

Date : 12/06/2019 3:46:04 PM

From : "LOWE Trinity"

To : "WELLS Melissa"

Cc : "DLO DES" , "MERRICK Jamie" , "Hannah Jackson" , "ELLWOOD Dean" , "LAWRENCE Rob" , "BROWN Glen" , "LOVEDAY Chris"

Subject : Adani - actions please

Attachment : Adani_Script CRT 5June 2019 V3.docx;image001.png;image003.png;

Hi Melissa

It's been suggested the script should sit with your team for update to ensure consistency with the other information you are preparing including draft media statements and Q&A's etc.

I am currently in discussions with CRT about extra resourcing for the phones tomorrow afternoon and all day Friday.

If there is anything the ODDG can do to assist, please let me know.

Thanks & Cheers

Trin



Trinity Lowe

Executive Officer

Office of the Deputy Director General

Environmental Services and Regulation Division

Department of Environment and Heritage Protection

P 07 3330 5812

Level 7 400 George St Brisbane

Published on DES Disclosure Log
RTI Act 2009

SCRIPT: ADANI – CARMICHAEL COAL MINE – GROUNDWATER DEPENDENT ECOSYSTEM MANAGEMENT PLAN AND BLACK-THROATED FINCH MANAGEMENT PLAN

Status Adani State Government Approvals:

- There is one outstanding plan requiring departmental approval before significant mining activities can commence at the Carmichael Coal Mine site that being the Groundwater Dependent Ecosystem Management Plan (GDEMP).
- **On 31 May 2019, DES approved the Black-throated Finch Management Plan.**

Black-throated Finch Management Plan (BTFMP)

- The Commonwealth approved a BTFMP for the project in December 2018.
- On 31 May 2019 DES approved a later, updated version of that plan (version 8a May 2019).
- As part of their Environmental Authority, Adani is required to publish a copy of the DES approved BTFMP on their website.
- You can access a copy of the DES approved BTFMP here:
- https://www.adaniaustralia.com/-/media/Project/Australia/Our-Projects--Businesses/mine-environment-reporting/BTF-Management-Plan_v8a-FINAL-28May2019.pdf?la=en&hash=D4C8EBBFB222B5FF28A61321F1A2078B
- Please note that the Adani web site also has the Commonwealth approved BTFMP (Dec 2018) – callers should be advised about the two versions.
- BTFMP details the management, mitigation measures and monitoring to minimise impacts to the endangered Black-throated Finch.
- Because the location of the Carmichael Coal Mine site hosts the most significant known population of the Black-throated Finch in Australia, DES engaged an independent expert panel to review the Plan.
- **The independent expert panel review** (Wintle Report) on the Black-throated Finch Management Plan (BTFMP) is not a document available on the public register under the *Environmental Protection Act 1994*. However, the report would be subject to Right to Information provisions and may be accessible through that process.

Groundwater Dependent Ecosystem Management Plan (GDEMP)

- DES is currently assessing a Groundwater Dependant Ecosystem Management Plan for the proposed mine.
- The Commonwealth Department of the Environment and Energy had engaged the CSIRO and Geoscience Australia to undertake an independent scientific review of the GDEMP and DES received a copy of the review on 9 April 2019.
- DES will assess whether the GDEMP meets the EA requirements, and advise Adani if further information or changes are required.
- DES will make a decision on the GDEMP by 13 June 2019.

State Approval

- The Queensland Coordinator-General approved the Environmental Impact Statement (EIS) for the project in 2014. The development of the BTFMP and GDEMP have been required since then by conditions of the mine's Environmental Authority.

Commonwealth approval

- The Commonwealth Department of the Environment and Energy (DoEE) approved the BTFMP on 18 December 2018 and the GDEMP on 9 April 2019.

Financial Assurance

- DES currently holds the total amount required amount \$15,824,063.00 in financial assurance for Carmichael Coal Mine.

Published on DES Disclosure Log
RTI Act 2009

Date : 31/05/2019 4:00:53 PM

From : "LOWE Trinity"

To : "Hannah Jackson"

Cc : "MACGROARTY Robynne" , "ELLWOOD Dean" , "MONKIVITCH James" , "BROWN Glen" , "LOVEDAY Chris" , "MERRICK Jamie" , "TRACEY Alena"

Subject : Adani Calls

Attachment : Adani_Script CRT 31 May 2019 (002).docx;image001.png;image003.png;

Good Afternoon Hannah

Please see the attached script that has been provided to the Community Response Team (CRT).

Calls can be transferred to our internal bypass number until 5:00pm (this is an automatic computer timed lock out number – 3330 5280.

After 5:00pm the Pollution Hotline number can be given which is 1300 130 372 – Option 2 where a message can be left for a call back from the department on Monday.

Please let me know if there is anything else you need.

Thanks & Cheers

Trinity



Trinity Lowe
Executive Officer
Office of the Deputy Director General
Environmental Services and Regulation Division
Department of Environment and Heritage Protection

P 07 3330 5812
Level 7 400 George St Brisbane

Published on DES Disclosure Log
RTI Act 2009

SCRIPT: ADANI – CARMICHAEL COAL MINE – GROUNDWATER DEPENDENT ECOSYSTEM MANAGEMENT PLAN AND BLACK-THROATED FINCH MANAGEMENT PLAN

Status Adani State Government Approvals:

- As at 31 May 2019, there is one outstanding plan requiring departmental approval before significant mining activities can commence at the Carmichael Coal Mine site that being the Groundwater Dependent Ecosystem Management Plan (GDEMP).
- **On 31 May 2019, DES approved the Black Throated Finch Management Plan.**
- As part of their Environmental Authority, Adani is required to publish a copy of the BTFMP within 10 business days on their website.

Black-throated Finch Management Plan (BTFMP)

- DES approved the BTFMP on 31 May 2019
- The BTFMP details the management, mitigation measures and monitoring to minimise impacts to the endangered Black-throated Finch.
- Because the location of the Carmichael Coal Mine site hosts the most significant known population of the Black-throated Finch in Australia, DES engaged an independent expert panel to review the Plan.
- Review process:
 - The review was finalised and the final report was provided to Adani on 18 February 2019 for their consideration. Adani provided submissions to DES on 15 March and 2 April 2019 about the review.
 - On 2 May 2019, DES advised Adani that the BTFMP did not meet the EA requirements and that it required amendments.
 - On 24 May 2019, DES reached agreement with Adani with respect to the requirements of the BTFMP.
 - On 28 May 2019, Adani submitted its most recent version of the plan addressing the required amendments.
- On 31 May 2019, DES approved the BTFMP.
- Note: The independent expert panel review report (Wintle Report) on the Black-throated Finch Management Plan (BTFMP) is not a document available on the public register under the *Environmental Protection Act 1994*. However, the report would be subject to Right to Information provisions and may be accessible through that process. DES is currently determining whether the report is able to be published on the DES website.

Groundwater Dependent Ecosystem Management Plan (GDEMP)

- DES is currently assessing a Groundwater Dependant Ecosystem Monitoring Plan for the proposed mine.
- The GDEMP must identify the source aquifer of the Doongmabulla Springs Complex and methodology used to determine the source.
- The Commonwealth Department of the Environment and Energy had engaged the CSIRO and Geoscience Australia to undertake an independent scientific review of the GDEMP and DES received a copy of the review on 9 April 2019.
- DES will assess whether the GDEMP meets the EA requirements, and advise Adani if further information or changes are required.

- DES will make a decision on the GDEMP by 13 June 2019.

State Approval

- The Queensland Coordinator-General approved the Environmental Impact Statement for the project in 2014. The development of the BTFMP and GDEMP have been required since then by conditions of the mine's Environmental Authority.

Commonwealth approval

- The Commonwealth Department of the Environment and Energy (DoEE) approved the BTFMP on 18 December 2018 and the GDEMP on 9 April 2019.

Financial Assurance

- DES currently holds the full required amount \$15,824,063.00 in financial assurance for Carmichael Coal Mine.

Published on DES Disclosure Log
RTI Act 2009

Date : 13/06/2019 9:43:32 AM

From : "WELLS Melissa"

To : "MERRICK Jamie"

Subject : Comparison table

Attachment : GDEMP v12a versus CSIRO recommendations and Flinders U research 12062019.docx;image001.png;image003.png;

Jamie comparison table FYI



Melissa Wells

Executive Director

Coal and Central Qld Compliance

Department of Environment and Science

P 07 4987 9343

99 Hospital Road, Emerald QLD 4720

PO Box 3028, Emerald QLD 4720

Published on DES Disclosure Log
RTI Act 2009

Summary - GDEMP v12a strengthened by:

- CSIRO/GA advice states *'There is always uncertainty in geological and groundwater conceptual models because we do not have, and never will have, complete knowledge of the sub-surface. The creation of a numerical model, which is a simplification of the biophysical world and processes, compounds this uncertainty.'* While Adani have identified the Clematis Sandstone as the principal/main source aquifer for the Doongmabulla Springs Complex, Adani commit to systematically consider all sources of uncertainty as they pertain to each source aquifer prior to the model re-run including modelling limitations and document these considerations.
- Adani has committed to doing additional work to improve the understanding of the springs source aquifers, particularly for Doongmabulla springs complex. This additional work includes:
 - hydrogeochemical analysis of water sampled from groundwater and spring samples from different spring groups within each spring complex
 - Isotopic analysis including noble, radioactive gases and strontium isotopes where isotopic analysis is not sufficient to reduce uncertainty of the source aquifer of the Doongmabulla Springs Complex.
 - Acquire, test and examine new core samples from new bores to attain a better understanding of hydraulic properties and provide detailed geological mapping
 - Incorporate air-borne electro-magnetic modelling undertaken by Geoscience Australia to improve hydrogeological understanding of the area.
- Adani has committed to installing a bore to below the Rewan in the vicinity of the Doongmabulla Springs Complex, with the Permian Betts Creek Beds (which includes the Bandanna and Colinlea).
- Adani has committed to using a Dunda Beds bore in the vicinity of the Carmichael River as an early warning drawdown trigger for groundwater drawdown monitoring to the Carmichael River.
- All inconsistencies within the plan and inconsistencies with the Groundwater Management and Monitoring Program have been addressed.

CSIRO/GA Recommendation 7 June 2019	How Adani Addressed in GDEMP v12a 12 June 2019
<p>1. Adani must make a commitment to undertake and complete the following additional work progressively to improve the understanding of the spring source aquifers prior to the model re-run.</p> <ul style="list-style-type: none">• Hydrogeochemical analysis of samples from different springs groups within each spring complex to provide	<p>Adani commits to undertake and complete studies and additional work sequentially over the first two years for the purpose of refining the groundwater numerical model and the hydrogeological conceptualisation as required by EA Condition E6.</p> <p>These additional works include:</p> <ul style="list-style-type: none">• Hydrogeochemical analysis across the Doongmabulla springs-complex from groundwater and surface water samples. This includes

<p>better understanding and discern the source aquifers of the Doongmabulla Springs Complex. Bulk hydrochemistry must be completed within 3 months of approval and tracer analyses within 12 months. Hydrogeochemical analyses must include but not limited to:</p> <ol style="list-style-type: none"> noble gases - e.g. helium to identify any deeper groundwater contributes to the springs (id of source aquifers); radioactive noble gases to identify source aquifer of recent (decades) to intermediate (centuries) and strontium isotopes – to identify the source rock of a particular groundwater system. <ul style="list-style-type: none"> Incorporation of the use of isotope and ageing tracers in the above hydrogeochemical analysis; A comprehensive review of groundwater level and quality data from relevant aquifers including data from new proposed nested bores in the vicinity of Doongmabulla Springs Complex; Undertake hydrochemistry interpretation from surface and spring samples to provide more detailed hydrogeology system understanding; Detailed geological mapping including cores from bores drilled in the vicinity of Doongmabulla Springs Complex and facies modelling to better inform hydraulic connectivity within and across all aquifers; At new monitoring locations, use the opportunity to acquire drill cores to better understand the intact hydrostratigraphy being drilled through to inform the conceptual model. Conduct test on core samples to assess and quantify hydraulic properties being implemented in the numerical model. Completion of core analysis within 2 years. 	<p>isotopic analysis and will also include noble and radioactive gases and strontium isotopes where isotopic analysis is not sufficient to significantly improve understanding and reduce uncertainty in relation to source aquifer(s) of the Doongmabulla Springs-complex</p> <ul style="list-style-type: none"> Acquiring, testing and examining any new cores samples generated through new bore holes (dependent on the integrity of these samples) As part of the new nested bores committed to be drilled in the GMMP (Section 7), Adani will install one hole below the Rewan in the vicinity of the Doongmabulla Springs-Complex, within the Permian Betts Creek Beds (which includes the Bandanna and Colinlea). Baseline research on GDEs is provided in sections 6.1, 7.1, 8.1 and 9.1. Future research activities on the wetland composition of the Doongmabulla and Mellaluka Springs-complexes will be undertaken through the GABSRP, summarised in section 5.9.2. Baseline research on source aquifers is presented in sections 6.2, 7.2, 8.4 and 9.4. Future research is noted in the GMMP (Section 1.10) and in the RFCRP and GABSRP. The GMMP (Section 5 and Table 42) provides details on the natural variation of groundwater level and pressure and how this will be monitored over time against the predicted groundwater levels. The ecological response to groundwater level fluctuation is a key component of the GABSRP (Section 5.9.2) <p>Within two years of commencement of mining activities, the groundwater model is to be reviewed and re-run with the subsequent provision of updated hydrogeological conceptualisation/s and reporting that details the information that was or was not used for this exercise, the supporting reasons for that approach, and detailed findings of this model re-run and revision of the conceptual understanding of the source aquifer(s) and how these will in turn inform the revised GDEMP and GMMP. A key outcome of this exercise is to refine/improve the understanding and decrease the uncertainty surrounding source aquifer/s for each GDE.</p>
---	---

<ul style="list-style-type: none"> • Incorporation of the airborne electro-magnetic (AEM) modelling recently completed by Geoscience Australia (and available to Adani by June 2020). Adani must undertake specific interpretation and analysis of AEM data. The analysis should be conducted with consideration of relevant site-specific data and alternative conceptualisations to be tested to ensure the interpretation derives appropriate conclusions regarding hydrogeology at the scale of investigation of interest to Adani. Adani's AEM investigation should articulate how the objectives of the AEM data analysis will seek to improve hydrogeological knowledge to ensure the interpretation yields desired outcomes; • Revision of the conceptual understanding of the source aquifer(s) for Doongmabulla Springs Complex and the groundwater system based on information collected from the above for incorporation into the groundwater model review (re-run) • Undertake measures identified by the Queensland Herbarium in the Lake Eyre Basin Springs Assessment project for the Doongmabulla Springs Complex including seismic surveys within 12 months. • Optimise the spatial distribution of monitoring bores, including nested or co-located bores intersecting different aquifer units, to enable improved future analysis of water level and hydrochemistry data. 	
<p>2. To address the level of uncertainty of the source aquifer(s) for all the Groundwater Dependent Ecosystems and to provide transparency and a better appreciation of the limitations and opportunities for further data collection or modelling, the</p>	<p>The GMMP provide details under section 7, commitment 24 on matters to be included in that model re-run. Specifically, this will include:</p> <ul style="list-style-type: none"> • A comprehensive review of groundwater level and quality data from across the monitoring network

<p>department recommends that Adani make the following commitments:</p> <ol style="list-style-type: none"> Adani make a commitment to systematically address all the sources of uncertainty and other modelling limitations identified by the CSIRO/GA review when the groundwater model is re-run and reviewed as required by EA condition E6 to be conducted within 2 years of commencement of any mining activities associated with the box cut excavation. Adani make a commitment to sample the entire plausible parameter space and make predictions probabilistically by spreading attention across refining distributions of the most sensitive model parameters and efficient stochastic modelling (Turnadge et al. 2018). Adani make a commitment to define scale dependent parameters such as hydraulic conductivity at the appropriate spatial scale i.e. commensurate with the size of the numerical grid cell of the groundwater model. Adani make a commitment to run a sufficient range of plausible scenarios that encompass the range of identified uncertainties. 	<ul style="list-style-type: none"> Hydrochemistry analysis from groundwater and spring samples from different spring groups within each spring complex as conducted through the additional studies Inputs from research programs such as the RFCRP and the GABSRP Attain a better understanding of the intact hydrostratigraphy to assess and quantify hydraulic properties from geological information gathered from new bores and core samples, geological mapping and research studies Incorporate Geoscience Australia airborne Electro-magnetic modelling Review of groundwater modelling network and locations for ongoing optimisation. Adani commits to systematically consider the sources of uncertainty as they pertain to each source aquifer and modelling limitations and document this consideration Inclusion of all relevant parameters in a range of modelled scenarios that encompass the identified uncertainties Selection of appropriate model spatial scale to account for local and regional parameters including scale dependent parameters such as hydraulic conductivity Uncertainty analysis and estimation in accordance with relevant guidelines Revision of groundwater drawdown rates for continuing appropriateness Revision of early warning triggers for continuing appropriateness <p>At the second model re-run (7 years after commencement of box cut), Adani will specifically review both the hydrogeological conceptualisation arising from model review and hydrochemistry analysis and seismic information pertaining to the impacts of underground mining. This mining activity is not scheduled to</p>
--	--

	<p>commence until year 10, and a number of precursors are required before it commences.</p> <p>If this review determines that additional seismic studies are required to determine the source aquifers of the Doongmabulla Springs Complex, these activities will be completed and that information included into revised modelling. Underground mining will not commence until these actions are completed and only if predicted impacts are consistent with approved impacts. Likewise, if the hydrogeological conceptualisation differs from that of the approved project, approval must be sought prior to relevant impact causing activities, if predicted impacts also differ from those approved.</p>
<p>To address the above EA requirements, the department recommends groundwater drawdown triggers are set for all monitoring locations for which water level thresholds are defined and use a timeframe that is comparable with routine monitoring data assessment and agreed groundwater model review periods. The bore locations must consider the localised changes that may impact on groundwater dependent ecosystems and changes to groundwater conditions following planned longwall panel excavation beneath of two of the 3 interim drawdown rate trigger bores.</p> <p>A commitment to install new groundwater drawdown trigger threshold bore to replace those lost to mining/underground mining must be made.</p>	<p>Adani has included groundwater drawdown triggers as indicators in the GDEMP monitoring and management under each relevant GDE Chapter. A cross reference to the relevant tables and sections of the GMMP is included.</p> <p>A new section 5.9.2 GAB Springs Research Plan will be included that provides detail of research with regards to GDE pressure response.</p> <p>New Commitment in section 8.7.4 Where interim drawdown rate trigger bores are removed or impacted due to underground mining, these will be replaced.</p>
<ul style="list-style-type: none"> • Address all inconsistent descriptions and reporting of groundwater drawdown trigger thresholds between the GDEMP and GMMP. • Address inconsistencies in the level of commitment for corrective actions for each GDE that are applied when groundwater drawdown trigger levels are exceeded. • Address inconsistencies between the GDEMP and GMMP with regard to adaptive management measures and commitments. 	<p>All inconsistencies of descriptions and reporting of groundwater drawdown trigger thresholds between the GDEMP and GMMP have been addressed.</p> <p>All inconsistencies in the level of commitment for corrective actions for each GDE applied when groundwater drawdown trigger level are exceeded have been addressed.</p>

	All inconsistencies between the GDEMP and GMMP with regard to adaptive management measures and commitments have been addressed.
Flinders University Scientists concerns 5 June 2019	How Adani Addressed in GDEMP v12a
<p>The scientists have provided research findings that suggest that there is an overlap between the hydrochemical signatures of the water types of the regional aquifers and the Doongmabulla Springs Complex. Additionally their analysis of the water samples from several springs in the Doongmabulla Springs Complex suggests they are statistically more consistent with waters from the Permian aquifers than those of the Triassic aquifers.</p> <p>Therefore, the Permian aquifers including the Colinlea cannot be ruled out as sources of water to the Doongmabulla Springs Complex.</p>	<p>At the second model re-run (7 years after commencement of box cut), Adani will specifically review both the hydrogeological conceptualisation arising from model review and hydrochemistry analysis and seismic information pertaining to the impacts of underground mining. This mining activity is not scheduled to commence until year 10, and a number of precursors are required before it commences.</p> <p>If this review determines that additional seismic studies are required to determine the source aquifers of the Doongmabulla Springs Complex, these activities will be completed and that information included into revised modelling. Underground mining will not commence until these actions are completed and only if predicted impacts are consistent with approved impacts. Likewise, if the hydrogeological conceptualisation differs from that of the approved project, approval must be sought prior to relevant impact causing activities, if predicted impacts also differ from those approved. Further, if any groundwater model re-run, or bore monitoring results, determine:</p> <ul style="list-style-type: none"> • unauthorised impacts may or have occurred to the Doongmabulla Springs-complex from commencement of dewatering operations into the long term post closure; or • the unlikely scenario that the Permian is an additional source to the Doongmabulla Springs-complex <p>the following mitigation measures and corrective actions will be put in place:</p> <ul style="list-style-type: none"> • Limiting thickness of extraction of coal seams and reviewing extraction of multiple coal seams for the underground longwall mining

	<p>in order to minimise drawdown impacts to Doongmabulla Springs-complex</p> <ul style="list-style-type: none"> • Freezing mine development at current levels until the completion of investigations and assessments which demonstrate and conclude that further development will not exceed approved impacts • Assess the water balance / budgets and evaluate losses at the Doongmabulla Springs-complex, in the context of the Permian being a possible additional source of groundwater.
--	--

Published on DES Disclosure
RTI Act 2009

Date : 17/05/2019 3:18:06 PM

From : s.73

To : "MERRICK Jamie"

Cc : "WELLS Melissa" , "ELLWOOD Dean"

Subject : Correspondence for DES

Attachment : DES re Groundwater Management Plan - 20190517.pdf;2019 05 16 Application RTI to DES re GMMP and GDEMP (Lodged).pdf;image146889.jpg;

Jamie,

Please find attached correspondence in relation to the GDEMP.

Thanks

s.73

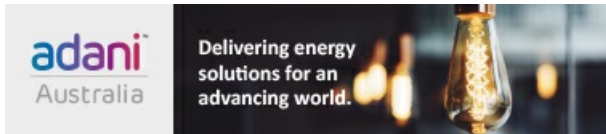
E s.73 adani.com.au

P office: +61 7 3223 4800|direct: s.73

A Level 25, 10 Eagle Street, Brisbane, QLD, 4000

P GPO Box 2569, Brisbane, QLD, 4001

W adaniaustralia.com



If you receive this message by mistake please tell me, do not use it and remove both messages from your system.
Privilege, confidentiality and copyright associated with this email is not waived.

17 May 2019

Private & Confidential

Mr Jamie Merrick
Director-General
Department of Environment and Science
Queensland Government
400 George Street
Brisbane QLD 4000

By email: jamie.merrick@des.qld.gov.au

Dear Jamie

Adani Mining Pty Ltd – Groundwater Management Plans

We refer to our previous correspondence in relation to groundwater management plans, in particular the Groundwater Dependent Ecosystems Management Plan (**GDEMP**) and the Groundwater Monitoring and Management Plan (**GMMP**) for Adani Mining Pty Ltd (**Adani**), and in particular our letter to you more than a month ago on 12 April 2019 which sought clarity from you on the process and timing for approval of those plans. In the most recent email from your Ms Melissa Wells at 5:15pm on 16 May 2019, we have been advised by the Department of Environment and Science (**DES**) that:

"...the CSIRO/GA advice is to provide clarification to the department about its original review in light of the revised GDEMP. Adani will be provided with a copy of the CSIRO/GA advice once it becomes available..."

This latest correspondence from Ms Wells was in response to our request where we had once again sought that DES provide us with the questions that DES has put to CSIRO / GA. We understand that these questions form the basis for a new contract being entered into between DES and CSIRO / GA. The latest email from DES is, at best, unresponsive and we ask:

Question 1: Can the DES please provide us with the questions that have been asked of CSIRO / GA?

It would seem fairer and simpler if you just provided us with these basic details so we have a proper opportunity to understand and engage in the process.

However, given the apparent unwillingness to meet this very simple request we have also submitted a formal Right to Information application (copy attached). As that RTI application exclusively relates to ourselves, DES and then to CSIRO / GA (who seem able to respond very rapidly to such requests) it is our expectation that this application will be dealt with as a priority.

Adani Mining Pty Ltd
Level 25
10 Eagle Street, Brisbane QLD 4000
GPO Box 2569, Brisbane QLD 4001
Australia

Tel +61 7 3223 4800
www.adaniaustralia.com

Question 2: When will you receive the advice from CSIRO / GA?

Separately, with respect to the latest correspondence from Ms Wells, there is a reference to advice from CSIRO / GA and its provision to us when it becomes available. We would expect it is a very short time frame given what seems to be, by implication, a strictly limited scope and we wish to be prepared to respond once it is available.

We are only seeking clarity as to process and timing and would appreciate the ability to be able to fully engage with the DES with a proper understanding of what is happening.

We remain committed to working collaboratively to finalise these plans so that we can get on with the task of delivering thousands of jobs for Queenslanders.

Yours sincerely

s.73

s.73

Attachment 2019 05 16 Application RTI to DES re GMMP and GDEMP (Lodged).pdf

cc Ms Mellissa Wells Melissa.Wells@des.qld.gov.au
Mr Dean Ellwood Dean.Ellwood@des.qld.gov.au

Date : 8/06/2019 5:54:54 PM

From : "WELLS Melissa"

To : "MERRICK Jamie" , "ELLWOOD Dean"

Subject : DES comments on Adani response to GDEMP recommendations 8 June 2019

Attachment : Adani Proposed Response to DES GACSIRO 080619v2 JM.docx;

Jamie and Dean,

Please find attached our responses in track changes. Subject to your views I can provide this document back to Adani either tonight (or in the morning) noting that these comments are based on the document provided and today's discussion and subject to reviewing the amendments in the documents in their entirety (including cross reference of inconsistencies).

Thanks,

Melissa.

Published on DES Disclosure Log
RTI Act 2009

In the interests of being pragmatic and seeing how Adani may be in a position to work with the Department looking forward, below include responses to each of the reasons that DES provided to Adani in the document issued 31 May 2019 regarding the Groundwater Dependent Ecosystem Management Plan Version 11b (March 2019).

In providing these responses, Adani maintains that Plan v.7b as submitted to the DES met the requirements of our Environmental Authority EPML01470513 and that it was not deficient in any respect.

Condition wording /reference	Departmental comments	Adani Response	Proposed Changes
The plan must include detailed baseline research to establish the source aquifer(s) for groundwater supply to the GDE	Requirements prior to model re-run:		
	1. Adani must make a commitment to undertake and complete the following additional work progressively to improve the understanding of the spring source aquifers prior to the 2 year model re-run.	See proposed wording to address this.	For inclusion in new Section 5.9 "Additional studies, Research and Model Re-run" Adani commits to undertake and complete studies and additional work <u>sequentially</u> over the first two years for the purpose of refining the groundwater numerical model and the hydrogeological conceptualisation as required by EA Condition E6.
	<ul style="list-style-type: none"> Hydrogeochemical analysis of samples from different springs groups within each spring complex to provide better understanding and discern the source aquifers of the Doongmabulla Springs Complex. Bulk hydrochemistry must be completed within 3 months of approval and tracer analyses within 12 months. Hydrogeochemical analyses must include but not limited to: <ul style="list-style-type: none"> noble gases - e.g. helium to identify any deeper groundwater contributes to the springs (id of source aquifers); radioactive noble gases to identify source aquifer of recent (decades) to intermediate (centuries) and strontium isotopes – to identify the source rock of a particular groundwater system. Incorporation of the use of isotope and ageing tracers in the above hydrogeochemical analysis; 	See proposed wording to address this.	<p>To cover all these elements, the following new text to be included:</p> <p>5.9 Additional Studies, Research and Model Re-run Adani commits to undertake and complete studies and additional work over the first two years for the purpose of refining the groundwater numerical model and the hydrogeological conceptualisation as required by EA Condition E6.</p> <p>These additional works include:</p> <ul style="list-style-type: none"> Adani will undertake hydrogeochemical analysis across the Doongmabulla springs-complex from groundwater and surface water samples. This includes isotopic analysis and may also include noble and radioactive gases and strontium isotopes where isotopic analysis is insufficient. Acquiring, testing and examining any new cores samples generated through new bore holes (dependent on the integrity of these samples) <p>Baseline research on GDE's is provided in Section 6.1, 7.1, 8.1 and 9.1. Future research activities on the wetland composition of the Doongmabulla and Mellaluka Springs-complexes will be undertaken through the GAB Springs Research Plan, summarised in Section 5.9.2. Baseline research on source aquifers is presented in Sections 6.2, 7.2, 8.4 and 9.4. Future research is noted in the GMMP (Section</p>
	<ul style="list-style-type: none"> A comprehensive review of groundwater level and quality data from relevant aquifers including data from new proposed nested bores in the vicinity of Doongmabulla Springs Complex; 	See proposed wording to address this.	
	<ul style="list-style-type: none"> Undertake hydrochemistry interpretation from surface and spring samples to provide more detailed hydrogeology system understanding; 	GMMP section 2.2 details the existing hydrogeochemical baseline. Section 4.7.1.1 and 5.4 the hydrochemistry monitoring Section 7 details commitments (18) to undertake isotopic tracers of GW and SW. Hydrochemistry is included in GMMP (see 4.4.1), GDEMP and GABSRP. See proposed wording to address this.	
	<ul style="list-style-type: none"> Detailed geological mapping including cores from bores drilled in the vicinity of Doongmabulla Springs Complex and facies modelling to better inform hydraulic connectivity within and across all aquifers; 	See text for inclusion, also detail summarising the RFRP. See proposed wording to address this.	

In the interests of being pragmatic and seeing how Adani may be in a position to work with the Department looking forward, below include responses to each of the reasons that DES provided to Adani in the document issued 31 May 2019 regarding the Groundwater Dependent Ecosystem Management Plan Version 11b (March 2019).

In providing these responses, Adani maintains that Plan v.7b as submitted to the DES met the requirements of our Environmental Authority EPML01470513 and that it was not deficient in any respect.

