There is now nothing standing between Indian mining giant Adani and the coal buried in Queensland's Galilee Basin.

By approving the Adani's groundwater management plan on June 13, the Queensland government has given the final green light to the company's controversial Carmichael coal mine.

What did the Queensland government just approve?

The Queensland Department of Environment and Science (DES) approved the project's Groundwater Dependent Ecosystem Management Plan, which had previously won federal government approval.

This plan outlines Adani's proposed strategies to protect ecosystems that depend on groundwater, such as the Doongmabulla Springs wetland, which some experts have warned could be destroyed by the project. The plan's approval at a state level removes the final legislative hurdle standing in the mine's way.

Read more: ***Unpacking the flaws in Adani's water management plan***

Didn't the federal government suffer a legal setback this week relating to the mine? Why is the mine still clear to proceed?

On June 12, in response to a legal challenge by the Australian Conservation Foundation, the

federal government conceded in the federal court that it failed to properly consider public submissions in passing judgement on Adani's North Galilee Water Scheme
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This scheme concerns Adani's plans for taking water from the Suttor River to the east of the mine, which will be required for mining operations.

The federal government will now need to reappraise this proposal. But the approval to take river water does not impact Adani's ability to start mine construction.

Has Adani made significant changes to its groundwater plan in light of scientific criticism?

In February 2019, CSIRO and Geoscience Australia advised the Queensland government that they did not consider Adani's groundwater plan adequate for assessing the risk to local springs. They recommended more research drilling, monitoring and analysis, to better understand the source aquifer for the springs.

On June 7, CSIRO and Geoscience Australia responded to a series of questions from the Queensland government. They effectively reiterated their earlier concerns, including that Adani's groundwater model is not fit for the purpose of assessing the mine's likely impacts to the springs.

Among a raft of suggested changes to the groundwater plan, they recommended that Adani make firmer commitments to protecting the springs. However, Adani has not strengthened this part of the plan, and actions required to address impacts to the springs remain vague.

Adani has made some changes to the investigations it is required to complete within one to two years. But there appears to be no new scientific work or findings in the most recent version of the groundwater plan to address scientific uncertainties or flaws in the modelling, as pointed out by CSIRO, Geoscience Australia and others .

Does Adani know where the Doongmabulla Springs water comes from?

No. Adani and the Queensland government seem relatively confident that the source aquifer for the springs is a geological unit called the Clematis Sandstone . But the Queensland government acknowledges that some uncertainty remains. The CSIRO and Geoscience Australia advice makes clear the springs could in fact flow from multiple sources, in agreement with a consortium of other experts .
Adani has been asked to determine this during the first two years of the mine's operation.

So have the scientific concerns been satisfied or not?

The final groundwater plan is based on science that has been shown to be questionable and containing crucial errors and data gaps, as indicated in the CSIRO/Geoscience Australia reviews in both February and June 2019. The plan also fails to consider key scientific issues that we raised in collaboration with colleagues from other universities. The shortcomings in the science raised by a range of scientists from multiple universities and agencies will therefore remain unaddressed until after mining activity begins, risking irreversible harm to the Doongmabulla Springs.

We believe that uncertainties in the future groundwater impacts from the mine are high, but could have been addressed if Adani had acted upon the advice it has repeatedly received over the past six years.

Read more: ***Adani's finch plan is approved, just weeks after being sent back to the drawing board***

After so many government approvals processes, court rulings, and legal challenges, does Adani truly have permission to start digging now?

Yes. Adani's excavations will mark the start of a highly uncertain experiment into the effects of mega-scale disturbance to a natural groundwater flow system and the ecosystems that depend on it. Time will tell whether the benefits of the mine warrant the impacts it will cause.

Read more: ***If the Adani mine gets built, it will be thanks to politicians, on two continents***

Adrian Werner has previously received funding from the Environmental Defenders Office (Qld) to serve as an expert witness in the Queensland Land Court case: "Adani Mining Pty Ltd v Land Services of Coast and Country Inc & Ors (2015) QLC 48".

Matthew Currell does not work for, consult, own shares in or receive funding from any company or organisation that would benefit from this article, and has disclosed no relevant affiliations beyond their academic appointment.

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Read more http://theconversation.com/adani-is-cleared-to-start-digging-its-coal-mine-six-key-questions-answered-118760