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To: Mr Stephen Hunter

Please find attached our submission to the independent review of the water trigger legislation under the EPBC Act.

Geoscience Australia (GA) has provided science advice to the Australian Government in connection with groundwater resources on coal seam gas projects prior to the introduction of the water trigger and on coal seam gas and coal mining projects following the introduction of the water trigger. GA also provides groundwater-related advice in connection with other aspects of the EPBC Act (such as nuclear matters).

In the context of your review, should you wish to discuss any of the matters raised in the GA submission, please contact our Groundwater Advice Section Leader, [redacted]

Kind Regards

[redacted]

Dr Narelle Neumann

Groundwater Branch Head
Environmental Geoscience Division
Geoscience Australia

Geoscience Australia Comments for EPBC Act 'Water Trigger' Review

Groundwater Branch,
Environmental Geoscience Division
Geoscience Australia

Date: 29 January 2016

1 Context for comments from Geoscience Australia

The 2013 amendment to the Environment Protection and Biodiversity Act 1999 (EPBC Act), to include Sections 24D and 24E, also known as the water trigger, resulted in a requirement for coal and coal seam gas (CSG) developments likely to result in significant impacts to water resources to be assessed and approved by the Australian Government. The water trigger seeks to protect both surface water and groundwater resources. The comments in this document are restricted to the regulation of impacts to groundwater only. The primary differences in managing impacts to surface water versus groundwater are the time frames and costs involved in the detection and mitigation of impacts: impacts to surface water can be detected almost immediately and are often mitigated or remediated relatively easily, whereas impacts to groundwater can take decades to detect and be highly expensive and complicated to remediate.

The Groundwater Branch of Geoscience Australia (GA) provides advice to the Australian Government on impacts to groundwater from the extractive industries (mineral, oil and gas) where these activities are covered by the EPBC Act, and has been doing so since 2006. GA's experience in this area is summarised below, to give context to the comments provided in this document, for the review of the EPBC Act water trigger legislation.

Prior to the approval of the CSG projects in the Surat Basin, Queensland and the introduction of the water trigger, the Groundwater Branch was primarily involved in providing advice relating to nuclear matters under the EPBC Act, specifically uranium mining. In these instances GA was directly engaged by the Department of the Environment (DoE), and its predecessors, to provide technical advice on resource and groundwater issues during the assessment phase and the drafting of approval conditions.

In 2010 GA provided advice in connection with the potential for proposed CSG projects in the Surat Basin, Queensland, to impact on the flows to springs that support matters of national environmental significance (MNES) listed under the EPBC Act. The advice was provided directly to the DoE during the assessment phase of the projects.

Between 2011 and 2013 the Groundwater Branch supported the work of an Expert Panel established by DoE. The Expert Panel was established *"to provide expert hydrological and hydrogeological advice to the Minister and ... (the department) relating to major coal seam gas (CSG) proposals which are approved, or which require a decision on approval, under ... (the EPBC Act)"*[1]. From this, the Branch gained further experience in the practical application of approval conditions for CSG projects. GA's role primarily related to advising on matters of compliance with the approval conditions for the CSG projects and included the assessment of water management and monitoring plans, and working with the proponents on a collaborative early warning monitoring network. This role highlighted the necessity of well worded, outcome or objective-focussed approval conditions, both for the regulator and for the proponent, and the difficulty in developing effective conditions for technically complex projects. The role also gave the Branch an understanding of the complexity of water management and monitoring for CSG projects.

Since the Expert Panel ceased to operate in 2013 and the water trigger was legislated, GA's role in providing advice on CSG and coal mining projects has been limited to responses to requests for review and comment from GA's portfolio agency, the Department of Industry, Innovation and Science (DoIIS). DoIIS is given the opportunity to comment on projects referred under the EPBC Act,

[1] Terms of Reference for the Expert Panel. See http://laptop.deh.gov.au/epbc/about/coal-seam-gas-panel.html

and on draft approval conditions as part of the EPBC Act provisions for consultation with relevant portfolio ministers. DoIIS then seeks groundwater-related technical comments from GA.

