



Australian Network of Environmental
Defender's Offices Inc

Draft Significant Impact Guidelines under the EPBC Act: Coal seam gas and large coal mining developments – impacts on water resources

July 2013

The Australian Network of Environmental Defender's Offices (ANEDO) consists of nine independently constituted and managed community environmental law centres located in each State and Territory of Australia.

Each EDO is dedicated to protecting the environment in the public interest. EDOs provide legal representation and advice, take an active role in environmental law reform and policy formulation, and offer a significant education program designed to facilitate public participation in environmental decision making.

EDO ACT (tel. 02 6247 9420)

edoact@edo.org.au

EDO NSW (tel. 02 9262 6989)

edonsw@edonsw.org.au

EDO NQ (tel. 07 4031 4766)

edonq@edo.org.au

EDO NT (tel. 08 8982 1182)

edont@edo.org.au

EDO QLD (tel. 07 3211 4466)

edoqld@edo.org.au

EDO SA (tel. 08 8410 3833)

edosa@edo.org.au

EDO TAS (tel. 03 6223 2770)

edotas@edo.org.au

EDOVIC (tel. 03 9328 4811)

edovic@edo.org.au

EDO WA (tel. 08 9221 3030)

edowa@edowa.org.au

Submitted to: epbc.reform@environment.gov.au

Department of Sustainability, Environment, Water, Population & Communities

For further information, please contact rachel.walmsley@edonsw.org.au

Introduction

ANEDO welcomes the development of the “Draft Significant Impact Guidelines: Coal seam gas and large coal mining developments – impacts on water resources” (**draft guidelines**) and appreciates the opportunity to provide comments on these draft guidelines.

ANEDO strongly supports the inclusion of the impact on water resources of coal seam gas and large coal mine developments as ninth matter of national environmental significance (**water trigger**) and is generally supportive of the draft guidelines for applying the water trigger. ANEDO submits that there are a number of ways that the guidelines can and should be strengthened, and we outline these comments further below.

Our comments broadly correspond to parts of the draft guidelines. In brief they relate to:

- Beneficial impacts (and potential adverse impacts)
- General criteria for significant impacts
- Changes to hydrology
- Changes to water quality
- Changes to ecosystem functioning and integrity (including if no significant impact to hydrology or water quality)
- Cumulative impacts and timing
- Scale of development (and sensitivity of environment)
- Value of water resources
- Transitional arrangements (and ‘prior authorisations’)
- Suggestion to include guidance on standard conditions.

Beneficial Impacts

The draft guidelines (pp 6-7) state that:

the following beneficial impacts would not be considered in an EPBC Act referral decision:

- *supply of water to towns for drinking water;*
- *supply of water for irrigation; or*
- *on-supply of excess water to other mines.*

ANEDO reads this section of the draft guidelines to mean that the activity of providing water (post mining use) is not subject to assessment under the water trigger. However, it should be noted that in obtaining this water, the CSG or coal mining activity may well have had a significant impact on the water resource. The guidelines should be clarified to ensure that it cannot be interpreted to support the argument that a plan to reuse water for drinking, irrigation or other mining, exempts these actions from the requirement of assessing their initial impact on the water resource. Similarly, if providing this water involves releasing water into the environment, the Water Trigger Guidelines should be clarified to ensure that such releases are also subject to assessment. For example, transporting drinking quality water to a town via a naturally turbid stream may actually reduce the ecological value of the stream. Noting examples of associated adverse impacts of these activities would be useful.

General Criteria

We make four points on this section. The draft guidelines (p 7) state that:

An action is likely to have a significant impact on a water resource if there is a real chance or possibility that it will directly or indirectly result in:

- *a substantial change to the hydrology of a water resource; or*
- *a substantial change in water quality of a water resource.*

First, guidance on what constitutes changes to hydrology (pp 7-8) does not explicitly discuss changes in the *hydrogeological* characteristics or integrity of *hydrogeological* connections. For clarity, this definition should be explicit and incorporated in the guidelines.

Second, the general criteria (p 7) appear to assume that, where an action does not create a substantial change to hydrology or water quality, the action is unlikely to result in substantial changes to ecosystem function and integrity and therefore do not require consideration of changes to ecosystem function and integrity in the absence of change to hydrology or water quality. This is an inappropriate assumption. While it may be 'less likely' (as on p 6), there are circumstances where even minor changes to hydrology or quality may create a substantial change to ecological function or integrity (for example, a small release of a highly toxic substance may lead to substantial changes in the population size of vulnerable species). Therefore the substantial changes to ecosystem function and integrity should be added to the two General Criteria proposed. This will ensure that biodiversity values vulnerable to even minor changes to water quality or hydrology are appropriately considered within the scope of the MNES and adequately protected. We also note that the figure on p 7 also asks about 'any likely significant impacts on water quantity or quality' rather than reflecting the guidelines' language relating to 'substantial changes to hydrology'. The same box also refers to 'value' of the water resource but not its 'sensitivity' which is also relevant (see comments below).

