



DOC19/628590

Mr Steve O'Donoghue
Director Resource Assessments
NSW Department of Planning, Industry and Environment
GPO Box 39
SYDNEY NSW 2001

Dear Mr O'Donoghue

I refer to the NSW Department of Planning, Industry and Environment's (DPIE) email of 8 April 2019 to the NSW Environment Protection Authority (EPA) regarding Santos' Narrabri Gas Project's Environmental Impact Statement (EIS) Supplementary Response to Submissions (SRTS). The EPA has now reviewed the SRTS, focusing on Santos' responses to advice previously provided by the EPA. Following a further assessment by specialist staff, the EPA is pleased to provide the following advice.

The SRTS has provided further information that has addressed a range of outstanding matters on noise, air quality, groundwater and waste related matters, identified in the EPA's advice on Santos' original Response to Submissions (RTS).

There are also a number of other matters which ideally require further information. However, the EPA is confident that the outstanding information is not critical to determination and can be formally required from the proponent prior to any activity commencing, should the project be approved. The EPA recommends that these other matters are addressed either through conditions of approval or during the development of management plans, to ensure the required environmental outcomes.

The SRTS does not provide the key information requested in relation to salt disposal and fugitive emissions. As a result, the EPA is not able to provide advice on these matters to DPIE without further clarification. I have provided further information regarding these matters below.

Waste

The SRTS has not provided the additional information requested with regard to salt disposal. Specifically, the EPA asked for the criteria which will be used when selecting disposal facilities, details of local and regional landfill capacity and capability, and contingency measures should capacity and capability not be available locally or regionally. As a result, the EPA is not able to provide advice on this matter to DPIE without further clarification.

The SRTS has provided additional information with regards to drill cuttings and produced water disposal. The SRTS also commits to preparing a waste management plan. The EPA recommends that should the project be approved, DPIE include a condition of consent requiring Santos to develop a waste management plan in consultation with the EPA, and prior to operations commencing under a new approval. This plan should include an ongoing monitoring program to ensure consistency with waste guidelines and to confirm the classification of salt over the lifetime of the project. It should also include mitigation strategies to manage identified waste risks, and proposed contingencies if these are not achieved.

The EPA also recommends to DPIE that, should the project be approved, drill cuttings intended for application to the drill pad surface are first assessed to ensure their suitability for this purpose.

Groundwater

The SRTS provides additional groundwater information. However, the SRTS has not provided the requested detail on the proposed monitoring program. As such, the EPA recommends to DPIE that, should the project be approved, a condition is applied requiring that a formally endorsed groundwater monitoring program is developed and implemented in consultation with DPIE – Water and the EPA prior to activities commencing. The EPA further recommends that the groundwater monitoring plan includes conditions relating to baseline analysis, and regular updating of model projections during the life of operations.

Produced Water

The SRTS commits to developing a produced water management plan in accordance with consent conditions. The EPA has made several recommendations to DPIE to apply conditions of consent, if approval is granted. These conditions relate to preferred and contingency water management options, including identification and assessment of specific irrigation areas.

The SRTS provides additional water quality data confirming current high quality water for irrigation and discharge is being produced. Should the project be approved, Santos have committed to applying for a Resource Recovery Order and Exemption for use of the produced water off the Leewood licenced premises. On this basis, the EPA is satisfied that the required environmental outcomes can be achieved through conditions of consent, should the project be approved.

Air

Further clarification on the characterisation and assessment of fugitive emissions, including methane, volatile organic compounds and air toxics, and additional detail on the proposed leak detection and repair program was not provided in the SRTS. As a result, the EPA is not able to provide advice on this matter to DPIE without further clarification.

The SRTS commits to developing an air quality management plan for the construction and operational phases of the project, should the project be approved. If the project is approved, the EPA has already recommended that DPIE include conditions of consent which address emissions estimations, types, cumulative impact assessments, background concentrations and impact assessments.

Noise

The SRTS provides additional information regarding noise related matters including seismic surveys, drilling noise, noise levels and blasting. The EPA now recommends that the outstanding noise issues related to drilling activities and tonal noise be addressed through conditions of consent, should approval for the project be granted.

Further detail is provided on all of the topics outlined above at attachments A to E.

Should the project be approved, as lead regulator the EPA is to be consulted regarding the form of conditions of approval to ensure their enforceability.