2 Review Responses

The principal questions being considered by the review are laid out in the document 'Independent review of the water trigger legislation. Issues paper - information on the review process and guide for making submissions to the review' dated 30 November 2015[2].

GA responses are provided in the context of each of the questions asked in connection with the numbered Terms of Reference of the review (as indicated in the boxed text in the sections below).

1. **Examination of the appropriateness of the regulation including whether it is necessary and well targeted.**

Appropriateness:

Prior to the water trigger amendment, water resources were not recognised in the EPBC Act as protected matters, except where they were identified as supporting listed ecological communities or threatened species or relating to other MNES. The protection of water resources was covered, to various extents, by the different legislation of the states and territories. The jurisdictions typically have different approaches to managing impacts to water resources and the water trigger amendment provides a nationally consistent approach whereby a project likely to result in a significant impact to a water resource will be evaluated under the EPBC Act and conditions will be developed to protect the water resource specifically, rather than only sufficiently to protect the communities of species that the water resource may be supporting.

The water trigger has a number of benefits:

- The simple phrasing of the legislation captures the majority of coal seam gas and coal mining projects, and as such, seeks to ensure that these projects all meet, or exceed, a nationally consistent standard for assessing and managing impacts to water resources. This also gives more clarity to proponents operating across different jurisdictions within Australia.
- It provides a means of applying a nationally consistent approach to the assessment of impacts to water resources from CSG and coal mining projects, and to the application of approval conditions to manage impacts to water resources.
- It is a means for the Commonwealth to provide leadership and guidance on the management of impacts to water resources from CSG and coal mining. This leadership could have taken a range of forms, for example policies and guidelines, however these typically rely on voluntary uptake. The water trigger has been a clear and enforceable means of achieving a similar outcome (a 'stick' to drive improvements in this area nationally). Additionally, reform driven by legislation, such as the water trigger, is likely to have a longer term impact on the behaviours of proponents and regulators than policies that may change, or guidelines that are difficult to enforce.
- It enables specific consideration of cumulative impacts to water resources – an important issue not typically required to be addressed, through state and territory legislation. Managing cumulative impacts is important in regions where there are multiple coal mining

[2] https://www.environment.gov.au/system/files/consultations/11c6034d-fc8e-4f06-a703-e51a16dec95c/files/water-trigger-review-issues-paper.pdf

and CSG developments and in areas where there may be cumulative impacts on water resources as a result of multiple industries, such as agriculture and mining.

- It enables regulation of impacts that cross jurisdictional boundaries. This would provide potential environmental benefits and simplify the approval process for any project impacting resources across jurisdictional boundaries.
- It has the potential to alleviate community concerns regarding a perceived conflict of interest arising from jurisdictions assessing and approving projects from which they receive the benefit of coal-related investment and royalties.

GA notes that there is a precedent in identifying specific activities that trigger assessment under the EPBC Act: the inclusion of nuclear matters, which explicitly includes uranium mining.

Necessary:

GA considers that the water trigger legislation was appropriate and beneficial at the time it was legislated and continues to be so now. This may change in the future as legislation dealing with the protection of water resources, and management of impacts to water resources from CSG and coal mining, continues to mature nationally.

Well targeted:

GA considers that the water trigger is appropriately targeted to large coal mines and CSG developments. GA recognises that it only applies to these two industries and not to others that also have the potential for significant impacts on water resources (e.g. agriculture, other mining activities), however the water trigger was introduced in response to changes in the scale and extraction methods of such developments and subsequent community concern. Recently large coal mine developments, on a scale unprecedented in Australia, have been proposed, notably in the Galilee Basin. In other regions, such as the Namoi Catchment, there is an intensification of mining in an area with competing land use and demands for water resources, primarily from agriculture. The water trigger provides an opportunity to give explicit value to water resources, to ensure they are protected for all users.

