer of the Doongmabulla Springs

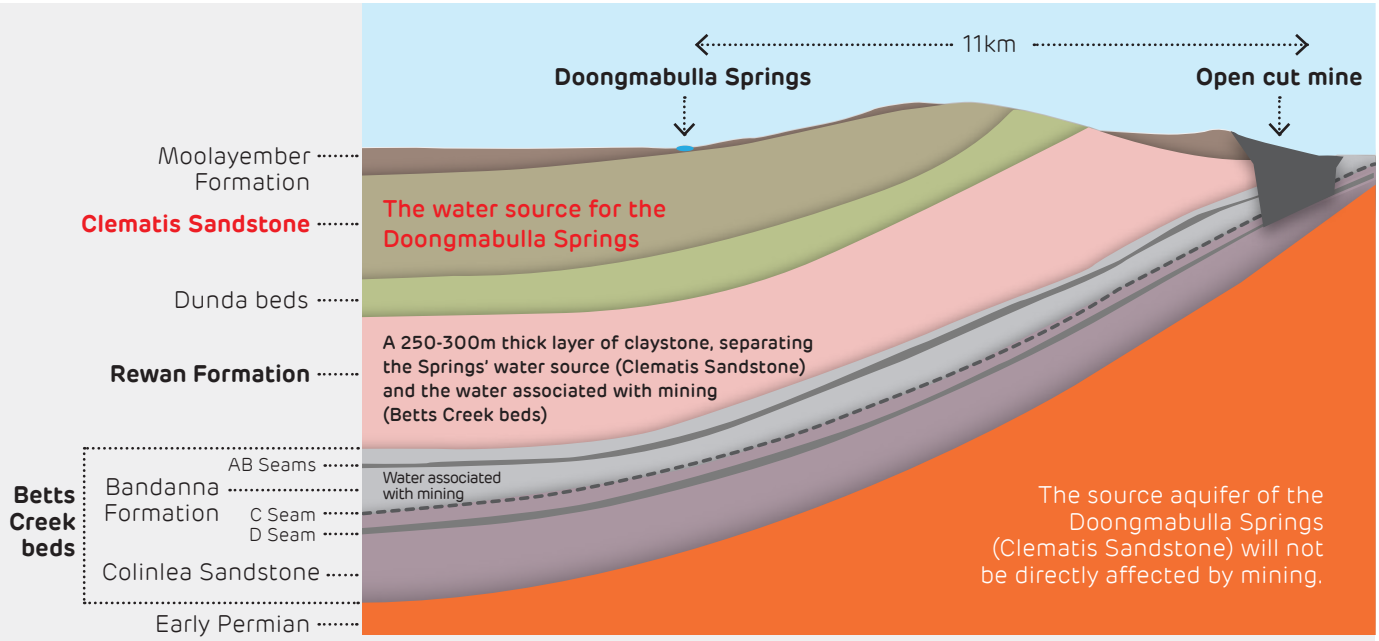
The Groundwater Dependent Ecosystem Management Plan (GDEMP) is a regulatory document that outlines the actions we will take to protect the Doongmabulla Springs during the construction and operation of the Carmichael Mine project.

As part of the approval requirements from Australian and Queensland Governments, Adani Mining was required to identify the source aquifer of the Springs.

The source aquifer is the underground layer of earth that holds water and acts as the main source of water for the Springs.

Between 2014 and 2018, Adani Mining engaged third-party scientific and environmental experts to identify the source aquifer. Following extensive field surveys, underground water monitoring assessments and geological studies, the Clematis Sandstone was identified as the source aquifer.

The Clematis Sandstone is a layer of sandstone that holds water, which sustains the Doongmabulla Springs.