If you would like any further information please do not hesitate to contact Mr Andrew Cowan A/Director Gas Regulation, EPA on 9995 6941 or at andrew.cowan@epa.nsw.gov.au.

Yours sincerely

 16/8/2019

GREG SHEEHY
Acting Chief Environmental Regulator
Environment Protection Authority

Enclosure

Attachment	Title
A	Comments on waste management issues in the SRTS
B	Comments on groundwater management issues in the SRTS
C	Comments on produced water management issues in the SRTS
D	Comments on air quality related issues in the SRTS
E	Comments on noise related issues in the SRTS

Attachment A – comments on waste management issues in the SRTS

Information reviewed

2019 – Narrabri Gas Project Supplementary Response to Submissions, Section 2.3.

Matters resolved

1. Waste aspects of produced water management

EPA recommendation (RTS): The EPA recommended that DPE request Santos provide additional information outlining the available options to lawfully dispose of the produced water from the water treatment plant, prior to project determination. This should include developing in principal agreement with the EPA on these disposal options. Specifically, this would include in principal agreement on the contents of any Resource Recovery Order and Exemption.

EPA comment on the SRTS: The SRTS has provided the additional information requested and, should the project be approved, Santos has committed to applying for a Resource Recovery Order and Exemption for use of the produced water off the Leewood licenced premises.

Matters to be resolved through conditions of approval – should the project proceed

2. Drill Cutting Disposal

EPA recommendation (RTS): The EPA recommended that DPE request from Santos further information fully describing the “mix, turn, bury” strategy, prior to project determination. Additionally, the EPA recommended that DPE request further detail from Santos regarding determining the suitability of using non-coal cuttings at drill pad sites. The EPA also recommended DPE request Santos conduct ongoing monitoring of this material over the life of the project to continually assess the suitability of using this material at drill pad sites as part of a waste management plan.

EPA comment on the SRTS: The SRTS has provided the additional information requested. The EPA recommend to DPIE that should the project be approved, drill cuttings intended for application to the drill pad surface are first assessed to ensure their suitability for this purpose.

3. Waste classification of salt

EPA recommendation (RTS): The EPA recommended that DPE include a condition of consent requiring Santos develop a waste management plan, in consultation with the EPA. This should include requirements for an ongoing monitoring program to ensure consistency with waste guidelines and to confirm the classification of waste over life of the project.

EPA comment on SRTS: The SRTS commits to develop a waste management plan for the project to be prepared in accordance with consent conditions, should the project be approved. Should the project be approved, the EPA recommends that DPIE include a condition of consent that the waste development plan be developed prior to operations commencing.

4. Waste risk assessment and management plan

EPA recommendation (RTS): The EPA recommended that DPE request further information from Santos on mitigation strategies to manage the potential waste impacts associated with the project, prior to project determination, including:

- proposed mitigation and management measures to manage the risks as identified in the risk matrix

- proposed contingencies if the preferred mitigation and management measures cannot be achieved.

The EPA also recommended that DPE request this information is included in the waste management plan to be developed, if the project is approved. The EPA further recommended that DPE include the development of the waste management plan as a condition of consent.

EPA comment on SRTS: The SRTS provides the additional information requested and has committed to preparing a waste management plan in accordance with consent conditions, should the project be approved. Should the project be approved, the EPA recommends that DPIE include a condition of consent that the waste development plan be developed prior to operations commencing.

Matters requiring more information to inform EPA's assessment but not provided by the SRTS

5. Waste Salt Disposal

EPA recommendation (RTS): The EPA recommended that DPE request from Santos further information detailing the criteria that will be used when selecting disposal facilities, prior to project determination. This information should include the measures that will be used to evaluate landfill capacity and capability. The EPA also recommended that DPE should also request an assessment of salt disposal options at different scales, including:

- what is the capacity and capability of local landfills located within 200km of the project to take the quantities and types of waste proposed to be generated by the project?
- what is the capacity and capability of landfills at a regional scale (Northern Inland Regional Waste) to take the quantities and types of waste proposed to be generated by the project?
- the assessment should also outline any contingencies if either option stated above does not achieve the desired waste management outcomes. This should include accessing landfills in other parts of the state.

EPA comment on the SRTS: The SRTS has not provided the information requested in the EPA's recommendation in response to the RTS. The SRTS infers that the volumes of waste generated can easily be catered for by existing waste facilities which have a combined capacity of far greater than the demands of the project. However, this assumption does not account for the existing demands from other existing waste streams that these facilities cater for. As a result, the EPA is not able to provide advice on this matter to DPIE without further clarification.