Third, the examples of changes to a water resource, currently described as possibly being caused by "watercourse diversions, water discharges, impoundments, subsidence, post-action voids or other landscape modifications as well as mining or drilling" should also refer to 'surface water take' and re-injection of produced waters from CSG production or mine dewatering as a potentially significant change.

Fourth, ANEDO strongly supports a precautionary approach when dealing with uncertainty (see draft guidelines, p 6). However, the provision of comprehensive baseline data is fundamental to understanding whether or not a substantial change to water quality, hydrology or ecosystem function and integrity is likely to result, directly or indirectly, from an action. ANEDO therefore submits that CSG development and large coal mining development should not be assessed under the EPBC Act in the absence of comprehensive baseline data. Baseline data is vital insofar as it enables the proponent to clearly articulate the current hydrology and water quality, and to subsequently measure actual (as opposed to predicted) impacts once development has commenced. Such data further enables the consent authority to either halt development or vary conditions of consent where actual impacts diverge from predicted impacts.

Changes to hydrology

ANEDO supports the range of facets of the water resource that must be considered under the guidelines.¹

¹ Draft guidelines, pp 7-8, refer to:

- *flow regimes (volume, timing, duration and frequency of water flows);*
- *recharge rates;*
- *aquifer pressure or pressure relationships between aquifers;*

Based on our experience, CSG development and large coal mining development is often approved by States on the basis of preliminary groundwater studies.² It therefore falls to the Commonwealth Government to ensure that adequate hydrological and hydrogeological modelling, including groundwater-surface water interactions, is undertaken to determine the level of impact *before* a controlled action is approved or refused under the EPBC Act. Assessment must therefore be based on modelling that is appropriately adapted to determining the likely short, medium and long-term impacts of the development in question.

We further submit that the Minister should consider whether ‘general’ or ‘specific’ thresholds are exceeded when determining whether to approve or refuse a CSG development or large coal mining development. These two ‘thresholds’ are discussed in turn.

General threshold

We recommend basing the ‘general threshold’ on the definition of ‘environmentally sustainable level of take’ contained in the *Water Act 2007 (Water Act)*. Specifically, the Minister should consider refusing any CSG development or large coal mining development that individually, or in combination with other developments, is likely to compromise:

- key environmental assets of the water resource; or
- key ecosystem functions of the water resource; or
- the productive base of the water resource; or
- key environmental outcomes for the water resource.³

Specific thresholds

We further recommend considering specific thresholds that are particular to the water system or systems likely to be significantly impacted by the development in question. We note that the draft guidelines recognise the importance of consideration of quantity of water extracted and associated drawdown impacts; water quality; ecosystem services; and impacts on habitat. However no commitment is made to develop appropriate thresholds beyond which project refusal would be mandatory.

Changes to water quality

ANEDO strongly supports the use of Australian and New Zealand Environment Conservation Council (**ANZECC**) guidelines in determining significant impact on aquatic ecosystems, as described on p 9:⁴

-
- *groundwater table levels;*
 - *groundwater/surface water interactions;*
 - *river/floodplain connectivity;*
 - *inter-aquifer connectivity; or*
 - *coastal processes including changes to sediment movement or accretion, water circulation patterns, permanent alterations in tidal patterns, or substantial changes to water flows or water quality in estuaries*

² For example, proposals for CSG pilot drilling at Fullerton Cove, NSW; and the NSW Government’s approval of the Gloucester CSG project.

³ *Water Act 2007*, s. 4 (definitions).

⁴ The draft guidelines refer to the *Australia and New Zealand Guidelines for Fresh and Marine Water Quality*.

For aquatic ecosystems, a significant impact is likely if the predicted change in water quality is greater than that required for 'slightly to moderately disturbed' systems as described in the relevant water quality objectives.

ANEDO also supports the requirement for long term and cumulative considerations,⁵ and recommends that the draft guidelines be expanded to ensure that the interaction of chemicals once exposed to air and potential increases in toxicity through mixing is considered.