Condition wording /reference	Departmental comments	Adani Response	Proposed Changes
	<ul style="list-style-type: none"> At new monitoring locations, use the opportunity to acquire drill cores to better understand the intact hydrostratigraphy being drilled through to inform the conceptual model. Conduct test on core samples to assess and quantify hydraulic properties being implemented in the numerical model. Completion of core analysis within 2 years. 	In the GMMP, commitment is made to collect and include geological information into the model rerun. Further the Rewan research plan includes relevant studies. Adani have provided detailed commitments already in the GMMP (23 and 24) about additional content in the groundwater model rerun, this includes calibration, sensitivity analysis, model guidelines, uncertainty analysis, inclusion of all additional information since the EIS and leading up to the rerun, local parameters for geology, groundwater quality, alternative conceptualisations, GAB and Rewan research findings.	<p>1.10) and tin the Rewan Formation Research Plan and GAB Springs Research Plan. The GMMP (Section 5 and Table 42) provides details on the natural variation of groundwater level and pressure and how this will be monitored over time against the predicted groundwater levels. The ecological response to groundwater level fluctuation is a key component of the GAB Springs Research Plan (Section 5.9.2)</p> <p>Within two years of commencement of mining activities, the ground water model is to be reviewed and re-run with the subsequent provision of updated hydrogeological conceptualisation/s and reporting detailed the information that was or wasn't used for this exercise, the supporting reasons for that approach, and detailed findings of this model re-run and conceptualisation exercise<u>revision of the conceptual understanding of the source aquifer(s)</u> and how this-these will in turn inform a revised GDEMP and GMMP. A key outcome of this exercise is to refine-improve the understanding and decrease the uncertainty surrounding source aquifer/s for each GDE.</p> <p>The GMMP provide details under Section 7 Commitment 24 on matters to be included in that model re-run. Specifically, this exercise will include (not excluding those items in Section 7 Commitment 24):</p> <ul style="list-style-type: none"> Comprehensive review of groundwater level and quality data from across the monitoring network. Hydrochemistry interpretation-analysis from groundwater and spring samples <u>from different spring groups within each spring complex</u> as conducted through the additional studies noted above. Inputs from research programs such as the Rewan Formation Research Program and the GAB Springs Research Program. <u>Geological-attain a better understanding of the intact hydrostratigraphy to assess and quantify hydraulic properties from geological</u> information gathered from new bores and core samples, geological mapping and research studies.
	<ul style="list-style-type: none"> Incorporation of the airborne electro-magnetic (AEM) modelling recently completed by Geoscience Australia (and available to Adani by June 2020). Adani must undertake specific interpretation and analysis of AEM data. The analysis should be conducted with consideration of relevant site-specific data and alternative conceptualisations to be tested to ensure the interpretation derives appropriate conclusions regarding hydrogeology at the scale of investigation of interest to Adani. Adani's AEM investigation should articulate how the objectives of the AEM data analysis will seek to improve hydrogeological knowledge to ensure the interpretation yields desired outcomes; 	Adani have already included in the GMMP a commitment to incorporate GA airborne EM survey data (if and when available) at the 2 year model revision. See proposed wording to address this.	
	<ul style="list-style-type: none"> Revision of the conceptual understanding of the source aquifer(s) for Doongmabulla Springs Complex and the groundwater system based on information collected from the above for incorporation into the groundwater model review (re-run); 	See proposed wording to address this.	
	<ul style="list-style-type: none"> Undertake measures identified by the Queensland Herbarium in the Lake Eyre Basin Springs Assessment project for the Doongmabulla Springs Complex including seismic surveys within 12 months; 	Seismic survey may be undertaken as part of Research, but not specifically at the DSC and not within that timeframe given UG Mining is not scheduled to commence until Year 10, and has triggers prior to commencement. See proposed wording to address this.	
	<ul style="list-style-type: none"> Optimise the spatial distribution of monitoring bores, including nested or co-located bores intersecting different aquifer units, to enable improved future analysis of water level and hydrochemistry data. 	The bore network has been presented in the GMMP with endorsement from CSIRO/GA previously apart from 3 new nested bores. See proposed wording to address this.	

In the interests of being pragmatic and seeing how Adani may be in a position to work with the Department looking forward, below include responses to each of the reasons that DES provided to Adani in the document issued 31 May 2019 regarding the Groundwater Dependent Ecosystem Management Plan Version 11b (March 2019).

In providing these responses, Adani maintains that Plan v.7b as submitted to the DES met the requirements of our Environmental Authority EPML01470513 and that it was not deficient in any respect.

Condition wording /reference	Departmental comments	Adani Response	Proposed Changes
	2. To address the level of uncertainty of the source aquifer(s) for all the Groundwater Dependent Ecosystems and to provide transparency and a better appreciation of the limitations and opportunities for further data collection or modelling, the department recommends that Adani make the following commitments:		<ul style="list-style-type: none"> • <u>incorporate</u> Geoscience Australia <u>airborne</u> Electro-magnetic modelling. • Review of groundwater modelling network and locations for ongoing optimisation. • Adani commits to systematically consider the <u>all</u> sources of uncertainty as they pertain to each source aquifer and modelling limitations • Inclusion of all relevant parameters in a range of modelled scenarios <u>that encompass the identified uncertainties.</u> • Selection of appropriate model <u>spatial</u> scale to account for local and regional parameters such as <u>including scale dependent parameters such as</u> hydraulic conductivity. • Uncertainty analysis and estimation in accordance with relevant guidelines <p>At the second model re-run instance (7 years after commencement of mining activities), Adani will specifically review seismic information pertaining to the impacts of underground mining noting that this mining activity is not scheduled to commence until year 10, and that a number of precursors are required before it commences.</p> <p>If this review determines that additional seismic studies are required <u>to determine the source aquifers of the DSC</u>, these activities will be completed and that information included into revised modelling. Underground mining will not commence until these actions are completed and only if predicted impacts are <u>in</u>consistent with approved impacts.</p> <p><u>NOTE: Two new sections also being included to provide details of the Rewan Formation Research Plan and the GAB Springs Research Plan</u></p>
	<ul style="list-style-type: none"> • Adani make a commitment to systematically address all the sources of uncertainty and other modelling limitations identified by the CSIRO/GA reviews when the groundwater model is re-run and reviewed as required by EA condition E6 (to be conducted within 2 years of commencement of any mining activities associated with the box cut excavation). 	We will meet condition E6 of the EA, as described in the GMMP and commitment 24 of the GMMP. Adani have provided detailed commitments already in the GMMP (23 and 24) about additional content in the groundwater model re-run, this includes calibration, sensitivity analysis, model guidelines, uncertainty analysis, inclusion of all additional information since the EIS and leading up to the re-run, local parameters for geology, groundwater quality, alternative conceptualisations, GAB and Rewan research findings. See proposed wording to address this.	
	<ul style="list-style-type: none"> • For the model re-run, Adani make a commitment to sample the entire plausible parameter space and make predictions probabilistically by spreading attention across refining distributions of the most sensitive model parameters and efficient stochastic modelling (Turnadge et al. 2018). 	Does not reflect the approval of the current model scenario. Adani have provided detailed commitments already in the GMMP (23 and 24) about additional content in the groundwater model re-run, this includes calibration, sensitivity analysis, model guidelines, uncertainty analysis, inclusion of all additional information since the EIS and leading up to the re-run, local parameters for geology, groundwater quality, alternative conceptualisations, GAB and Rewan research findings. See proposed wording to address this.	
	<ul style="list-style-type: none"> • For the model re-run, Adani make a commitment to define scale dependent parameters such as hydraulic conductivity at the appropriate spatial scale i.e. commensurate with the size of the numerical grid cell of the groundwater model. 	Adani have provided detailed commitments already in the GMMP (23 and 24) about additional content in the groundwater model re-run, this includes calibration, sensitivity analysis, model guidelines, uncertainty analysis, inclusion of all additional information since the EIS and leading up to the re-run, local parameters for geology, groundwater quality, alternative conceptualisations, GAB and Rewan research findings. See proposed wording to address this.	

In the interests of being pragmatic and seeing how Adani may be in a position to work with the Department looking forward, below include responses to each of the reasons that DES provided to Adani in the document issued 31 May 2019 regarding the Groundwater Dependent Ecosystem Management Plan Version 11b (March 2019).

In providing these responses, Adani maintains that Plan v.7b as submitted to the DES met the requirements of our Environmental Authority EPML01470513 and that it was not deficient in any respect.

Condition wording /reference	Departmental comments	Adani Response	Proposed Changes
	<ul style="list-style-type: none"> For the model re-run, Adani make a commitment to run a sufficient range of plausible scenarios that encompass the range of identified uncertainties. 	Adani have provided detailed commitments already in the GMMP (23 and 24) about additional content in the groundwater model re-run, this includes calibration, sensitivity analysis, model guidelines, uncertainty analysis, inclusion of all additional information since the EIS and leading up to the re-run, local parameters for geology, groundwater quality, alternative conceptualisations, GAB and Rewan research findings. See proposed wording to address this.	
	<ul style="list-style-type: none"> Adani make a commitment to undertake and include an uncertainty estimation in accordance with the Australian Groundwater Guidelines based on the 2 year re-run. 	Adani have provided detailed commitments already in the GMMP (23 and 24) about additional content in the groundwater model re-run, this includes calibration, sensitivity analysis, model guidelines, uncertainty analysis, inclusion of all additional information since the EIS and leading up to the re-run, local parameters for geology, groundwater quality, alternative conceptualisations, GAB and Rewan research findings. See proposed wording to address this.	
The plan must include detailed baseline research to establish GDE ecosystem pressure response to groundwater level/pressure fluctuation The plan must include a description of the potential impact on each GDE from each project stage including impacts from subsidence, mine dewatering of aquifers, water discharge, hydrological changes and weed and pest infestation Requirements:	<ul style="list-style-type: none"> Groundwater drawdown triggers must be set for all monitoring locations for which water level thresholds are defined and use a timeframe that is comparable with routine monitoring data assessment and agreed groundwater model review periods. 	GA/CSIRO's advice is inconsistent with both the EPBC and EA conditions, and is a repeat of earlier advice with respect to groundwater drawdown thresholds. This was a requirements for DSC bores under the EPBC approval. It is not a requirement under the EA and we recently discussed with DES and they removed this requirement from Adani to do so in a recent workshop (20/6/19). Baseline research relating to pressure response under the GABSRP will be detailed in the GDEMP	Adani has included groundwater drawdown triggers as indicators in the GDEMP monitoring and management under each relevant GDE Chapter. A cross reference to the relevant tables and sections of the GMMP will also be provided. A new section 5.9.2 GAB Springs Research Plan will be included that provides detail of research with regards to GDE pressure response. <u>Provide a commitment that the interim drawdown rate trigger levels will be reviewed at each review - that is 2 years after commencement of box cut and then every 5 years.</u> <u>Provide a commitment to use bore C027P2 for the early detection of groundwater drawdown to the Carmichael River GDE.</u>
	<ul style="list-style-type: none"> The bore locations must consider the localised changes that may impact on groundwater dependent ecosystems and changes to groundwater conditions following planned longwall panel excavation beneath of two of the 3 interim drawdown rate trigger bores. 	Adani have a monitoring network that takes into consideration a range of factors including the removal of bores due to OC and UG mining. This is detailed in the GMMP Figures 29 and 30.	New Commitment in section 8.7.4 Where interim drawdown rate trigger bores are removed or impacted due to underground mining, these will be replaced.
	<ul style="list-style-type: none"> A commitment to install new groundwater drawdown trigger threshold bore to replace those lost to mining/underground mining must be made. 		New Commitment in section 8.7.4 Where interim drawdown rate trigger bores are removed or

In the interests of being pragmatic and seeing how Adani may be in a position to work with the Department looking forward, below include responses to each of the reasons that DES provided to Adani in the document issued 31 May 2019 regarding the Groundwater Dependent Ecosystem Management Plan Version 11b (March 2019).

In providing these responses, Adani maintains that Plan v.7b as submitted to the DES met the requirements of our Environmental Authority EPML01470513 and that it was not deficient in any respect.

Condition wording /reference	Departmental comments	Adani Response	Proposed Changes
			impacted due to underground mining, these will be replaced.
	<p>To ensure the effective management of these unique ecosystems the GMMP and the GDEMP must be consistent and ‘talk to each other’.</p> <ul style="list-style-type: none"> • Address all inconsistent descriptions and reporting of groundwater drawdown trigger thresholds between the GDEMP and GMMP as detailed in section 4 of the CSIRO/GA advice 7 June 2019. • Address inconsistencies in the level of commitment for corrective actions for each GDE that are applied when groundwater drawdown trigger levels are exceeded as detailed in section 5 of the CSIRO/GA advice 7 June 2019. • Address inconsistencies between the GDEMP and GMMP with regard to adaptive management measures and commitments as detailed in section 5 of the CSIRO/GA advice 7 June 2019. 	<p>Appendix B of the GDEMP has been reconciled with the relevant content and tables of the GMMP</p> <p>Adani is revising the responses based on the workshop with DES on the 31/5 through the Management tables for each GDE.</p> <p>Adani is revising the responses based on the workshop with DES on the 31/5 through the Management tables for each GDE.</p>	<p>This is being addressed via response to DES Comments on the GDEMP provided on the 31/5/19, including review and check for consistency within the GDEMP, and with the GMMP.</p>

Date : 7/06/2019 9:16:22 PM

From : "WELLS Melissa"

To : " s.73

Cc : "MERRICK Jamie" , "ELLWOOD Dean" , s.73 , "MCCOSKER Juliana"

Subject : DES GDEMP (CSIRO/GA advice) Feedback 7 June 2019

Attachment : CSIRO-Geoscience Australia QDES AdviceJun2019(Secured).pdf;DES GDEMP_CSIRO_GA Feedback 7 June 2019.pdf;Letter_DES GDEMP (CSIRO_GA) Feedback 7 June 2019.pdf;image001.png;image002.png;

Good evening s.73

Please see attached correspondence.

Kind regards,
Melissa.



Melissa Wells
Executive Director
Coal and Central Qld Compliance
Department of Environment and Science

P 07 4987 9343

99 Hospital Road, Emerald QLD 4720
PO Box 3028, Emerald QLD 4720

Published on DES Disclosure Log
RTI Act 2009



Department of
Environment and Science

Our Ref: GDEMP_CSIRO/GA

7 June 2019

s.73

Adani Mining Pty Ltd
Level 25, 10 Eagle Street
Brisbane QLD 4000

By email: s.73@adani.com.au

Dear s.73

The Department of Environment and Science (the department) has now received the clarification and advice sought from the Commonwealth Scientific and Industrial Research Organisation (CSIRO) and Geoscience Australia (GA) in relation to Adani's Groundwater Dependent Ecosystem Management Plan (GDEMP).

The department has now considered this advice and requires the matters set out in Attachment A to be addressed to progress the finalisation of the GDEMP.

It is the department's view that the advice from CSIRO/GA reinforces advice provided by the department to date and is not inconsistent with discussions held previously between the department and Adani.

Accordingly, this advice should be read and addressed in conjunction with the preliminary GDEMPv11b comments provided on the 31 May 2019 and discussed at our meeting on the 6 June 2019.

To provide further background and context a copy of the CSIRO/GA advice is enclosed.

Should you require any further information, please contact Juliana McCosker, Manager of Business Centre (Coal) of the department on telephone (07) 4987 9356 or by email at juliana.mccosker@des.qld.gov.au.

Yours sincerely

sch4p4(6) Personal information

Melissa Wells
Executive Director
Coal and Central Queensland Compliance
Environmental Services and Regulation

Enc:

*Attachment A – Departmental comments on the GDEMP v11b (dated 7 June 2019); and
Attachment B – Carmichael Coal Mine, Advice on Groundwater Dependent Ecosystem
Management Plan v11b to the Queensland Department of Environment and Science (June
2019).*

Published on DES Disclosure Log
RTI Act 2009

Date : 23/05/2019 5:23:12 PM

From : "ELLWOOD Dean"

To : "s.73"

Cc : "MERRICK Jamie", s.73, "WELLS Melissa"

Subject : DES request

Attachment : DES CSIRO_GA Request REVISED.docx;image001.png;image002.png;

s.73 please find attached DES's request to CSIRO/GA. I will also provide further correspondence tomorrow with respect to any additional requirements for either BTFM and GDEM plans will not preclude the commencement of stage 2 activities.

Regards

dean



Dean Ellwood

Project Executive

Department of Environment and Science

400 George St, Brisbane QLD 4000

GPO Box 2454, Brisbane QLD 4001

Published on DES Disclosure Log
RTI Act 2009

DES CSIRO/GA GDEMP 11b Advice request – REVISED based on CSIRO/GA feedback and clarification provided 20 May 2019

Review documents (for clarification please note DES does not require a review of the GMMP):

1. GDEMP v11b (track change versions v10 – v11 and v11a-11b attached);

Following the department's review of the CSIRO/GA 2019 Report, the department seeks your advice about the type of investigation and research that may provide greater certainty regarding the department's interest in relation to the identification of the source aquifer(s) to the Doongmabulla Springs Complex (DSC).

The environmental authority (EA) for the Carmichael Coal Mine requires Adani to develop and implement a Groundwater Dependent Ecosystems Management Plan (GDEMP). The term GDEMP is defined in the EA and states, among other things, that a GDEMP must include *'detailed baseline research to establish the source aquifer(s) for groundwater supply to each groundwater dependent ecosystem [potentially or indirectly impacted by mining activities]*.

Your 2019 Report states that:

'It is plausible and reasonable that the Clematis Sandstone is a major source aquifer for the DSC... It is not plausible and reasonable to state unequivocally that the Clematis Sandstone is the sole source aquifer for the DSC...' (p2); and

'Available evidence supports the conceptualisation that the Clematis Sandstone is a likely source aquifer for the DSC. However, the proposed monitoring and management approaches do not sufficiently address the uncertainty regarding the potential alternative or additional source aquifers (refer Section 3.2 and 3.3).' (p9); and

'To constrain the source aquifer(s) of the DSC, a more sophisticated statistical analysis of hydrochemistry data is required. This includes assessing a wider variety of groundwater and surface water analytes, as well as appropriate use of isotope hydrochemistry analysis. Further information on potential techniques is provided (CSIRO and Geoscience Australia, 2018) and other readily available references.' (p10)

Further, in advice given to the Commonwealth Department of the Environment and Energy, *'Advice on draft research plans to the Department of the Environment and Energy'*, dated November 2018, you state:

'An integrated analysis of existing and newly acquired geological, hydrodynamic and hydrochemical data would improve the conceptual understanding of the groundwater sources of the DSC'. (at page 5); and

'Further information on the specific methods and techniques to be applied to chemically assess the springs source and groundwater flow processes is required for a more detailed assessment to be made. This includes the need to define the

analytical suite, quality assurance and quality control methods, and use of a broader range of isotopic and environmental traces...' (at page 13).

Having regard to **the 2019 Report, the 2018 advice, and our meeting of 16 April 2019**, the department has the understanding that the following further research (steps) would improve the certainty about the source aquifer(s) of the DSC and other groundwater dependent ecosystems:

- a) hydrogeochemical analysis of water samples for comparison within and across relevant aquifers (Clematis Sandstone, Dunda Beds and Rewan Formation);
 - b) incorporation of the use of isotope and ageing tracers in the above hydrogeochemical analysis;
 - c) a comprehensive review of groundwater level and quality data from relevant aquifers including data from new proposed nested bores in the vicinity of DSC;
 - d) detailed geological mapping including cores from bores drilled in the vicinity of DSC and facies modelling to better inform hydraulic connectivity within and across all aquifers;
 - e) incorporation of the airborne electro-magnetic modelling recently completed by Geoscience Australia (and available to Adani by June 2020); and
 - f) revision of the conceptual understanding of the source aquifer(s) for DSC and groundwater system based on information collected from the above for incorporation into the groundwater model review (re-run).
1. Does the above summary accurately reflect the CSIRO/GA advice with respect to further work that could increase certainty of the source aquifer(s) for the DSC?
 2. Would CSIRO/GA recommend any additional measures?
 3. Would it be appropriate from an adaptive management framework for all the above matters to be undertaken over a set period i.e. prior to the model review (re-run)?

Based on GDEMP 11b (track change version/s) and the CSIRO/GA advice dated November 2018 and February 2019, the department seeks your additional advice on the following questions:

4. Generally, in respect to groundwater research and modelling, is it acceptable and/or common from a scientific basis to have some level of uncertainty? i.e. can source aquifer(s) ever be categorically determined or definitively identified? Can you have absolute certainty? Is there always some level of uncertainty?
5. Are the groundwater drawdown trigger thresholds proposed in the updated GDEMP 11b appropriate and suitable to ensure the long-term protection of the DSC in light of your advice that the numerical model is not fit for purpose?
6. For question 5, are the adaptive management measures and commitments in the updated GDEMP appropriate? If not, please provide suggestions to address this?

This advice will assist the department's review and assessment of the latest version of the GDEMP 11b.

Please note there is a high level of urgency to your advice given the department wishes to progress the assessment of the GDEMP and work with Adani to finalise the plan.

Date : 13/06/2019 2:07:34 PM

From : "MERRICK Jamie"

To : s.73

Subject : DES Statement

Attachment : 130619 - MR - GDEMP approved FINAL.pdf;

s.73

For information - please find attached the statement the department has issued.

I have also liaised with senior colleagues in the Federal Department to let them know of the approval.

Consistent with the Federal approval process, and given the public interest, we intend to make the approved GDEMP and additional CSIRO advice publically available.

Jamie

Published on DES Disclosure Log
RTI Act 2009

Media release

GDEMP approved

The Department of Environment and Science (DES) approved Adani's Groundwater Dependent Ecosystem Management Plan (GDEMP) today.

Adani submitted its most recent version of the plan, addressing the department's feedback, yesterday.

The GDEMP's assessment has been rigorous and based on the best available science. DES and Adani have met regularly to ensure the plan is robust and provides the maximum environmental protection.

In assessing the plan, both Adani and DES took on board advice from CSIRO and Geoscience Australia – the same advice considered by the Commonwealth Government in approving an earlier version of the GDEMP in April this year.

DES sought further clarification and advice from CSIRO and Geoscience Australia, which it received on 7 June 2019.

Based on this advice, DES is satisfied that the GDEMP sufficiently establishes the main source aquifer of the springs as the Clematis Sandstone.

CSIRO and Geoscience Australia also confirmed that some level of uncertainty in geological and groundwater conceptual models always exists.

DES has required additional commitments from Adani to undertake further scientific work over the next two years. This is required to identify any potential contribution from other aquifers and strengthen the GDEMP.

Additional commitments in the approved GDEMP include:

- Further work to improve the understanding of the source aquifers of springs in the locality, particularly the Doongmabulla Springs Complex, including:
 - Undertaking detailed hydrogeochemical analysis of groundwater and spring samples from different springs within each spring complex
 - Undertaking isotopic analysis (including noble, radioactive gases and strontium isotopes where isotopic analysis is not sufficient)
 - Examining core samples from new bores to attain a better understanding of hydraulic properties and provide detailed geological mapping
 - Incorporating air-borne electro-magnetic modelling undertaken by Geoscience Australia to improve hydrogeological understanding of the area.

- Using a bore in the Dunda Beds (also known as the Rewan Formation) as an early warning trigger for groundwater drawdown monitoring in the Carmichael River.

Additional measures in the GDEMP also address concerns raised last week by Flinders University scientists that the Permian aquifers should not be ruled out as a Doongmabulla Springs Complex source.

These include installing a new bore below the Rewan Formation, in the vicinity of the Doongmabulla Springs Complex, to assist in determining if the Permian aquifers (Colinlea) form a source for the springs.

Adani is also required to review hydrological, hydrochemistry analyses and seismic information as part of its second geological and groundwater remodelling after box cut mining starts, and review seismic information pertaining underground mining impacts (which is scheduled to start in year 10 of the project). Further seismic studies may also need to be undertaken.

Underground mining will not commence until these actions are completed and only if predicted impacts are consistent with approved impacts. Likewise, if the hydrogeological conceptualisation differs from that of the approved project, approval must be sought prior to relevant impact causing activities.

The GDEMP is the second of the two environmental management plans (the other being the Black-Throated Finch Management Plan, approved on 31 May) that needed to be approved before Adani could begin significant mining activities at its Carmichael mine site.

Both plans are a requirement of Adani's EA.

For details of what constitutes "significant mining activities", refer to Appendix 1 – Definitions of the EA for the Carmichael mine, available at <https://apps.des.qld.gov.au/env-authorities/pdf/epml01470513.pdf>.

ENDS

Date : 8/06/2019 2:31:39 PM

From : s.73

To : s.73 , "MERRICK Jamie"

Subject : Follow up

Attachment : image001.jpg;

s.73 Jamie,

As a follow up:

- GMMP – The appendices were included in the update provided yesterday. Evidently Julianna had not opened and checked the file. Accordingly I do not believe that there is anything further required from us in this regard.
- Inconsistencies – On the back of the feedback I have the team undertaking another check for inconsistencies prior to providing the updated version of the GDEMP to Melissa and Julianna. We will have this to you this afternoon and s.73 has advised and spoken with Melissa in this regard.
- Response to CSIRO / GA – s.73 is working through the response based on the meeting we just had in relation to CSIRO and Geoscience Australia feedback. I expect we will have this through to Melissa and Julianna within the next 3 hours at latest.
- Meeting - I have sent a meeting invite for 1600hrs tomorrow, should we require it.

Thanks

s.73

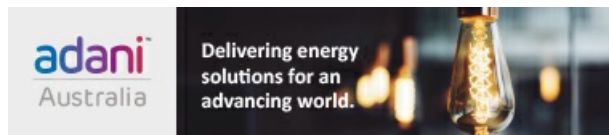
E s.73 @adani.com.au

P office: +61 7 3223 4800 | direct: s.73

A Level 25, 10 Eagle Street, Brisbane, QLD, 4000

P GPO Box 2569, Brisbane, QLD, 4001

W adaniaustralia.com



If you receive this message by mistake please tell me, do not use it and remove both messages from your system.
Privilege, confidentiality and copyright associated with this email is not waived.

Date : 13/05/2019 5:27:07 PM
From : "WELLS Melissa"
To : "ELLWOOD Dean" , "MERRICK Jamie"
Subject : FW: Actions
Attachment : image001.jpg;image002.png;image003.png;

Good evening Jamie and Dean - FYI. Thanks, Melissa.

"Thank you for the email s.73

I can confirm DES will be in a position to provide Adani comments on the GMMP this week. I am advised that a meeting request has been sent out for the BTFMP workshop and the meeting will take place in Rockhampton from 2.30-5pm this Wednesday. As discussed in our meeting last week, the relevant staff are unavailable to meet again later this week and the next earliest opportunity is Monday 20 May. If you have a preference for the meeting location please let me know and we can send a calendar invitation.

In regards to the questions posed to GA/CSIRO I can advise that DES is seeking clarification and feedback regarding the level of certainty around the source aquifer, its monitoring and management in light of the GA/CSIRO report, the resubmitted GDEMP (version 11b) and the relevant environmental authority conditions in accordance with the *Environmental Protection Act 1994*.

In relation to timing for clarification sought from GA/CSIRO, DES has expressed the urgency around the request. From discussions with GA today, DES is advised they are currently reviewing the request and will be in a position to provide certainty around timeframes later this week. We look forward to receiving your comments on the BTFMP prior to the workshop this Wednesday and finalising the BTFMP.

Regards,
Dean/Melissa"



Melissa Wells
Executive Director
Coal and Central Qld Compliance
Department of Environment and Science

P 07 4987 9343
99 Hospital Road, Emerald QLD 4720
PO Box 3028, Emerald QLD 4720

From s.73 @adani.com.au>

Sent: Monday, 13 May 2019 2:59 PM

To: ELLWOOD Dean; WELLS Melissa

Subject: Actions

Dean

Thank you for your time on Friday to talk through the finalisation of our management plans.

We have been consistent in requesting clarity of both process and timing to finalise the outstanding management plans. Based on the discussions from last Friday we understand that the following actions were committed to:

- In relation to the GMMP, DES will provide comments to Adani this week in a similar format to that provided for the BTFMP;
- Adani and DES will meet in a workshop to work through feedback on the GDEMP and GMMP. We note you offered Monday 20th May to hold this workshop. We stated our preference and desire for a meeting during the course of this week and we respectfully request that DES provide an opportunity for that timing to be met.
- For the BTFMP, on a forward looking basis, we agreed to meet on Wednesday the 15th of May to workshop the matters as expressed in the reasons in your Attachment A.
- Prior to that workshop this Wednesday, Adani will send through high level comments in relation to the reasons set out in your Attachment A of the BTFMP decision of 2 May 2019. These comments are being provided in the context of Adani considering resubmission and are without prejudice to any other right me may have with respect to the BTFMP decision.

We also again request that DES provide to Adani the questions asked of CSIRO & GA regarding the Source Aquifer (GDEMP), and the timing in which CSIRO & GA will respond to those questions. As discussed in the meeting you undertook to provide me with this information today.

Thanks

s.73

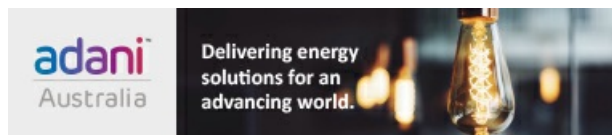
E s.73 adani.com.au

P office: +61 7 3223 4800|direct: s.73

A Level 25, 10 Eagle Street, Brisbane, QLD, 4000

P GPO Box 2569, Brisbane, QLD, 4001

W adaniaustralia.com



If you receive this message by mistake please tell me, do not use it and remove both messages from your system.
Privilege, confidentiality and copyright associated with this email is not waived.

Date : 13/05/2019 6:17:53 PM
From : "WELLS Melissa"
To : "MERRICK Jamie"
Subject : FW: Actions
Attachment : image001.jpg;image002.png;image003.png;image006.png;

FYI



Melissa Wells
Executive Director
Coal and Central Qld Compliance
Department of Environment and Science

P 07 4987 9343
99 Hospital Road, Emerald QLD 4720
PO Box 3028, Emerald QLD 4720

From: WELLS Melissa
Sent: Monday, 13 May 2019 6:16 PM
To: [redacted] s.73
Cc: ELLWOOD Dean
Subject: RE: Actions

Good evening [redacted] s.73

On behalf of Dean I can confirm DES will be in a position to provide Adani comments on the GMMP this week. As you are aware, a meeting request has been sent out for the BTFMP workshop and the meeting will take place in Rockhampton from 2.30-5pm this Wednesday. As discussed in our meeting last week, the relevant staff are unavailable to meet again later this week and the next earliest opportunity is Monday 20 May. If you have a preference for the meeting location please let me know and we can send a calendar invitation.