The water trigger also appropriately targets CSG developments. Whilst small-scale CSG extraction has been occurring in Queensland for decades, the scale of recent developments in the Surat and Bowen basins is unprecedented and the potential for impacts to groundwater resources were poorly understood. The CSG developments in the Surat and Gunnedah basins (in Queensland and NSW, respectively) are located in areas of competing land use, primarily agricultural industry and urban areas. It was appropriate for there to be a nationally consistent approach to protecting water resources and assessment of, amongst other things, cumulative impacts and impacts to other water users from these developments.

2. **Examine the effectiveness of the regulation in protecting water resources from the impacts of coal seam gas and large coal mining projects, including the role and scope of work ascribed to the IESC.**

Effectiveness:

The crucial input to the effectiveness of the water trigger is that it results in conditions that are appropriate and effective for achieving improved outcomes for water resources. Good approval conditions meet the following criteria:

- they are useful (they address an issue that needs to be addressed)
- they provide appropriate and accurate translation and application of technical advice, and
- they can be achieved (and can be enforced).

Another important input to the effectiveness of the water trigger is an appropriate regime to monitor and enforce compliance with approval conditions. The way conditions are worded has a direct impact on the success of the compliance regime – wording should ensure it is clear what is being protected, what must be done, when it must be done, by whom, where it must be reported. Conditions should also clearly identify what must not happen (i.e. what constitutes a breach) and how compliance will be evaluated.

Given the direct link between effectiveness of the legislation and compliance with approval conditions that are designed to avoid, reduce and mitigate impacts to water resources, GA strongly recommends that a compliance review be undertaken to determine the effectiveness of the conditions that have been placed on projects to date. While this is early in the life of the water trigger, many projects have conditions that require actions to be taken early in the project life (for example the preparation of a water management plan), and it should be relatively simple (and inexpensive) to undertake a review to determine how well these conditions are being met.

GA considers the legislation has not been wholly effective in managing cumulative impacts, despite this issue being a key motivation for implementing the water trigger. The application of conditions to manage cumulative impacts has been inconsistent. Conditions relating to cumulative impacts, where applied, generally lack the sophistication seen in addressing some other issues of concern.

IESC:

It is important that the IESC have a key role in the review of the water trigger, given their close involvement in its application, and their independence from the DoE.

The advice provided by the IESC to the regulators is, by its nature, highly technical. To get the greatest benefit from this advice it is important that the role of the IESC is complemented by appropriate technical support for the DoE assessment teams, to assist in the development of approval conditions, translating scientific advice into enforceable conditions.

3. Identify any opportunities to improve the effectiveness of the regulation

Cumulative impacts:

While cumulative impacts are a key issue that can be addressed with the water trigger, they are generally not yet well managed through approval conditions. A more strategic approach to dealing with cumulative impacts could be to address this issue on regional scale, develop comprehensive baseline datasets in areas where future development is likely and construct water management models incorporating all types of industry that may impact on a water resource. A good example of this type of cumulative impact assessment is the Underground Water Impact Report (UWIR) for the Surat Cumulative Management Area (CMA). The Queensland Government requires, through project approval conditions, that all CSG projects located in the CMA contribute data and funds (via a levy) to support the development of the model that underpins the UWIR. The UWIR is developed by a government agency, thus providing community confidence in the independence of the reported findings. Improvements on the UWIR approach would be to include all types of industry that impact on water resources (the UWIR only includes CSG). The Bowen Basin would be a useful trial site for this type of approach, as it is an area in which extensive CSG and coal mine development is taking place, and where water resources are also relied on for a range of agricultural industries and communities.

National Approach:

The effectiveness of the water trigger regulation could be improved by linking its implementation with a parallel process aimed at developing a standardised national approach to the protection of water resources. This approach would work toward achieving a standardised level of protection of water resources in state and territory legislation. There would be many benefits to taking this approach now and building on the gains achieved through the National Water Initiative.