Further in relation to hydraulic fracturing, ANEDO is concerned that CSG developments and large coal mining developments classified as 'controlled actions' are being approved in the absence of definitive information regarding hydraulic fracturing agents. By way of example, condition 20 of the approval issued by Minister Burke for the 'Gloucester Coal Seam Methane Gas Project' (**Gloucester Approval**)⁶ states that:

Prior to undertaking any hydraulic fracturing, the person undertaking the action must provide the minister with the following details on any hydraulic fracturing agents or other reinjected fluids likely to be used under this approval:

- *estimated number and location (mapped, and expressed in latitude, longitude and depth) of wells where the agent or fluid may be used;*
- *Chemical Abstracts Service Number;*
- *typical load;*
- *typical concentration; and*
- *toxicity as total effluent toxicity and ecotoxicity, based on methods outlined in the National Water Quality Management Strategy.*

ANEDO is of the view that this information must be provided by the proponent *before* assessing the likely impacts of a CSG development on a water resource or resources. Indeed, we submit that it is difficult to properly assess environmental impacts in the absence of this information.

We understand that certain CSG companies argue that fracturing agents are 'commercial-in-confidence' and accordingly refuse to disclose their contents. ANEDO rejects this rationale, and contends that it is in the public interest for proponents to provide the Commonwealth with all information necessary to meaningfully assess the likely impacts of a CSG development on a water resource or resources. Put differently, we are of the view that the public's interest in protecting Australia's water resources far outweighs commercial interests, as amply demonstrated by continuing community concern regarding the impacts of fracturing on groundwater and surface water.

Changes to ecosystem function and integrity (including 'If no significant impact to hydrology or water quality')

ANEDO supports the range of facets of ecosystem function and integrity that must be considered (p 10), however see our comments above regarding:

⁵ Draft guidelines, p 10:

The quality of water extracted from coal seams needs to be considered in the widest context. Individually, the salts, heavy metals, and other compounds should not be allowed to exceed safe guideline levels, in particular guidelines for ecosystems or water bodies to avoid damage over the term of coal seam gas extraction. In addition, taken cumulatively, their concentration during water treatment processes could potentially produce substantial volumes of salt and heavy metal concentrate that remain in the environment and might be mobilised by water in the future.

⁶ EPBC approval 2008/4432. Issued 11 February 2013.

- the need to consider impacts on ecosystem function and integrity even in the absence of significant impacts on hydrology or water quality; and
- the need for thresholds when the Minister is determining whether to approve or refuse a CSG or large coal mine development.

Cumulative impacts and timing

ANEDO strongly supports the need to consider cumulative impacts and timing in the consideration of potential impacts on water resources associated with CSG activities and large coal mines. (p 11). These issues are particularly important for CSG activities with potential ongoing impacts through increased connectivity of aquifers, and potential for large numbers of well heads to have cumulative impacts on aquifers.

Scale (and sensitivity)

ANEDO accepts that it reasonable to expect that small scale development are less likely to have a significant impact on water resources (p 11). However, this section of the draft guidelines does not reflect the fact that, if the surrounding environment is highly sensitive, then even small scale developments may have significant impacts. For this reason, ANEDO does not support the implication that exploration, appraisal and pilot developments have less need to consider their potential impact. This is particularly important given that CSG exploration effectively involves the same activity as production (ie, drilling, casing, hydraulic fracturing and disposal of produced fluids) and therefore the impacts are similar.

Rather, consideration of impact must take into account the level of risk and sensitivity of the surrounding environment (as is suggested earlier in the draft guidelines, at p 6). The wording under 'Scale' should be changed to reflect this (or via a separate section on 'sensitivity').⁷ ANEDO suggests that any company that is investing in exploratory drilling has an expectation that this may be successful and lead to full production. As such, considering only the impact of a small number of wells may give unrealistic expectations of the ability to obtain project approvals in the longer term. The draft guidelines could be amended to manage any such expectations.⁸

Value

An additional factor that is relevant to the value of the water resource is the intrinsic and existence values of the resource and its components. ANEDO submits that this be included in addition to the listed 'main factors'.

Transitional arrangements

ANEDO supports the intention of the 'prior authorisation' limitations. However, we note that some of the wording of the provisions is open to interpretation (see p 16, which quotes s 22 of the Amendment Act,⁹ and the guidance at p 20). The draft guidelines state that an "extension or renewal of an authorisation is considered to be a new

⁷ See, for example, *Matters of National Environmental Significance - Significant Impact Guidelines 1.1* (2009), p 15, 'The Commonwealth Marine Environment': 'Actions in or near marine protected areas, or other areas with high conservation value, have a greater likelihood of significant impacts on the Commonwealth marine environment.'