In regards to the questions posed to GA/CSIRO I can advise that DES is seeking clarification and feedback regarding the level of certainty around the source aquifer/s, its monitoring and management in light of the GA/CSIRO report, the resubmitted GDEMP (version 11b) and the relevant environmental authority conditions in accordance with the *Environmental Protection Act 1994*.

In relation to timing for clarification sought from GA/CSIRO, DES has expressed the urgency around the request. From discussions with GA today, DES is advised they are currently reviewing the request and will be in a position to provide certainty around timeframes later this week as the contract is in place.

We look forward to receiving your comments on the BTFMP prior to the workshop this Wednesday and finalising the BTFMP.

Kind regards,
Melissa



Melissa Wells
Executive Director
Coal and Central Qld Compliance
Department of Environment and Science

P 07 4987 9343
99 Hospital Road, Emerald QLD 4720
PO Box 3028, Emerald QLD 4720

From: [redacted] s.73 <[redacted]@adani.com.au>

Sent: Monday, 13 May 2019 2:59 PM
To: ELLWOOD Dean; WELLS Melissa
Subject: Actions

Dean

Thank you for your time on Friday to talk through the finalisation of our management plans.

We have been consistent in requesting clarity of both process and timing to finalise the outstanding management plans. Based on the discussions from last Friday we understand that the following actions were committed to:

- In relation to the GMMP, DES will provide comments to Adani this week in a similar format to that provided for the BTFMP;
- Adani and DES will meet in a workshop to work through feedback on the GDEMP and GMMP. We note you offered Monday 20th May to hold this workshop. We stated our preference and desire for a meeting during the course of this week and we respectfully request that DES provide an opportunity for that timing to be met.
- For the BTFMP, on a forward looking basis, we agreed to meet on Wednesday the 15th of May to workshop the matters as expressed in the reasons in your Attachment A.
- Prior to that workshop this Wednesday, Adani will send through high level comments in relation to the reasons set out in your Attachment A of the BTFMP decision of 2 May 2019. These comments are being provided in the context of Adani considering resubmission and are without prejudice to any other right me may have with respect to the BTFMP decision.

We also again request that DES provide to Adani the questions asked of CSIRO & GA regarding the Source Aquifer (GDEMP), and the timing in which CSIRO & GA will respond to those questions. As discussed in the meeting you undertook to provide me with this information today.

Thanks

[redacted] s.73

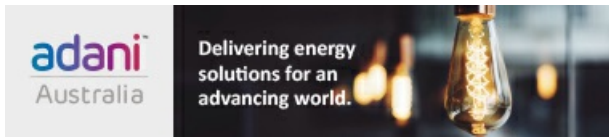
E [redacted] s.73 <[redacted]@adani.com.au>

P office: +61 7 3223 4800|direct: [redacted] s.73

A Level 25, 10 Eagle Street, Brisbane, QLD, 4000

P GPO Box 2569, Brisbane, QLD, 4001

W adaniaustralia.com



If you receive this message by mistake please tell me, do not use it and remove both messages from your system.
Privilege, confidentiality and copyright associated with this email is not waived.

Published on DES Disclosure Log
RTI Act 2009

Date : 14/05/2019 6:27:12 PM
From : "WELLS Melissa"
To : "MERRICK Jamie" , "LAWRENCE Rob"
Subject : FW: Adani response to DES email 13 May 2019
Attachment : image002.png;image004.jpg;image001.png;image006.png;

FYI



Melissa Wells
Executive Director
Coal and Central Qld Compliance
Department of Environment and Science

P 07 4987 9343
99 Hospital Road, Emerald QLD 4720
PO Box 3028, Emerald QLD 4720

From: WELLS Melissa
Sent: Tuesday, 14 May 2019 6:26 PM
To: s.73
Cc: s.73; ELLWOOD Dean
Subject: RE: Adani response to DES email 13 May 2019

s.73
I refer to your email of this morning, 14 May 2019 concerning the departments review of the resubmitted Adani GDEMP.
I remind you that the review of the Adani GDEMP undertaken by CSIRO/GA (the review) was commissioned by the Department of the Environment and Energy (DOEE).
While the department was consulted by DOEE on the review's terms of reference and attended a presentation of the CSIRO/GA's Tranche 1 advice, the department did not further participate or meet with CSIRO/GA during the DOEE independent review. Nor did the department have any commercial arrangement with CSIRO/GA regarding the DOEE review.
The final review (advice/report) was not provided to department until 9 April 2019, some four weeks after multiple requests by the department to DOEE, including requests at Ministerial level.
Again, given that Adani has submitted a revised version of the GDEMP (version 11b), a version that is different to the one that the CSIRO/GA review (advice/report) relied on, the department is simply seeking clarification from CSIRO/GA about its review in light of the revised GDEMP. This clarification will assist the department in part to decide whether the GDEMP is in compliance with the conditions of the environmental authority (EA) granted to Adani under the *Environmental Protection Act 1994* (Act) for the Carmichael Mine. This is not a 'new' review of the GDEMP, and it is entirely consistent with the clear message provided to Adani that the department would rely upon advice from CSIRO/GA and not seek other third party advice.
Given the resource implications and urgency around the timeliness of the advice sought from CSIRO/GA, the department considers the requirement of a contract and fee for service by CSIRO/GA as reasonable and consistent with any necessary governance in relation to a process such as this.
To date, the department has communicated with Dr James Johnson, CEO Geoscience Australia, and CSIRO in relation to the department's request.
The names of the officers of CSIRO/GA who will be involved in preparing advice for the department is a matter for CSIRO/GA. I am neither furnished with the information nor would it be appropriate for me to comment on the CSIRO/GA officers who were involved with the DOEE GDEMP review.
The department's actions in relation to the Adani GDEMP are directed solely at ensuring the proper administration of the Act and compliance with the conditions of the environmental authority.
My email of yesterday, gave you an indication on the timing of the review of the GDEMP by the department and the advice of CSIRO/GA.
Kind regards
Melissa



Melissa Wells
Executive Director
Coal and Central Qld Compliance
Department of Environment and Science

P 07 4987 9343
99 Hospital Road, Emerald QLD 4720
PO Box 3028, Emerald QLD 4720

From: s.73 @adani.com.au>
Sent: Tuesday, 14 May 2019 10:21 AM
To: ELLWOOD Dean
Cc: WELLS Melissa; s.73
Subject: Adani response to DES email 13 May 2019
Dean

I refer to Melissa Well's email sent last evening. It would appear despite DES' public claims that you would not be seeking a new or further review of the scientific evidence presented by CSIRO /GA, you are in fact engaging in another review as evidenced by Ms Well's reference to having to put in place a new contract. If this round of questions was simply an extension of the work undertaken we do not see how there would be any requirement for a new contract.
Furthermore we submit that the email fails to provide Adani with the necessary clarity regarding the "contract" between DES and CSIRO/GA or the substance of the questions that have been presented to CSIRO/GA by DES. Accordingly and consistent with our request on Friday 10 May, we once again request a copy of the questions you have asked CSIRO/GA to consider under this new contract. This request is reasonable given DES is commissioning a new review or assessment of Adani's GDEMP, and that DES previously provided Adani with a copy of the Terms of Reference for the so-called Wintle Review of the BTFMP. An ability to consider the questions as posed by the DES to CSIRO/GA would seem a normal part of this process and is clearly required to permit us to fully participate.

Could you also clarify whether the officers of CSIRO/GA engaged by DES were directly involved in the GDEMP review process commissioned by the Department of Environment and Energy? Can you also provide Adani with the names of all CSIRO/GA officers engaged for the DES contract? Can you confirm that DES were consulted and participated with DoEE in the original questions put to CSIRO/GA?

We request the above information by close of business today. Please contact me if I can provide further information.

s.73

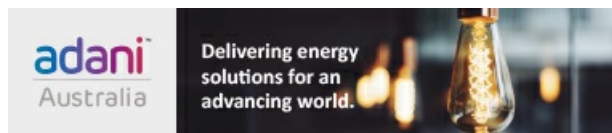
E s.73 adani.com.au

P office: +61 7 3223 4800|direct: s.73

A Level 25, 10 Eagle Street, Brisbane, QLD, 4000

P GPO Box 2569, Brisbane, QLD, 4001

W adaniaustralia.com



If you receive this message by mistake please tell me, do not use it and remove both messages from your system.
Privilege, confidentiality and copyright associated with this email is not waived.

Published on DES Disclosure Log
RTI Act 2009

17 May 2019

Private & Confidential

Mr Jamie Merrick
Director-General
Department of Environment and Science
Queensland Government
400 George Street
Brisbane QLD 4000

By email: jamie.merrick@des.qld.gov.au

Dear Jamie

Adani Mining Pty Ltd – Groundwater Management Plans

We refer to our previous correspondence in relation to groundwater management plans, in particular the Groundwater Dependent Ecosystems Management Plan (**GDEMP**) and the Groundwater Monitoring and Management Plan (**GMMP**) for Adani Mining Pty Ltd (**Adani**), and in particular our letter to you more than a month ago on 12 April 2019 which sought clarity from you on the process and timing for approval of those plans. In the most recent email from your Ms Melissa Wells at 5:15pm on 16 May 2019, we have been advised by the Department of Environment and Science (**DES**) that:

"...the CSIRO/GA advice is to provide clarification to the department about its original review in light of the revised GDEMP. Adani will be provided with a copy of the CSIRO/GA advice once it becomes available..."

This latest correspondence from Ms Wells was in response to our request where we had once again sought that DES provide us with the questions that DES has put to CSIRO / GA. We understand that these questions form the basis for a new contract being entered into between DES and CSIRO / GA. The latest email from DES is, at best, unresponsive and we ask:

Question 1: Can the DES please provide us with the questions that have been asked of CSIRO / GA?

It would seem fairer and simpler if you just provided us with these basic details so we have a proper opportunity to understand and engage in the process.

However, given the apparent unwillingness to meet this very simple request we have also submitted a formal Right to Information application (copy attached). As that RTI application exclusively relates to ourselves, DES and then to CSIRO / GA (who seem able to respond very rapidly to such requests) it is our expectation that this application will be dealt with as a priority.

Adani Mining Pty Ltd
Level 25
10 Eagle Street, Brisbane QLD 4000
GPO Box 2569, Brisbane QLD 4001
Australia

Tel +61 7 3223 4800
www.adaniaustralia.com

Question 2: When will you receive the advice from CSIRO / GA?

Separately, with respect to the latest correspondence from Ms Wells, there is a reference to advice from CSIRO / GA and its provision to us when it becomes available. We would expect it is a very short time frame given what seems to be, by implication, a strictly limited scope and we wish to be prepared to respond once it is available.

We are only seeking clarity as to process and timing and would appreciate the ability to be able to fully engage with the DES with a proper understanding of what is happening.

We remain committed to working collaboratively to finalise these plans so that we can get on with the task of delivering thousands of jobs for Queenslanders.

Yours sincerely

s.73

Attachment 2019 05 16 Application RTI to DES re GMMP and GDEMP (Lodged).pdf

cc Ms Mellissa Wells Melissa.Wells@des.qld.gov.au
Mr Dean Ellwood Dean.Ellwood@des.qld.gov.au

Date : 8/06/2019 4:18:55 PM
From : "WELLS Melissa"
To : "MERRICK Jamie"
Cc : "ELLWOOD Dean"
Subject : FW: GDEMP recommendations
Attachment : Adani Proposed Response to DES GACSIRO 080619.docx;image001.jpg;

Jamie FYI. We will review now and provide any comments in track.

From [redacted] s.73 [redacted]@adani.com.au>

Sent: Saturday, 8 June 2019 3:50 PM

To: WELLS Melissa; MCCOSKER Juliana

Cc [redacted] s.73 [redacted]

Subject: GDEMP recommendations

Dear Melissa and Juliana,

Please see attached proposed response to recommendations on the GDEMP as provided to Adani on the 7/6/19

Regards

[redacted]
s.73

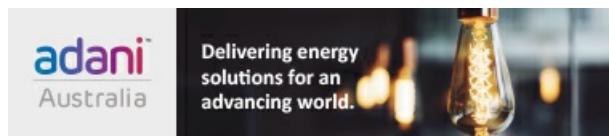
E [redacted] s.73 [redacted]@adani.com.au

P office: +61 7 3223 4800|direct: + [redacted] s.73 [redacted]

A Level 25, 10 Eagle Street, Brisbane, QLD, 4000

P GPO Box 2569, Brisbane, QLD, 4001

W adaniaustralia.com



If you receive this message by mistake please tell me, do not use it and remove both messages from your system.
Privilege, confidentiality and copyright associated with this email is not waived.

In the interests of being pragmatic and seeing how Adani may be in a position to work with the Department looking forward, below include responses to each of the reasons that DES provided to Adani in the document issued 31 May 2019 regarding the Groundwater Dependent Ecosystem Management Plan Version 11b (March 2019).

In providing these responses, Adani maintains that Plan v.7b as submitted to the DES met the requirements of our Environmental Authority EPML01470513 and that it was not deficient in any respect.

Condition wording /reference	Departmental comments	Adani Response	Proposed Changes
The plan must include detailed baseline research to establish the source aquifer(s) for groundwater supply to the GDE	Requirements prior to model re-run:		
	1. Adani must make a commitment to undertake and complete the following additional work progressively to improve the understanding of the spring source aquifers prior to the 2 year model re-run.	See proposed wording to address this.	For inclusion in new Section 5.9 "Additional studies, Research and Model Re-run" Adani commits to undertake and complete studies and additional work over the first two years for the purpose of refining the groundwater numerical model and the hydrogeological conceptualisation as required by EA Condition E6.
	<ul style="list-style-type: none"> Hydrogeochemical analysis of samples from different springs groups within each spring complex to provide better understanding and discern the source aquifers of the Doongmabulla Springs Complex. Bulk hydrochemistry must be completed within 3 months of approval and tracer analyses within 12 months. Hydrogeochemical analyses must include but not limited to: <ul style="list-style-type: none"> noble gases - e.g. helium to identify any deeper groundwater contributes to the springs (id of source aquifers); radioactive noble gases to identify source aquifer of recent (decades) to intermediate (centuries) and strontium isotopes – to identify the source rock of a particular groundwater system. Incorporation of the use of isotope and ageing tracers in the above hydrogeochemical analysis; 	See proposed wording to address this.	To cover all these elements, the following new text to be included: 5.9 Additional Studies, Research and Model Re-run Adani commits to undertake and complete studies and additional work over the first two years for the purpose of refining the groundwater numerical model and the hydrogeological conceptualisation as required by EA Condition E6. These additional works include: <ul style="list-style-type: none"> Adani will undertake hydrogeochemical analysis across the Doongmabulla springs-complex from groundwater and surface water samples. This includes isotopic analysis and may also include noble and radioactive gases and strontium isotopes where isotopic analysis is insufficient. Acquiring, testing and examining any new cores samples generated through new bore holes (dependent on the integrity of these samples)
	<ul style="list-style-type: none"> A comprehensive review of groundwater level and quality data from relevant aquifers including data from new proposed nested bores in the vicinity of Doongmabulla Springs Complex; 	See proposed wording to address this.	
	<ul style="list-style-type: none"> Undertake hydrochemistry interpretation from surface and spring samples to provide more detailed hydrogeology system understanding; 	GMMP section 2.2 details the existing hydrogeochemical baseline. Section 4.7.1.1 and 5.4 the hydrochemistry monitoring Section 7 details commitments (18) to undertake isotopic tracers of GW and SW. Hydrochemistry is included in GMMP (see 4.4.1), GDEMP and GABSRP. See proposed wording to address this.	Baseline research on GDE's is provided in Section 6.1, 7.1, 8.1 and 9.1. Future research activities on the wetland composition of the Doongmabulla and Mellaluka Springs-complexes will be undertaken through the GAB Springs Research Plan, summarised in Section 5.9.2. Baseline research on source aquifers is presented in Sections 6.2, 7.2, 8.4 and 9.4. Future research is noted in the GMMP (Section
	<ul style="list-style-type: none"> Detailed geological mapping including cores from bores drilled in the vicinity of Doongmabulla Springs Complex and facies modelling to better inform hydraulic connectivity within and across all aquifers; 	See text for inclusion, also detail summarising the RFRP. See proposed wording to address this.	

In the interests of being pragmatic and seeing how Adani may be in a position to work with the Department looking forward, below include responses to each of the reasons that DES provided to Adani in the document issued 31 May 2019 regarding the Groundwater Dependent Ecosystem Management Plan Version 11b (March 2019).

In providing these responses, Adani maintains that Plan v.7b as submitted to the DES met the requirements of our Environmental Authority EPML01470513 and that it was not deficient in any respect.

Condition wording /reference	Departmental comments	Adani Response	Proposed Changes
	<ul style="list-style-type: none"> At new monitoring locations, use the opportunity to acquire drill cores to better understand the intact hydrostratigraphy being drilled through to inform the conceptual model. Conduct test on core samples to assess and quantify hydraulic properties being implemented in the numerical model. Completion of core analysis within 2 years. 	In the GMMP, commitment is made to collect and include geological information into the model rerun. Further the Rewan research plan includes relevant studies. Adani have provided detailed commitments already in the GMMP (23 and 24) about additional content in the groundwater model rerun, this includes calibration, sensitivity analysis, model guidelines, uncertainty analysis, inclusion of all additional information since the EIS and leading up to the rerun, local parameters for geology, groundwater quality, alternative conceptualisations, GAB and Rewan research findings.	<p>1.10) and tin the Rewan Formation Research Plan and GAB Springs Research Plan. The GMMP (Section 5 and Table 42) provides details on the natural variation of groundwater level and pressure and how this will be monitored over time against the predicted groundwater levels. The ecological response to groundwater level fluctuation is a key component of the GAB Springs Research Plan (Section 5.9.2)</p> <p>Within two years of commencement of mining activities, the ground water model is to be reviewed and re-run with the subsequent provision of updated hydrogeological conceptualisation/s and reporting detailed the information that was or wasn't used for this exercise, the supporting reasons for that approach, and detailed findings of this model re-run and conceptualisation exercise and how this will in turn inform a revised GDEMP and GMMP. A key outcome of this exercise is to refine the understanding and uncertainty surrounding source aquifer/s for each GDE.</p> <p>The GMMP provide details under Section 7 Commitment 24 on matters to be included in that model re-run. Specifically, this exercise will include (not excluding those items in Section 7 Commitment 24):</p> <ul style="list-style-type: none"> Comprehensive review of groundwater level and quality data from across the monitoring network. Hydrochemistry interpretation from groundwater and spring samples as conducted through the additional studies noted above. Inputs from research programs such as the Rewan Formation Research Program and the GAB Springs Research Program. Geological information gathered from new bores and core samples, geological mapping and research studies. Geoscience Australia Electro-magnetic modelling. Review of groundwater modelling network and locations for ongoing optimisation. Systematic consideration of the sources of uncertainty as they pertain to each source aquifer Inclusion of all relevant parameters in a range of modelled
	<ul style="list-style-type: none"> Incorporation of the airborne electro-magnetic (AEM) modelling recently completed by Geoscience Australia (and available to Adani by June 2020). Adani must undertake specific interpretation and analysis of AEM data. The analysis should be conducted with consideration of relevant site-specific data and alternative conceptualisations to be tested to ensure the interpretation derives appropriate conclusions regarding hydrogeology at the scale of investigation of interest to Adani. Adani's AEM investigation should articulate how the objectives of the AEM data analysis will seek to improve hydrogeological knowledge to ensure the interpretation yields desired outcomes; 	Adani have already included in the GMMP a commitment to incorporate GA airborne EM survey data (if and when available) at the 2 year model revision. See proposed wording to address this.	
	<ul style="list-style-type: none"> Revision of the conceptual understanding of the source aquifer(s) for Doongmabulla Springs Complex and the groundwater system based on information collected from the above for incorporation into the groundwater model review (re-run); 	See proposed wording to address this.	
	<ul style="list-style-type: none"> Undertake measures identified by the Queensland Herbarium in the Lake Eyre Basin Springs Assessment project for the Doongmabulla Springs Complex including seismic surveys within 12 months; 	Seismic survey may be undertaken as part of Research, but not specifically at the DSC and not within that timeframe given UG Mining is not scheduled to commence until Year 10, and has triggers prior to commencement. See proposed wording to address this.	
	<ul style="list-style-type: none"> Optimise the spatial distribution of monitoring bores, including nested or co-located bores intersecting different aquifer units, to enable improved future analysis of water level and hydrochemistry data. 	The bore network has been presented in the GMMP with endorsement from CSIRO/GA previously apart from 3 new nested bores. See proposed wording to address this.	

In the interests of being pragmatic and seeing how Adani may be in a position to work with the Department looking forward, below include responses to each of the reasons that DES provided to Adani in the document issued 31 May 2019 regarding the Groundwater Dependent Ecosystem Management Plan Version 11b (March 2019).

In providing these responses, Adani maintains that Plan v.7b as submitted to the DES met the requirements of our Environmental Authority EPML01470513 and that it was not deficient in any respect.

Condition wording /reference	Departmental comments	Adani Response	Proposed Changes
	2. To address the level of uncertainty of the source aquifer(s) for all the Groundwater Dependent Ecosystems and to provide transparency and a better appreciation of the limitations and opportunities for further data collection or modelling, the department recommends that Adani make the following commitments:		<p>scenarios</p> <ul style="list-style-type: none"> • Selection of appropriate model scale to account for local and regional parameters such as hydraulic conductivity. • Uncertainty analysis and estimation in accordance with relevant guidelines
	<ul style="list-style-type: none"> • Adani make a commitment to systematically address all the sources of uncertainty and other modelling limitations identified by the CSIRO/GA reviews when the groundwater model is re-run and reviewed as required by EA condition E6 (to be conducted within 2 years of commencement of any mining activities associated with the box cut excavation). 	We will meet condition E6 of the EA, as described in the GMMP and commitment 24 of the GMMP. Adani have provided detailed commitments already in the GMMP (23 and 24) about additional content in the groundwater model re-run, this includes calibration, sensitivity analysis, model guidelines, uncertainty analysis, inclusion of all additional information since the EIS and leading up to the re-run, local parameters for geology, groundwater quality, alternative conceptualisations, GAB and Rewan research findings. See proposed wording to address this.	<p>At the second model re-run instance (7 years after commencement of mining activities), Adani will specifically review seismic information pertaining to the impacts of underground mining noting that this mining activity is not scheduled to commence until year 10, and that a number of precursors are required before it commences.</p> <p>If this review determines that additional seismic studies are required, these activities will be completed and that information included into revised modelling. Underground mining will not commence until these actions are completed and only if predicted impacts are consistent with approved impacts.</p>
	<ul style="list-style-type: none"> • For the model re-run, Adani make a commitment to sample the entire plausible parameter space and make predictions probabilistically by spreading attention across refining distributions of the most sensitive model parameters and efficient stochastic modelling (Turnadge et al. 2018). 	Does not reflect the approval of the current model scenario. Adani have provided detailed commitments already in the GMMP (23 and 24) about additional content in the groundwater model re-run, this includes calibration, sensitivity analysis, model guidelines, uncertainty analysis, inclusion of all additional information since the EIS and leading up to the re-run, local parameters for geology, groundwater quality, alternative conceptualisations, GAB and Rewan research findings. See proposed wording to address this.	<p><u>NOTE: Two new sections also being included to provide details of the Rewan Formation Research Plan and the GAB Springs Research Plan</u></p>
	<ul style="list-style-type: none"> • For the model re-run, Adani make a commitment to define scale dependent parameters such as hydraulic conductivity at the appropriate spatial scale i.e. commensurate with the size of the numerical grid cell of the groundwater model. 	Adani have provided detailed commitments already in the GMMP (23 and 24) about additional content in the groundwater model re-run, this includes calibration, sensitivity analysis, model guidelines, uncertainty analysis, inclusion of all additional information since the EIS and leading up to the re-run, local parameters for geology, groundwater quality, alternative conceptualisations, GAB and Rewan research findings. See proposed wording to address this.	

In the interests of being pragmatic and seeing how Adani may be in a position to work with the Department looking forward, below include responses to each of the reasons that DES provided to Adani in the document issued 31 May 2019 regarding the Groundwater Dependent Ecosystem Management Plan Version 11b (March 2019).

In providing these responses, Adani maintains that Plan v.7b as submitted to the DES met the requirements of our Environmental Authority EPML01470513 and that it was not deficient in any respect.

Condition wording /reference	Departmental comments	Adani Response	Proposed Changes
	<ul style="list-style-type: none"> For the model re-run, Adani make a commitment to run a sufficient range of plausible scenarios that encompass the range of identified uncertainties. 	Adani have provided detailed commitments already in the GMMP (23 and 24) about additional content in the groundwater model re-run, this includes calibration, sensitivity analysis, model guidelines, uncertainty analysis, inclusion of all additional information since the EIS and leading up to the re-run, local parameters for geology, groundwater quality, alternative conceptualisations, GAB and Rewan research findings. See proposed wording to address this.	
	<ul style="list-style-type: none"> Adani make a commitment to undertake and include an uncertainty estimation in accordance with the Australian Groundwater Guidelines based on the 2 year re-run. 	Adani have provided detailed commitments already in the GMMP (23 and 24) about additional content in the groundwater model re-run, this includes calibration, sensitivity analysis, model guidelines, uncertainty analysis, inclusion of all additional information since the EIS and leading up to the re-run, local parameters for geology, groundwater quality, alternative conceptualisations, GAB and Rewan research findings. See proposed wording to address this.	
The plan must include detailed baseline research to establish GDE ecosystem pressure response to groundwater level/pressure fluctuation The plan must include a description of the potential impact on each GDE from each project stage including impacts from subsidence, mine dewatering of aquifers, water discharge, hydrological changes and weed and pest infestation Requirements:	<ul style="list-style-type: none"> Groundwater drawdown triggers must be set for all monitoring locations for which water level thresholds are defined and use a timeframe that is comparable with routine monitoring data assessment and agreed groundwater model review periods. 	GA/CSIRO's advice is inconsistent with both the EPBC and EA conditions, and is a repeat of earlier advice with respect to groundwater drawdown thresholds. This was a requirements for DSC bores under the EPBC approval. It is not a requirement under the EA and we recently discussed with DES and they removed this requirement from Adani to do so in a recent workshop (20/6/19). Baseline research relating to pressure response under the GABSRP will be detailed in the GDEMP	Adani has included groundwater drawdown triggers as indicators in the GDEMP monitoring and management under each relevant GDE Chapter. A cross reference to the relevant tables and sections of the GMMP will also be provided. A new section 5.9.2 GAB Springs Research Plan will be included that provides detail of research with regards to GDE pressure response.
	<ul style="list-style-type: none"> The bore locations must consider the localised changes that may impact on groundwater dependent ecosystems and changes to groundwater conditions following planned longwall panel excavation beneath of two of the 3 interim drawdown rate trigger bores. 	Adani have a monitoring network that takes into consideration a range of factors including the removal of bores due to OC and UG mining. This is detailed in the GMMP Figures 29 and 30.	New Commitment in section 8.7.4 Where interim drawdown rate trigger bores are removed or impacted due to underground mining, these will be replaced.
	<ul style="list-style-type: none"> A commitment to install new groundwater drawdown trigger threshold bore to replace those lost to mining/underground mining must be made. 		New Commitment in section 8.7.4 Where interim drawdown rate trigger bores are removed or impacted due to underground mining, these will be replaced.
	To ensure the effective management of these unique ecosystems the GMMP and the GDEMP must be consistent and 'talk to each other'.		

In the interests of being pragmatic and seeing how Adani may be in a position to work with the Department looking forward, below include responses to each of the reasons that DES provided to Adani in the document issued 31 May 2019 regarding the Groundwater Dependent Ecosystem Management Plan Version 11b (March 2019).

In providing these responses, Adani maintains that Plan v.7b as submitted to the DES met the requirements of our Environmental Authority EPML01470513 and that it was not deficient in any respect.

Condition wording /reference	Departmental comments	Adani Response	Proposed Changes
	<ul style="list-style-type: none"> • Address all inconsistent descriptions and reporting of groundwater drawdown trigger thresholds between the GDEMP and GMMP as detailed in section 4 of the CSIRO/GA advice 7 June 2019. 	Appendix B of the GDEMP has been reconciled with the relevant content and tables of the GMMP	This is being addressed via response to DES Comments on the GDEMP provided on the 31/5/19, including review and check for consistency within the GDEMP, and with the GMMP.
	<ul style="list-style-type: none"> • Address inconsistencies in the level of commitment for corrective actions for each GDE that are applied when groundwater drawdown trigger levels are exceeded as detailed in section 5 of the CSIRO/GA advice 7 June 2019. 	Adani is revising the responses based on the workshop with DES on the 31/5 through the Management tables for each GDE.	
	<ul style="list-style-type: none"> • Address inconsistencies between the GDEMP and GMMP with regard to adaptive management measures and commitments as detailed in section 5 of the CSIRO/GA advice 7 June 2019. 	Adani is revising the responses based on the workshop with DES on the 31/5 through the Management tables for each GDE.	

Published on DES Disclosure
RTI Act 2009

Date : 9/06/2019 12:47:33 PM

From : "MERRICK Jamie"

To : [redacted] s.73 @coordinatorgeneral.qld.gov.au"

Subject : FW: GDEMP recommendations

Attachment : Adani Proposed Response to DES GACSIRO 080619v2 JM_MW.docx;image001.jpg;

FYI - The team are liaising with Adani prior to the 4pm teleconference
Jamie

From: WELLS Melissa <Melissa.Wells@des.qld.gov.au>

Sent: Sunday, 9 June 2019 9:42 AM

To: [redacted] s.73 CCOSKER Juliana

Cc: [redacted] s.73 MERRICK Jamie; ELLWOOD Dean

Subject: RE: GDEMP recommendations

Good morning,

Please find attached DES comments (in track) noting that these comments are subject to reviewing the amendments in the documents in their entirety (including cross reference with GMMP).

Thanks,

Melissa.

