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24 May 2018

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Dear Sir,

**Re: Response to submissions Narrabri Gas Project**

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Thank you for the opportunity to make a submission on the response to submissions (**RTS**) for the Narrabri Gas Project (**Project**). Narrabri Shire Council (**Council**) makes the following recommendations.

**1. Sizing of produced water and brine ponds**

Council is **satisfied** with the response by the Proponent.

According to the Proponent produced water and brine ponds "...will comply with the *NSW Code of Practice: Produced Water Management, Storage and Transfer* including:

- a spillway capacity designed to pass 0.01 per cent Annual Exceedance Probability (AEP) flows; and
- wet season design storage allowance sized to provide storage for a volume equivalent to the 1:100 AEP and a storm event containment of 1:100 AEP 72-hour duration..." (Santos NSW (Eastern) Pty Ltd, 2018, p. 5-136).

**2. Chemical composition of produced and amended water**

Council requires **independent assessment** of the response by the Proponent.

According to the Proponent "The results show that the water quality complies with relevant water quality guidelines for proposed beneficial reuse activities, including recreation and long-term irrigation. The data also shows the treated water meets drinking water and stock watering guidelines. No hydrocarbons, nor metals, have been detected (above the laboratory limit of reporting) in treated water from the plant." (Santos NSW (Eastern) Pty Ltd, 2018, p. 5-137).

The NSW Environment and Protection Agency (**EPA**) "requested information on the management and beneficial reuse of treated, amended and produced water" (Santos NSW (Eastern) Pty Ltd, 2018, p. 5-70) in its submission on the Project.

**Recommendation 1**

During the assessment of the application Council requests:

That the EPA satisfies itself that the chemical composition and water quality of produced and amended water associated with the Project is safe and will not negatively impact the environment.

*Reason: To ensure produced and amended water associated with the Project will not negatively impact the environment.*

**Recommendation 2**

Should development consent be granted Council requests:

1. That the EPA be responsible for the monitoring of produced and amended water associated with the Project to ensure that it is safe and will not negatively impact the environment.
2. That the monitoring results be published on the EPA website.

*Reason: To ensure produced and amended water associated with the Project will not negatively impact the environment.*

**3. Bohena Creek managed release point and Newell Highway gauging station**

Council requires **independent assessment** of the response by the Proponent.

According to the Proponent "No gauging will be required at, or upstream of, the discharge site." (Santos NSW (Eastern) Pty Ltd, 2018, p. 5-138-139). The NSW Department of Primary Industries (DPI) "recommended the installation of a hydrological gauging station in close proximity to the Bohena Creek managed release point. It also recommended the existing Bohena Creek gauging station at Newell Highway be upgraded." (Santos NSW (Eastern) Pty Ltd, 2018, 5-47).

**Recommendation 3**

During the assessment of the application Council requests:

That the DPI satisfies itself that the hydrological gauging stations will be located so as to be representative of conditions at the managed release point and will have the capacity to detect flows in the order of 100 megalitres / day.

*Reason: To ensure that there are appropriate references for triggering managed release of treated water to Bohena Creek.*

#### 4. Bohena Creek managed release and predicted cadmium levels

Council requires **independent assessment** of the response by the Proponent.

According to the Proponent "Recent samples from the Leewood water treatment facility in operation for the approved exploration and appraisal program in the project area show that cadmium concentrations in treated water are <0.0001 mg/L (0.1 micrograms per litre), which is less than the ANZECC/ARMCANZ (2000) water quality guideline of 0.2 micrograms per litre." (Santos NSW (Eastern) Pty Ltd, 2018, p. 5-139).

DPI suggested "...the potential impact of releases on Bohena Creek ecological health maybe difficult to determine in the short term..." and recommended "...continued monitoring of water quality in conjunction with ecological monitoring..." (Santos NSW (Eastern) Pty Ltd, 2018, p. 5-48).

##### **Recommendation 4**

During the assessment of the application Council requests:

That the DPI satisfies itself that the managed release of treated water to Bohena Creek will not impact on the ecological health of Bohena Creek.