Attachment B – comments on groundwater management issues in the SRTS

Information reviewed

2019 – Narrabri Gas Project Supplementary Response to Submissions, Section 2.3 and 2.1.

Matters to be resolved through conditions of approval – should the project proceed

1. Gunnedah Basin Regional Groundwater Model (GBRM)

EPA recommendation (RTS): The EPA recommended that DPE include a condition of consent requiring Santos update the GBRM as further data becomes available through the ongoing monitoring and baseline data collection.

EPA comment on the SRTS: Revision of the groundwater model is still considered as a response as part of level 1 in the trigger action response plan. The model is used to estimate impacts not expected to occur until many years after the project's cessation and its ability to determine or predict impacts has been relied on heavily by the proponent. A commitment to revisit the model during the life of the project will further constrain risks or unknowns as well as predicted impacts should level 1 management responses not be triggered. As such, the EPA continues to recommend DPE include a condition of consent requiring the proponent to update the GBRM as further data becomes available through the ongoing monitoring and baseline data collection as a mandatory requirement of the project.

2. Water Quality

EPA recommendation (RTS): The EPA recommended that DPE request Santos further develop a conceptual water monitoring plan in consultation with the EPA and the Department of Industry – Land and Water (LW), prior to project determination. The plan must:

- include trigger action response plans for any changes in groundwater quality
- include thresholds for water quality impacts considering baseline data collected
- enable validation of current and future model simulations and associated predictions
- be capable of detecting water level and quality impacts from coal seam dewatering before they propagate into beneficial aquifers.

The EPA also recommended DPE include a condition of consent requiring Santos develop a water monitoring plan based on this conceptual water monitoring plan agreed to with EPA and LW, if the project is approved.

EPA comment on the SRTS: Ongoing monitoring work is proposed as a condition of consent and committed to within the EIS and SRTS.

Should the project be approved, the EPA recommends that DPE include a condition of consent that the groundwater monitoring program be developed and implemented in consultation with the DPE – Water and the EPA prior to the commencement of activities. The program must:

- include trigger action response plans for any changes in groundwater quality
- include thresholds for water quality impacts considering baseline data collected
- address local monitoring objective gaps
- enable validation of current and future model simulations and associated predictions
- be capable of detecting water level and quality impacts from coal seam dewatering before they propagate into beneficial aquifers.

3. Water Baseline Report

EPA recommendation (RTS): The EPA recommended that DPE include a condition of consent requiring Santos update the water monitoring plan, prior to commencement of works, in consultation with the EPA and LW to:

- commit to installation of monitoring bores as the gas field is progressively developed
- ongoing collection of baseline dataset.

EPA comment on the SRTS: Ongoing monitoring work is proposed as conditions of consent and committed to within the EIS and SRTS. The requirement for baseline sampling or timing of monitoring installations prior to field development has not been committed to by the proponent. EPA requires this to ensure that key markers of the groundwater environment are monitored to measure change. Without baseline monitoring progressing in advance of field development, the ability to regulate or determine impacts to groundwater sources is limited.

Should the project be approved, the EPA again recommends DPIE include a condition of consent requiring Santos update the water monitoring plan, prior to commencement of works, in consultation with the EPA and DPIE – Water to:

- commit to installation of monitoring bores as the gas field is progressively developed
- ongoing collection of baseline dataset.

4. Water Monitoring Plan

EPA recommendation (RTS): The EPA recommended that DPE request Santos further develop a conceptual water monitoring plan, in consultation with the EPA and LW, prior to project determination. The plan must:

- better incorporate water level impact findings presented in the EIS
- enable validation of current and future model simulations and associated predictions
- demonstrate that sufficient data will be collected to enable significant improvements in the certainty of regional groundwater flow model simulations and regular intervals over the lifetime of the activity
- be capable of detecting water level and quality impacts from coal seam dewatering before they propagate into beneficial aquifers.

The EPA also recommended that DPE include a condition of consent requiring Santos develop a water monitoring plan based on this conceptual water monitoring plan agreed to with EPA and LW, if the project is approved.

EPA comment on the SRTS: Ongoing monitoring work is proposed as a condition of consent and committed to within the EIS and SRTS. The SRTS also provides some information as to how the monitoring network will be expanded, but not enough information is provided to assess if this is adequate.