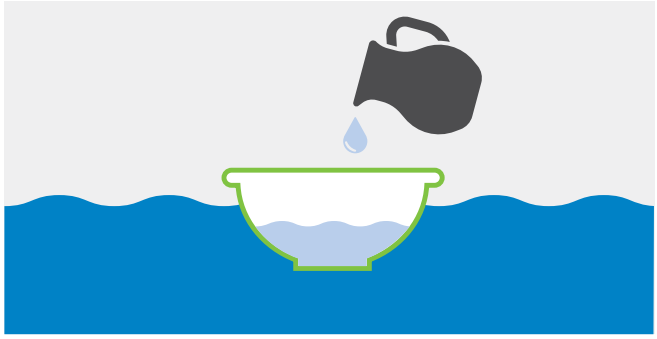

*A cross-section of the ground beneath the Doongmabulla Springs and the Carmichael Mine site shows that they draw water from different underground sources.*

The Clematis Sandstone is protected by the Rewan Formation. It is a 250-300m thick layer of claystone that acts as an impervious natural barrier, restricting water from flowing between the Clematis Sandstone and Betts Creek beds.

For this reason, the water source for the Doongmabulla Springs (the Clematis Sandstone) is naturally separated from the water associated with mining (Betts Creek beds).

This is similar to pouring water in a container that sits in a sink of water. The water inside the container does not mix with the water in the sink, remaining separate.

These facts were provided as evidence to the Queensland Land Court. The Court reaffirmed that the Rewan Formation will be effective in protecting the Doongmabulla Springs from mining activity on the Carmichael Mine site.



*The Rewan Formation acts like a container sitting on top of water. It separates the Springs' water source (Clematis Sandstone) from the mine.*

# Protection and monitoring

Protecting the Springs' ecological value is a priority for Adani Mining.

The Groundwater Management and Monitoring Plan (GMMP) for the Carmichael Mine is strictly regulated under a framework of approvals, backed by six years of scientific environmental assessments.

The Groundwater Dependent Ecosystem Management Plan (GDEMP) is an important document that is linked to the GMMP. It describes the monitoring and management activities, and any approved impacts to groundwater dependent springs and plants in the nearby Carmichael Mine site.

This GDEMP has been through 11 rounds of assessments with the Australian and Queensland Governments over two years. These management plans have been approved by the Australian Government and are now being finalised by the Queensland Government.

## Environmental approvals for the Carmichael Mine

Adani Mining has received the relevant Australian and Queensland Government approvals to ensure the Springs will be protected from mining activity.

### 2015

Federal Environment Minister granted approval on the Carmichael Mine and Rail Project under national environment law (subject to 36 strict conditions).

Part of the approval conditions included strict monitoring of groundwater and 'triggers to take action' to protect the Doongmabulla Springs.

The approval was granted following a comprehensive Environmental Impact Statement process under Australian and Queensland legislation.

### 2016

Adani Mining submitted the Groundwater Dependent Ecosystem Management Plan to the Queensland Government to commence the review process.

### 2016

Carmichael Mine and Rail Project Environmental Authority granted. This approval gives Adani Mining the authority to operate the mine and outlines the environmental conditions under which Adani Mining can operate.

### 2018

Management plans related to project conditions were assessed and reviewed by CSIRO and Geoscience Australia.

### 2019

Australian Govenment approved water management plans. Queensland Government finalising plans.

## Approvals and legislation

The GDEMP has progressed through a rigorous legislation review:

- *Environment Protection and Biodiversity Conservation Act 1999*
- *Environmental Offsets Act 2014*
- *Environmental Protection Act 1994*
- *Environmental Protection Regulation 2008*
- *Fisheries Act 1994*
- *Nature Conservation Act 1992*
- *Vegetation Management Act 1999.*

Just like every other Australian mine, the Carmichael Mine is strictly regulated to ensure it uses water safely and responsibly.

The water source for the Carmichael Mine, and when and how much is used, is all detailed in the conditions and regulations set by the Australian and Queensland Governments. These conditions and limits have been set after comprehensive scientific assessments were completed as part of the approval processes for the mine.

Adani Mining must also monitor and report on its activities to ensure the way we use water is sustainable.

We will act in accordance with the regulatory conditions placed on our activities.