One-stop-shop Approvals:

The EPBC Act has the provision to establish assessment and approval bilateral agreements with the State and Territory jurisdictions. At this time, there are no approval bilateral agreements; however the Commonwealth Government is committed to delivering a one-stop shop for environmental approvals. As part of the process for accrediting states to assess and approve projects referred under the water trigger it is important that the accreditation process ensure conformity or standardisation of the approach to assessing (and conditioning) impacts to water resources. This has been the key benefit of the water trigger, and should be continued if the 'one-stop-shop' approach is ultimately applied to the water trigger.

Accreditation of bilateral agreements should also ensure that there is an agreed process for considering projects that have impacts that cross jurisdiction boundaries.

Mine Closure:

Both CSG and coal mining developments have the potential to have significant impacts on groundwater resources. Impacts to groundwater can take many years (often longer than the project life) to become apparent to other water users.

There is a lot of effort in the early stages of a project to assess, avoid and mitigate impacts to groundwater resources throughout the project life, however groundwater models frequently indicate that there will be impacts for hundreds of years after the project ceases operation. In some cases, the greatest impact to groundwater resources will occur after active mining is complete. There appears to be limited consideration of the long-term management of impacts to groundwater from coal mining and CSG extraction, for example, who will be responsible for the groundwater licence for the permanent inflow of groundwater into coal mine final voids (sometimes hundreds of megalitres per year). The effectiveness of the legislation could be improved by further detailing how long-term impacts to water resources will be assessed and monitored after closure and lease relinquishment, and identifying who will be responsible for this (e.g. the proponent or the regulator) once the project has ceased operating and all obligations have been met.

Conditions:

The collection of an adequate record of baseline data is crucial for the effective implementation of a range of conditions. This is particularly true where the conditions require changes in a monitored parameter to be identified. The legislation does not define baseline, and approval conditions have typically not provided a definition, despite requiring the collection of baseline data. A guidance document provided by the DoE identifies the importance of baseline data but a definition is again not provided[3]. While there is ambiguity about what is meant by 'baseline' information the protection of the groundwater resource through approval conditions has the potential to be compromised, particularly as projects are approved while baseline data for groundwater resources is still being collected and plans for the collection of this data are not developed.

An evaluation of the extent to which approval conditions have achieved environmental protection would usefully include periodic analysis of groundwater data by an expert groundwater team once the project has commenced. Such analyses should be made with reference to any predictions that were used to justify the controlled action (including groundwater model predictions).

Opportunities to improve the effectiveness of the legislation may be identified by considering how other similar MNES, such as nuclear matters, are managed under the EPBC Act. Technical input to the assessment and approval of uranium mines is streamlined: DoE seeks technical advice from the same experts throughout the assessment and approval process - incorporating the referral stage, the review and assessment of environmental impact documentation and the review of draft approval conditions. There is dialogue between the proponent and the technical advisors during the process that can expedite the resolution of critical issues. This process has been shown to be effective.

A streamlined approach for projects requiring approval under the water trigger would see one group of technical experts follow a project from referral through to assessment of the environmental impact documentation and to the review of approval conditions. This may also provide a useful model for compliance and enforcement.

Improvements to the way advice is sought from the IESC

Further to their current role, the involvement of the IESC would be useful both in confirming the suitability of the conditions in addressing their advice, and in reviewing the implementation of the conditions by the proponent. While this level of oversight may not be necessary for every project, more complex and larger projects may benefit from this oversight.

[3] Sections 5.1.3 and 5.1.6 of https://www.environment.gov.au/system/files/resources/d078caf3-3923-4416-a743-0988ac3f1ee1/files/sig-water-resources.pdf

Communication between the IESC and the proponent is currently via the DoE. Greater contact between the IESC and proponents on key topics may achieve better environmental outcomes and more efficient conditions, and avoid long delays in the regulatory process when communication is done solely through the exchange of letters.

Stakeholder Consultation:

The development of government structures to implement the water trigger included the establishment of a technical groundwater team within OWS. Other agencies also provide technical groundwater advice on issues arising under the EPBC Act. It may be timely, as part of this review, to consider if the expertise of these separate technical teams can be harnessed in a more efficient and complementary way to support the effective implementation of the water trigger and further streamline the regulation.