*Reason: To ensure the ecological health of Bohena Creek.*

##### **Recommendation 5**

Should development consent be granted Council requests:

1. That the EPA be responsible for the monitoring the managed release of treated water to Bohena Creek to ensure that it is safe and will not negatively impact the environment.
2. That the monitoring results be published on the EPA website.

*Reason: To ensure the ecological health of Bohena Creek.*

#### 5. Water quality monitoring

Council is **not satisfied** with the response by the Proponent.

The Commonwealth Government: Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development (IESC) "considered the proposed groundwater monitoring network not suitable..." and recommends a "Groundwater Monitoring Plan detailing a groundwater impact early warning monitoring system that includes management, mitigation and contingency measures." (Santos NSW (Eastern) Pty Ltd, 2018, p. 5-13).

The Proponent responds by saying, it "...will work with DPI Water and relevant Commonwealth and State Government stakeholders to refine the groundwater monitoring plan for the project." (Santos NSW (Eastern) Pty Ltd, 2018, p. 5-14).

**Recommendation 6**

During the assessment of the application Council requests:

That the proposed groundwater monitoring network and plan be amended as necessary to obtain the endorsement of the IESC.

*Reason: To ensure that the risk to groundwater is appropriately managed.*

**Recommendation 7**

Should development consent be granted Council requests:

1. That the Proponent:
  - a. Review the groundwater model two-to-three years after commencement of water production.
  - b. Undertake validation and recalibration of the groundwater modelling.
  - c. Review and revise relevant management plans to ensure early prediction of impacts and the implementation of adequate monitoring, management and contingency measures.
2. That the Proponent be required to obtain endorsement of the above by the IESC.

*Reason: To ensure that the risk to groundwater is appropriately managed.*

**6. Construction of natural gas wells**

Council is **satisfied** with the response by the Proponent.

According to the Proponent, "...gas wells would be constructed in accordance with the Code of Practice for Coal Seam Gas – Well Integrity." (Santos NSW (Eastern) Pty Ltd, 2018, p. 5-140).

The NSW Chief Scientist and Engineer has concluded that the *NSW Code of Practice for Coal Seam Gas – Well Integrity* is "in line with international best practice" (NSW Chief Scientist & Engineer, 2014, p. 12).

**7. Monitoring of natural gas wells and gathering lines**

Council is **not satisfied** with the response by the Proponent.

The Chief Scientist and Engineer concluded that the *NSW Code of Practice for Coal Seam Gas – Well Integrity* is "in line with international best practice" (p. 12) and that "...a conclusion can be drawn that if wells are properly designed, installed and maintained, the risk of long-term leakage from CSG wells from both the casing and cement can be considered to be minimal,..." (NSW Chief Scientist & Engineer, 2014, p. 5).

Professor O’Kane did however acknowledge “...no long-term studies could be found dealing specifically with deterioration of CSG wells...” (NSW Chief Scientist & Engineer, 2014, p. 5) and that “there is scope for additional research specifically to assess the impact of abandoned CSG wells over extended timeframes.” (NSW Chief Scientist & Engineer, 2014, p. 5).

The NSW Chief Scientist and Engineer further concluded that “...if the integrity of these wells is compromised at any stage during construction, operation or after abandonment, they have the potential to affect the environment adversely, mainly in the form of either contamination of subsurface water systems or via fugitive methane emissions.” (NSW Chief Scientist & Engineer, 2014, p. 12)

Anderson, Rahman, Davey, Miller and Glamore (2013) concluded that without the indefinite monitoring of decommissioned coal seam gas wells “any of the adverse consequences may be realised” (Anderson et al., 2013, p. 28). The “adverse consequences” referred to include contamination of the “Water Resource Aquifer” (Anderson et al., 2013, p. 25).

Council is of the view that the precautionary principle should be applied in this matter and indefinite monitoring of decommissioned coal seam gas wells by a public authority should be required until there is a sufficient body of evidence by way of long-term studies to conclude that the risk of contamination of water resource aquifers is negligible

**Recommendation 8**

Should development consent be granted Council requests:

1. That the Proponent pay for independent third party monitoring of decommissioned coal seam gas wells indefinitely.
2. That the monitoring be overseen by the EPA and results published on the EPA website.