From: [redacted] s.73 adani.com.au>

Sent: Saturday, 8 June 2019 4:33 PM

To: WELLS Melissa; MCCOSKER Juliana

Cc: [redacted] s.73

Subject: RE: GDEMP recommendations

Hi Melissa

Apologies, one minor update in the table (text in red)

Thanks

[redacted]
s.73

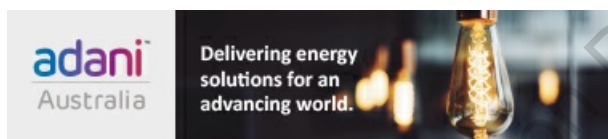
E [redacted] s.73 @adani.com.au

P office: +61 7 3223 4800|direct: [redacted] s.73

A Level 25, 10 Eagle Street, Brisbane, QLD, 4000

P GPO Box 2569, Brisbane, QLD, 4001

W adaniaustralia.com



If you receive this message by mistake please tell me, do not use it and remove both messages from your system.
Privilege, confidentiality and copyright associated with this email is not waived.

From: [redacted] s.73

Sent: Saturday, 8 June 2019 3:50 PM

To: WELLS Melissa <Melissa.Wells@des.qld.gov.au>; MCCOSKER Juliana <Juliana.Mccosker@des.qld.gov.au>

Cc: [redacted] s.73 adani.com.au>; [redacted] s.73 adani.com.au>

Subject: GDEMP recommendations

Dear Melissa and Juliana,

Please see attached proposed response to recommendations on the GDEMP as provided to Adani on the 7/6/19

Regards

[redacted]
s.73

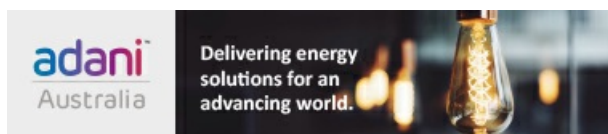
E [redacted] s.73 @adani.com.au

P office: +61 7 3223 4800|direct: [redacted] s.73

A Level 25, 10 Eagle Street, Brisbane, QLD, 4000

P GPO Box 2569, Brisbane, QLD, 4001

W adaniaustralia.com



If you receive this message by mistake please tell me, do not use it and remove both messages from your system.
Privilege, confidentiality and copyright associated with this email is not waived.

In the interests of being pragmatic and seeing how Adani may be in a position to work with the Department looking forward, below include responses to each of the reasons that DES provided to Adani in the document issued 31 May 2019 regarding the Groundwater Dependent Ecosystem Management Plan Version 11b (March 2019).

In providing these responses, Adani maintains that Plan v.7b as submitted to the DES met the requirements of our Environmental Authority EPML01470513 and that it was not deficient in any respect.

Condition wording /reference	Departmental comments	Adani Response	Proposed Changes
The plan must include detailed baseline research to establish the source aquifer(s) for groundwater supply to the GDE	Requirements prior to model re-run:		
	1. Adani must make a commitment to undertake and complete the following additional work progressively to improve the understanding of the spring source aquifers prior to the 2 year model re-run.	See proposed wording to address this.	For inclusion in new Section 5.9 "Additional studies, Research and Model Re-run" Adani commits to undertake and complete studies and additional work <u>sequentially</u> over the first two years for the purpose of refining the groundwater numerical model and the hydrogeological conceptualisation as required by EA Condition E6.
	<ul style="list-style-type: none"> Hydrogeochemical analysis of samples from different springs groups within each spring complex to provide better understanding and discern the source aquifers of the Doongmabulla Springs Complex. Bulk hydrochemistry must be completed within 3 months of approval and tracer analyses within 12 months. Hydrogeochemical analyses must include but not limited to: <ul style="list-style-type: none"> noble gases - e.g. helium to identify any deeper groundwater contributes to the springs (id of source aquifers); radioactive noble gases to identify source aquifer of recent (decades) to intermediate (centuries) and strontium isotopes – to identify the source rock of a particular groundwater system. Incorporation of the use of isotope and ageing tracers in the above hydrogeochemical analysis; 	See proposed wording to address this.	<p>To cover all these elements, the following new text to be included:</p> <p>5.9 Additional Studies, Research and Model Re-run Adani commits to undertake and complete studies and additional work over the first two years for the purpose of refining the groundwater numerical model and the hydrogeological conceptualisation as required by EA Condition E6.</p> <p>These additional works include:</p> <ul style="list-style-type: none"> Adani will undertake hydrogeochemical analysis across the Doongmabulla springs-complex from groundwater and surface water samples. This includes isotopic analysis and <u>will may</u> also include noble and radioactive gases and strontium isotopes where isotopic analysis is <u>not</u> sufficient <u>to significantly improve understanding and reduce uncertainty in relation to source aquifer (s) of the DSC.</u> Acquiring, testing and examining any new cores samples generated through new bore holes (dependent on the integrity of these samples) <p>Baseline research on GDE's is provided in Section 6.1, 7.1, 8.1 and 9.1. Future research activities on the wetland composition of the Doongmabulla and Mellaluka Springs-complexes will be undertaken through the GAB Springs Research Plan, summarised in Section 5.9.2. Baseline</p>
	<ul style="list-style-type: none"> A comprehensive review of groundwater level and quality data from relevant aquifers including data from new proposed nested bores in the vicinity of Doongmabulla Springs Complex; 	See proposed wording to address this.	
	<ul style="list-style-type: none"> Undertake hydrochemistry interpretation from surface and spring samples to provide more detailed hydrogeology system understanding; 	GMMP section 2.2 details the existing hydrogeochemical baseline. Section 4.7.1.1 and 5.4 the hydrochemistry monitoring Section 7 details commitments (18) to undertake isotopic tracers of GW and SW. Hydrochemistry is included in GMMP (see 4.4.1), GDEMP and GABSRP. See proposed wording to address this.	
	<ul style="list-style-type: none"> Detailed geological mapping including cores from bores drilled in the vicinity of Doongmabulla Springs Complex and facies modelling to better inform hydraulic connectivity within and across all aquifers; 	See text for inclusion, also detail summarising the RFRP. See proposed wording to address this.	

In the interests of being pragmatic and seeing how Adani may be in a position to work with the Department looking forward, below include responses to each of the reasons that DES provided to Adani in the document issued 31 May 2019 regarding the Groundwater Dependent Ecosystem Management Plan Version 11b (March 2019).

In providing these responses, Adani maintains that Plan v.7b as submitted to the DES met the requirements of our Environmental Authority EPML01470513 and that it was not deficient in any respect.

Condition wording /reference	Departmental comments	Adani Response	Proposed Changes
	<ul style="list-style-type: none"> At new monitoring locations, use the opportunity to acquire drill cores to better understand the intact hydrostratigraphy being drilled through to inform the conceptual model. Conduct test on core samples to assess and quantify hydraulic properties being implemented in the numerical model. Completion of core analysis within 2 years. 	In the GMMP, commitment is made to collect and include geological information into the model rerun. Further the Rewan research plan includes relevant studies. Adani have provided detailed commitments already in the GMMP (23 and 24) about additional content in the groundwater model rerun, this includes calibration, sensitivity analysis, model guidelines, uncertainty analysis, inclusion of all additional information since the EIS and leading up to the rerun, local parameters for geology, groundwater quality, alternative conceptualisations, GAB and Rewan research findings.	<p>research on source aquifers is presented in Sections 6.2, 7.2, 8.4 and 9.4. Future research is noted in the GMMP (Section 1.10) and in the Rewan Formation Research Plan and GAB Springs Research Plan. The GMMP (Section 5 and Table 42) provides details on the natural variation of groundwater level and pressure and how this will be monitored over time against the predicted groundwater levels. The ecological response to groundwater level fluctuation is a key component of the GAB Springs Research Plan (Section 5.9.2)</p> <p>Within two years of commencement of mining activities, the ground water model is to be reviewed and re-run with the subsequent provision of updated hydrogeological conceptualisation/s and reporting detailed the information that was or wasn't used for this exercise, the supporting reasons for that approach, and detailed findings of this model re-run and conceptualisation exercise<u>revision of the conceptual understanding of the source aquifer(s)</u> and how this-these will in turn inform a revised GDEMP and GMMP. A key outcome of this exercise is to refine-improve the understanding and decrease the uncertainty surrounding source aquifer/s for each GDE.</p> <p>The GMMP provide details under Section 7 Commitment 24 on matters to be included in that model re-run. Specifically, this exercise will include (not excluding those items in Section 7 Commitment 24):</p> <ul style="list-style-type: none"> Comprehensive review of groundwater level and quality data from across the monitoring network. Hydrochemistry interpretation analysis from groundwater and spring samples <u>from different spring groups within each spring complex</u> as conducted through the additional studies noted above. Inputs from research programs such as the Rewan Formation Research Program and the GAB Springs Research Program. Geological <u>Attain a better understanding of the intact hydrostratigraphy to assess and quantify hydraulic properties from geological</u> information gathered from new
	<ul style="list-style-type: none"> Incorporation of the airborne electro-magnetic (AEM) modelling recently completed by Geoscience Australia (and available to Adani by June 2020). Adani must undertake specific interpretation and analysis of AEM data. The analysis should be conducted with consideration of relevant site-specific data and alternative conceptualisations to be tested to ensure the interpretation derives appropriate conclusions regarding hydrogeology at the scale of investigation of interest to Adani. Adani's AEM investigation should articulate how the objectives of the AEM data analysis will seek to improve hydrogeological knowledge to ensure the interpretation yields desired outcomes; 	Adani have already included in the GMMP a commitment to incorporate GA airborne EM survey data (if and when available) at the 2 year model revision. See proposed wording to address this.	
	<ul style="list-style-type: none"> Revision of the conceptual understanding of the source aquifer(s) for Doongmabulla Springs Complex and the groundwater system based on information collected from the above for incorporation into the groundwater model review (re-run); 	See proposed wording to address this.	
	<ul style="list-style-type: none"> Undertake measures identified by the Queensland Herbarium in the Lake Eyre Basin Springs Assessment project for the Doongmabulla Springs Complex including seismic surveys within 12 months; 	Seismic survey may be undertaken as part of Research, but not specifically at the DSC and not within that timeframe given UG Mining is not scheduled to commence until Year 10, and has triggers prior to commencement. See proposed wording to address this.	
	<ul style="list-style-type: none"> Optimise the spatial distribution of monitoring bores, including nested or co-located bores intersecting different aquifer units, to enable improved future analysis of water level and hydrochemistry data. 	The bore network has been presented in the GMMP with endorsement from CSIRO/GA previously apart from 3 new nested bores. See proposed wording to address this.	

In the interests of being pragmatic and seeing how Adani may be in a position to work with the Department looking forward, below include responses to each of the reasons that DES provided to Adani in the document issued 31 May 2019 regarding the Groundwater Dependent Ecosystem Management Plan Version 11b (March 2019).

In providing these responses, Adani maintains that Plan v.7b as submitted to the DES met the requirements of our Environmental Authority EPML01470513 and that it was not deficient in any respect.

Condition wording /reference	Departmental comments	Adani Response	Proposed Changes
	2. To address the level of uncertainty of the source aquifer(s) for all the Groundwater Dependent Ecosystems and to provide transparency and a better appreciation of the limitations and opportunities for further data collection or modelling, the department recommends that Adani make the following commitments:		bores and core samples, geological mapping and research studies. <ul style="list-style-type: none"> • <u>incorporate</u> Geoscience Australia <u>airborne</u> Electro-magnetic modelling. • Review of groundwater modelling network and locations for ongoing optimisation. • <u>Adani commits to systematically consider the all sources of uncertainty as they pertain to each source aquifer and modelling limitations and document this consideration.</u> • Inclusion of all relevant parameters in a range of modelled scenarios <u>that encompass the identified uncertainties.</u> • Selection of appropriate model <u>spatial</u> scale to account for local and regional parameters <u>such as including scale dependent parameters such as</u> hydraulic conductivity. - • Uncertainty analysis and estimation in accordance with relevant guidelines <p>At the second model re-run instance (7 years after commencement of mining activities), Adani will specifically review seismic information pertaining to the impacts of underground mining noting that this mining activity is not scheduled to commence until year 10, and that a number of precursors are required before it commences.</p> <p>If this review determines that additional seismic studies are required <u>to determine the source aquifers of the DSC</u>, these activities will be completed and that information included into revised modelling. Underground mining will not commence until these actions are completed and only if predicted impacts are <u>in</u>consistent with approved impacts.</p> <p><u>NOTE: Two new sections also being included to provide details of the Rewan Formation Research Plan and the GAB Springs Research Plan</u></p>
	<ul style="list-style-type: none"> • Adani make a commitment to systematically address all the sources of uncertainty and other modelling limitations identified by the CSIRO/GA reviews when the groundwater model is re-run and reviewed as required by EA condition E6 (to be conducted within 2 years of commencement of any mining activities associated with the box cut excavation). 	We will meet condition E6 of the EA, as described in the GMMP and commitment 24 of the GMMP. Adani have provided detailed commitments already in the GMMP (23 and 24) about additional content in the groundwater model re-run, this includes calibration, sensitivity analysis, model guidelines, uncertainty analysis, inclusion of all additional information since the EIS and leading up to the re-run, local parameters for geology, groundwater quality, alternative conceptualisations, GAB and Rewan research findings. See proposed wording to address this.	
	<ul style="list-style-type: none"> • For the model re-run, Adani make a commitment to sample the entire plausible parameter space and make predictions probabilistically by spreading attention across refining distributions of the most sensitive model parameters and efficient stochastic modelling (Turnadge et al. 2018). 	Does not reflect the approval of the current model scenario. Adani have provided detailed commitments already in the GMMP (23 and 24) about additional content in the groundwater model re-run, this includes calibration, sensitivity analysis, model guidelines, uncertainty analysis, inclusion of all additional information since the EIS and leading up to the re-run, local parameters for geology, groundwater quality, alternative conceptualisations, GAB and Rewan research findings. See proposed wording to address this.	
	<ul style="list-style-type: none"> • For the model re-run, Adani make a commitment to define scale dependent parameters such as hydraulic conductivity at the appropriate spatial scale i.e. commensurate with the size of the numerical grid cell of the groundwater model. 	Adani have provided detailed commitments already in the GMMP (23 and 24) about additional content in the groundwater model re-run, this includes calibration, sensitivity analysis, model guidelines, uncertainty analysis, inclusion of all additional information since the EIS and leading up to the re-run, local parameters for geology, groundwater quality, alternative conceptualisations, GAB and Rewan research findings. See proposed wording to address this.	

In the interests of being pragmatic and seeing how Adani may be in a position to work with the Department looking forward, below include responses to each of the reasons that DES provided to Adani in the document issued 31 May 2019 regarding the Groundwater Dependent Ecosystem Management Plan Version 11b (March 2019).

In providing these responses, Adani maintains that Plan v.7b as submitted to the DES met the requirements of our Environmental Authority EPML01470513 and that it was not deficient in any respect.

Condition wording /reference	Departmental comments	Adani Response	Proposed Changes
	<ul style="list-style-type: none"> For the model re-run, Adani make a commitment to run a sufficient range of plausible scenarios that encompass the range of identified uncertainties. 	Adani have provided detailed commitments already in the GMMP (23 and 24) about additional content in the groundwater model re-run, this includes calibration, sensitivity analysis, model guidelines, uncertainty analysis, inclusion of all additional information since the EIS and leading up to the re-run, local parameters for geology, groundwater quality, alternative conceptualisations, GAB and Rewan research findings. See proposed wording to address this.	
	<ul style="list-style-type: none"> Adani make a commitment to undertake and include an uncertainty estimation in accordance with the Australian Groundwater Guidelines based on the 2 year re-run. 	Adani have provided detailed commitments already in the GMMP (23 and 24) about additional content in the groundwater model re-run, this includes calibration, sensitivity analysis, model guidelines, uncertainty analysis, inclusion of all additional information since the EIS and leading up to the re-run, local parameters for geology, groundwater quality, alternative conceptualisations, GAB and Rewan research findings. See proposed wording to address this.	
The plan must include detailed baseline research to establish GDE ecosystem pressure response to groundwater level/pressure fluctuation The plan must include a description of the potential impact on each GDE from each project stage including impacts from subsidence, mine dewatering of aquifers, water discharge, hydrological changes and weed and pest infestation Requirements:	<ul style="list-style-type: none"> Groundwater drawdown triggers must be set for all monitoring locations for which water level thresholds are defined and use a timeframe that is comparable with routine monitoring data assessment and agreed groundwater model review periods. 	GA/CSIRO's advice is inconsistent with both the EPBC and EA conditions, and is a repeat of earlier advice with respect to groundwater drawdown thresholds. This was a requirements for DSC bores under the EPBC approval. It is not a requirement under the EA and we recently discussed with DES and they removed this requirement from Adani to do so in a recent workshop (20/6/19). Baseline research relating to pressure response under the GABSRP will be detailed in the GDEMP	Adani has included groundwater drawdown triggers as indicators in the GDEMP monitoring and management under each relevant GDE Chapter. A cross reference to the relevant tables and sections of the GMMP will also be provided. A new section 5.9.2 GAB Springs Research Plan will be included that provides detail of research with regards to GDE pressure response. <u>Provide a commitment that the interim drawdown rate trigger levels will be reviewed at each review - that is 2 years after commencement of box cut and then every 5 years.</u> <u>Provide a commitment to use bore C027P2 for the early detection of groundwater drawdown to the Carmichael River GDE.</u>
	<ul style="list-style-type: none"> The bore locations must consider the localised changes that may impact on groundwater dependent ecosystems and changes to groundwater conditions following planned longwall panel excavation beneath of two of the 3 interim drawdown rate trigger bores. 	Adani have a monitoring network that takes into consideration a range of factors including the removal of bores due to OC and UG mining. This is detailed in the GMMP Figures 29 and 30.	New Commitment in section 8.7.4 Where interim drawdown rate trigger bores are removed or impacted due to underground mining, these will be replaced.
	<ul style="list-style-type: none"> A commitment to install new groundwater drawdown trigger threshold bore to replace those lost to mining/underground mining must be made. 		New Commitment in section 8.7.4 Where interim drawdown rate trigger bores are removed or

In the interests of being pragmatic and seeing how Adani may be in a position to work with the Department looking forward, below include responses to each of the reasons that DES provided to Adani in the document issued 31 May 2019 regarding the Groundwater Dependent Ecosystem Management Plan Version 11b (March 2019).

In providing these responses, Adani maintains that Plan v.7b as submitted to the DES met the requirements of our Environmental Authority EPML01470513 and that it was not deficient in any respect.

Condition wording /reference	Departmental comments	Adani Response	Proposed Changes
			impacted due to underground mining, these will be replaced.
	<p>To ensure the effective management of these unique ecosystems the GMMP and the GDEMP must be consistent and ‘talk to each other’.</p> <ul style="list-style-type: none"> • Address all inconsistent descriptions and reporting of groundwater drawdown trigger thresholds between the GDEMP and GMMP as detailed in section 4 of the CSIRO/GA advice 7 June 2019. • Address inconsistencies in the level of commitment for corrective actions for each GDE that are applied when groundwater drawdown trigger levels are exceeded as detailed in section 5 of the CSIRO/GA advice 7 June 2019. • Address inconsistencies between the GDEMP and GMMP with regard to adaptive management measures and commitments as detailed in section 5 of the CSIRO/GA advice 7 June 2019. 	<p>Appendix B of the GDEMP has been reconciled with the relevant content and tables of the GMMP</p> <p>Adani is revising the responses based on the workshop with DES on the 31/5 through the Management tables for each GDE.</p> <p>Adani is revising the responses based on the workshop with DES on the 31/5 through the Management tables for each GDE.</p>	<p>This is being addressed via response to DES Comments on the GDEMP provided on the 31/5/19, including review and check for consistency within the GDEMP, and with the GMMP.</p>

Published on DES Disclosures
RTI Act 2009

Date : 17/05/2019 5:12:51 PM
From : "MERRICK Jamie"
To : "Corro DES Minister and DG"
Subject : FW: Letter re new information re Adani GDEMP
Attachment : DES GDEMP Letter May 2019.pdf;

Please register to ESR. Division to meet with Lock the Gate please.

Thanks
Alena

Alena Tracey
Executive Director
Office of the Director-General
Department of Environment and Science

E: alena.tracey@des.qld.gov.au

sch4p4(6) Personal information
Level 32, 1 William Street, Brisbane Qld 4000
Level 27, 400 George Street, Brisbane Qld 4000

-----Original Message-----

From: Carmel Flint <carmelflint@tpg.com.au>
Sent: Friday, 17 May 2019 4:05 PM
To: MERRICK Jamie
Cc: BENNINK Kate
Subject: Letter re new information re Adani GDEMP

Hi Jamie,

Please find attached a letter from Lock the Gate Alliance about new information relating to the Adani GDEMP.

We would greatly appreciate an opportunity to meet to discuss these matters in more detail.

Could you advise whether you are available for a meeting and what might be a suitable time and date?

Thank you,

Carmel

Carmel Flint
Campaign Coordinator
Lock the Gate Alliance

sch4p4(6) Personal information

Jamie Merrick
Director-General
Department of Environment and Science
GPO Box 2454, Brisbane Queensland 4001
By email to Jamie.Merrick@des.qld.gov.au



15th May 2019

Dear Jamie,

Re New information re Adani Groundwater Dependent Ecosystem Management Plan (GDEMP)

I am writing in relation to Adani's GDEMP and the recent reports provided on it by CSIRO and Geoscience Australia (dated November 2018 and February 2019).

As you are aware, the Adani EA requires that the source aquifer for groundwater dependent ecosystems, including the Doongmabulla Springs, are definitively identified in the GDEMP.

In light of that, you have stated previously that Adani would have to find the source aquifer of the Doongmabulla Springs complex before the GDEMP is approved

Reports confirm source aquifer/s have NOT been identified

However, the two CSIRO/Geoscience Australia reports confirm categorically that the source aquifers of the Doongmabulla Springs have not been conclusively identified.

The February 2019 report states that:

"It is not plausible and reasonable to state unequivocally that the Clematis Sandstone is the sole source aquifer for the DSC, as sufficient uncertainty surrounding hydrogeochemistry, inter-aquifer connectivity and groundwater flow exists (Currell et al., 2017; Lewis et al., 2018; Webb et al., 2015) to necessitate a precautionary approach to the conceptualisation (as ruled by the Land Court of Queensland, 2015).

Documents provided by the Proponent, including the GMMP, support the conceptualisation that the Clematis Sandstone is a source aquifer, but there is enough uncertainty around the information provided, as acknowledged by the Proponent, such as in GDEMP Section 4.3.1, to necessitate a robust assessment of potential alternative or additional source aquifers. The paucity of water level and hydrochemistry data for units other than the Clematis Sandstone in the vicinity of the DSC means that it is not possible to conclusively determine the source aquifer or aquifers for the DSC based on available evidence, and thus the precautionary principle must apply".

The November 2018 report states that:

“Evidence provided in the GABSRP supports the conceptualisation that the Clematis Sandstone is a source aquifer, but there is enough uncertainty around the information provided, as acknowledged by the Proponent, to necessitate a robust assessment of potential alternative or additional source aquifers. In addition, and as summarised below, the body of existing evidence available in the public domain shows that there is ambiguity in the source aquifers of the Doongmabulla Springs Complex (Currell et al., 2017; Evans et al., 2018; Fensham et al., 2016; Land Court of Queensland, 2015; Lewis et al., 2018; Webb et al., 2015; Webb, 2015).....

*The information provided and available in the public domain indicates that it is both plausible and reasonable that units other than the Clematis Sandstone, including below the Rewan Formation may be a source aquifer for the DSC. If these other units are providing flow to the DSC, then this would lead to an increase in impacts to the springs (high consequence) and is considered plausible (medium likelihood) – **High risk**.....*

And..... “until such time as more data is provided in the research and management plans, the conceptualisation whereby the Clematis Sandstone is recognised as the sole source aquifer is not the only reasonable and plausible conclusion”.

Additional work required to identify the source aquifer/s

The two reports also provide a number of recommendations about additional research that is or should be required to better understand groundwater interactions and to identify the source aquifer of the springs. Extra research which they refer to includes:

- a. Appropriate geochemical characterisation for each potential contributor to spring flow.
- b. Nested or adjacent bores installed to measure pressure in multiple hydrostratigraphic units
- c. A high resolution ground surface elevation model to properly assess groundwater pressures.
- d. Accurate stream gauging data.
- e. A three dimensional geological model, including geological structures and lithofacies variation.
- f. Additional seismic data acquisition

Specifically, the February 2019 report recommends that:

“To constrain the source aquifer(s) of the DSC, a more sophisticated statistical analysis of hydrochemistry data is required. This includes assessing a wider variety of groundwater and surface water analytes, as well as appropriate use of isotope hydrochemistry analysis. Further information on potential techniques is provided in (CSIRO and Geoscience Australia, 2018) and other readily available references.”

The November 2018 report states that:

Nested or adjacent bores installed to measure pressure in multiple hydrostratigraphic units are required to adequately assess groundwater pressure as it relates to springs, and also to address data gaps identified in the broader hydrogeological conceptualisation.....

A high resolution ground surface elevation model is required to properly assess groundwater pressures in relation to groundwater interaction with the land surface and contributions to and from surface water bodies. Similarly, accurate stream gauging data is required. This also extends to a need for representative spring flow measurements.....

Appropriate geochemical characterisation for each potential contributor to spring flow is necessary to identify spring source aquifers. This includes aquifer materials, surface water and groundwater. This type of assessment should consider a broad suite of parameters including but not limited to anions, cations, trace metals, and isotopes with analytical detection limits at trace levels, including parameters that are commonly associated with coal. This analysis and assessment should involve chemical and isotopic measurements of aquifer formations and springs, as well as alluvium and surface water.....

....a three dimensional geological model, including geological structures and lithofacies variation would provide extremely valuable information to underpin any hydrogeological conceptualisation, including the characteristics of the Rewan Formation.

Additional seismic data acquisition may be warranted, given the data quality issues that may affect reprocessing historical data outlined above....”

In light of these very strong conclusions from our premier scientific bodies, we are writing to seek confirmation that Adani will be required to conduct all of the research identified in the CSIRO/Geoscience Australia reports prior to any further consideration of the GDEMP by DES.

We note that any approval of the GDEMP without conducting the research identified by these scientific reports is likely to fall foul of the legal requirements set down in the Adani EA.

We would appreciate a response as to whether Adani will be required to undertake the full suite of research identified by CSIRO and Geoscience Australia, as listed above. I can be contacted at any time on 0400 521474 or by email at carmelflint@tpg.com.au

Yours sincerely,

sch4p4(6) Personal information

Carmel Flint,
Campaign Coordinator, Lock the Gate Alliance
PO Box 55 Helensvale Qld

Date : 31/05/2019 7:28:25 PM

From : "MERRICK Jamie"

To : "Corro DES Minister and DG"

Subject : FW: Meeting request: Adani Carmichael Coal Mine impacts to the Doongmabulla Springs

Attachment : MeetingRequest 20190531.pdf; PositionPaper Ver5

Main.pdf; image001.png; image003.gif; image005.jpg; image006.png; image002.png; image004.png; image009.jpg; image010.png;



Alena Tracey
Executive Director
Office of the Director-General
Department of Environment and Science

E: alena.tracey@des.qld.gov.au
Level 32, 1 William Street, Brisbane Qld 4000
Level 27, 400 George Street, Brisbane Qld 4000

From: Adrian Werner <adrian.werner@flinders.edu.au>

Sent: Friday, 31 May 2019 3:48 PM

To: MERRICK Jamie; Jamie.Merrick@qld.gov.au; ELLWOOD Dean; ROBERTS Tony; environment@ministerial.qld.gov.au

Cc: Matthew Currell; John Webb (John.Webb@latrobe.edu.au)

Subject: Meeting request: Adani Carmichael Coal Mine impacts to the Doongmabulla Springs

Dear Mr Merrick, Mr Ellwood, Mr Roberts and Minister Enoch,

Please find attached a meeting request and associated position paper regarding our concerns with the current state of science for assessing Carmichael Coal Mine impacts.

Sincerely,

Prof. Adrian Werner

Adrian Werner

Australian Research Council Future Fellow

Professor of Hydrogeology

College of Science and Engineering

Flinders University

Chief Investigator, National Centre for Groundwater Research and Training

Associate Editor, Advances in Water Resources

Room 314, Earth Sciences Building

Flinders University / Sturt Road, Bedford Park South Australia 5042

GPO Box 2100 Adelaide SA 5001

P: +61 8 8201 2718 M: [+61 8 8201 2718](tel:+61882012718)

E: adrian.werner@flinders.edu.au | www.flinders.edu.au/people/adrian.werner

CRICOS No: 00114A This email and any attachments may be confidential. If you are not the intended recipient, please inform the sender by reply email and delete all copies of this message.



NATIONAL CENTRE FOR
GROUNDWATER
RESEARCH AND TRAINING



Flinders
UNIVERSITY
College of Science
& Engineering

Attachment : DES CSIRO GA Request REVISED.docx;image001.png;image002.png;image004.png;

FYI (removed GDEMP attachments).



Melissa Wells
Executive Director
Coal and Central Qld Compliance
Department of Environment and Science

P 07 4987 9343
99 Hospital Road, Emerald QLD 4720
PO Box 3028, Emerald QLD 4720

Dear s.78B(2)

Melissa.



Melissa Wells
Executive Director
Coal and Central Qld Compliance
Department of Environment and Science

P 07 4987 9343
99 Hospital Road, Emerald QLD 4720
PO Box 3028, Emerald QLD 4720

Dear Melissa s.78B(2)

Please engage with [redacted] as the primary contact in relation to contractual issues. [redacted]@aima.eu. [redacted]

Tsch4p4(6) Personal information

Clunies Ross St, Canberra ACT 2601

DES CSIRO/GA GDEMP 11b Advice request – REVISED based on CSIRO/GA feedback and clarification provided 20 May 2019

Review documents (for clarification please note DES does not require a review of the GMMP):

1. GDEMP v11b (track change versions v10 – v11 and v11a-11b attached);

Following the department's review of the CSIRO/GA 2019 Report, the department seeks your advice about the type of investigation and research that may provide greater certainty regarding the department's interest in relation to the identification of the source aquifer(s) to the Doongmabulla Springs Complex (DSC).