⁸ There is some reference to mineral exploration impacts in the Appendix to the MNES Guidelines 1.1. However, the scale and concerns about CSG drilling and hydraulic fracturing have seen a marked increase since 2009.

⁹ NB: The reference to the Amendment Act on p 16 of the draft guidelines should say '2013', not '1999'.

environmental authorisation where... *further and substantial environmental considerations* are involved” (p 20, emphasis added). Instead, the guidelines should reflect the requirement in s 22, that it is a new environmental authorisation (i.e. the exemption does not apply) where “*any* further consideration of the environmental impacts of the action” is required to properly renew or extend the authorisation (emphasis added).

Standard conditions – guidance recommended

In addition to the matters outlined in the draft guidelines, ANEDO submits that to increase certainty for proponents and the community, the Department should consider publishing guidance on standard conditions relating to monitoring, hydrological and hydrogeological modelling, reporting, and cessation of activities in certain circumstances. These matters are discussed in turn.

Monitoring

ANEDO recommends a standard condition requiring continuous monitoring of water quality at each well head, and at all discharge points. This condition should be accompanied by an explicit statement indicating that monitoring does not authorise pollution and that action to reduce (or eliminate) unauthorised levels of a given substance may be required.

Hydrological and hydrogeological modelling

ANEDO recommends developing a standard condition requiring the proponent to undertake ongoing hydrological and hydrogeological modelling that includes regular review by the Department. This modelling would enable changes to project requirements should the project not proceed as forecast in the original modelling.

Reporting

Given the high level of community and regulatory concern regarding the impacts of CSG development and large coal mining development on water resources,¹⁰ ANEDO recommends developing standard conditions requiring:

- monitoring results to be published online within 14-28 days of the sample being taken from the relevant water source. Raw data, as well as a plain-English version of the data, are to be published on the company’s website (and/or a centralised location);
- the results of ongoing hydrological and hydrogeological modelling to be published online at regular intervals. Raw data, as well as a plain-English version of the data, are to be published on the company’s website (and/or central location); and
- the publication of annual reports specifying both approved and actual impacts. These reports are to be published on the company’s website.

A standard condition regarding ongoing reporting would promote transparency and shared regulatory responsibility. It would also further assist the Commonwealth to determine whether permissible limits are being exceeded by the proponent, and to take

¹⁰ See for example, National Water Commission position statement on Coal Seam Gas (Dec. 2010); NSW Legislative Council Inquiry Report into Coal Seam Gas (May 2012), chapters 7 (Community views) and 13 (Regulation); Queensland Ombudsman, ‘An investigation into the approval and oversight of the Kingaroy underground coal gasification project’ (Sept. 2012).

appropriate action. We note that NSW laws now require licence holders to monitor and publish pollution data, guided and regulated by the NSW Environment Protection Authority.¹¹

Cessation of activity

ANEDO recommends including a standard condition regarding cessation of activity in certain circumstances. Where actual impacts diverge from approved impacts beyond a reasonable margin of error (for example +/- 5%), the proponent must cease the development or relevant activities immediately. The proponent must immediately notify, either orally or electronically, the Commonwealth and/or State contact specified in the approval of both the divergence and the nature and extent of the divergence, and cease the development or relevant activities within 24 hours of initial notification. Where the divergence presents an imminent risk to human health or the environment, such notification shall be provided to affected communities as well. Development may recommence once the Commonwealth is reasonably satisfied that appropriate steps have been taken to first, remediate unacceptable impacts and second, ensure compliance with the original approval.

Requirement to make good

ANEDO recommends developing a standard condition requiring the proponent to (where physically possible) to 'make good' impacts on a water resource or resources, as well as groundwater-dependent ecosystems. These conditions should be divided into two categories: remediating approved impacts and remediating unapproved impacts.

Any standard condition concerning remediation of *approved* impacts should require the work to be undertaken within specified timeframes and to an appropriate standard, where 'appropriate' is defined as being as close to the resource's pre-impact state as possible.

Where *unapproved* impacts exceed the general and/or specific thresholds specified in relevant conditions work would cease. This being the case, ANEDO recommends that the standard condition concerning unapproved impacts should state that resumption of development is conditional on the completion of appropriate remediation work (see definition of 'appropriate', above).

¹¹ *Protection of the Environment Operations Act 1997* (NSW), s 66(6). See also NSW EPA website, <http://www.epa.nsw.gov.au/legislation/faqs/pubprmdata.htm>.