Should the project be approved, the EPA continues to recommend that DPIE include a condition of consent requiring that a groundwater monitoring program be developed and implemented in consultation with the DPIE – Water and the EPA, prior to the commencement of activities. The program must:

- enable validation of current and future model simulations and associated predictions
- demonstrate that sufficient data will be collected to improve the certainty of regional groundwater flow model simulations over the lifetime of the activity.

Attachment C – comments on produced water management issues in the SRTS

Information reviewed

2019 – Narrabri Gas Project Supplementary Response to Submissions, Section 2.3.

Matters to be resolved through conditions of approval – should the project proceed

1. Water balance

EPA recommendation (RTS): The EPA recommended that DPE include a condition of consent that requires Santos develop a produced water management plan (PWMP) in consultation with the EPA prior to produced water being generated, that includes:

- clear identification of access to sufficient irrigation area and offsite storage, and/or clear processes and milestones to sustainably irrigate effluent in the lead up to peak water production, during peak water production, and for the remaining years of water production
- contingency irrigation areas (i.e. in addition to the nominated 500ha)
- confirmation of agreements with third parties receiving effluent to establish the commercial responsibilities of the supplier and user of effluent and ensure the water balance is achieved
- details on how landowners will coordinate optimal cropping regimes to ensure the water balance is maintained throughout a year and throughout the project
- how amended and unamended water would be distributed to the various reuse options
- a process for annual review and reporting of the water balance based on actual reuse locations, water volumes treated, reuse volumes, and rainfall
- procedures and management triggers for use of produced water storages as upstream storage for excess irrigation or discharge
- procedures and triggers for ceasing produced water production if water is more than all available management options.

EPA comment on the SRTS: The SRTS commits to develop a PWMP in accordance with consent conditions. The EPA is satisfied that the required environmental outcomes can be achieved through conditions of consent, should the project be approved.

2. Agricultural irrigation

Soil survey data and density, and soil risks

EPA recommendation (RTS): The EPA recommended that DPE include a condition of consent that requires Santos develop a PWMP in consultation with the EPA and LW that includes:

- a procedure for the collection of site-specific soil surveys and/or baseline monitoring of irrigation sites to develop management requirements that ensure the sustainability of irrigation. This must include, but not be limited to:
 - representative soil baseline data relevant to an operational scale irrigation scheme
 - sampling to cover key soil parameters such as salinity, exchangeable sodium percentage (ESP)/sodium adsorption ratio (SAR) values, and permeability/water logging risk
 - adequately detailed soil profile descriptions
 - an initial EMI survey of all potential irrigation areas so that a common baseline data set is established
 - an inland acid sulfate soil risk assessment, including testing of soil materials from lower slope and drainage line locations for titratable acidity and acid-base accounting
 - use of a standardised soil classification system across all irrigation areas

- an appropriate basis for identifying and managing key differences between Vertisols and Sodsols, including profile textural ranges and volume expansion to allow the two soils type to be effectively differentially managed
- appropriate ongoing soil monitoring of each risk factor (to be implemented based on baseline assessments), including, at a minimum: salinity, ESP/SAR, permeability/water logging and pH
- clearly defined trigger, action and response plans
- protocols for dust suppression and stock water use.

EPA comment on the SRTS: The SRTS has provided additional water quality data confirming current high quality water for irrigation and discharge is being produced. The EPA is satisfied that the required environmental outcomes can be achieved through conditions of consent, should the project be approved. The SRTS commits to developing a PWMP for the project to be developed in accordance with consent conditions.

Taking into consideration the additional water quality data the commitment to develop a PWMP in the SRTS, EPA's recommended conditions of consent can be refined to include:

- reducing specific overall requirements for baseline soil monitoring at all irrigation sites to be replaced by a site-specific risk-based approach
- recommending appropriate site-specific baseline and ongoing soil monitoring requirements based on risk and to be assessed post-approval as part of the PWMP and irrigation management plans.

3. Bicarbonate

EPA recommendation (RTS): This recommendation is captured by the recommendation for discharge monitoring (8) below.