The environmental authority (EA) for the Carmichael Coal Mine requires Adani to develop and implement a Groundwater Dependent Ecosystems Management Plan (GDEMP). The term GDEMP is defined in the EA and states, among other things, that a GDEMP must include *'detailed baseline research to establish the source aquifer(s) for groundwater supply to each groundwater dependent ecosystem [potentially or indirectly impacted by mining activities]'*.

Your 2019 Report states that:

'It is plausible and reasonable that the Clematis Sandstone is a major source aquifer for the DSC... It is not plausible and reasonable to state unequivocally that the Clematis Sandstone is the sole source aquifer for the DSC...' (p2); and

'Available evidence supports the conceptualisation that the Clematis Sandstone is a likely source aquifer for the DSC. However, the proposed monitoring and management approaches do not sufficiently address the uncertainty regarding the potential alternative or additional source aquifers (refer Section 3.2 and 3.3).' (p9); and

'To constrain the source aquifer(s) of the DSC, a more sophisticated statistical analysis of hydrochemistry data is required. This includes assessing a wider variety of groundwater and surface water analytes, as well as appropriate use of isotope hydrochemistry analysis. Further information on potential techniques is provided (CSIRO and Geoscience Australia, 2018) and other readily available references.' (p10)

Further, in advice given to the Commonwealth Department of the Environment and Energy, *'Advice on draft research plans to the Department of the Environment and Energy'*, dated November 2018, you state:

'An integrated analysis of existing and newly acquired geological, hydrodynamic and hydrochemical data would improve the conceptual understanding of the groundwater sources of the DSC'. (at page 5); and

'Further information on the specific methods and techniques to be applied to chemically assess the springs source and groundwater flow processes is required for a more detailed assessment to be made. This includes the need to define the

analytical suite, quality assurance and quality control methods, and use of a broader range of isotopic and environmental traces...' (at page 13).

Having regard to **the 2019 Report, the 2018 advice, and our meeting of 16 April 2019**, the department has the understanding that the following further research (steps) would improve the certainty about the source aquifer(s) of the DSC and other groundwater dependent ecosystems:

- a) hydrogeochemical analysis of water samples for comparison within and across relevant aquifers (Clematis Sandstone, Dunda Beds and Rewan Formation);
 - b) incorporation of the use of isotope and ageing tracers in the above hydrogeochemical analysis;
 - c) a comprehensive review of groundwater level and quality data from relevant aquifers including data from new proposed nested bores in the vicinity of DSC;
 - d) detailed geological mapping including cores from bores drilled in the vicinity of DSC and facies modelling to better inform hydraulic connectivity within and across all aquifers;
 - e) incorporation of the airborne electro-magnetic modelling recently completed by Geoscience Australia (and available to Adani by June 2020); and
 - f) revision of the conceptual understanding of the source aquifer(s) for DSC and groundwater system based on information collected from the above for incorporation into the groundwater model review (re-run).
1. Does the above summary accurately reflect the CSIRO/GA advice with respect to further work that could increase certainty of the source aquifer(s) for the DSC?
 2. Would CSIRO/GA recommend any additional measures?
 3. Would it be appropriate from an adaptive management framework for all the above matters to be undertaken over a set period i.e. prior to the model review (re-run)?

Based on GDEMP 11b (track change version/s) and the CSIRO/GA advice dated November 2018 and February 2019, the department seeks your additional advice on the following questions:

4. Generally, in respect to groundwater research and modelling, is it acceptable and/or common from a scientific basis to have some level of uncertainty? i.e. can source aquifer(s) ever be categorically determined or definitively identified? Can you have absolute certainty? Is there always some level of uncertainty?
5. Are the groundwater drawdown trigger thresholds proposed in the updated GDEMP 11b appropriate and suitable to ensure the long-term protection of the DSC in light of your advice that the numerical model is not fit for purpose?
6. For question 5, are the adaptive management measures and commitments in the updated GDEMP appropriate? If not, please provide suggestions to address this?

This advice will assist the department's review and assessment of the latest version of the GDEMP 11b.

Please note there is a high level of urgency to your advice given the department wishes to progress the assessment of the GDEMP and work with Adani to finalise the plan.

Date : 10/05/2019 5:25:42 PM

From : "WELLS Melissa"

To : "MERRICK Jamie"

Subject : FW: QLD DES Request CSIRO/GA Clarification

Attachment : Letter GA_CSIRO clarification 10 May 2019.pdf;Source Aquifer to Doongmabulla Springs_final_20181129.pdf;image001.png;image002.png;image005.png;

FYI



Melissa Wells
Executive Director
Coal and Central Qld Compliance
Department of Environment and Science

P 07 4987 9343
99 Hospital Road, Emerald QLD 4720
PO Box 3028, Emerald QLD 4720

From: WELLS Melissa

Sent: Friday, 10 May 2019 9:36 AM

To: '[redacted] Personal information' <[redacted]@ga.gov.au>
sch4p4(6) Personal information; [redacted] s.78B(2) ga.gov.au'

Subject: QLD DES Request CSIRO/GA Clarification

Good morning [redacted] Personal information

James as discussed [redacted] Personal information was unable to reach you to discuss prior to sending the attached correspondence. Please feel free to give me a call to discuss when convenient.

Kind regards,

Melissa.



Melissa Wells
Executive Director
Coal and Central Qld Compliance
Department of Environment and Science

P 07 4987 9343
99 Hospital Road, Emerald QLD 4720
PO Box 3028, Emerald QLD 4720

Published on DES Disclosure Log
RTI Act 2009



Department of
Environment and Science

10 May 2019

[redacted]
s78B(2)
Chief Executive Officer
Geoscience Australia
Cnr Jerroomberra Avenue and Hindmarsh Drive
SYMONSTON ACT 2609

By email [redacted] s.78B(2) [@ga.gov.au](mailto:[redacted]@ga.gov.au)

sch4p4(6) Personal information

Director
CSIRO Land and Water
Black Mountain Science and Innovation Park
Clunies Ross Street
ACTON ACT 2601

By email [redacted] (6) Personal information [@csiro.au](mailto:[redacted]@csiro.au)

Dear [redacted] sch4p4(6) Personal information

Thank you for meeting with the Department of Environment and Science (the department) on 16 April 2019 to discuss the CSIRO and Geoscience Australia Report '*Advice on Groundwater Management and Monitoring and Groundwater Dependent Ecosystem Management plans to the Department of the Environment and Energy (CSIRO and Geoscience Australia, February 2019)*' (the 2019 Report).

Following the department's review of the 2019 Report, the department wishes to seek your advice about the type of investigation and research that may provide greater certainty regarding the department's interest in relation to the identification of the source aquifer(s) to the Doongmabulla Springs Complex (DSC).

The environmental authority (EA) for the Carmichael Coal Mine requires Adani to develop and implement a Groundwater Dependent Ecosystems Management Plan (GDEMP). The term GDEMP is defined in the EA and states, among other things, that a GDEMP must include '*detailed baseline research to establish the source aquifer(s) for groundwater supply to each groundwater dependent ecosystem [potentially or indirectly impacted by mining activities]*'.

Your 2019 Report states that:

'It is plausible and reasonable that the Clematis Sandstone is a major source aquifer for the DSC... It is not plausible and reasonable to state unequivocally that the Clematis Sandstone is the sole source aquifer for the DSC...' (p2); and

'Available evidence supports the conceptualisation that the Clematis Sandstone is a likely source aquifer for the DSC. However, the proposed monitoring and management approaches do not sufficiently address the uncertainty regarding the potential alternative or additional source aquifers (refer Section 3.2 and 3.3).' (p9); and

'To constrain the source aquifer(s) of the DSC, a more sophisticated statistical analysis of hydrochemistry data is required. This includes assessing a wider variety of groundwater and surface water analytes, as well as appropriate use of isotope hydrochemistry analysis. Further information on potential techniques is provided (CSIRO and Geoscience Australia, 2018) and other readily available references.' (p10)

Further, in advice given to the Commonwealth Department of the Environment and Energy, *'Advice on draft research plans to the Department of the Environment and Energy'*, dated November 2018, you state:

'An integrated analysis of existing and newly acquired geological, hydrodynamic and hydrochemical data would improve the conceptual understanding of the groundwater sources of the DSC'. (at page 5); and

'Further information on the specific methods and techniques to be applied to chemically assess the springs source and groundwater flow processes is required for a more detailed assessment to be made. This includes the need to define the analytical suite, quality assurance and quality control methods, and use of a broader range of isotopic and environmental traces...' (at page 13).

Having regard to the 2019 Report, the 2018 advice, and our meeting of 16 April 2019, the department has the understanding that the following further research (steps) would improve the certainty about the source aquifer(s) of the DSC and other groundwater dependent ecosystems:

1. hydrogeochemical analysis of water samples for comparison within and across relevant aquifers (Clematis Sandstone, Dunda Beds and Rewan Formation);
2. incorporation of the use of isotope and ageing tracers in the above hydrogeochemical analysis;
3. a comprehensive review of groundwater level and quality data from relevant aquifers including data from new proposed nested bores in the vicinity of DSC;
4. detailed geological mapping including cores from bores drilled in the vicinity of DSC and facies modelling to better inform hydraulic connectivity within and across all aquifers;
5. incorporation of the airborne electro-magnetic modelling recently completed by Geoscience Australia (and available to Adani by June 2020); and

6. revision of the conceptual understanding of the source aquifer(s) for DSC and groundwater system based on information collected from the above for incorporation into the groundwater model review (re-run).

Is this understanding correct? Does the above summary accurately reflect the CSIRO and GA advice with respect to further work required to increase certainty of the source aquifer(s) for the DSC?

In addition, the department seeks your advice on the following questions:

1. What is the level of confidence that the Clematis Sandstone aquifer is the main source for the DSC?
2. If there is a high level of uncertainty, what work should be undertaken to address and reduce the level of uncertainty regarding the potential alternative or additional source aquifers for the DSC?
3. For any additional work recommended for question 2, what is a realistic timeframe for the completion of each element of the additional work?
4. Are the groundwater drawdown trigger thresholds proposed in the new GDEMP appropriate and suitable to ensure the long-term protection of the DSC in light of your advice that the conceptual model is not fit for purpose?
5. Based on GDEMP version 11b, are there any other matters or recommendations that CSIRO and GA would highlight in order to ensure the effectiveness of the management plan in relation to environmental authority conditions?

This advice will assist the department's review and assessment of the GDEMP.

Given that the department wishes to progress the assessment of the GDEMP in a timely manner, there is some urgency to your advice. Could you please advise when you anticipate to be in a position to provide your advice.

By way of background, please refer to the GDEMP (version 11b) that was submitted to the department on 9 April 2019 (available at <https://www.adaniaustralia.com/-/media/Project/Australia/Our-Projects--Businesses/mine-environment-reporting/GDEMP-Final-V11b-19March2019.pdf?la=en&hash=C4988A8485428FD234C4A09023D08B34>), and the enclosed document 'Research Study Report – Source Aquifer to Doongmabulla Springs' that was provided to the department by Adani in November 2018.

Please do not hesitate to contact me on (07) 4987 9343 or at Melissa.Wells@des.qld.gov.au should you require further information about this request.

Yours sincerely

sch4p4(6) Personal information

Melissa Wells
Executive Director
Coal and Central Queensland Compliance

Enc.
Research Study Report – Source Aquifer to Doongmabulla Springs (revision 03, Adani, November 2018)

Date : 13/06/2019 1:41:09 PM

From : "ELLWOOD Dean"

To : "Hannah Jackson" , "Pamela.Frost@ministerial.qld.gov.au"

Cc : "MERRICK Jamie"

Subject : Fwd: re. GDEMP approval

Attachment : image003.png;ATT00001.htm;GDEMP_Approval_13-06-2019.pdf;ATT00002.htm;

Dean Ellwood

Department of Environment and Science

[400 George St, Brisbane QLD 4000](#)

GPO [Box 2454, Brisbane QLD 4001](#)

Begin forwarded message:

From: WELLS Melissa <Melissa.Wells@des.qld.gov.au>

Date: 13 June 2019 at 1:30:54 pm AEST

To: MERRICK Jamie <Jamie.Merrick@des.qld.gov.au>, s.78B(2) <@coordinatorgeneral.qld.gov.au>, ELLWOOD Dean <Dean.Ellwood@des.qld.gov.au>

Subject: FW: re. GDEMP approval

FYI

From: MCCOSKER Juliana <Juliana.Mccosker@des.qld.gov.au>

Sent: Thursday, 13 June 2019 1:30 PM

To: s.73

Cc: WELLS Melissa

Subject: re. GDEMP approval

H | s.78B(2)

Please see attached.

Ciao for now

Juliana



Department of
Environment and Science

Our Ref: Groundwater Dependent Ecosystem Management Plan

13 June 2019

s.73

Adani Mining Pty Ltd
Level 25, 10 Eagle Street
Brisbane QLD 4000

Dear s.73

As a delegate under the Environmental Protection Act 1994, I have decided to approve the *Groundwater Dependent Ecosystem Management Plan – Carmichael Coal Mine Project version 12a (June 2019)* as required by the Carmichael Coal Mine Environmental Authority (EPML01470513). The submitted Groundwater Dependent Ecosystem Management Plan satisfies the requirements of environmental authority conditions I11, I12, I13 and the definition requirements in Appendix A of the environmental authority.

Should you require any further information, please contact me on telephone (07) 4987 9356 or by email at juliana.mccosker@des.qld.gov.au.

Yours sincerely

sch4p4(6) Personal information

Juliana McCosker
Manager
Business Centre Coal
Coal and Central Queensland Compliance
Environmental Services and Regulation

Date : 24/05/2019 8:40:44 AM
From : "MERRICK Jamie"
To : "Hannah.Jackson@ministerial.qld.gov.au"
Subject : Fwd: Table
FYI

Sent from my iPhone

Begin forwarded message:

From: Jamie.Merrick@des.qld.gov.au
Date: 24 May 2019 at 8:40:22 am AEST
To: sch4p4(6) Personal information coordinatorgeneral.qld.gov.au>
Cc: Dean Ellwood <dean.ellwood@des.qld.gov.au>
Subject: Table

sch4p4(6) Personal information

Can you please amend the table in reference to DES providing the requirements to the company.

The word 'final' should be removed.

The regulator is prepping material that can go consistent with the timeline set out in the table based on the review of the GDEMP 11 to date. This material is based on consideration by the delegate, informed by advice from the Science Division of the department.

We are seeking advice from CSIRO consistent with the timeframe you have proposed. As discussed, we have set out a scope for the work that is both necessary for the delegate to make a decision informed by the best available science and we believe to be feasible to delivered by CSIRO within the timeframe.

However, as stated in the meeting with the proponent and communicated on other occasions to you, we have no jurisdiction to compel them on the timeframe other than through a contractual date that is the outcome of negotiation. This is one of the two primary risks to the schedule (the other of course being a timely response from the proponent that meets any requirements of the delegate).

On advice from the delegate, the department has consistently committed to the two week resolution period to reach a decision following receipt of the CSIRO advice and this remains the case. This also of course requires that the proponent responds satisfactorily in accordance with timeframe proposed.

Jamie

Sent from my iPhone

Date : 27/05/2019 12:35:18 PM

From : "WELLS Melissa"

To : "ELLWOOD Dean" , "TRACEY Alena"

Cc : "MERRICK Jamie"

Subject : Fwd: urgent - Brief

Attachment : attachment 1.docx;ATT00001.htm;image003.png;ATT00002.htm;

Hi Dean and Alena as per below advice BN now attached for DDG and DG consideration and approval. Thanks, Melissa.

Published on DES Disclosure Log
RTI Act 2009

SECURITY CLASSIFICATION: UNCLASSIFIED

BRIEFING NOTE – EXECUTIVE DIRECTOR

Subject Engagement of CSIRO to provide advice relating to the Adani Carmichael Coal Mine Groundwater Dependent Ecosystem Management Plan

Approval required 27 May 2019.

RECOMMENDATION

It is recommended that the Executive Director:

- **approve** the engagement of CSIRO to provide advice relating to the Adani Carmichael Coal Mine Groundwater Dependent Ecosystem Management Plan (GDEMP).

BACKGROUND

- On 9 April 2019, Adani submitted the most recent version of the GDEMP (version 11b).
- The Commonwealth Department of the Environment and Energy (DOEE) previously engaged CSIRO and Geoscience Australia (GA) to review the GDEMP (version 10a), before the Federal Minister decided to approve that version of the GDEMP on 9 April 2019.
- CSIRO and GA's review report (February 2019) was received by DES on 9 April 2019.
- DES officers met with DOEE, CSIRO and Geoscience Australia representatives on 16 April 2019 to discuss the review report.
- Given that Adani has submitted a revised version of the GDEMP (version 11b) that is different to the one that the CSIRO/GA review relied on, DES is seeking clarification from CSIRO/GA about its review in light of the revised GDEMP.
- DES is seeking clarification around the evidence to support identification of the source aquifer(s) of the Doongmabulla Springs Complex.
- On 10 May 2019, DES wrote to CSIRO and GA requesting advice on five areas, and subsequently provided clarification of the advice sought on 22 May 2019.
- CSIRO and GA have agreed in-principle to provide the advice on a fee-for-service basis.

KEY ISSUES

- As CSIRO and GA conducted the review of the GDEMP for DoEE, and DES requires advice on specific issues within the scope of that review, only CSIRO and GA can provide the requested consulting services in the required timeframe
- The advice is required by COB 7 June 2019, as a decision on the GDEMP must be made by 13 June 2019.
- DES have accepted in-principle CSIRO's terms and conditions in the short form consulting services agreement.
- CSIRO will subcontract to GA through a standing order arrangement, therefore DES only require a contract with CSIRO.

ELECTION/CABINET/PUBLIC COMMITMENTS/LEGISLATION

- DES is required to make a decision whether to approve the GDEMP under environmental authority (EA) condition I12 for the Carmichael Coal Mine (EPML01470513) by 13 June 2019.
- DES has publically stated that advice on version 11b of the GDEMP will be sought from CSIRO and GA.

FINANCIAL IMPACTS

- Funding is available from within existing divisional budget.
- The estimated cost for the advice is approximately \$48,410.00 (GST exclusive).

CONSULTATION

- Procurement Services (mandatory if approval is related to a procurement exercise).

FUTURE STEPS

- The delegate will assess the GDEMP submitted by Adani on 9 April 2019 against the EA requirements. A decision is required to be made by 13 June 2019.
- The delegate will consider the advice from CSIRO and GA when assessing version 11b of the GDEMP.

Endorsed

Noted / Approved / Not Approved

Dean Ellwood
Deputy Director-General
Environmental Services and Regulation
27 / 5 / 2019

Jamie Merrick (or Executive Director on behalf of)
Director-General
27 / 05 / 2019

Director-General or Executive Director comments

Date : 13/06/2019 12:14:34 PM
From : "MERRICK Jamie"
To : "WELLS Melissa" , "GRANT Andrea"
Subject : Latest version
Attachment : 130619 - MR - GDEMP approved.docx;

Published on DES Disclosure Log
RTI Act 2009

Draft media release

Deadline:	Briefing officer: Juliana McCosker
Media Services contact: Kieran Lewis	Phone: 4987 9356
Phone: 3339 58874 (6) Personal information	DDG:
Approved:	Phone:
Geographical area/s of interest:	

GDEMP approved

The Department of Environment and Science (DES) approved Adani's Groundwater Dependent Ecosystem Management Plan (GDEMP) today.

Adani submitted its most recent version of the plan, addressing the department's feedback, yesterday.

The GDEMP's assessment has been rigorous and based on the best available science with DES and Adani meeting regularly to ensure the plan is robust and provides the maximum environmental protection.

In assessing the plan, both Adani and DES took on board advice from CSIRO and Geoscience Australia – the same advice considered by the Commonwealth Government in approving an earlier version of the GDEMP in April this year.

DES sought further clarification and advice from CSIRO and Geoscience Australia, which it received on 7 June 2019.

Based on this advice, DES is satisfied that the GDEMP sufficiently establishes the main source aquifer of the springs.

The advice further confirmed that some level of uncertainty in geological and groundwater conceptual models always exists.

To this extent, other lesser sources are plausible but not proven and DES has required additional commitments from Adani to undertake further scientific work over the next two years. This will identify any potential contribution from other aquifers and strengthen the GDEMP.

Adani is required to undertake additional work to improve the understanding of the source aquifers of springs in the locality, particularly the Doongmabulla Springs Complex. This includes:

- Undertaking detailed hydrogeochemical analysis of groundwater and spring samples from different springs within each spring complex
- Undertaking Isotopic analysis (including noble, radioactive gases and strontium isotopes where isotopic analysis alone is not sufficient)
- Examine core samples from new bores to attain a better understanding of hydraulic properties and provide detailed geological mapping

- Incorporate air-borne electro-magnetic modelling undertaken by Geoscience Australia to improve hydrogeological understanding of the area.
- Using a bore in the Dunda Beds (also known as the Rewan Formation) as an early warning trigger for groundwater drawdown monitoring in the Carmichael River.

Additional measures in the GDEMP also address concerns raised last week by Flinders University scientists that the Permian aquifers should not be ruled out as a Doongmabulla Springs Complex source.

These include installing a new bore below the Rewan Formation, in the vicinity of the Doongmabulla Springs Complex, to assist in determining if the Permian aquifers (Colinlea) form a source for the springs.

Adani is also required to review hydrological, hydrochemistry analyses and seismic information as part of its second geological and groundwater remodelling after box cut mining starts, and review seismic information pertaining underground mining impacts (which is scheduled to start in year 10 of the project).

Underground mining will not commence until these actions are completed and only if predicted impacts are consistent with approved impacts. Likewise, if the hydrogeological conceptualisation differs from that of the approved project, approval must be sought prior to relevant impact causing activities.

The GDEMP is the second of the two environmental management plans (the other being the Black-Throated Finch Management Plan, approved on 31 May) that needed to be approved before Adani could begin significant mining activities at its Carmichael mine site.

Both plans are a requirement of Adani's EA.

For details of what constitutes "significant mining activities", refer to Appendix 1 – Definitions of the EA for the Carmichael mine, available at <https://apps.des.qld.gov.au/env-authorities/pdf/epml01470513.pdf>.

ENDS

AGENCY BACKGROUND – NOT FOR PUBLICATION (do not include in response to media)

Date : 17/05/2019 4:05:20 PM

From : "Carmel Flint"

To : "MERRICK Jamie"

Cc : "BENNINK Kate"

Subject : Letter re new information re Adani GDEMP

Attachment : DES GDEMP Letter May 2019.pdf;

Hi Jamie,

Please find attached a letter from Lock the Gate Alliance about new information relating to the Adani GDEMP.

We would greatly appreciate an opportunity to meet to discuss these matters in more detail.

Could you advise whether you are available for a meeting and what might be a suitable time and date?

Thank you,

Carmel

Carmel Flint

Campaign Coordinator

Lock the Gate Alliance

sch4p4(6) Personal information

Published on DES Disclosure Log
RTI Act 2009

Jamie Merrick
Director-General
Department of Environment and Science
GPO Box 2454, Brisbane Queensland 4001
By email to Jamie.Merrick@des.qld.gov.au



15th May 2019

Dear Jamie,

Re New information re Adani Groundwater Dependent Ecosystem Management Plan (GDEMP)

I am writing in relation to Adani's GDEMP and the recent reports provided on it by CSIRO and Geoscience Australia (dated November 2018 and February 2019).

As you are aware, the Adani EA requires that the source aquifer for groundwater dependent ecosystems, including the Doongmabulla Springs, are definitively identified in the GDEMP.

In light of that, you have stated previously that Adani would have to find the source aquifer of the Doongmabulla Springs complex before the GDEMP is approved

Reports confirm source aquifer/s have NOT been identified

However, the two CSIRO/Geoscience Australia reports confirm categorically that the source aquifers of the Doongmabulla Springs have not been conclusively identified.

The February 2019 report states that:

"It is not plausible and reasonable to state unequivocally that the Clematis Sandstone is the sole source aquifer for the DSC, as sufficient uncertainty surrounding hydrogeochemistry, inter-aquifer connectivity and groundwater flow exists (Currell et al., 2017; Lewis et al., 2018; Webb et al., 2015) to necessitate a precautionary approach to the conceptualisation (as ruled by the Land Court of Queensland, 2015).

Documents provided by the Proponent, including the GMMP, support the conceptualisation that the Clematis Sandstone is a source aquifer, but there is enough uncertainty around the information provided, as acknowledged by the Proponent, such as in GDEMP Section 4.3.1, to necessitate a robust assessment of potential alternative or additional source aquifers. The paucity of water level and hydrochemistry data for units other than the Clematis Sandstone in the vicinity of the DSC means that it is not possible to conclusively determine the source aquifer or aquifers for the DSC based on available evidence, and thus the precautionary principle must apply".

The November 2018 report states that:

“Evidence provided in the GABSRP supports the conceptualisation that the Clematis Sandstone is a source aquifer, but there is enough uncertainty around the information provided, as acknowledged by the Proponent, to necessitate a robust assessment of potential alternative or additional source aquifers. In addition, and as summarised below, the body of existing evidence available in the public domain shows that there is ambiguity in the source aquifers of the Doongmabulla Springs Complex (Currell et al., 2017; Evans et al., 2018; Fensham et al., 2016; Land Court of Queensland, 2015; Lewis et al., 2018; Webb et al., 2015; Webb, 2015).....

*The information provided and available in the public domain indicates that it is both plausible and reasonable that units other than the Clematis Sandstone, including below the Rewan Formation may be a source aquifer for the DSC. If these other units are providing flow to the DSC, then this would lead to an increase in impacts to the springs (high consequence) and is considered plausible (medium likelihood) – **High risk**.....*

And..... “until such time as more data is provided in the research and management plans, the conceptualisation whereby the Clematis Sandstone is recognised as the sole source aquifer is not the only reasonable and plausible conclusion”.

Additional work required to identify the source aquifer/s

The two reports also provide a number of recommendations about additional research that is or should be required to better understand groundwater interactions and to identify the source aquifer of the springs. Extra research which they refer to includes:

- a. Appropriate geochemical characterisation for each potential contributor to spring flow.
- b. Nested or adjacent bores installed to measure pressure in multiple hydrostratigraphic units
- c. A high resolution ground surface elevation model to properly assess groundwater pressures.
- d. Accurate stream gauging data.
- e. A three dimensional geological model, including geological structures and lithofacies variation.
- f. Additional seismic data acquisition

Specifically, the February 2019 report recommends that:

“To constrain the source aquifer(s) of the DSC, a more sophisticated statistical analysis of hydrochemistry data is required. This includes assessing a wider variety of groundwater and surface water analytes, as well as appropriate use of isotope hydrochemistry analysis. Further information on potential techniques is provided in (CSIRO and Geoscience Australia, 2018) and other readily available references.”

The November 2018 report states that:

Nested or adjacent bores installed to measure pressure in multiple hydrostratigraphic units are required to adequately assess groundwater pressure as it relates to springs, and also to address data gaps identified in the broader hydrogeological conceptualisation.....

A high resolution ground surface elevation model is required to properly assess groundwater pressures in relation to groundwater interaction with the land surface and contributions to and from surface water bodies. Similarly, accurate stream gauging data is required. This also extends to a need for representative spring flow measurements.....

Appropriate geochemical characterisation for each potential contributor to spring flow is necessary to identify spring source aquifers. This includes aquifer materials, surface water and groundwater. This type of assessment should consider a broad suite of parameters including but not limited to anions, cations, trace metals, and isotopes with analytical detection limits at trace levels, including parameters that are commonly associated with coal. This analysis and assessment should involve chemical and isotopic measurements of aquifer formations and springs, as well as alluvium and surface water.....

....a three dimensional geological model, including geological structures and lithofacies variation would provide extremely valuable information to underpin any hydrogeological conceptualisation, including the characteristics of the Rewan Formation.

Additional seismic data acquisition may be warranted, given the data quality issues that may affect reprocessing historical data outlined above....”

In light of these very strong conclusions from our premier scientific bodies, we are writing to seek confirmation that Adani will be required to conduct all of the research identified in the CSIRO/Geoscience Australia reports prior to any further consideration of the GDEMP by DES.

We note that any approval of the GDEMP without conducting the research identified by these scientific reports is likely to fall foul of the legal requirements set down in the Adani EA.

We would appreciate a response as to whether Adani will be required to undertake the full suite of research identified by CSIRO and Geoscience Australia, as listed above. I can be contacted at any time on 0400 521474 or by email at carmelflint@tpg.com.au

Yours sincerely,

sch4p4(6) Personal information

Carmel Flint,
Campaign Coordinator, Lock the Gate Alliance
PO Box 55 Helensvale Qld

Date : 13/06/2019 1:40:21 PM

From : "MERRICK Jamie"

To : "rachel.hunter@premiers.qld.gov.au"

Cc : "mark.cridland@premiers.qld.gov.au"

Subject : Management Plan approval

Attachment : 130619 - MR - GDEMP approved FINAL.docx;GDEMP_Approval_13-06-2019.pdf;image001.png;image002.png;

Dear Rachel

For information.

Jamie



Jamie Merrick

Director-General

Department of Environment and Science

E jamie.merrick@des.qld.gov.au

P: + 61 7 3338 9304

Level 32, 1 William Street, Brisbane Qld 4000

GPO Box 2454, Brisbane Qld 4001

Published on DES Disclosure Log
RTI Act 2009

Draft media release

Deadline:	Briefing officer: Juliana McCosker
Media Services contact: Kieran Lewis	Phone: 4987 9356
Phone: 3339 58874 (6) Personal information	DDG:
Approved: ED Melissa Wells	Phone:
Geographical area/s of interest:	

GDEMP approved

The Department of Environment and Science (DES) approved Adani's Groundwater Dependent Ecosystem Management Plan (GDEMP) today.

Adani submitted its most recent version of the plan, addressing the department's feedback, yesterday.

The GDEMP's assessment has been rigorous and based on the best available science. DES and Adani have met regularly to ensure the plan is robust and provides the maximum environmental protection.

In assessing the plan, both Adani and DES took on board advice from CSIRO and Geoscience Australia – the same advice considered by the Commonwealth Government in approving an earlier version of the GDEMP in April this year.

DES sought further clarification and advice from CSIRO and Geoscience Australia, which it received on 7 June 2019.