*Reason: To ensure that decommissioned coal seam gas wells do not contaminate water resource aquifers.*

**8. Rehabilitation fund**

Council is **not satisfied** with the response by the Proponent.

Council does not consider the current requirement to lodge a security deposit to cover the cost of undertaking rehabilitation to be adequate given the experience in other jurisdictions (Evans, 2014; Abbott, 2014).

The NSW Chief Scientist and Engineer recommended, “...potential adoption of a 3-layered policy of security deposits, enhanced insurance coverage and an environmental rehabilitation fund administered by government.” (NSW Chief Scientist & Engineer, 2014b, p.8)

The NSW Chief Scientist and Engineer further recommended, “That Government consider a robust and comprehensive policy of appropriate insurance and environmental risk coverage of the CSG industry to ensure financial protection short and long term. Government should examine the potential adoption of a three-layered policy of security deposits, enhanced insurance coverage, and an environmental rehabilitation fund.” (NSW Chief Scientist & Engineer, 2014c, p.13)

According to the NSW Government, it "...accepts all the recommendations of the Chief Scientist and Engineer's independent review and is committed to building a world class regime for the extraction of gas." (NSW Government, 2015, p.3)

Council is of the view that a "world class regime for the extraction of gas" cannot be achieved unless the State holds sufficient financial assurance to cover the true cost of rehabilitation, pollution and natural resource damage both on-site and off-site and unforeseen long term impacts.

**Recommendation 9**

Should development consent be granted Council requests:

1. The Proponent shall pay a security deposit in the form of a cash bond or bank guarantee of an appropriate amount that covers the true cost of rehabilitation.
2. The Proponent shall carry pollution legal liability insurance that covers pollution and natural resource damage both on-site and off-site including groundwater contamination and for the benefit of the insured, third parties, and contractors.
3. The Proponent shall contribute to an Environmental Fund (similar to the Western Australian Government Mining Rehabilitation Fund) established to cover off-site remediation and rehabilitation including groundwater contamination and other long term, gradual onset damage.

**Recommendation 10**

Should development consent be granted Council requests:

1. That the DPE:
  - a. Publish details of the financial assurance that the State will hold to cover the cost of on-site and off-site remediation and rehabilitation in the event of sudden accidental pollution and from unforeseen and long term impacts of the Project including groundwater contamination, and
  - b. Explains the methodology used to determine that this amount is sufficient to ensure that no costs are passed on to the Public.

**Reason:** *To provide public confidence that the amount of financial assurance that the State holds is sufficient to cover the cost of rehabilitation and the Public are protected in the event of sudden accidental pollution caused by the Project and from unforeseen and long term impacts of the Project including groundwater contamination.*

**9. Principles of land access**

Council is **satisfied** with the response by the Proponent.

The Proponent advises that it “is a signatory to the Agreed Principles of Land Access.” (Santos NSW (Eastern) Pty Ltd, 2018, p. 5-142).

**Recommendation 11**

Should development consent be granted Council requests:

1. That the Proponent be bound by the Agreed Principles of Land Access

*Reason: To ensure that decommissioned coal seam gas wells do not contaminate water resource aquifers.*

**10. Air quality impacts near Leewood**

Council requires **independent assessment** of the response by the Proponent.

The EPA “...notes that the Air Quality Impact Assessment omits fugitive methane and carbon dioxide emissions...” and “...recommends that all potential components of fugitive emissions should be assessed, and measures to mitigate and manage the emissions should be proposed.” (Santos NSW (Eastern) Pty Ltd, 2018, p. 5-75).

NSW Health stated that “...air quality monitoring should be undertaken prior to, and during, the project, and be independently verified to validate the findings of the Air Quality Impact Assessment.” (Santos NSW (Eastern) Pty Ltd, 2018, p. 5-104).

**Recommendation 12**

During the assessment of the application Council requests:

That the EPA and NSW Health satisfies itself that the Air Quality Impact Assessment and measures to mitigate and manage the emissions are acceptable.