4. Un-amended effluent Sodium Absorbtion Ratio risk assessment including stockwater supply

EPA recommendation (RTS): The EPA recommended that DPE include a condition of consent, if the project is approved, that requires:

- the use of amended effluent for all reuse activities (except for fire-fighting)
- any proposal for reuse of unamended effluent, such as stock water use, must be adequately assessed in consultation with the EPA and DPI prior to undertaking the reuse activity
- there must be no irrigation in forested areas other than amended effluent use for dust suppression on roads, access tracks and project construction and operational areas.

EPA comment on the SRTS: The SRTS provides a commitment to beneficially re-use treated water in accordance with the EIS, RTS and SRTS, and relevant consent conditions. The EPA is satisfied that the required environmental outcomes can be achieved through conditions of consent, should the project be approved.

5. Discharges to Bohena Creek

a. NSW Water Quality Objectives and downstream users

EPA recommendation (RTS): The EPA recommended that DPE include a condition of consent that requires Santos develop a PWMP in consultation with the EPA and LW that includes:

- identification and consideration of all downstream water uses and values in operational plans regarding potential exceedances of water quality guidelines, including homestead water use, stock water, irrigation, recreation and aquatic ecosystems
- consideration of all relevant downstream environmental values in commissioning monitoring and monitoring to validate the mixing zone model.

EPA comment on the SRTS: The SRTS provides a commitment to develop a PWMP for the project which will be developed in accordance with consent conditions. The EPA is satisfied that the required environmental outcomes can be achieved through conditions of consent, should the project be approved.

b. Managed release trigger

EPA recommendation (RTS): The EPA recommended that DPE include a condition of consent, if the project is approved, that requires:

- the monitoring location for the managed release trigger of 100ML/day must be at or immediately upstream of the proposed discharge point
- if the discharge point is not located upstream that Santos provide evidence of why this is not a practical site and provide an alternative that will ensure the same outcomes can be met.

In addition, a release protocol must be developed in consultation with the EPA that clearly indicates the trigger(s) to commence and stop discharging to Bohena Creek.

EPA comment on the SRTS: The SRTS provides a commitment to develop a PWMP for the project which will be developed in accordance with consent conditions. The EPA is satisfied that the required environmental outcomes can be achieved through conditions of consent, should the project be approved.

6. Other pollutants and mixing zone assessment

EPA recommendation (RTS): The EPA recommended that DPE include a condition of consent, if the project is approved, requiring Santos:

- conduct an updated modelling assessment prior to discharge that:
 - provides the additional Cormix information requested by EPA in its submission
 - considers potential ionic risks, osmotic impacts of low salinity, bicarbonate, ammonia, hydrocarbons, treatment chemicals and the full range of analytes assessed in commissioning monitoring for the Leewood WTP (the commissioning analytes are set out in the document entitled "Santos Energy NSW Leewood Phase 2, Water Treatment Plan", Document No: 7056-465-PLA-0001, dated 19 November 2015)
- monitoring of the mixing zone occurs in conjunction with commissioning assessments to validate model predictions of dilution
- initial direct toxicity assessment of representative effluent during the commissioning stage to assess any combined impacts of different chemicals in the discharge water, including biocides and treatment chemicals. Toxicity testing methodology should be developed in consultation with the EPA. Direct toxicity assessment testing can then be used as a future monitoring tool if there are any significant departures in chemical quality and should be based on the most sensitive test species identified during the initial test. A trigger value system should be developed in a discharge management plan to identify the need for any future toxicity testing.

EPA comment on the SRTS: The SRTS has provided additional water quality data confirming high current quality water for irrigation and discharge. The EPA is satisfied that the required environmental outcomes can be achieved through conditions of consent, should the project be approved. With the additional water quality data provided by the SRTS, the proposed conditions of consent can now be refined to include:

- removing requirements for additional mixing zone modelling prior to discharge
- retaining appropriate levels of verification monitoring of discharge quality and mixing processes which are typical verification and commission requirements for development assessments.