Based on this advice, DES is satisfied that the GDEMP sufficiently establishes the main source aquifer of the springs as the Clematis Sandstone.

CSIRO and Geoscience Australia also confirmed that some level of uncertainty in geological and groundwater conceptual models always exists.

DES has required additional commitments from Adani to undertake further scientific work over the next two years. This is required to identify any potential contribution from other aquifers and strengthen the GDEMP.

Additional commitments in the approved GDEMP include:

- Further work to improve the understanding of the source aquifers of springs in the locality, particularly the Doongmabulla Springs Complex, including:
 - Undertaking detailed hydrogeochemical analysis of groundwater and spring samples from different springs within each spring complex
 - Undertaking isotopic analysis (including noble, radioactive gases and strontium isotopes where isotopic analysis is not sufficient)
 - Examining core samples from new bores to attain a better understanding of hydraulic properties and provide detailed geological mapping

- Incorporating air-borne electro-magnetic modelling undertaken by Geoscience Australia to improve hydrogeological understanding of the area.
- Using a bore in the Dunda Beds (also known as the Rewan Formation) as an early warning trigger for groundwater drawdown monitoring in the Carmichael River.

Additional measures in the GDEMP also address concerns raised last week by Flinders University scientists that the Permian aquifers should not be ruled out as a Doongmabulla Springs Complex source.

These include installing a new bore below the Rewan Formation, in the vicinity of the Doongmabulla Springs Complex, to assist in determining if the Permian aquifers (Colinlea) form a source for the springs.

Adani is also required to review hydrological, hydrochemistry analyses and seismic information as part of its second geological and groundwater remodelling after box cut mining starts, and review seismic information pertaining underground mining impacts (which is scheduled to start in year 10 of the project). Further seismic studies may also need to be undertaken.

Underground mining will not commence until these actions are completed and only if predicted impacts are consistent with approved impacts. Likewise, if the hydrogeological conceptualisation differs from that of the approved project, approval must be sought prior to relevant impact causing activities.

The GDEMP is the second of the two environmental management plans (the other being the Black-Throated Finch Management Plan, approved on 31 May) that needed to be approved before Adani could begin significant mining activities at its Carmichael mine site.

Both plans are a requirement of Adani's EA.

For details of what constitutes "significant mining activities", refer to Appendix 1 – Definitions of the EA for the Carmichael mine, available at <https://apps.des.qld.gov.au/env-authorities/pdf/epml01470513.pdf>.

ENDS



Department of
Environment and Science

Our Ref: Groundwater Dependent Ecosystem Management Plan

13 June 2019

s.73

Adani Mining Pty Ltd
Level 25, 10 Eagle Street
Brisbane QLD 4000

Dear s.78B(2)

As a delegate under the Environmental Protection Act 1994, I have decided to approve the *Groundwater Dependent Ecosystem Management Plan – Carmichael Coal Mine Project version 12a (June 2019)* as required by the Carmichael Coal Mine Environmental Authority (EPML01470513). The submitted Groundwater Dependent Ecosystem Management Plan satisfies the requirements of environmental authority conditions I11, I12, I13 and the definition requirements in Appendix A of the environmental authority.

Should you require any further information, please contact me on telephone (07) 4987 9356 or by email at juliana.mccosker@des.qld.gov.au.

Yours sincerely

sch4p4(6) Personal information

Juliana McCosker
Manager
Business Centre Coal
Coal and Central Queensland Compliance
Environmental Services and Regulation

Date : 4/06/2019 5:03:17 PM

From : "Adrian Werner"

To : "MERRICK Jamie" , "Jamie.Merrick@qld.gov.au" , "ELLWOOD Dean" , "ROBERTS Tony" ,
"environment@ministerial.qld.gov.au"

Cc : "Matthew Currell" , " [REDACTED] s.78B(2) [REDACTED]@latrobe.edu.au)"

Subject : MEETING SCHEDULED FOR 5 JUNE 2019 - RE: Meeting request: Adani Carmichael Coal Mine impacts to the Doongmabulla Springs

Attachment :

image004.png;image007.gif;image009.jpg;image010.png;image011.png;image006.jpg;image008.png;image012.png;image013.jpg;

Dear Mr Merrick,

Thank you for your reply and offer to meet with Jamie Merrick 9am Tuesday next week.

We believe that the science that we wish to discuss is critical to the approval of the Carmichael Mine. Our understanding of the timelines for that decision are that DES is to advise Adani of any additional requirements (from the CSIRO review) by June 7, giving Adani until June 10 to submit a revised GDEMP. DES will then make a final decision by June 13.

On this basis, **the meeting date you have suggested appears to miss the important milestone of providing DES (and Adani) with feedback and a request to Adani for justification for issues raised.**

Therefore, I am concerned that our Position Paper, written by a group of eminent scientists on this topic, **may fail to inform this important decision.**

Additionally, in the interests of providing the best science to the Queensland Government, I contacted CSIRO today and informed them of our Position Paper and that it is now with DES, without sending it to CSIRO. They acknowledged that our Paper has the advantage of being an independent review with a broader scope than the targeted set of questions that were posed to them. They suggested that their upcoming report and our Paper were therefore likely to be complementary in informing the Queensland Government about critical risks of impacts from the Carmichael Mine.

Is there an opportunity to meet with one of the DDG's at an earlier time e.g., tomorrow. We would also like to discuss with you our intention to release our report to the public in the next day or two, and are eager to discuss the content of the document with you beforehand. We believe that there are advantages to considering our Paper in the context of CSIRO's upcoming opinion and the scope of their evaluation.

Sincerely,

Prof. Adrian Werner

Adrian Werner

Australian Research Council Future Fellow

Professor of Hydrogeology

College of Science and Engineering

Flinders University

Chief Investigator, National Centre for Groundwater Research and Training

Associate Editor, Advances in Water Resources

Room 314, Earth Sciences Building

Flinders University / Sturt Road, Bedford Park South Australia 5042

GPO Box 2100 Adelaide SA 5001

P: +61 8 8201 2710 / s.78B(2) Personal information

E: adrian.werner@flinders.edu.au | www.flinders.edu.au/people/adrian.werner

CRICOS No: 00114A This email and any attachments may be confidential. If you are not the intended recipient, please inform the sender by reply email and delete all copies of this message.



NATIONAL CENTRE FOR
GROUNDWATER
RESEARCH AND TRAINING



Flinders
UNIVERSITY

College of Science
& Engineering

From: TRACEY Erin <Erin.Tracey@des.qld.gov.au> On Behalf Of MERRICK Jamie

Sent: Tuesday, 4 June 2019 1:42 PM

To: Adrian Werner <adrian.werner@flinders.edu.au>

Subject: RE: Meeting request: Adani Carmichael Coal Mine impacts to the Doongmabulla Springs

Good afternoon Adrian,

Jamie is available to meet with you next Tuesday at 9am at 1 William street.

Please let me know if this time suits and I will send through a calendar invite.

Many thanks,



Erin Tracey

Acting Senior Executive Support Officer

Office of the Director-General

Department of Environment and Science

07 3338 9304 | erin.tracey@des.qld.gov.au
Level 32, 1 William Street, Brisbane QLD 4000
GPO Box 2454, Brisbane QLD 4001

From: Adrian Werner <adrian.werner@flinders.edu.au>

Sent: Friday, 31 May 2019 3:48 PM

To: MERRICK Jamie; Jamie.Merrick@qld.gov.au; ELLWOOD Dean; ROBERTS Tony; environment@ministerial.qld.gov.au

Cc: Matthew Currell; John Webb (John.Webb@latrobe.edu.au)

Subject: Meeting request: Adani Carmichael Coal Mine impacts to the Doongmabulla Springs

Dear Mr Merrick, Mr Ellwood, Mr Roberts and Minister Enoch,

Please find attached a meeting request and associated position paper regarding our concerns with the current state of science for assessing Carmichael Coal Mine impacts.

Sincerely,
Prof. Adrian Werner
Adrian Werner
Australian Research Council Future Fellow
Professor of Hydrogeology
College of Science and Engineering
Flinders University
Chief Investigator, National Centre for Groundwater Research and Training
Associate Editor, Advances in Water Resources

Room 314, Earth Sciences Building
Flinders University / Sturt Road, Bedford Park South Australia 5042
GPO Box 2100 Adelaide SA 5001

P: +61 8 8201 2715 sch4p4 (6) Personal information

E: adrian.werner@flinders.edu.au | www.flinders.edu.au/people/adrian.werner

CRICOS No: 00114A This email and any attachments may be confidential. If you are not the intended recipient, please inform the sender by reply email and delete all copies of this message.



NATIONAL CENTRE FOR
GROUNDWATER
RESEARCH AND TRAINING



Flinders
UNIVERSITY
College of Science
& Engineering

The information in this email together with any attachments is intended only for the person or entity to which it is addressed and may contain confidential and/or privileged material. There is no waiver of any confidentiality/privilege by your inadvertent receipt of this material. Any form of review, disclosure, modification, distribution and/or publication of this email message is prohibited, unless as a necessary part of Departmental business.

If you have received this message in error, you are asked to inform the sender as quickly as possible and delete this message and any copies of this message from your computer and/or your computer system network.



Date : 31/05/2019 4:20:09 PM

From : "LOWE Trinity"

To : "MONKIVITCH James"

Cc : "ELLWOOD Dean" , "BROWN Glen" , "LOVEDAY Chris" , "MERRICK Jamie" , "TRACEY Alena" , "Hannah Jackson" , "LAWRENCE Rob"

Subject : RE: Adani Calls

Attachment : Adani_Script CRT 31 May 2019 V 2.docx;image001.png;image002.png;

Hi James – second version a little shorter for the CRT to use.

Cheers

Trin

From: LOWE Trinity

Sent: Friday, 31 May 2019 4:01 PM

To: Hannah Jackson

Cc: MACGROARTY Robynne; ELLWOOD Dean; MONKIVITCH James; BROWN Glen; LOVEDAY Chris; MERRICK Jamie; TRACEY Alena

Subject: Adani Calls

Good Afternoon Hannah

Please see the attached script that has been provided to the Community Response Team (CRT).

Calls can be transferred to our internal bypass number until 5:00pm (this is an automatic computer timed lock out number – 3330 5280.

After 5:00pm the Pollution Hotline number can be given which is 1300 130 372 – Option 2 where a message can be left for a call back from the department on Monday.

Please let me know if there is anything else you need.

Thanks & Cheers

Trinity



Trinity Lowe

Executive Officer

Office of the Deputy Director General
Environmental Services and Regulation Division
Department of Environment and Heritage Protection

P 07 3330 5812

Level 7 400 George St Brisbane

SCRIPT: ADANI – CARMICHAEL COAL MINE – GROUNDWATER DEPENDENT ECOSYSTEM MANAGEMENT PLAN AND BLACK-THROATED FINCH MANAGEMENT PLAN

Status Adani State Government Approvals:

- As at 31 May 2019, there is one outstanding plan requiring departmental approval before significant mining activities can commence at the Carmichael Coal Mine site that being the Groundwater Dependent Ecosystem Management Plan (GDEMP).
- **On 31 May 2019, DES approved the Black Throated Finch Management Plan.**
- As part of their Environmental Authority, Adani is required to publish a copy of the BTFMP within 10 business days on their website.

Black-throated Finch Management Plan (BTFMP)

- DES approved the BTFMP on 31 May 2019
- The BTFMP details the management, mitigation measures and monitoring to minimise impacts to the endangered Black-throated Finch.
- Because the location of the Carmichael Coal Mine site hosts the most significant known population of the Black-throated Finch in Australia, DES engaged an independent expert panel to review the Plan.
- **The independent expert panel review** (Wintle Report) on the Black-throated Finch Management Plan (BTFMP) is not a document available on the public register under the *Environmental Protection Act 1994*. However, the report would be subject to Right to Information provisions and may be accessible through that process.

Groundwater Dependent Ecosystem Management Plan (GDEMP)

- DES is currently assessing a Groundwater Dependant Ecosystem Management Plan for the proposed mine.
- The Commonwealth Department of the Environment and Energy had engaged the CSIRO and Geoscience Australia to undertake an independent scientific review of the GDEMP and DES received a copy of the review on 9 April 2019.
- DES will assess whether the GDEMP meets the EA requirements, and advise Adani if further information or changes are required.
- DES will make a decision on the GDEMP by 13 June 2019.

State Approval

- The Queensland Coordinator-General approved the Environmental Impact Statement for the project in 2014. The development of the BTFMP and GDEMP have been required since then by conditions of the mine's Environmental Authority.

Commonwealth approval

- The Commonwealth Department of the Environment and Energy (DoEE) approved the BTFMP on 18 December 2018 and the GDEMP on 9 April 2019.

Financial Assurance

- DES currently holds the total amount required amount \$15,824,063.00 in financial assurance for Carmichael Coal Mine.

Published on DES Disclosure Log
RTI Act 2009

Date : 13/06/2019 3:39:32 PM

From : "LOWE Trinity"

To : "MONKIVITCH James" , "MERRICK Jamie" , "TRACEY Alena" , "Hannah Jackson" , "DLO DES"

Cc : "DES Director General" , "ESR" , "ELLWOOD Dean" , "BROWN Glen" , "LOVEDAY Chris"

Subject : RE: Adani Calls

Attachment : Adani_Script CRT 13 June 2019 MW.docx;image001.png;image003.png;image004.png;

Afternoon

Please see the update script as at 3:30pm today.

Let me know if you need anything further

Thanks & Cheers

Trinity



Trinity Lowe
Executive Officer
Office of the Deputy Director General
Environmental Services and Regulation Division
Department of Environment and Heritage Protection

P 07 3330 5812
Level 7 400 George St Brisbane

From: LOWE Trinity

Sent: Friday, 31 May 2019 4:01 PM

To: Hannah Jackson

Cc: MACGROARTY Robynne; ELLWOOD Dean; MONKIVITCH James; BROWN Glen; LOVEDAY Chris; MERRICK Jamie; TRACEY Alena

Subject: Adani Calls

Good Afternoon Hannah

Please see the attached script that has been provided to the Community Response Team (CRT).

Calls can be transferred to our internal bypass number until 5:00pm (this is an automatic computer timed lock out number – 3330 5280.

After 5:00pm the Pollution Hotline number can be given which is 1300 130 372 – Option 2 where a message can be left for a call back from the department on Monday.

Please let me know if there is anything else you need.

Thanks & Cheers

Trinity



Trinity Lowe
Executive Officer
Office of the Deputy Director General
Environmental Services and Regulation Division
Department of Environment and Heritage Protection

P 07 3330 5812
Level 7 400 George St Brisbane

SCRIPT: ADANI – CARMICHAEL COAL MINE – GROUNDWATER DEPENDENT ECOSYSTEM MANAGEMENT PLAN AND BLACK-THROATED FINCH MANAGEMENT PLAN

Status Adani State Government Approvals:

- DES has now approved (13 June 2019) the Groundwater Dependant Ecosystem Management Plan (GDEMP). The GDEMP is the second of the two environmental management plans (the other being the Black-Throated Finch Management Plan, approved on 31 May) that needed to be approved before Adani could begin significant mining activities at its Carmichael mine site

Black-throated Finch Management Plan (BTFMP)

- The Commonwealth approved a BTFMP for the project in December 2018.
- On 31 May 2019 DES approved a later, updated version of that plan (version 8a May 2019).
- As part of their Environmental Authority, Adani is required to publish a copy of the DES approved BTFMP on their website.
- You can access a copy of the DES approved BTFMP here:
- https://www.adaniaustralia.com/-/media/Project/Australia/Our-Projects--Businesses/mine-environment-reporting/BTF-Management-Plan_v8a-FINAL-28May2019.pdf?la=en&hash=D4C8EBBFB222B5FF28A61321F1A2078B
- Please note that the Adani web site also has the Commonwealth approved BTFMP (Dec 2018) – callers should be advised about the two versions.
- BTFMP details the management, mitigation measures and monitoring to minimise impacts to the endangered Black-throated Finch.
- Because the location of the Carmichael Coal Mine site hosts the most significant known population of the Black-throated Finch in Australia, DES engaged an independent expert panel to review the Plan.
- **The independent expert panel review** (Wintle Report) on the Black-throated Finch Management Plan (BTFMP) is not a document available on the public register under the *Environmental Protection Act 1994*. However, the report would be subject to Right to Information provisions and may be accessible through that process.

Groundwater Dependent Ecosystem Management Plan (GDEMP)

- **On 13 June 2019 DES approved the GDEMP.**
- **The Commonwealth approved the GDEMP on the 9 April 2019.**
- In assessing the plan, both Adani and DES took on board independent scientific advice from CSIRO and Geoscience Australia provided in April this year.
- DES sought further clarification and advice from CSIRO and Geoscience Australia, which it received on 7 June 2019.
- Based on this advice, DES is satisfied that the GDEMP sufficiently establishes the main source aquifer of the springs as the Clematis Sandstone. A requirement of Adani's environmental approval.

- CSIRO and Geoscience Australia also confirmed that some level of uncertainty in geological and groundwater conceptual models always exists. Therefore, DES has required additional commitments from Adani to undertake further scientific work over the next two years. This is required to identify any potential contribution from other aquifers and strengthen the GDEMP.

Additional significant commitments in the approved GDEMP include:

- Further work to improve the understanding of the source aquifers of springs in the locality, particularly the Doongmabulla Springs Complex, including:
 - Undertaking detailed hydrogeochemical analysis of groundwater and spring samples from different springs within each spring complex
 - Undertaking isotopic analysis (including noble, radioactive gases and strontium isotopes where isotopic analysis is not sufficient)
 - Examining core samples from new bores to attain a better understanding of hydraulic properties and provide detailed geological mapping
 - Incorporating air-borne electro-magnetic modelling undertaken by Geoscience Australia to improve hydrogeological understanding of the area.
- Using a bore in the Dunda Beds (also known as the Rewan Formation) as an early warning trigger for groundwater drawdown monitoring in the Carmichael River.
- Additional measures in the GDEMP also address concerns raised by Flinders University scientists that the Permian aquifers should not be ruled out as a Doongmabulla Springs Complex source.
- These include installing a new bore below the Rewan Formation, in the vicinity of the Doongmabulla Springs Complex, to assist in determining if the Permian aquifers (Colinlea) form a source for the springs.
- Adani is also required to review hydrological, hydrochemistry analyses and seismic information as part of its second geological and groundwater remodelling after box cut mining starts, and review seismic information pertaining underground mining impacts (which is scheduled to start in year 10 of the project). Further seismic studies may also need to be undertaken.
- Underground mining will not commence until these actions are completed and only if predicted impacts are consistent with approved impacts. Likewise, if the hydrogeological conceptualisation differs from that of the approved project, approval must be sought prior to relevant impact causing activities.
- **Both plans are a requirement of Adani's EA. A copy of the GDEMP and also the CSIRO/GA advice is also available on the department's website. The BTFMP is available on Adani's website.**

State Approval

- The Queensland Coordinator-General approved the Environmental Impact Statement (EIS) for the project in 2014. The development of the BTFMP and GDEMP have been required since then by conditions of the mine's Environmental Authority.

Commonwealth approval

- The Commonwealth Department of the Environment and Energy (DoEE) approved the BTFMP on 18 December 2018 and the GDEMP on 9 April 2019.

Financial Assurance

- DES currently holds the total amount required amount \$15,824,063.00 in financial assurance for Carmichael Coal Mine.

Published on DES Disclosure Log
RTI Act 2009

Date : 8/06/2019 6:46:47 PM

From : "WELLS Melissa"

To : "MERRICK Jamie"

Cc : "ELLWOOD Dean"

Subject : Re: DES comments on Adani response to GDEMP recommendations 8 June 2019

Sure will do.

Sent from my iPhone

On 8 Jun 2019, at 6:31 pm, MERRICK Jamie <Jamie.Merrick@des.qld.gov.au> wrote:

Suggest in the morning after a conversation.

Jamie

Sent from my iPhone

On 8 Jun 2019, at 5:54 pm, WELLS Melissa <Melissa.Wells@des.qld.gov.au> wrote:

Jamie and Dean,

Please find attached our responses in track changes. Subject to your views I can provide this document back to Adani either tonight (or in the morning) noting that these comments are based on the document provided and today's discussion and subject to reviewing the amendments in the documents in their entirety (including cross reference of inconsistencies).

Thanks,

Melissa.

<Adani Proposed Response to DES GACSIRO 080619v2 JM.docx>

Date : 7/06/2019 10:35:24 PM

From : "WELLS Melissa"

To : "s.73"

Cc : "MERRICK Jamie", "ELLWOOD Dean", s.73 "MCCOSKER Juliana"

Subject : RE: DES GDEMP (CSIRO/GA advice) Feedback 7 June 2019

Attachment : image001.png;image004.jpg;image006.png;image007.png;image003.png;

Thanks s.73 I received the mail delivery error, corrected and have also forwarded them onto him.

Regards,
Melissa.



Melissa Wells
Executive Director
Coal and Central Qld Compliance
Department of Environment and Science

P 07 4987 9343
99 Hospital Road, Emerald QLD 4720
PO Box 3028, Emerald QLD 4720

From: s.73 @adani.com.au>

Sent: Friday, 7 June 2019 10:26 PM

To: WELLS Melissa; s.73

Cc: MERRICK Jamie; ELLWOOD Dean; s.73 MCCOSKER Juliana

Subject: Re: DES GDEMP (CSIRO/GA advice) Feedback 7 June 2019

Thanks Melissa. Please also note that your initial and subsequent emails did not have the correct email address for s.73 have corrected this for you on this email and also sent him the initial files.

s.73

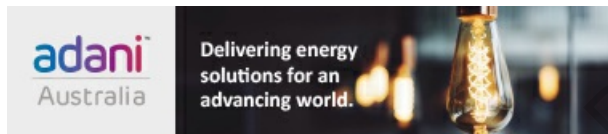
E s.73 @adani.com.au

P office: +61 7 3223 4800|direct: s.73

A Level 25, 10 Eagle Street, Brisbane, QLD, 4000

P GPO Box 2569, Brisbane, QLD, 4001

W adaniaustralia.com



If you receive this message by mistake please tell me, do not use it and remove both messages from your system.
Privilege, confidentiality and copyright associated with this email is not waived.

From: WELLS Melissa <melissa.wells@des.qld.gov.au>

Sent: Friday, June 7, 2019 22:17

To: s.73

Cc: MERRICK Jamie; ELLWOOD Dean; s.73 MCCOSKER Juliana

Subject: RE: DES GDEMP (CSIRO/GA advice) Feedback 7 June 2019

s.73

I am available if s.73 wishes to contact me to clarify any points over the weekend prior to Monday's meeting at 10am.

Thanks,
Melissa.



Melissa Wells
Executive Director
Coal and Central Qld Compliance
Department of Environment and Science

P 07 4987 9343
99 Hospital Road, Emerald QLD 4720
PO Box 3028, Emerald QLD 4720

From: s.73 @adani.com.au>

Sent: Friday, 7 June 2019 9:44 PM

To: WELLS Melissa; s.78B(2)

Cc: MERRICK Jamie; ELLWOOD Dean; s.73 MCCOSKER Juliana

Subject: Re: DES GDEMP (CSIRO/GA advice) Feedback 7 June 2019

Melissa,

Who from the Department is available over the weekend to work through clarifications and issues arising from this latest advice?

Thanks

s.73

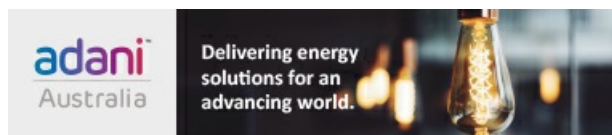
E s.73 @adani.com.au

19-062

File D

Page 92 of 119

P office: +61 7 3223 4800|direct: s.73
A Level 25, 10 Eagle Street, Brisbane, QLD, 4000
P GPO Box 2569, Brisbane, QLD, 4001
W adaniaustralia.com



If you receive this message by mistake please tell me, do not use it and remove both messages from your system.
Privilege, confidentiality and copyright associated with this email is not waived.

From: WELLS Melissa <melissa.wells@des.qld.gov.au>
Sent: Friday, June 7, 2019 21:18
To: s.73
Cc: MERRICK Jamie; ELLWOOD Dean; s.73; MCCOSKER Juliana
Subject: DES GDEMP (CSIRO/GA advice) Feedback 7 June 2019
Good evening s.73
Please see attached correspondence.
Kind regards,
Melissa.



Melissa Wells
Executive Director
Coal and Central Qld Compliance
Department of Environment and Science

P 07 4987 9343
99 Hospital Road, Emerald QLD 4720
PO Box 3028, Emerald QLD 4720

The information in this email together with any attachments is intended only for the person or entity to which it is addressed and may contain confidential and/or privileged material. There is no waiver of any confidentiality/privilege by your inadvertent receipt of this material. Any form of review, disclosure, modification, distribution and/or publication of this email message is prohibited, unless as a necessary part of Departmental business.
If you have received this message in error, you are asked to inform the sender as quickly as possible and delete this message and any copies of this message from your computer and/or your computer system network.

Date : 7/06/2019 10:25:32 PM

From : [s.73]

To : "WELLS Melissa" , [s.73]

Cc : "MERRICK Jamie" , "ELLWOOD Dean" , [s.73] , "MCCOSKER Juliana"

Subject : Re: DES GDEMP (CSIRO/GA advice) Feedback 7 June 2019

Attachment : image004.jpg;image005.png;image003.png;image866223.jpg;

Thanks Melissa. Please also note that your initial and subsequent emails did not have the correct email address for [s.73] have corrected this for you on this email and also sent him the initial files.

[s.73]

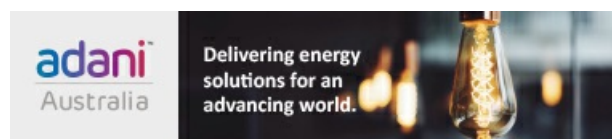
E [s.73]@adani.com.au

P office: +61 7 3223 4800| direct: + [s.73]

A Level 25, 10 Eagle Street, Brisbane, QLD, 4000

P GPO Box 2569, Brisbane, QLD, 4001

W adaniaustralia.com



If you receive this message by mistake please tell me, do not use it and remove both messages from your system. Privilege, confidentiality and copyright associated with this email is not waived.

From: WELLS Melissa <melissa.wells@des.qld.gov.au>

Sent: Friday, June 7, 2019 22:17

To [s.73]

Cc: MERRICK Jamie; ELLWOOD Dean; [s.73]; MCCOSKER Juliana

Subject: RE: DES GDEMP (CSIRO/GA advice) Feedback 7 June 2019

[s.73]

I am available if [s.73] wishes to contact me to clarify any points over the weekend prior to Monday's meeting at 10am.

Thanks,

Melissa.



Melissa Wells
Executive Director
Coal and Central Qld Compliance
Department of Environment and Science

P 07 4987 9343
99 Hospital Road, Emerald QLD 4720
PO Box 3028, Emerald QLD 4720

From: [s.73]@adani.com.au>

Sent: Friday, 7 June 2019 9:44 PM

To: WELLS Melissa; [s.73]

Cc: MERRICK Jamie; ELLWOOD Dean; [s.73]; MCCOSKER Juliana

Subject: Re: DES GDEMP (CSIRO/GA advice) Feedback 7 June 2019

Melissa,

Who from the Department is available over the weekend to work through clarifications and issues arising from this latest advice?

Thanks

[s.73]

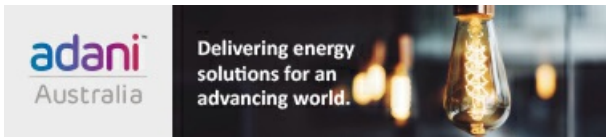
E [s.73]@adani.com.au

P office: +61 7 3223 4800| direct: [s.73]

A Level 25, 10 Eagle Street, Brisbane, QLD, 4000

P GPO Box 2569, Brisbane, QLD, 4001

W adaniaustralia.com



If you receive this message by mistake please tell me, do not use it and remove both messages from your system.
Privilege, confidentiality and copyright associated with this email is not waived.

From: WELLS Melissa <melissa.wells@des.qld.gov.au>

Sent: Friday, June 7, 2019 21:18

To [REDACTED] s.73

Cc: MERRICK Jamie; ELLWOOD Dean; [REDACTED] s.73 MCCOSKER Juliana

Subject: DES GDEMP (CSIRO/GA advice) Feedback 7 June 2019

Good evening [REDACTED] s.73

Please see attached correspondence.

Kind regards,

Melissa.



Melissa Wells

Executive Director

Coal and Central Qld Compliance

Department of Environment and Science

P 07 4987 9343

99 Hospital Road, Emerald QLD 4720

PO Box 3028, Emerald QLD 4720

The information in this email together with any attachments is intended only for the person or entity to which it is addressed and may contain confidential and/or privileged material. There is no waiver of any confidentiality/privilege by your inadvertent receipt of this material. Any form of review, disclosure, modification, distribution and/or publication of this email message is prohibited, unless as a necessary part of Departmental business.

If you have received this message in error, you are asked to inform the sender as quickly as possible and delete this message and any copies of this message from your computer and/or your computer system network.

Date : 7/06/2019 10:16:47 PM

From : "WELLS Melissa"

To : "s.73"

Cc : "MERRICK Jamie", "ELLWOOD Dean", s.73, "MCCOSKER Juliana"

Subject : RE: DES GDEMP (CSIRO/GA advice) Feedback 7 June 2019

Attachment : image001.png;image004.jpg;image005.png;image003.png;

s.73

I am available if s.78B(2) wishes to contact me to clarify any points over the weekend prior to Monday's meeting at 10am.

Thanks,

Melissa.



Melissa Wells
Executive Director
Coal and Central Qld Compliance
Department of Environment and Science

P 07 4987 9343
99 Hospital Road, Emerald QLD 4720
PO Box 3028, Emerald QLD 4720

From: s.73 @adani.com.au>

Sent: Friday, 7 June 2019 9:44 PM

To: WELLS Melissa; s.73

Cc: MERRICK Jamie; ELLWOOD Dean; s.73 MCCOSKER Juliana

Subject: Re: DES GDEMP (CSIRO/GA advice) Feedback 7 June 2019

Melissa,

Who from the Department is available over the weekend to work through clarifications and issues arising from this latest advice?