## Protection and monitoring

**The Groundwater Dependent Ecosystem Management Plan (GDEMP) outlines how Adani Mining will meet the four core regulatory conditions to protect the Springs:**

Water levels at the Springs cannot drop more than 20cm

Monitoring systems must be in place to identify early warning triggers

Identify and implement any corrective measures if early warning triggers exceed approved limits

Undertake a research program on the Rewan Formation to further help limit the impacts from mining

*The Doongmabulla Springs, September 2018*

## Monitoring and reporting

### Monitoring system

100+ monitoring bores will be established across the mining site to observe underground water levels.

### Reporting to government regulators

Adani Mining will report to Australian and Queensland Government regulators on underground water levels and water management activities.

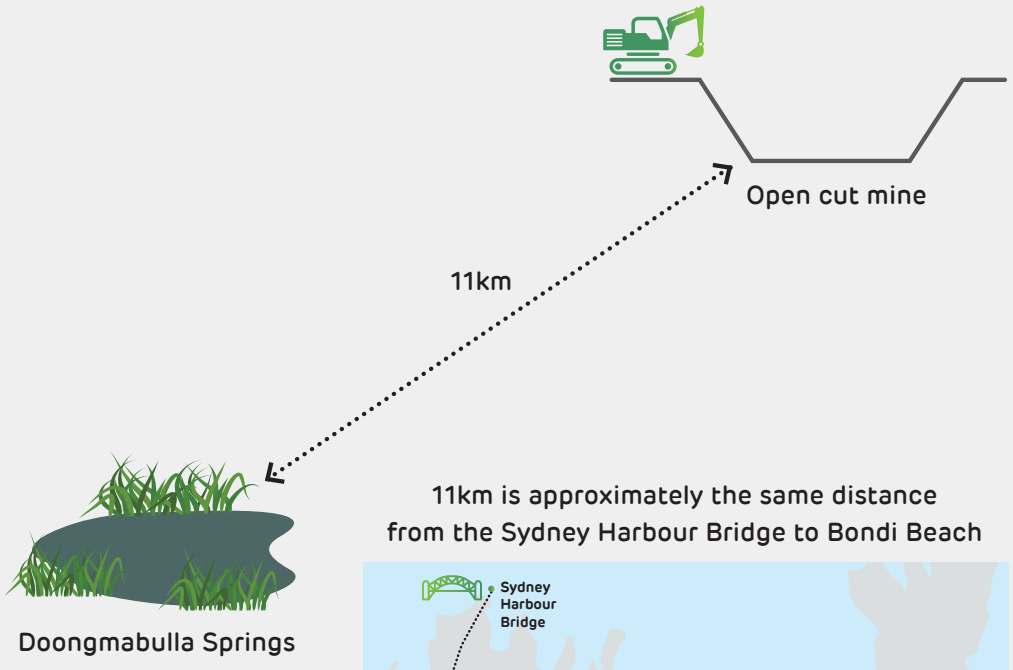
### Early warning triggers

Early warning triggers will be alerted if there are unforeseen impacts outside the regulatory conditions.

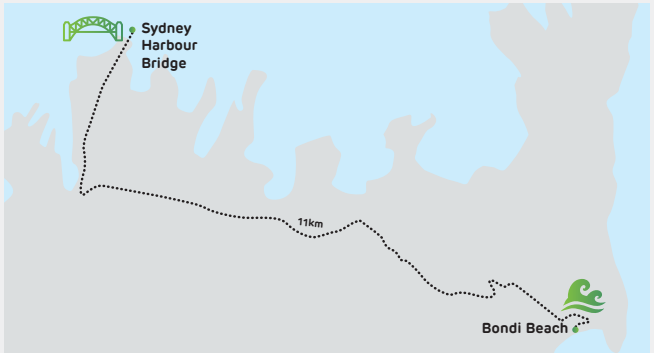
### Implement corrective measures

If early warning triggers are exceeded, Adani Mining will identify and implement corrective measures to ensure approved limits are not exceeded.

**The Doongmabulla Springs are more than 11km from mining activities and plans are in place to protect their ecological value.**




11km is approximately the same distance from the Sydney Harbour Bridge to Bondi Beach




**Distance calculated by driving route on Google Maps*