*Reason: To ensure the Project will not impact on the environment or human health in terms of air quality.*

**Recommendation 13**

Should development consent be granted Council requests:

1. That the EPA be responsible for the monitoring of air quality prior to, and during, the Project to ensure that it is safe and will not negatively impact the environment or human health.
2. That the monitoring results be published on the EPA website.

*Reason: To ensure the Project will not impact on the environment or human health in terms of air quality.*

### 11. Chemical composition of dust suppressant

Council is **satisfied** with the response by the Proponent.

According to the Proponent, "The specific commercial dust suppressants that would be used will be finalised during construction of the project. However, it should be noted that the use of commercial dust suppressants is standard practice for construction activities and would not be expected to introduce adverse environmental impacts." (Santos NSW (Eastern) Pty Ltd, 2018, p. 5-142).

### 12. Characterisation of natural gas

Council is **satisfied** with the response by the Proponent.

According to the Proponent "The Air Quality Impact Assessment (EIS Appendix L) considered the composition of natural gas based on data from existing exploration and appraisal wells and the predicted products of the processing and combustion of the natural gas." (Santos NSW (Eastern) Pty Ltd, 2018, p. 5-143).

### 13. Air Quality Management Plan

Council is **satisfied** with the response by the Proponent.

According to the Proponent, "...an Air Quality Management Plan would be implemented during construction and operation of the project. The Air Quality Management Plan would include an air quality monitoring program." (Santos NSW (Eastern) Pty Ltd, 2018, p. 5-143).

#### **Recommendation 14**

Should development consent be granted Council requests:

1. That the Proponent be required to liaise with sensitive receptors and Council in the preparation and annual review of the Air Quality Management Plan.

**Reason:** *To ensure the Project will not impact on the environment or human health in terms of air quality.*

### 14. Road maintenance agreement

Council is **not satisfied** with the response by the Proponent.

The Proponent does not dispute that the Project will result in increased traffic generation despite concluding that roads are generally expected "...to operate within ... functional classification under the ultimate peak traffic scenario for the project." (Santos NSW (Eastern) Pty Ltd, 2018, p. 5-143-144).



In September 2014 the NSW Chief Scientist and Engineer recommended, "That Government investigate ... funding (derived from the fees and levies paid by CSG companies) for local councils to enable them to fund, in a transparent manner, infrastructure and repairs required as a consequence of the CSG industry." (NSW Chief Scientist & Engineer, 2014c, p. 12).

**Recommendation 15**

Should development consent be granted Council requests:

1. That the Proponent be required to enter into a road maintenance agreement with Narrabri Shire Council.

*Reason: To ensure the Narrabri Shire community is not unfairly burdened by maintenance of road infrastructure as a result of the Project.*

**15. Timing of intersection upgrades**

Council is **satisfied** with the response by the Proponent.

According to the Proponent, "The proposed upgrades to the Newell Highway/Old Mill Road and Newell Highway/X-Line Road intersections would be provided following a final investment decision on the production project and before significant construction commences." (Santos NSW (Eastern) Pty Ltd, 2018, p. 5-144).

**16. Light at Siding Spring Observatory**

Council requires **independent assessment** of the response by the Proponent.

According to the Proponent, "...a Gas Flare Light Assessment to assess the light impacts of the project flares and their potential to contribute to skyglow that would affect observing conditions at the Observatory." (Santos NSW (Eastern) Pty Ltd, 2018, p. 5-144).

**Recommendation 16**

During the assessment of the application Council requests:

That the Proponent be required to obtain endorsement of the Gas Flare Light Assessment and proposed mitigating practices by the Siding Spring Observatory.

*Reason: To ensure the Project will not impact observing conditions at the Siding Spring Observatory.*

**17. Social impacts on vulnerable groups**

Council is **not satisfied** with the response by the Proponent.

The Proponent acknowledges "The potential for localised inequality in the distribution of potential socio-economic benefits or impacts..." (Santos NSW (Eastern) Pty Ltd, 2018, p. 5-145).