Thanks

s.73

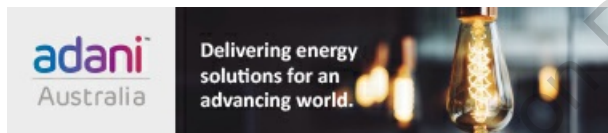
E s.73 @adani.com.au

P office: +61 7 3223 4800|direct: s.73

A Level 25, 10 Eagle Street, Brisbane, QLD, 4000

P GPO Box 2569, Brisbane, QLD, 4001

W adaniaustralia.com



If you receive this message by mistake please tell me, do not use it and remove both messages from your system.
Privilege, confidentiality and copyright associated with this email is not waived.

From: WELLS Melissa <melissa.wells@des.qld.gov.au>

Sent: Friday, June 7, 2019 21:18

To: s.73

Cc: MERRICK Jamie; ELLWOOD Dean; s.73 MCCOSKER Juliana

Subject: DES GDEMP (CSIRO/GA advice) Feedback 7 June 2019

Good evening s.73

Please see attached correspondence.

Kind regards,

Melissa.



Melissa Wells
Executive Director
Coal and Central Qld Compliance
Department of Environment and Science

P 07 4987 9343
99 Hospital Road, Emerald QLD 4720
PO Box 3028, Emerald QLD 4720

The information in this email together with any attachments is intended only for the person or entity to which it is addressed and may contain confidential and/or privileged material. There is no waiver of any confidentiality/privilege by your inadvertent receipt of this material. Any form of review, disclosure, modification, distribution and/or publication of this email message is prohibited, unless as a necessary part of Departmental business.

If you have received this message in error, you are asked to inform the sender as quickly as possible and delete this message and any copies of this message from your computer and/or your computer system network.

Date : 7/06/2019 9:44:22 PM

From : s.73

To : "WELLS Melissa" , s.73

Cc : "MERRICK Jamie" , "ELLWOOD Dean" , s.73 , "MCCOSKER Juliana"

Subject : Re: DES GDEMP (CSIRO/GA advice) Feedback 7 June 2019

Attachment : image002.png;image474155.jpg;

Melissa,

Who from the Department is available over the weekend to work through clarifications and issues arising from this latest advice?

Thanks

s.73

s.73

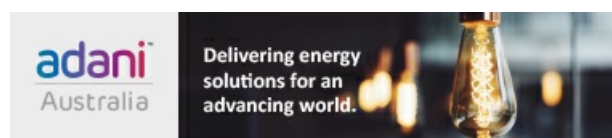
E s.73@adani.com.au

P office: +61 7 3223 4800| direct: s.73

A Level 25, 10 Eagle Street, Brisbane, QLD, 4000

P GPO Box 2569, Brisbane, QLD, 4001

W adaniaustralia.com



If you receive this message by mistake please tell me, do not use it and remove both messages from your system.
Privilege, confidentiality and copyright associated with this email is not waived.

From: WELLS Melissa <melissa.wells@des.qld.gov.au>

Sent: Friday, June 7, 2019 21:18

To: s.73

Cc: MERRICK Jamie; ELLWOOD Dean; s.73 MCCOSKER Juliana

Subject: DES GDEMP (CSIRO/GA advice) Feedback 7 June 2019

Good evening s.73

Please see attached correspondence.

Kind regards,

Melissa.



Melissa Wells
Executive Director
Coal and Central Qld Compliance
Department of Environment and Science

P 07 4987 9343
99 Hospital Road, Emerald QLD 4720
PO Box 3028, Emerald QLD 4720

The information in this email together with any attachments is intended only for the person or entity to which it is addressed and may contain confidential and/or privileged material. There is no waiver of any confidentiality/privilege by your inadvertent receipt of this material. Any form of review, disclosure, modification, distribution and/or publication of this email message is prohibited, unless as a necessary part of Departmental business.

If you have received this message in error, you are asked to inform the sender as quickly as possible and delete this message and any copies of this message from your computer and/or your computer system network.

Date : 7/06/2019 9:33:36 PM

From: (6) Personal information

To : "Rachel Hunter", "MERRICK Jamie"

Subject : Re: DES GDEMP (CSIRO/GA advice) Feedback 7 June 2019

Fantastic effort and commitment to meet timeline Thanks Jamie

Get [Outlook for iOS](#)

From: Rachel Hunter <rachel.hunter@premiers.qld.gov.au>

Sent: Friday, June 7, 2019 9:27:01 PM

To: Jamie Merrick (DES) s.78B(2)

Subject: Re: DES GDEMP (CSIRO/GA advice) Feedback 7 June 2019

Thank you Jamie.

Warm regards

Rachel Hunter

A/Director-General

Department of the Premier and Cabinet

P 07 3003 938844 (6) Personal information

Level 40, 1 William Street, Brisbane QLD 4000

PO Box 15009, City East QLD 4002

www.dsdp.qld.gov.au

From: MERRICK Jamie <jamie.merrick@des.qld.gov.au>

Sent: Friday, June 7, 2019 9:25 PM

sch4p4 (6) Personal information

To: (Coordinator-General)

Cc: Rachel Hunter

Subject: Fwd: DES GDEMP (CSIRO/GA advice) Feedback 7 June 2019

FYI

DES has met its commitments re timelines.

Jamie

Sent from my iPhone

Begin forwarded message:

From: "WELLS Melissa" <Melissa.Wells@des.qld.gov.au<mailto:Melissa.Wells@des.qld.gov.au>>

To: s.73 @adani.com<mailto:s.73@adani.com>>

Cc: "MERRICK Jamie" <Jamie.Merrick@des.qld.gov.au<mailto:Jamie.Merrick@des.qld.gov.au>>, "ELLWOOD Dean"

<Dean.Ellwood@des.qld.gov.au<mailto:Dean.Ellwood@des.qld.gov.au>>, s.73

s.73 @adani.com.au<mailto:s.73@adani.com.au>>, s.73

s.73 @adani.com.au<mailto:s.73@adani.com.au>>, "MCCOSKER Juliana"

<Juliana.Mccosker@des.qld.gov.au<mailto:Juliana.Mccosker@des.qld.gov.au>>

Subject: DES GDEMP (CSIRO/GA advice) Feedback 7 June 2019

Good evening s.73

Please see attached correspondence.

Kind regards,

Melissa.

[cid:image002.png@01D51D76.3C4EC7C0]

Melissa Wells

Executive Director

Coal and Central Qld Compliance

Department of Environment and Science

P 07 4987 9343

19-062

File D

Page 98 of 119

The information in this email together with any attachments is intended only for the person or entity to which it is addressed and may contain confidential and/or privileged material. There is no waiver of any confidentiality/privilege by your inadvertent receipt of this material. Any form of review, disclosure, modification, distribution and/or publication of this email message is prohibited, unless as a necessary part of Departmental business.

If you have received this message in error, you are asked to inform the sender as quickly as possible and delete this message and any copies of this message from your computer and/or your computer system network.

This email is intended only for the addressee. Its use is limited to that intended by the author at the time and it is not to be distributed without the author's consent. Unless otherwise stated, the State of Queensland accepts no liability for the contents of this email except where subsequently confirmed in writing. The opinions expressed in this email are those of the author and do not necessarily represent the views of the State of Queensland. This email is confidential and may be subject to a claim of legal privilege. If you have received this email in error, please notify the author and delete this message immediately

This email and any attachments may contain confidential or privileged information and may be protected by copyright. You must not use or disclose them other than for the purposes for which they were supplied. The confidentiality and privilege attached to this message and attachment is not waived by reason of mistaken delivery to you. If you are not the intended recipient, you must not use, disclose, retain, forward or reproduce this message or any attachments. If you receive this message in error please notify the sender by return email or telephone, and destroy and delete all copies. The Department does not accept any responsibility for any loss or damage that may result from reliance on, or use of, any information contained in this email and/or attachments.

Date : 10/06/2019 9:53:23 AM
From : "Justin Carpenter"
To : "MERRICK Jamie"
Subject : RE: DES GDEMP (CSIRO/GA advice) Feedback 7 June 2019
Thanks for this Jamie.

Justin Carpenter
Acting Executive Director
Environment Policy
Department of the Premier and Cabinet

P 07 3003 9316 M s.73
1 William Street, Brisbane QLD 4000
PO Box 15185, City East, QLD 4002

-----Original Message-----

From: MERRICK Jamie <Jamie.Merrick@des.qld.gov.au>
Sent: Friday, 7 June 2019 9:39 PM
To: Mark Cridland <mark.cridland@premiers.qld.gov.au>; Justin Carpenter <justin.carpenter@premiers.qld.gov.au>
Subject: Fwd: DES GDEMP (CSIRO/GA advice) Feedback 7 June 2019

FYI - DES received CSIRO advice at 5pm this evening and has now set out final GDEMP requirements to Adani in accordance with the timeframe set out by the CG.

DGDPC has been notified.

Jamie

Sent from my iPhone

Begin forwarded message:

From: "WELLS Melissa" <Melissa.Wells@des.qld.gov.au<mailto:Melissa.Wells@des.qld.gov.au>>
To: s.73 <adani.com<mailto:s.73@adani.com>>
Cc: "MERRICK Jamie" <Jamie.Merrick@des.qld.gov.au<mailto:Jamie.Merrick@des.qld.gov.au>>, "ELLWOOD Dean" <Dean.Ellwood@des.qld.gov.au<mailto:Dean.Ellwood@des.qld.gov.au>>, s.73 <s.73@adani.com.au<mailto:s.73@adani.com.au>>, s.73 <s.73@adani.com.au>>, "MCCOSKER Juliana" <Juliana.Mccosker@des.qld.gov.au<mailto:Juliana.Mccosker@des.qld.gov.au>>
Subject: DES GDEMP (CSIRO/GA advice) Feedback 7 June 2019

Good evening s.73

Please see attached correspondence.

Kind regards,
Melissa.

[cid:image002.png@01D51D76.3C4EC7C0]

Melissa Wells
Executive Director
Coal and Central Qld Compliance
Department of Environment and Science

P 07 4987 9343

99 Hospital Road, Emerald QLD 4720
PO Box 3028, Emerald QLD 4720

The information in this email together with any attachments is intended only for the person or entity to which it is addressed and may contain confidential and/or privileged material. There is no waiver of any confidentiality/privilege by your inadvertent receipt of this material.
Any form of review, disclosure, modification, distribution and/or publication of this email message is prohibited, unless as a necessary part of Departmental business.
If you have received this message in error, you are asked to inform the sender as quickly as possible and delete this message and any copies of this message from your computer and/or your computer system network.

This email is intended only for the addressee. Its use is limited to that intended by the author at the time and it is not to be distributed without the author's consent. Unless otherwise stated, the State of Queensland accepts no liability for the contents of this email except where subsequently confirmed in writing. The opinions expressed in this email are those of the author and do not necessarily represent the views of the State of Queensland. This email is confidential and may be subject to

Published on DES Disclosure Log
RTI Act 2009

Date : 9/06/2019 12:01:10 PM

From : "WELLS Melissa"

To : "s.73", "MCCOSKER Juliana"

Cc : "s.73" "MERRICK Jamie", "ELLWOOD Dean"

Subject : RE: GDEMP recommendations

Attachment : image001.jpg;

s.73 we agree to the alternative proposed wording. Melissa.

From: s.73 @adani.com.au>

Sent: Sunday, 9 June 2019 11:20 AM

To: WELLS Melissa; MCCOSKER Juliana

Cc: s.73 MERRICK Jamie; ELLWOOD Dean

Subject: RE: GDEMP recommendations

Thanks Melissa,

An alternative wording is proposed as follows:

From: Adani commits to systematically consider all sources of uncertainty as they pertain to each source aquifer and modelling limitations and document this consideration.

To: Adani commits to systematically consider all significant sources of uncertainty as they pertain to each source aquifer and modelling limitations and document this consideration.

This change reflects the CSIRO / GA advice regarding residual uncertainty associated with geological and groundwater studies, and the inability to have a complete knowledge of the subsurface.

Otherwise, our position is that the proposed amendments are consistent with the original wording and commitments.

Regards

s.73

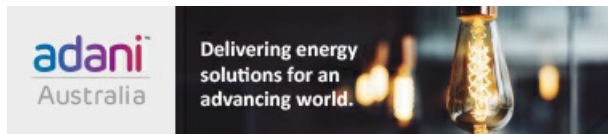
E s.73 @adani.com.au

P office: +61 7 3223 4800|direct: s.73

A Level 25, 10 Eagle Street, Brisbane, QLD, 4000

P GPO Box 2569, Brisbane, QLD, 4001

W adaniaustralia.com



If you receive this message by mistake please tell me, do not use it and remove both messages from your system.
Privilege, confidentiality and copyright associated with this email is not waived.

From: WELLS Melissa [<mailto:Melissa.Wells@des.qld.gov.au>]

Sent: Sunday, 9 June 2019 9:42 AM

To: s.73 @adani.com.au>; MCCOSKER Juliana <Juliana.Mccosker@des.qld.gov.au>

Cc: s.73 @adani.com.au>; s.73 @adani.com.au>; MERRICK Jamie <Jamie.Merrick@des.qld.gov.au>; ELLWOOD Dean <Dean.Ellwood@des.qld.gov.au>

Subject: RE: GDEMP recommendations

Good morning,

Please find attached DES comments (in track) noting that these comments are subject to reviewing the amendments in the documents in their entirety (including cross reference with GMMP).

Thanks,

Melissa.

From: s.73 @adani.com.au>

Sent: Saturday, 8 June 2019 4:33 PM

To: WELLS Melissa; MCCOSKER Juliana

Cc: s.73

Subject: RE: GDEMP recommendations

Hi Melissa

Apologies, one minor update in the table (text in red)

Thanks

s.73

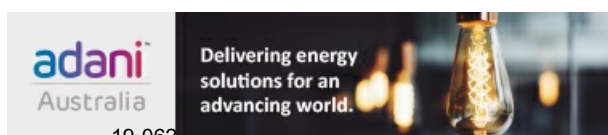
E s.73 @adani.com.au

P office: +61 7 3223 4800|direct: s.73

A Level 25, 10 Eagle Street, Brisbane, QLD, 4000

P GPO Box 2569, Brisbane, QLD, 4001

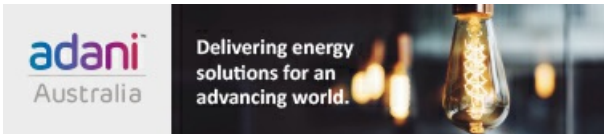
W adaniaustralia.com



From: [redacted] s.73
Sent: Saturday, 8 June 2019 3:50 PM
To: WELLS Melissa <Melissa.Wells@des.qld.gov.au>; MCCOSKER Juliana <Juliana.Mccosker@des.qld.gov.au>
Cc: [redacted] s.73 @adani.com.au; [redacted] s.73 @adani.com.au
Subject: GDEMP recommendations
Dear Melissa and Juliana,
Please see attached proposed response to recommendations on the GDEMP as provided to Adani on the 7/6/19
Regards

[redacted] s.73

E [redacted] s.73 @adani.com.au
P office: +61 7 3223 4800 | direct: [redacted] s.73
A Level 25, 10 Eagle Street, Brisbane, QLD, 4000
P GPO Box 2569, Brisbane, QLD, 4001
W adaniaustralia.com



The information in this email together with any attachments is intended only for the person or entity to which it is addressed and may contain confidential and/or privileged material. There is no waiver of any confidentiality/privilege by your inadvertent receipt of this material. Any form of review, disclosure, modification, distribution and/or publication of this email message is prohibited, unless as a necessary part of Departmental business.
If you have received this message in error, you are asked to inform the sender as quickly as possible and delete this message and any copies of this message from your computer and/or your computer system network.

Date : 9/06/2019 11:53:31 AM

From : s.73
To : "s.73", "WELLS Melissa", "MCCOSKER Juliana"
Cc : "s.73", "MERRICK Jamie", "ELLWOOD Dean"
Subject : Re: GDEMP recommendations
Attachment : image001.jpg;image243862.jpg;

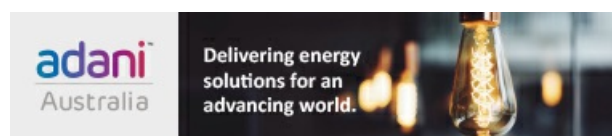
Melissa,

As s.73 notes the amendment below is the only change we are seeking in response to your edits of this morning (ie all of your other edits have been accepted) . Accordingly if you can confirm that the changes referenced below are acceptable we can then move to finalise the document.

Thanks

s.73

E s.73@adani.com.au
P office: +61 7 3223 4800| direct: s.73
A Level 25, 10 Eagle Street, Brisbane, QLD, 4000
P GPO Box 2569, Brisbane, QLD, 4001
W adaniaustralia.com



If you receive this message by mistake please tell me, do not use it and remove both messages from your system.
Privilege, confidentiality and copyright associated with this email is not waived.

From s.73@adani.com.au>

Sent: Sunday, June 9, 2019 11:19

To: WELLS Melissa; MCCOSKER Juliana

Cc: s.73 MERRICK Jamie; ELLWOOD Dean

Subject: RE: GDEMP recommendations

Thanks Melissa,

An alternative wording is proposed as follows:

From: Adani commits to systematically consider all sources of uncertainty as they pertain to each source aquifer and modelling limitations and document this consideration.

To: Adani commits to systematically consider all significant sources of uncertainty as they pertain to each source aquifer and modelling limitations and document this consideration.

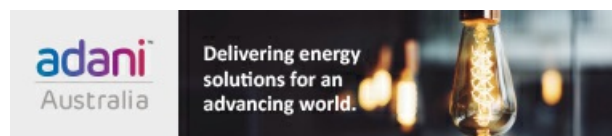
This change reflects the CSIRO / GA advice regarding residual uncertainty associated with geological and groundwater studies, and the inability to have a complete knowledge of the subsurface.

Otherwise, our position is that the proposed amendments are consistent with the original wording and commitments.

Regards

s.73

E s.73@adani.com.au
P office: +61 7 3223 4800| direct: s.73
A Level 25, 10 Eagle Street, Brisbane, QLD, 4000
P GPO Box 2569, Brisbane, QLD, 4001
W adaniaustralia.com



If you receive this message by mistake please tell me, do not use it and remove both messages from your system.
Privilege, confidentiality and copyright associated with this email is not waived.

From: WELLS Melissa [mailto:Melissa.Wells@des.qld.gov.au]

Sent: Sunday, 9 June 2019 9:42 AM
19-062

File D

Page 104 of 119

To: [redacted] s.73 [redacted]@adani.com.au>; MCCOSKER Juliana <Juliana.Mccosker@des.qld.gov.au>
Cc: [redacted] s.73 [redacted]@adani.com.au>; [redacted] s.73 [redacted]@adani.com.au>; MERRICK Jamie
<Jamie.Merrick@des.qld.gov.au>; ELLWOOD Dean <Dean.Ellwood@des.qld.gov.au>

Subject: RE: GDEMP recommendations

Good morning,

Please find attached DES comments (in track) noting that these comments are subject to reviewing the amendments in the documents in their entirety (including cross reference with GMMP).

Thanks,

Melissa.

From: [redacted] s.73 [redacted]@adani.com.au>

Sent: Saturday, 8 June 2019 4:33 PM

To: WELLS Melissa; MCCOSKER Juliana

Cc: [redacted] s.73 [redacted]

Subject: RE: GDEMP recommendations

Hi Melissa

Apologies, one minor update in the table (text in red)

Thanks

[redacted] s.73 [redacted]

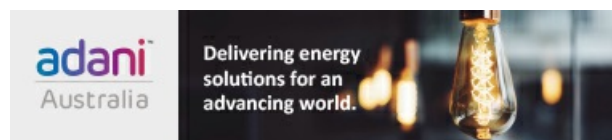
E [redacted] s.73 [redacted]@adani.com.au

P office: +61 7 3223 4800| direct: + [redacted] s.73 [redacted]

A Level 25, 10 Eagle Street, Brisbane, QLD, 4000

P GPO Box 2569, Brisbane, QLD, 4001

W adaniaustralia.com



If you receive this message by mistake please tell me, do not use it and remove both messages from your system.
Privilege, confidentiality and copyright associated with this email is not waived.

From: [redacted] s.73 [redacted]

Sent: Saturday, 8 June 2019 3:50 PM

To: WELLS Melissa <Melissa.Wells@des.qld.gov.au>; MCCOSKER Juliana <Juliana.Mccosker@des.qld.gov.au>

Cc: [redacted] s.73 [redacted]@adani.com.au>; [redacted] s.73 [redacted]@adani.com.au>

Subject: GDEMP recommendations

Dear Melissa and Juliana,

Please see attached proposed response to recommendations on the GDEMP as provided to Adani on the 7/6/19

Regards

[redacted] s.73 [redacted]

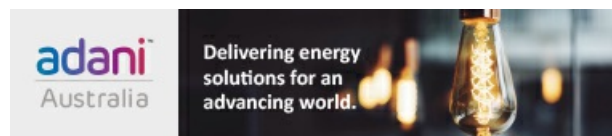
E [redacted] s.73 [redacted]@adani.com.au

P office: +61 7 3223 4800| direct: [redacted] s.73 [redacted]

A Level 25, 10 Eagle Street, Brisbane, QLD, 4000

P GPO Box 2569, Brisbane, QLD, 4001

W adaniaustralia.com



If you receive this message by mistake please tell me, do not use it and remove both messages from your system.
Privilege, confidentiality and copyright associated with this email is not waived.

The information in this email together with any attachments is intended only for the person or entity to which it is addressed and may contain confidential and/or privileged material. There is no waiver of any confidentiality/privilege by your inadvertent receipt of this material.

Any form of review, disclosure, modification, distribution and/or publication of this email message is prohibited, unless as a necessary part of Departmental business.

Date : 9/06/2019 11:19:53 AM

From : [REDACTED] s.73

To : "WELLS Melissa" , "MCCOSKER Juliana"

Cc : "[REDACTED] s.73" , "MERRICK Jamie" , "ELLWOOD Dean"

Subject : RE: GDEMP recommendations

Attachment : image001.jpg;

Thanks Melissa,

An alternative wording is proposed as follows:

From: Adani commits to systematically consider all sources of uncertainty as they pertain to each source aquifer and modelling limitations and document this consideration.

To: Adani commits to systematically consider all significant sources of uncertainty as they pertain to each source aquifer and modelling limitations and document this consideration.

This change reflects the CSIRO / GA advice regarding residual uncertainty associated with geological and groundwater studies, and the inability to have a complete knowledge of the subsurface.

Otherwise, our position is that the proposed amendments are consistent with the original wording and commitments.

Regards

[REDACTED] s.73

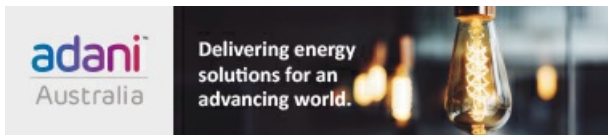
E [REDACTED] s.73 @adani.com.au

P office: +61 7 3223 4800|direct: [REDACTED] s.73

A Level 25, 10 Eagle Street, Brisbane, QLD, 4000

P GPO Box 2569, Brisbane, QLD, 4001

W adaniaustralia.com



If you receive this message by mistake please tell me, do not use it and remove both messages from your system.

Privilege, confidentiality and copyright associated with this email is not waived.

From: WELLS Melissa [mailto:Melissa.Wells@des.qld.gov.au]

Sent: Sunday, 9 June 2019 9:42 AM

To: [REDACTED] s.73 @adani.com.au; MCCOSKER Juliana <Juliana.Mccosker@des.qld.gov.au>

Cc: [REDACTED] s.73 @adani.com.au; [REDACTED] s.73 @adani.com.au; MERRICK Jamie <Jamie.Merrick@des.qld.gov.au>; ELLWOOD Dean <Dean.Ellwood@des.qld.gov.au>

Subject: RE: GDEMP recommendations

Good morning,

Please find attached DES comments (in track) noting that these comments are subject to reviewing the amendments in the documents in their entirety (including cross reference with GMMP).

Thanks,

Melissa.

From: [REDACTED] s.73 @adani.com.au>

Sent: Saturday, 8 June 2019 4:33 PM

To: WELLS Melissa; MCCOSKER Juliana

Cc: [REDACTED] s.73

Subject: RE: GDEMP recommendations

Hi Melissa

Apologies, one minor update in the table (text in red)

Thanks

[REDACTED] s.73

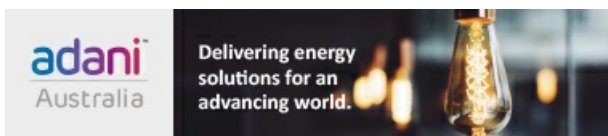
E [REDACTED] s.73 @adani.com.au

P office: +61 7 3223 4800|direct: [REDACTED] s.73

A Level 25, 10 Eagle Street, Brisbane, QLD, 4000

P GPO Box 2569, Brisbane, QLD, 4001

W adaniaustralia.com



If you receive this message by mistake please tell me, do not use it and remove both messages from your system.

Privilege, confidentiality and copyright associated with this email is not waived.

From: [REDACTED] s.73

Sent: Saturday, 8 June 2019 3:50 PM

To: WELLS Melissa <Melissa.Wells@des.qld.gov.au>; MCCOSKER Juliana <Juliana.Mccosker@des.qld.gov.au>
19-062

File D

Page 106 of 119

Cc: [redacted] s.73 [redacted] @adani.com.au>; [redacted] s.73 [redacted] @adani.com.au>

Subject: GDEMP recommendations

Dear Melissa and Juliana,

Please see attached proposed response to recommendations on the GDEMP as provided to Adani on the 7/6/19

Regards

[redacted]
s.73

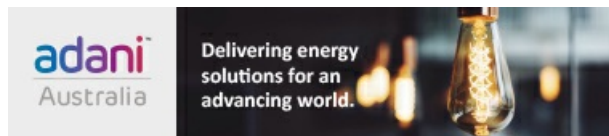
E [redacted] s.73 [redacted] @adani.com.au

P office: +61 7 3223 4800|direct: [redacted] s.73 [redacted]

A Level 25, 10 Eagle Street, Brisbane, QLD, 4000

P GPO Box 2569, Brisbane, QLD, 4001

W adaniaustralia.com



If you receive this message by mistake please tell me, do not use it and remove both messages from your system.
Privilege, confidentiality and copyright associated with this email is not waived.

The information in this email together with any attachments is intended only for the person or entity to which it is addressed and may contain confidential and/or privileged material. There is no waiver of any confidentiality/privilege by your inadvertent receipt of this material. Any form of review, disclosure, modification, distribution and/or publication of this email message is prohibited, unless as a necessary part of Departmental business.

If you have received this message in error, you are asked to inform the sender as quickly as possible and delete this message and any copies of this message from your computer and/or your computer system network.

Published on DES Disclosure Log
RTI Act 2009

Date : 9/06/2019 10:59:29 AM

From : s.73

To : "WELLS Melissa", s.73, "MCCOSKER Juliana"

Cc : s.73, "MERRICK Jamie", "ELLWOOD Dean"

Subject : Re: GDEMP recommendations

Attachment : image001.jpg;image367530.jpg;

Melissa,

We are working through these and will revert this morning.

Thanks

s.73

s.73

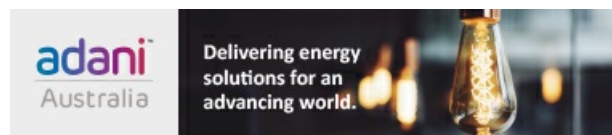
E s.73 @adani.com.au

P office: +61 7 3223 4800| direct: s.73

A Level 25, 10 Eagle Street, Brisbane, QLD, 4000

P GPO Box 2569, Brisbane, QLD, 4001

W adaniaustralia.com



If you receive this message by mistake please tell me, do not use it and remove both messages from your system.
Privilege, confidentiality and copyright associated with this email is not waived.

From: WELLS Melissa <melissa.wells@des.qld.gov.au>

Sent: Sunday, June 9, 2019 09:43

To: s.73 MCCOSKER Juliana

Cc: s.73 MERRICK Jamie; ELLWOOD Dean

Subject: RE: GDEMP recommendations

Good morning,

Please find attached DES comments (in track) noting that these comments are subject to reviewing the amendments in the documents in their entirety (including cross reference with GMMP).

Thanks,

Melissa.

From: s.73 @adani.com.au>

Sent: Saturday, 8 June 2019 4:33 PM

To: WELLS Melissa; MCCOSKER Juliana

Cc: s.73

Subject: RE: GDEMP recommendations

Hi Melissa

Apologies, one minor update in the table (text in red)

Thanks

s.73

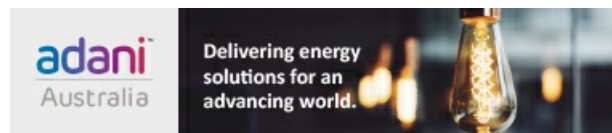
E s.73 @adani.com.au

P office: +61 7 3223 4800| direct: s.73

A Level 25, 10 Eagle Street, Brisbane, QLD, 4000

P GPO Box 2569, Brisbane, QLD, 4001

W adaniaustralia.com



If you receive this message by mistake please tell me, do not use it and remove both messages from your system.

From: [redacted] s.73
Sent: Saturday, 8 June 2019 3:50 PM
To: WELLS Melissa <Melissa.Wells@des.qld.gov.au>; MCCOSKER Juliana <Juliana.Mccosker@des.qld.gov.au>
Cc: [redacted] s.73 @adani.com.au>; [redacted] s.73 @adani.com.au>
Subject: GDEMP recommendations

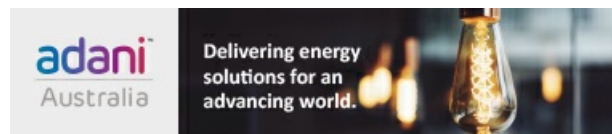
Dear Melissa and Juliana,

Please see attached proposed response to recommendations on the GDEMP as provided to Adani on the 7/6/19

Regards

[redacted]
s.73

E [redacted] s.73 @adani.com.au
P office: +61 7 3223 4800 | direct: [redacted] s.73
A Level 25, 10 Eagle Street, Brisbane, QLD, 4000
P GPO Box 2569, Brisbane, QLD, 4001
W adaniaustralia.com



If you receive this message by mistake please tell me, do not use it and remove both messages from your system.
Privilege, confidentiality and copyright associated with this email is not waived.