GA considers that appropriate stakeholders to consult for related strategic discussions to develop processes to efficiently harness government technical expertise, would include: OWS, GA, DoIIS, Department of Agriculture and Water Resources, IESC, CSIRO, and the Environment Standards Division within the DoE, particularly in the Assessments, and Compliance and Enforcement branches.

4. **Examine the efficiency of the regulation in protecting water resources from the impacts of coal seam gas and large coal mining projects**

GA suggests that when examining the cost-effectiveness of the regulation the reviewer should give consideration to the difference in timescale between costs and benefits. For example significant impacts to groundwater resources, managed by the approval conditions, can take many years to manifest and can be permanent. By contrast, the projects considered under the water trigger typically have a 30 year operational life, after which the benefit to the community ceases. While the regulatory burden placed on projects may seem significant in the short-term, the benefit of effectively managing the impacts to water resources will likely be seen (by an absence of impact) indefinitely.

CSG and coal mining projects typically take place in areas of competing landuse, where a range of other industries and communities rely on the water resources potentially impacted by the projects. Comparing the costs to the project, with the benefit to the other water users, and the environment is complex.

The restriction of the water trigger to coal seam gas and large coal mining projects limits the environmental benefits that can accrue from this legislation with regard to managing cumulative impacts. This is particularly the case where the projects being assessed are located in areas where groundwater is already heavily exploited for other purposes.

5. **Identify any opportunities to reduce or simplify the regulation whilst maintaining its effectiveness**

Opportunities to simplify wording:

The water trigger, in its current form, is a simple regulation. Further clarification of the regulation is provided in the *Significant impact guidelines 1.3: Coal seam gas and large coal mining developments—impacts on water resources*[4], which includes the following definitions:

- **Significant impact** means an impact which is important, notable, or of consequence, having regard to its context or intensity. [p26]
- To be **'likely'**, it is not necessary for a significant impact to have a greater than 50 per cent chance of happening; it is sufficient if a significant impact on a water resource is a real or not remote chance or possibility.[p14]

The broadness of these key definitions means that the majority of CSG and coal mining projects are referred under the water trigger because the very nature of these projects will result in changes to the hydrological regime of the site. Due to the importance of water resources, and the inherent uncertainty in characterising natural systems, particularly groundwater systems, there is usually some chance that the impact will be significant.

A review of projects that have triggered the regulation to date, and how conditions were applied to them, may help to identify if the regulation is capturing projects that are otherwise adequately conditioned by state and territory approval processes. More detailed consideration of which projects

[4] https://www.environment.gov.au/system/files/resources/d078caf3-3923-4416-a743-0988ac3f1ee1/files/sig-water-resources.pdf

the water trigger is intended to capture could help to further refine these definitions and narrow the focus of the regulation appropriately.

Opportunities to simplify implementation:

Measures to simplify the implementation of the water trigger might usefully be drawn from the current process that applies to uranium projects assessed under the EPBC Act (Nuclear matters are considered a MNES). The consideration of uranium projects is a relatively mature process that has been running for several years and which appears to have a level of acceptance from proponents, state agencies and federal government agencies. A key element is that the time frames within the assessment and approval process are adequate to allow due consideration of technical documentation and discussion between the different technical disciplines, additionally technical experts are involved throughout the approval process, development of conditions and post-approval compliance reviews of the project.

Given the workload involved in becoming familiar with the technical detail of any one project considered under the water trigger (often comprising several hundreds of pages of documentation), it is suggested that the assessment and consultation process undertaken by DoE be managed to ensure that groundwater specialists are given sufficient time to review documentation provided by proponents, consult with the IESC, and provide advice on the wording of approval conditions. There would also be efficiency gains if the same specialists were then involved in data review as part of monitoring and compliance processes once an approved project is operational.

6. Identify any recommended appropriate future review points of the regulation.

The regulation of impacts to water resources from CSG and coal mines is maturing nationally. At some point in the future state and territory legislation may provide the same level of protection as intended from the water trigger regulation, and consideration could be given to how national consistency would be best achieved. This may present a suitable opportunity to review the regulation.