According to the Proponent, "Social impact monitoring would be undertaken in line with the proponent's Social Impact Management Plan." Investment in social infrastructure and services will be provided through "...the Gas Community Benefit Fund..." (Santos NSW (Eastern) Pty Ltd, 2018, p. 5-145).

Council is of the view that the Gas Community Benefit Funds should not be used to provide essential services and infrastructure but rather support improved economic and social outcomes for the community so that the people of Narrabri benefit from the Project not merely maintain the status quo.

**Recommendation 17**

During the assessment of the application Council requests:

That the Proponent be required to demonstrate to the satisfaction of NSW Health how social impacts on vulnerable groups will be managed.

*Reason: To ensure improved social outcomes for vulnerable groups.*

**18. Social impacts on vital health services**

Council is **satisfied** with the response by the Proponent.

The Proponent acknowledges, "...that there will be an increase in demand on local health services...", however, "...consultation with the Narrabri District Health Service... indicated that local health services had sufficient capacity to cater for population growth in the region including the project workforce." (Santos NSW (Eastern) Pty Ltd, 2018, p. 5-145).

**19. Aboriginal employment agreement**

Council is **satisfied** with the response by the Proponent.

According to the Proponent, "A Diversity and Equal Opportunity Policy would be implemented to achieve representative Aboriginal employment, including for contractors (refer to Appendix A of Appendix T1 of the EIS). Aboriginal employment opportunities would be part of ongoing Native Title negotiations with the Gomeri Applicants, with final details subject to the finalisation of a Native Title agreement." (Santos NSW (Eastern) Pty Ltd, 2018, p. 5-147).

**20. Local skills development**

Council is **satisfied** with the response by the Proponent.

According to the Proponent, "To provide long term career pathways for locals and ensure that an appropriately skilled workforce is employed, the proponent will provide scholarships and develop suitable training and apprenticeship programs in consultation with local TAFE and other training institutions." (Santos NSW (Eastern) Pty Ltd, 2018, p. 5-147).

## 21. Monitoring of social impacts

Council is **satisfied** with the response by the Proponent.

According to the Proponent, "...social impacts would be monitored and managed over the life of the project through engagement with landholders, the community, service providers, industry bodies and government." (Santos NSW (Eastern) Pty Ltd, 2018, p. 5-147)

### **Recommendation 18**

Should development consent be granted Council requests:

1. That the Proponent be required to engage with the public and Narrabri Shire Council and community in the preparation and review of the social impact management plan.
2. That the Proponent be required to review the social impact management plan annually in consultation with Narrabri Shire Council and community to ensure that they are fit for purpose.

***Reason:** To ensure that social impacts from the Project are managed.*

## 22. Adjoining landholders

Council is **satisfied** with the response by the Proponent.

According to the Proponent, "Unless a written agreement is in place with the relevant landholder, no project infrastructure will be located within 200 m of an occupied residence on that property." (Santos NSW (Eastern) Pty Ltd, 2018, p. 5-148).

## 23. Chemical monitoring of health impacts

Council is **satisfied** with the response by the Proponent.

According to NSW Health, "Based on the nature and scale of the operation and distance from townships we expect there will be minimal impact on human health..." (Dalton, 2017). The Proponent advised "The Environmental Management Strategy for the project includes a number of sub-plans with chemical monitoring requirements including surface water, groundwater and air quality. As such, specific chemical monitoring for health impacts is not considered to be necessary." (Santos NSW (Eastern) Pty Ltd, 2018, p. 5-148).

## 24. Verification of gas price assumption

Council is **satisfied** with the response by the Proponent.

The Proponent advised "It is noted that the NSW Division of Resources and Geoscience noted in its EIS submission that the forecast gas price used in the cost-benefit analysis (Appendix U1 of the EIS) of \$8.70 GJ lies within the range of expected future gas prices in the east coast market over the more than 20-year project life." (Santos NSW (Eastern) Pty Ltd, 2018, p. 5-149).