7. Monitoring and reporting

EPA recommendation (RTS): The EPA recommended that DPE include a condition of consent, if the project is approved, requiring Santos to include information in the PWMP regarding water treatment to ensure the treatment process meets the requirements for the proposed end uses or disposal options for treated water. This should include but not be limited to:

- a commissioning monitoring program and report for the water treatment plant that must:
 - be developed in consultation with the EPA prior to commencing full scale operations
 - be consistent with commissioning monitoring requirements and analytes set out the document entitled “Santos Energy NSW Leewood Phase 2, Water Treatment Plan” (Document No: 7056-465-PLA-0001, dated 19 November 2015)
 - in addition to the commissioning analytes in Document No: 7056-465-PLA-0001, include hydrocarbons and any chemicals used in the WTP that may have a non-trivial impact on water quality
 - consider all end-uses of effluent
 - propose ongoing water quality monitoring, including monitoring to be required under the Environment Protection Licence (EPL)
- ongoing operational monitoring requirements for discharge and reuse (subject to results from the treatment plant commissioning monitoring). Note that monitoring requirements for pollutants may be removed, added or amended in an EPL
- maintenance, operational triggers and responses to ensure that the treatment process is functioning in a proper and efficient manner
- procedures for water discharges that do not meet specifications, treatment failure, spills, and communication with downstream water users.

EPA comment on the SRTS: The SRTS commits to develop a PWMP for the project which will be developed in accordance with consent conditions. The EPA is satisfied that the required environmental outcomes can be achieved through conditions of consent, should the project be approved.

8. Discharge monitoring

EPA recommendation (RTS): The EPA recommended that DPE include a condition of consent, if the project is approved, requiring Santos to:

- conduct ambient upstream and downstream monitoring
- conduct sampling during or immediately after discharges (and not “within 5 to 7 days”)
- include a downstream monitoring point close to the edge of the modelled near-field mixing zone.

EPA comment on the SRTS: The SRTS commits to develop a water monitoring plan which will comply with any conditions of consent, should the project be approved. The EPA is satisfied that the required environmental outcomes can be achieved through conditions of consent, should the project be approved.

Attachment D – comments on air quality related issues in the SRTS

Information reviewed

2019 – Narrabri Gas Project Supplementary Response to Submissions, Section 2.3.

Matters that can be resolved through conditions of approval – should the project proceed

1. Emission estimation

EPA recommendation (RTS): The EPA recommended that DPE include a condition requiring additional assessment of all processes and emission sources associated with the project, if the project is approved. This must include the Leewood gas processing plant and the gas field. The revised assessment must:

- be completed prior to the commencement of project construction
- be based on final plant design, engineering parameters and emission performance
- provide detailed description of all processing plant including but not limited to gas processing and treatment systems such as they triethylene glycol dehydration systems
- demonstrate that the plant design and emission performance is consistent with best practice emission performance
- account for cumulative impacts.

EPA comment on SRTS: The EPA continues to recommend a condition of consent for a revised impact assessment based on final plant design. The SRTS commits to develop an air quality management plan for the construction and operational phases of the project which will be developed in accordance with consent conditions. The EPA is satisfied that the required environmental outcomes can be achieved through conditions of consent, should the project be approved.

2. Emission types

EPA recommendation (RTS): The EPA recommends DPE include a condition requiring additional assessment of all processes and emission sources associated with the project, if the project is approved. This must include the Leewood gas processing plant and the gas field. The revised assessment must:

- be completed prior to the commencement of project construction
- be based on final plant design, engineering parameters and emission performance
- provide detailed description of all processing plant including but not limited to gas processing and treatment systems such as the triethylene glycol dehydration systems
- demonstrate that the plant design and emission performance is consistent with best practice emission performance
- account for cumulative impacts.

Additionally, the EPA recommends that DPE should consider a condition requiring a management plan in relation to air quality for the construction phase, if the project is approved.

EPA comment on SRTS: The EPA continues to recommend a condition of consent for a revised impact assessment based on final plant design. The SRTS commits to develop an air quality management plan for the construction and operational phases of the project which will be developed in accordance with consent conditions. The EPA is satisfied that the required environmental outcomes can be achieved through conditions of consent, should the project be approved.

3. Cumulative impact assessment

EPA recommendation (RTS): The EPA recommended DPE include conditions that require the assessment of well head locations and well head emission sources prior to construction through the design phase, if the project is approved. An ongoing assessment of the final well head locations and sources must be incorporated into these conditions.

The EPA recommended DPE include conditions requiring additional assessment of all processes and emission sources associated with the project, if the project is approved. This must include the Leewood gas processing plant and the gas field. The revised assessment must:

- be completed prior to the commencement of project construction
- be based on final plant design, engineering parameters and emission performance
- provide detailed description of all processing plant including but not limited gas processing and treatment systems such as the triethylene glycol dehydration systems
- demonstrate that the plant design and emission performance is consistent with best practice emission performance
- account for cumulative impacts.