The information in this email together with any attachments is intended only for the person or entity to which it is addressed and may contain confidential and/or privileged material. There is no waiver of any confidentiality/privilege by your inadvertent receipt of this material. Any form of review, disclosure, modification, distribution and/or publication of this email message is prohibited, unless as a necessary part of Departmental business.
If you have received this message in error, you are asked to inform the sender as quickly as possible and delete this message and any copies of this message from your computer and/or your computer system network.

Date : 9/06/2019 9:42:11 AM

From : "WELLS Melissa"

To : "s.73", "MCCOSKER Juliana"

Cc : "s.73", "MERRICK Jamie", "ELLWOOD Dean"

Subject : RE: GDEMP recommendations

Attachment : Adani Proposed Response to DES GACSIRO 080619v2 JM_MW.docx;image001.jpg;

Good morning,

Please find attached DES comments (in track) noting that these comments are subject to reviewing the amendments in the documents in their entirety (including cross reference with GMMP).

Thanks,

Melissa.

From: s.73@adani.com.au>

Sent: Saturday, 8 June 2019 4:33 PM

To: WELLS Melissa; MCCOSKER Juliana

Cc: s.73

Subject: RE: GDEMP recommendations

Hi Melissa

Apologies, one minor update in the table (text in red)

Thanks

s.73

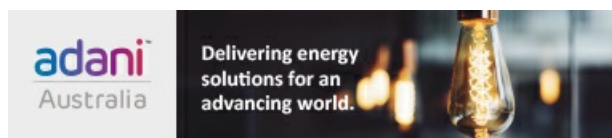
E s.73@adani.com.au

P office: +61 7 3223 4800|direct: + s.73

A Level 25, 10 Eagle Street, Brisbane, QLD, 4000

P GPO Box 2569, Brisbane, QLD, 4001

W adaniaustralia.com



If you receive this message by mistake please tell me, do not use it and remove both messages from your system.
Privilege, confidentiality and copyright associated with this email is not waived.

From: s.73

Sent: Saturday, 8 June 2019 3:50 PM

To: WELLS Melissa <Melissa.Wells@des.qld.gov.au>; MCCOSKER Juliana <Juliana.Mccosker@des.qld.gov.au>

Cc: s.73@adani.com.au>; s.73@adani.com.au>

Subject: GDEMP recommendations

Dear Melissa and Juliana,

Please see attached proposed response to recommendations on the GDEMP as provided to Adani on the 7/6/19

Regards

s.73

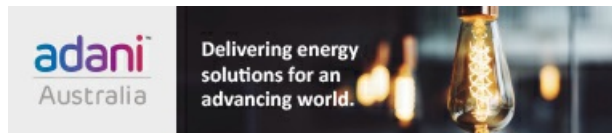
E s.73@adani.com.au

P office: +61 7 3223 4800|direct: s.73

A Level 25, 10 Eagle Street, Brisbane, QLD, 4000

P GPO Box 2569, Brisbane, QLD, 4001

W adaniaustralia.com



If you receive this message by mistake please tell me, do not use it and remove both messages from your system.
Privilege, confidentiality and copyright associated with this email is not waived.

In the interests of being pragmatic and seeing how Adani may be in a position to work with the Department looking forward, below include responses to each of the reasons that DES provided to Adani in the document issued 31 May 2019 regarding the Groundwater Dependent Ecosystem Management Plan Version 11b (March 2019).

In providing these responses, Adani maintains that Plan v.7b as submitted to the DES met the requirements of our Environmental Authority EPML01470513 and that it was not deficient in any respect.

Condition wording /reference	Departmental comments	Adani Response	Proposed Changes
The plan must include detailed baseline research to establish the source aquifer(s) for groundwater supply to the GDE	Requirements prior to model re-run:		
	1. Adani must make a commitment to undertake and complete the following additional work progressively to improve the understanding of the spring source aquifers prior to the 2 year model re-run.	See proposed wording to address this.	For inclusion in new Section 5.9 "Additional studies, Research and Model Re-run" Adani commits to undertake and complete studies and additional work <u>sequentially</u> over the first two years for the purpose of refining the groundwater numerical model and the hydrogeological conceptualisation as required by EA Condition E6.
	<ul style="list-style-type: none"> Hydrogeochemical analysis of samples from different springs groups within each spring complex to provide better understanding and discern the source aquifers of the Doongmabulla Springs Complex. Bulk hydrochemistry must be completed within 3 months of approval and tracer analyses within 12 months. Hydrogeochemical analyses must include but not limited to: <ul style="list-style-type: none"> noble gases - e.g. helium to identify any deeper groundwater contributes to the springs (id of source aquifers); radioactive noble gases to identify source aquifer of recent (decades) to intermediate (centuries) and strontium isotopes – to identify the source rock of a particular groundwater system. Incorporation of the use of isotope and ageing tracers in the above hydrogeochemical analysis; 	See proposed wording to address this.	<p>To cover all these elements, the following new text to be included:</p> <p>5.9 Additional Studies, Research and Model Re-run Adani commits to undertake and complete studies and additional work over the first two years for the purpose of refining the groundwater numerical model and the hydrogeological conceptualisation as required by EA Condition E6.</p> <p>These additional works include:</p> <ul style="list-style-type: none"> Adani will undertake hydrogeochemical analysis across the Doongmabulla springs-complex from groundwater and surface water samples. This includes isotopic analysis and <u>will may</u> also include noble and radioactive gases and strontium isotopes where isotopic analysis is <u>not</u> sufficient <u>to significantly improve understanding and reduce uncertainty in relation to source aquifer (s) of the DSC.</u> Acquiring, testing and examining any new cores samples generated through new bore holes (dependent on the integrity of these samples) <p>Baseline research on GDE's is provided in Section 6.1, 7.1, 8.1 and 9.1. Future research activities on the wetland composition of the Doongmabulla and Mellaluka Springs-complexes will be undertaken through the GAB Springs Research Plan, summarised in Section 5.9.2. Baseline</p>
	<ul style="list-style-type: none"> A comprehensive review of groundwater level and quality data from relevant aquifers including data from new proposed nested bores in the vicinity of Doongmabulla Springs Complex; 	See proposed wording to address this.	
	<ul style="list-style-type: none"> Undertake hydrochemistry interpretation from surface and spring samples to provide more detailed hydrogeology system understanding; 	GMMP section 2.2 details the existing hydrogeochemical baseline. Section 4.7.1.1 and 5.4 the hydrochemistry monitoring Section 7 details commitments (18) to undertake isotopic tracers of GW and SW. Hydrochemistry is included in GMMP (see 4.4.1), GDEMP and GABSRP. See proposed wording to address this.	
	<ul style="list-style-type: none"> Detailed geological mapping including cores from bores drilled in the vicinity of Doongmabulla Springs Complex and facies modelling to better inform hydraulic connectivity within and across all aquifers; 	See text for inclusion, also detail summarising the RFRP. See proposed wording to address this.	

In the interests of being pragmatic and seeing how Adani may be in a position to work with the Department looking forward, below include responses to each of the reasons that DES provided to Adani in the document issued 31 May 2019 regarding the Groundwater Dependent Ecosystem Management Plan Version 11b (March 2019).

In providing these responses, Adani maintains that Plan v.7b as submitted to the DES met the requirements of our Environmental Authority EPML01470513 and that it was not deficient in any respect.

Condition wording /reference	Departmental comments	Adani Response	Proposed Changes
	<ul style="list-style-type: none"> At new monitoring locations, use the opportunity to acquire drill cores to better understand the intact hydrostratigraphy being drilled through to inform the conceptual model. Conduct test on core samples to assess and quantify hydraulic properties being implemented in the numerical model. Completion of core analysis within 2 years. 	In the GMMP, commitment is made to collect and include geological information into the model rerun. Further the Rewan research plan includes relevant studies. Adani have provided detailed commitments already in the GMMP (23 and 24) about additional content in the groundwater model rerun, this includes calibration, sensitivity analysis, model guidelines, uncertainty analysis, inclusion of all additional information since the EIS and leading up to the rerun, local parameters for geology, groundwater quality, alternative conceptualisations, GAB and Rewan research findings.	<p>research on source aquifers is presented in Sections 6.2, 7.2, 8.4 and 9.4. Future research is noted in the GMMP (Section 1.10) and in the Rewan Formation Research Plan and GAB Springs Research Plan. The GMMP (Section 5 and Table 42) provides details on the natural variation of groundwater level and pressure and how this will be monitored over time against the predicted groundwater levels. The ecological response to groundwater level fluctuation is a key component of the GAB Springs Research Plan (Section 5.9.2)</p> <p>Within two years of commencement of mining activities, the ground water model is to be reviewed and re-run with the subsequent provision of updated hydrogeological conceptualisation/s and reporting detailed the information that was or wasn't used for this exercise, the supporting reasons for that approach, and detailed findings of this model re-run and conceptualisation exercise<u>revision of the conceptual understanding of the source aquifer(s)</u> and how this-these will in turn inform a revised GDEMP and GMMP. A key outcome of this exercise is to refine-improve the understanding and decrease the uncertainty surrounding source aquifer/s for each GDE.</p> <p>The GMMP provide details under Section 7 Commitment 24 on matters to be included in that model re-run. Specifically, this exercise will include (not excluding those items in Section 7 Commitment 24):</p> <ul style="list-style-type: none"> Comprehensive review of groundwater level and quality data from across the monitoring network. Hydrochemistry interpretation analysis from groundwater and spring samples <u>from different spring groups within each spring complex</u> as conducted through the additional studies noted above. Inputs from research programs such as the Rewan Formation Research Program and the GAB Springs Research Program. Geological <u>Attain a better understanding of the intact hydrostratigraphy to assess and quantify hydraulic properties from geological</u> information gathered from new
	<ul style="list-style-type: none"> Incorporation of the airborne electro-magnetic (AEM) modelling recently completed by Geoscience Australia (and available to Adani by June 2020). Adani must undertake specific interpretation and analysis of AEM data. The analysis should be conducted with consideration of relevant site-specific data and alternative conceptualisations to be tested to ensure the interpretation derives appropriate conclusions regarding hydrogeology at the scale of investigation of interest to Adani. Adani's AEM investigation should articulate how the objectives of the AEM data analysis will seek to improve hydrogeological knowledge to ensure the interpretation yields desired outcomes; 	Adani have already included in the GMMP a commitment to incorporate GA airborne EM survey data (if and when available) at the 2 year model revision. See proposed wording to address this.	
	<ul style="list-style-type: none"> Revision of the conceptual understanding of the source aquifer(s) for Doongmabulla Springs Complex and the groundwater system based on information collected from the above for incorporation into the groundwater model review (re-run); 	See proposed wording to address this.	
	<ul style="list-style-type: none"> Undertake measures identified by the Queensland Herbarium in the Lake Eyre Basin Springs Assessment project for the Doongmabulla Springs Complex including seismic surveys within 12 months; 	Seismic survey may be undertaken as part of Research, but not specifically at the DSC and not within that timeframe given UG Mining is not scheduled to commence until Year 10, and has triggers prior to commencement. See proposed wording to address this.	
	<ul style="list-style-type: none"> Optimise the spatial distribution of monitoring bores, including nested or co-located bores intersecting different aquifer units, to enable improved future analysis of water level and hydrochemistry data. 	The bore network has been presented in the GMMP with endorsement from CSIRO/GA previously apart from 3 new nested bores. See proposed wording to address this.	

In the interests of being pragmatic and seeing how Adani may be in a position to work with the Department looking forward, below include responses to each of the reasons that DES provided to Adani in the document issued 31 May 2019 regarding the Groundwater Dependent Ecosystem Management Plan Version 11b (March 2019).

In providing these responses, Adani maintains that Plan v.7b as submitted to the DES met the requirements of our Environmental Authority EPML01470513 and that it was not deficient in any respect.

Condition wording /reference	Departmental comments	Adani Response	Proposed Changes
	2. To address the level of uncertainty of the source aquifer(s) for all the Groundwater Dependent Ecosystems and to provide transparency and a better appreciation of the limitations and opportunities for further data collection or modelling, the department recommends that Adani make the following commitments:		bores and core samples, geological mapping and research studies. <ul style="list-style-type: none"> • <u>incorporate</u> Geoscience Australia <u>airborne</u> Electro-magnetic modelling. • Review of groundwater modelling network and locations for ongoing optimisation. • <u>Adani commits to systematically consider the all sources of uncertainty as they pertain to each source aquifer and modelling limitations and document this consideration.</u> • Inclusion of all relevant parameters in a range of modelled scenarios <u>that encompass the identified uncertainties.</u> • Selection of appropriate model <u>spatial</u> scale to account for local and regional parameters <u>such as including scale dependent parameters such as</u> hydraulic conductivity. - • Uncertainty analysis and estimation in accordance with relevant guidelines <p>At the second model re-run instance (7 years after commencement of mining activities), Adani will specifically review seismic information pertaining to the impacts of underground mining noting that this mining activity is not scheduled to commence until year 10, and that a number of precursors are required before it commences.</p> <p>If this review determines that additional seismic studies are required <u>to determine the source aquifers of the DSC</u>, these activities will be completed and that information included into revised modelling. Underground mining will not commence until these actions are completed and only if predicted impacts are <u>in</u> consistent with approved impacts.</p> <p><u>NOTE: Two new sections also being included to provide details of the Rewan Formation Research Plan and the GAB Springs Research Plan</u></p>
	<ul style="list-style-type: none"> • Adani make a commitment to systematically address all the sources of uncertainty and other modelling limitations identified by the CSIRO/GA reviews when the groundwater model is re-run and reviewed as required by EA condition E6 (to be conducted within 2 years of commencement of any mining activities associated with the box cut excavation). 	We will meet condition E6 of the EA, as described in the GMMP and commitment 24 of the GMMP. Adani have provided detailed commitments already in the GMMP (23 and 24) about additional content in the groundwater model re-run, this includes calibration, sensitivity analysis, model guidelines, uncertainty analysis, inclusion of all additional information since the EIS and leading up to the re-run, local parameters for geology, groundwater quality, alternative conceptualisations, GAB and Rewan research findings. See proposed wording to address this.	
	<ul style="list-style-type: none"> • For the model re-run, Adani make a commitment to sample the entire plausible parameter space and make predictions probabilistically by spreading attention across refining distributions of the most sensitive model parameters and efficient stochastic modelling (Turnadge et al. 2018). 	Does not reflect the approval of the current model scenario. Adani have provided detailed commitments already in the GMMP (23 and 24) about additional content in the groundwater model re-run, this includes calibration, sensitivity analysis, model guidelines, uncertainty analysis, inclusion of all additional information since the EIS and leading up to the re-run, local parameters for geology, groundwater quality, alternative conceptualisations, GAB and Rewan research findings. See proposed wording to address this.	
	<ul style="list-style-type: none"> • For the model re-run, Adani make a commitment to define scale dependent parameters such as hydraulic conductivity at the appropriate spatial scale i.e. commensurate with the size of the numerical grid cell of the groundwater model. 	Adani have provided detailed commitments already in the GMMP (23 and 24) about additional content in the groundwater model re-run, this includes calibration, sensitivity analysis, model guidelines, uncertainty analysis, inclusion of all additional information since the EIS and leading up to the re-run, local parameters for geology, groundwater quality, alternative conceptualisations, GAB and Rewan research findings. See proposed wording to address this.	

In the interests of being pragmatic and seeing how Adani may be in a position to work with the Department looking forward, below include responses to each of the reasons that DES provided to Adani in the document issued 31 May 2019 regarding the Groundwater Dependent Ecosystem Management Plan Version 11b (March 2019).

In providing these responses, Adani maintains that Plan v.7b as submitted to the DES met the requirements of our Environmental Authority EPML01470513 and that it was not deficient in any respect.

Condition wording /reference	Departmental comments	Adani Response	Proposed Changes
	<ul style="list-style-type: none"> For the model re-run, Adani make a commitment to run a sufficient range of plausible scenarios that encompass the range of identified uncertainties. 	Adani have provided detailed commitments already in the GMMP (23 and 24) about additional content in the groundwater model re-run, this includes calibration, sensitivity analysis, model guidelines, uncertainty analysis, inclusion of all additional information since the EIS and leading up to the re-run, local parameters for geology, groundwater quality, alternative conceptualisations, GAB and Rewan research findings. See proposed wording to address this.	
	<ul style="list-style-type: none"> Adani make a commitment to undertake and include an uncertainty estimation in accordance with the Australian Groundwater Guidelines based on the 2 year re-run. 	Adani have provided detailed commitments already in the GMMP (23 and 24) about additional content in the groundwater model re-run, this includes calibration, sensitivity analysis, model guidelines, uncertainty analysis, inclusion of all additional information since the EIS and leading up to the re-run, local parameters for geology, groundwater quality, alternative conceptualisations, GAB and Rewan research findings. See proposed wording to address this.	
The plan must include detailed baseline research to establish GDE ecosystem pressure response to groundwater level/pressure fluctuation The plan must include a description of the potential impact on each GDE from each project stage including impacts from subsidence, mine dewatering of aquifers, water discharge, hydrological changes and weed and pest infestation Requirements:	<ul style="list-style-type: none"> Groundwater drawdown triggers must be set for all monitoring locations for which water level thresholds are defined and use a timeframe that is comparable with routine monitoring data assessment and agreed groundwater model review periods. 	GA/CSIRO's advice is inconsistent with both the EPBC and EA conditions, and is a repeat of earlier advice with respect to groundwater drawdown thresholds. This was a requirements for DSC bores under the EPBC approval. It is not a requirement under the EA and we recently discussed with DES and they removed this requirement from Adani to do so in a recent workshop (20/6/19). Baseline research relating to pressure response under the GABSRP will be detailed in the GDEMP	Adani has included groundwater drawdown triggers as indicators in the GDEMP monitoring and management under each relevant GDE Chapter. A cross reference to the relevant tables and sections of the GMMP will also be provided. A new section 5.9.2 GAB Springs Research Plan will be included that provides detail of research with regards to GDE pressure response. <u>Provide a commitment that the interim drawdown rate trigger levels will be reviewed at each review - that is 2 years after commencement of box cut and then every 5 years.</u> <u>Provide a commitment to use bore C027P2 for the early detection of groundwater drawdown to the Carmichael River GDE.</u>
	<ul style="list-style-type: none"> The bore locations must consider the localised changes that may impact on groundwater dependent ecosystems and changes to groundwater conditions following planned longwall panel excavation beneath of two of the 3 interim drawdown rate trigger bores. 	Adani have a monitoring network that takes into consideration a range of factors including the removal of bores due to OC and UG mining. This is detailed in the GMMP Figures 29 and 30.	New Commitment in section 8.7.4 Where interim drawdown rate trigger bores are removed or impacted due to underground mining, these will be replaced.
	<ul style="list-style-type: none"> A commitment to install new groundwater drawdown trigger threshold bore to replace those lost to mining/underground mining must be made. 		New Commitment in section 8.7.4 Where interim drawdown rate trigger bores are removed or

In the interests of being pragmatic and seeing how Adani may be in a position to work with the Department looking forward, below include responses to each of the reasons that DES provided to Adani in the document issued 31 May 2019 regarding the Groundwater Dependent Ecosystem Management Plan Version 11b (March 2019).

In providing these responses, Adani maintains that Plan v.7b as submitted to the DES met the requirements of our Environmental Authority EPML01470513 and that it was not deficient in any respect.

Condition wording /reference	Departmental comments	Adani Response	Proposed Changes
			impacted due to underground mining, these will be replaced.
	<p>To ensure the effective management of these unique ecosystems the GMMP and the GDEMP must be consistent and ‘talk to each other’.</p> <ul style="list-style-type: none"> • Address all inconsistent descriptions and reporting of groundwater drawdown trigger thresholds between the GDEMP and GMMP as detailed in section 4 of the CSIRO/GA advice 7 June 2019. • Address inconsistencies in the level of commitment for corrective actions for each GDE that are applied when groundwater drawdown trigger levels are exceeded as detailed in section 5 of the CSIRO/GA advice 7 June 2019. • Address inconsistencies between the GDEMP and GMMP with regard to adaptive management measures and commitments as detailed in section 5 of the CSIRO/GA advice 7 June 2019. 	<p>Appendix B of the GDEMP has been reconciled with the relevant content and tables of the GMMP</p> <p>Adani is revising the responses based on the workshop with DES on the 31/5 through the Management tables for each GDE.</p> <p>Adani is revising the responses based on the workshop with DES on the 31/5 through the Management tables for each GDE.</p>	<p>This is being addressed via response to DES Comments on the GDEMP provided on the 31/5/19, including review and check for consistency within the GDEMP, and with the GMMP.</p>

Published on DES Disclosures
RTI Act 2009

Date : 9/06/2019 12:48:45 PM

From : "MERRICK Jamie"

To : s.78B(2) @coordinatorgeneral.qld.gov.au"

Subject : RE: GDEMP recommendations

Attachment : image001.jpg;

FYI

From s.73 adani.com.au>

Sent: Sunday, 9 June 2019 11:54 AM

To: s.73 WELLS Melissa; MCCOSKER Juliana

Cc: s.73 MERRICK Jamie; ELLWOOD Dean

Subject: Re: GDEMP recommendations

Melissa,

As s.73 notes the amendment below is the only change we are seeking in response to your edits of this morning (ie all of your other edits have been accepted) . Accordingly if you can confirm that the changes referenced below are acceptable we can then move to finalise the document.

Thanks

s.73

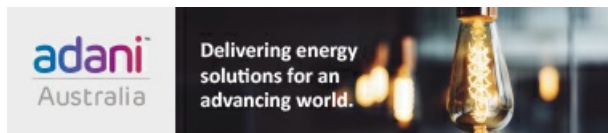
E s.73 @adani.com.au

P office: +61 7 3223 4800|direct: s.73

A Level 25, 10 Eagle Street, Brisbane, QLD, 4000

P GPO Box 2569, Brisbane, QLD, 4001

W adaniaustralia.com



If you receive this message by mistake please tell me, do not use it and remove both messages from your system.
Privilege, confidentiality and copyright associated with this email is not waived.

From: s.73 @adani.com.au>

Sent: Sunday, June 9, 2019 11:19

To: WELLS Melissa; MCCOSKER Juliana

Cc: s.73 MERRICK Jamie; ELLWOOD Dean

Subject: RE: GDEMP recommendations

Thanks Melissa,

An alternative wording is proposed as follows:

From: Adani commits to systematically consider all sources of uncertainty as they pertain to each source aquifer and modelling limitations and document this consideration.

To: Adani commits to systematically consider all significant sources of uncertainty as they pertain to each source aquifer and modelling limitations and document this consideration.

This change reflects the CSIRO / GA advice regarding residual uncertainty associated with geological and groundwater studies, and the inability to have a complete knowledge of the subsurface.

Otherwise, our position is that the proposed amendments are consistent with the original wording and commitments.

Regards

s.73

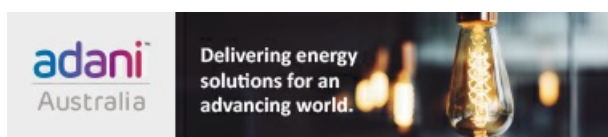
E s.73 @adani.com.au

P office: +61 7 3223 4800|direct: s.73

A Level 25, 10 Eagle Street, Brisbane, QLD, 4000

P GPO Box 2569, Brisbane, QLD, 4001

W adaniaustralia.com



If you receive this message by mistake please tell me, do not use it and remove both messages from your system.
Privilege, confidentiality and copyright associated with this email is not waived.

From: WELLS Melissa [<mailto:Melissa.Wells@des.qld.gov.au>]

Sent: Sunday, 9 June 2019 9:42 AM

19-062

File D

Page 116 of 119

To: [redacted] s.73 [redacted] @adani.com.au>; MCCOSKER Juliana <Juliana.Mccosker@des.qld.gov.au>
Cc: [redacted] s.73 [redacted] @adani.com.au>; [redacted] s.73 [redacted] adani.com.au>; MERRICK Jamie
<Jamie.Merrick@des.qld.gov.au>; ELLWOOD Dean <Dean.Ellwood@des.qld.gov.au>
Subject: RE: GDEMP recommendations

Good morning,

Please find attached DES comments (in track) noting that these comments are subject to reviewing the amendments in the documents in their entirety (including cross reference with GMMP).

Thanks,

Melissa.

From: [redacted] s.73 [redacted] @adani.com.au>

Sent: Saturday, 8 June 2019 4:33 PM

To: WELLS Melissa; MCCOSKER Juliana

Cc: [redacted] s.73 [redacted]

Subject: RE: GDEMP recommendations

Hi Melissa

Apologies, one minor update in the table (text in red)

Thanks

[redacted]
s.73

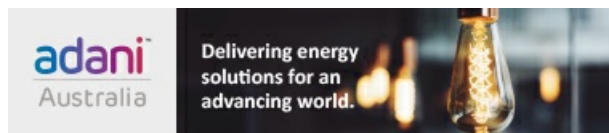
E [redacted] s.73 [redacted] adani.com.au

P office: +61 7 3223 4800|direct: [redacted] s.73 [redacted]

A Level 25, 10 Eagle Street, Brisbane, QLD, 4000

P GPO Box 2569, Brisbane, QLD, 4001

W adaniaustralia.com



If you receive this message by mistake please tell me, do not use it and remove both messages from your system.
Privilege, confidentiality and copyright associated with this email is not waived.

From: [redacted] s.73 [redacted]
Sent: Saturday, 8 June 2019 3:50 PM
To: WELLS Melissa <Melissa.Wells@des.qld.gov.au>; MCCOSKER Juliana <Juliana.Mccosker@des.qld.gov.au>
Cc: [redacted] s.73 [redacted] @adani.com.au>; [redacted] s.73 [redacted] @adani.com.au>
Subject: GDEMP recommendations

Dear Melissa and Juliana,

Please see attached proposed response to recommendations on the GDEMP as provided to Adani on the 7/6/19

Regards

[redacted]
s.73

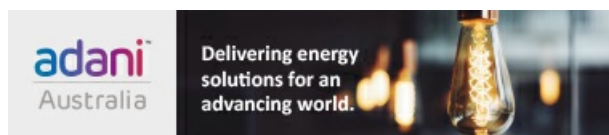
E [redacted] s.73 [redacted] adani.com.au

P office: +61 7 3223 4800|direct: [redacted] s.73 [redacted]

A Level 25, 10 Eagle Street, Brisbane, QLD, 4000

P GPO Box 2569, Brisbane, QLD, 4001

W adaniaustralia.com



If you receive this message by mistake please tell me, do not use it and remove both messages from your system.
Privilege, confidentiality and copyright associated with this email is not waived.

The information in this email together with any attachments is intended only for the person or entity to which it is addressed and may contain confidential and/or privileged material. There is no waiver of any confidentiality/privilege by your inadvertent receipt of this material. Any form of review, disclosure, modification, distribution and/or publication of this email message is prohibited, unless as a necessary part of Departmental business.

If you have received this message in error, you are asked to inform the sender as quickly as possible and delete this message and any copies of this message from your computer and/or your computer system network.

Date : 9/06/2019 12:06:43 PM

From : "MCCOSKER Juliana"

To : " s.73 "

Cc : "WELLS Melissa" , "MERRICK Jamie" , "ELLWOOD Dean" , " s.73 "

Subject : re. GDEMP version 12

Attachment : GDEMP Final V12 Changes Tracked HM 8June19 v3 JM comments090619.docx;

Hi s.73

Please see attached comments/edits to v12 of GDEMP. Still working through groundwater quality values.

Ciao for now

Juliana

Published on DES Disclosure Log
RTI Act 2009

Date : 13/06/2019 1:54:30 PM

From: [redacted] (6) Personal information

To : "WELLS Melissa", "MERRICK Jamie", "ELLWOOD Dean"

Subject : RE: re. GDEMP approval

Attachment : image002.png;image004.png;image005.png;image006.png;

Many thanks for this and to DES for the outstanding work and commitment to the timing and robust outcome



[redacted] (6) Personal information

Coordinator-General

Department of State Development, Manufacturing, Infrastructure and Planning

P: 07 3452 7034 [redacted] (6) Personal information

E: [redacted] (6) Personal information coordinatorgeneral.qld.gov.au

Level 14 | 1 William Street | Brisbane QLD 4000 | PO Box 15517 | City East QLD 4002

From: WELLS Melissa <Melissa.Wells@des.qld.gov.au>

Sent: Thursday, 13 June 2019 1:31 PM

To: MERRICK Jamie <Jamie.Merrick@des.qld.gov.au> [redacted] (6) Personal information; coordinatorgeneral.qld.gov.au; ELLWOOD Dean <Dean.Ellwood@des.qld.gov.au>

Subject: FW: re. GDEMP approval

FYI

From: MCCOSKER Juliana <Juliana.Mccosker@des.qld.gov.au>

Sent: Thursday, 13 June 2019 1:30 PM

To: [redacted] s.73

Cc: WELLS Melissa

Subject: re. GDEMP approval

Hi [redacted] s.73

Please see attached.

Ciao for now

Juliana



Juliana McCosker

Manager

Business Centre Coal - Coal and Central Queensland Compliance

Department of Environment and Science

P 07 4874 2561 [redacted] (6) Personal information

99 Hospital Road, Emerald QLD 4720

PO Box 3028, Emerald QLD 4720

The information in this email together with any attachments is intended only for the person or entity to which it is addressed and may contain confidential and/or privileged material. There is no waiver of any confidentiality/privilege by your inadvertent receipt of this material.

Any form of review, disclosure, modification, distribution and/or publication of this email message is prohibited, unless as a necessary part of Departmental business.

If you have received this message in error, you are asked to inform the sender as quickly as possible and delete this message and any copies of this message from your computer and/or your computer system network.

This email and any attachments may contain confidential or privileged information and may be protected by copyright. You must not use or disclose them other than for the purposes for which they were supplied. The confidentiality and privilege attached to this message and attachment is not waived by reason of mistaken delivery to you. If you are not the intended recipient, you must not use, disclose, retain, forward or reproduce this message or any attachments. If you receive this message in error please notify the sender by return email or telephone, and destroy and delete all copies. The Department does not accept any responsibility for any loss or damage that may result from reliance on, or use of, any information contained in this email and/or attachments.