## 25. Gas community benefit fund

Council is **satisfied** with the response by the Proponent, however, takes the opportunity to raise the following concerns with the Gas community benefit fund (**Fund**) in general:

- The Fund represents a once in a generation opportunity for the Narrabri Shire Community to benefit from potential Coal Seam Gas extraction projects within the Shire. Council believes the guidelines that have been developed do not/will not achieve the desired outcomes of the Fund nor deliver the intended benefit to the Narrabri Shire Community.
- There needs to be greater Local Government representation on the Community Benefits Fund Committee.
- The maximum of \$500,000 per project needs to be increased to \$2,000,000 to ensure that impactful projects can be funded.
- Operational costs of new infrastructure need to be funded.
- The “geographical area for the Fund” should be based on where the most significant impact on the community occurs not the footprint of PELs or Projects and requires a definitive definition to ensure certainty of eligibility of applications.

## 26. Local employment and procurement

Council is **satisfied** with the response by the Proponent.

The Proponent advised it “...will continue to engage with, the Narrabri Shire Council and other relevant stakeholders for their input and feedback into the project’s regional and local employment and business development initiatives and workforce management strategies.” (Santos NSW (Eastern) Pty Ltd, 2018, p. 5-149).

## 27. Capacity of local waste facilities for waste salt

Council requires **independent assessment** of the response by the Proponent.

The EPA requested “...information should be provided on the facilities to be utilised for waste salt disposal and their long-term capacity to accept it. It also recommended that information be provided on contingency planning in the event that licensed facilities within 150 kilometres of the project be unable to accept waste salt.” (Santos NSW (Eastern) Pty Ltd, 2018, p. 5-68).

The Proponent advised, “There are a substantial number of waste facilities available, including government and privately owned facilities that are licensed to receive general solid waste in the order of hundreds of thousands of tonnes per annum. The average volume of salt produced annually by the project would be a very small proportion of the overall capacity of any one such facility.

As part of the ongoing development of salt management, options for alternative beneficial reuse applications are being investigated.” (Santos NSW (Eastern) Pty Ltd, 2018, p. 5-150).

**Recommendation 19**

During the assessment of the application Council requests:

That the EPA satisfies itself that the facilities to be utilised for waste salt disposal have long-term capacity to accept it and adequate contingency planning is in place for disposal of waste salt.

*Reason: To ensure the waste salt is appropriately disposed.*

**28. Composition and classification of waste salt**

Council requires **independent assessment** of the response by the Proponent.

The EPA requested that “...further information should be provided to demonstrate that waste salt would not contain other contaminants, and therefore classify as general solid waste.” (Santos NSW (Eastern) Pty Ltd, 2018, p. 5-65)

According to the Proponent, the waste salt “...would be classified as general solid waste, with contaminants significantly below threshold values.” (Santos NSW (Eastern) Pty Ltd, 2018, p. 5-150).

**Recommendation 20**

During the assessment of the application Council requests:

That the EPA satisfies itself that the waste salt would not contain other contaminants, and therefore classify as general solid waste.

*Reason: To ensure the waste salt is appropriately disposed.*

**29. Waste management**

Council requires **independent assessment** of the response by the Proponent.

The EPA requested details of the “...Waste Management Plan and requests further information on the mitigation measures to be included in the Plan.” (Santos NSW (Eastern) Pty Ltd, 2018, p. 5-72).

The Proponent advised, “The Waste Management Plan would be structured around the waste management hierarchy defined under the Protection of the Environment Operations Act 1997. That is, opportunities to avoid, reduce, reuse, recycle and treat waste would be investigated in order to reduce the volumes waste and minimise potential environmental impacts.” (Santos NSW (Eastern) Pty Ltd, 2018, p. 5-151).

**Recommendation 21**

During the assessment of the application Council requests:

That the EPA satisfies itself that the Waste Management Plan is acceptable.

*Reason: To minimise and manage waste from the Project.*

**30. Westport workers' accommodation**

Council is **satisfied** with the response by the Proponent.

**31. Westport workers' accommodation bushfire risk**

Council is **satisfied** with the response by the Proponent.