EPA comment on SRTS: The EPA continues to recommend a condition of consent for a revised impact assessment based on final plant design. The SRTS commits to develop an air quality management plan for the construction and operational phases of the project which will be developed in accordance with consent conditions. The EPA is satisfied that the required environmental outcomes can be achieved through conditions of consent, should the project be approved.

4. Background concentration

EPA recommendation (RTS): The EPA recommended that DPE include a condition of consent requiring further cumulative assessment in accordance with methods listed in the *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW*, or a method otherwise agreed to in writing by the EPA, if the project is approved.

EPA comment on SRTS: The SRTS commits to develop an air quality management plan for the construction and operational phases of the project which will be developed in accordance with consent conditions. The EPA is satisfied that the required environmental outcomes can be achieved through conditions of consent, should the project be approved.

5. Impact assessment results

EPA recommendation (RTS): The EPA recommended that DPE include conditions requiring additional assessment of all processes and emission sources associated with the project, if the project is approved. This must include the Leewood gas processing plant and the gas field. The revised assessment must:

- be completed prior to the commencement of project construction
- be based on final plant design, engineering parameters and emission performance
- provide detailed description of all processing plant including but not limited to gas processing and treatment systems such as they triethylene glycol dehydration systems
- demonstrate that the plant design and emission performance is consistent with best practice emission performance
- account for cumulative impacts.

EPA comment on SRTS: The EPA continues to recommend a condition of consent for a revised impact assessment based on final plant design. The SRTS commits to develop an air quality management plan for the construction and operational phases of the project which will be developed in accordance with consent conditions. The EPA is satisfied that the required environmental outcomes can be achieved through conditions of consent, should the project be approved.

Matters requiring more information to inform EPA's assessment but not provided by the SRTS

6. Fugitive emissions

EPA recommendation (RTS): The EPA recommended that DPE request Santos provide further information to inform the assessment of fugitive emissions for methane, trace VOCs and air toxics, prior to project determination.

As a minimum, Santos should provide:

- project specific gas composition data to inform a risk evaluation of air toxics/trace VOCs
- additional information that demonstrates that the proposed leak detection and repair program adequately:
 - minimises the potential for significant fugitive emissions of air toxics/trace VOCs from all gas infrastructure
 - manages potential impacts from residual emissions.

EPA comment on the SRTS: The SRTS has not provided the additional information requested in the EPA's recommendation in response to the RTS. As a result, the EPA is not able to provide advice on this matter to DPIE without further clarification.

Attachment E – comments on noise related issues in the SRTS

Information reviewed

2019 – Narrabri Gas Project Supplementary Response to Submissions, Section 2.3.

Matters requiring no further action

1. Seismic surveys

EPA recommendation (RTS): The EPA recommended that DPE request further detail from Santos on how long and how often these surveys are expected to occur near any given sensitive receiver location, prior to project determination.

EPA comment on the SRTS: The SRTS has provided the additional information requested.

2. Drilling noise

EPA recommendation (RTS): The EPA recommended that DPE request further detail from Santos on the 'standard mitigation measures' to be applied to drilling unit pump engines, generators and power units, prior to project determination.

EPA comment on the SRTS: The SRTS has provided the additional information requested.

3. Noise levels

EPA recommendation (RTS): The EPA recommends DPE request further detail from Santos on the expected error in maximum noise level (Lmax) adjustments applied to operating equipment.

EPA comment on the SRTS: The SRTS has provided the additional information requested.

4. Blasting

EPA recommendation (RTS): The EPA recommended DPE request further information from Santos on what additional measures will be considered if blasting is required, prior to project determination.

EPA comment on the SRTS: The SRTS has provided the additional information requested.

Matters that can be resolved through conditions of approval – should the project proceed

5. Drilling activities and tonal noise

EPA recommendation (RTS): The EPA recommended that DPE include conditions of consent if the project is approved, requiring Santos to:

- meet the relevant noise criteria for the activities mentioned above unless a written agreement is in place with the landholder
- implement additional noise mitigation measures to address any low frequency, tonal or other problematic noise characteristics from operational equipment, including drill rigs.

EPA comment on the SRTS: The SRTS commits to implementing a noise management plan for the project to be developed in accordance with consent conditions. The EPA is satisfied that the required environmental outcomes can be achieved through conditions of consent, should the project be approved.