According to the Proponent, "The existing accommodation was granted a bush fire safety authority that prescribed bush fire protection specifications and requirements including asset protection zones, water supplies for firefighting and emergency procedures. It is expected that a similar level of bush fire protection would be provided to the expanded facility. An updated bushfire response and evacuation plan would also be prepared." (Santos NSW (Eastern) Pty Ltd, 2018, p. 5-152).

**32. Environmental management plans**

Council is **satisfied** with the response by the Proponent.

**Recommendation 22**

Should development consent be granted Council requests:

1. That the Proponent be required to engage with the public and Narrabri Shire Council in the preparation and review of all environmental management plans.
2. That the Proponent be required to review all environmental management plans annually to ensure that they are fit for purpose.

*Reason: To ensure the Narrabri Shire community is involved in environmental management for the Project.*

**33. Independent monitoring**

Council is **not satisfied** with the response by the Proponent.

According to the Proponent, "Within three years of commencement of the project, and every three years thereafter, the proponent will facilitate a third-party environmental audit to ensure compliance..." (Santos NSW (Eastern) Pty Ltd, 2018, p. 5-153).

**Recommendation 23**

Should development consent be granted Council requests:

1. That the EPA be responsible for the monitoring of environmental and human health compliance including but not limited to:
  - a. *Air quality — particulate matter, volatile organic compounds, hydrogen sulfide, nitrogen dioxide, sulphur dioxide, sulfuric acid mist, molecular weight of stack gases, odour.*
  - b. *Noise — annual monitoring of premises and flaring events in accordance with the NSW Industrial Noise Policy and AS 1055.1-1997 Acoustics - Description and measurement of environmental noise General procedures.*
  - c. *Soil — cation exchange capacity, electrical conductivity, pH, petroleum hydrocarbons, polyaromatic hydrocarbons, heavy metals, sodium adsorption ratio, boron, sodium, calcium, potassium, benzene, toluene, ethylbenzene and xylene.*
  - d. *Sediment (Bohena Creek) — cation exchange capacity, electrical conductivity, pH, petroleum hydrocarbons, polyaromatic hydrocarbons, heavy metals, sodium adsorption ratio, boron, sodium, calcium, potassium, benzene, toluene, ethylbenzene and xylene.*
  - e. *Water quality — suspended solids, biochemical oxygen demand, oil and grease, polyaromatic hydrocarbons, phenols, organic carbon, petroleum hydrocarbons, recoverable hydrocarbons, electrical conductivity, pH, sodium adsorption ratio, boron, sodium, calcium, potassium, heavy metals (particularly cadmium), benzene, toluene, ethylbenzene and xylene.*
2. That the monitoring results be published on the EPA website.

**Reason:** *To ensure community confidence in that the Project will have an acceptable impact on the environment and human health.*

If you require any further clarification, please do not hesitate to contact me on (02) 6799 6882 or [danielb@narrabri.nsw.gov.au](mailto:danielb@narrabri.nsw.gov.au).

Yours faithfully,

Mr Daniel Boyce

**A/DIRECTOR DEVELOPMENT AND ECONOMIC GROWTH**

## References

- Abbott, T. (2014). *Peer Comment on "Insurance and Environmental Securities"*. Piper Alderman.
- Anderson, D., Rahman, P., Davey, E., Miller, B. and Glamore, W. (2013). *Background Paper on Groundwater Resources in Relation to Coal Seam Gas Production*. Water Research Laboratory, University of NSW.
- Evans, B. (2014). *Insurance and Environmental Securities*. Hicksons Lawyers.
- Dalton, C. (2017). *FW: Narrabri Gas Project (SSD 6456)*. [email].
- NSW Chief Scientist & Engineer (2014a). *Independent Review of Coal Seam Gas Activities in NSW*. Information paper: Abandoned wells.
- NSW Chief Scientist & Engineer (2014b). *Environmental risk & responsibility and insurance arrangements for the NSW CSG industry*.
- NSW Chief Scientist & Engineer (2014c). *Final Report of the Independent Review of Coal Seam Gas Activities in NSW*.
- Santos NSW (Eastern) Pty Ltd (2018). *Narrabri Gas Project - Response to Submissions - Report Part A*.