



Department
of Industry
Resources & Energy

COMPLIANCE AUDIT

Leewood Ponds Water Management Facility

Santos NSW Pty Ltd

PAL0002

Petroleum (Onshore) Act 1991

Division of Resources and Energy

September 2015
Version 1





Published by NSW Department of Industry

Compliance Audit: Leewood Ponds Water Management Facility, Santos NSW Pty Ltd

First published September 2015

More information

Jenny Ehmsen, Principal Compliance Auditor, Regulatory Audit & Investigation Unit, Maitland

www.industry.nsw.gov.au

Version No:1

File: XXXX

© State of New South Wales through the NSW Department of Industry, Skills and Regional Development 2015.

This publication is copyright. You may download, display, print and reproduce this material in an unaltered form only (retaining this notice) for your personal use or for non-commercial use within your organisation. To copy, adapt, publish, distribute or commercialise any of this publication you will need to seek permission from the NSW Department of Industry, Skills and Regional Development.

Disclaimer: The information contained in this publication is based on knowledge and understanding at the time of writing (September 2015). However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up to date and to check currency of the information with the appropriate officer of the NSW Department of Industry, Skills and Regional Development or the user's independent advisor.



Executive Summary

A compliance audit was undertaken of the Leewood Stage 1 Produced Water and Brine Management Ponds, located within PAL0002 near Narrabri, and operated by Santos NSW Pty Ltd. This audit is part of the compliance audit program being undertaken by the Department of Industry - Division of Resources and Energy (the department). The on-site component of the audit was conducted on 20 August 2015.

The objective of the audit was to assess the level of compliance with the commitments made by Santos in the Review of Environmental Factors (REF) prepared for Stage 1 of the Leewood project, and the conditions contained in the corresponding approval issued by the department.

The audit process involved the interview of Santos personnel, a review of documentation and samples of records provided by Santos, and a site inspection of the site, to determine the level of compliance and the current status of the site's operational performance.

From the evidence reviewed during the audit, and observations made on site during the audit site inspections, the auditor concluded that Santos has achieved a very high level of compliance with the obligations imposed by the conditions of the activity approval for the Leewood Stage 1 project, and the commitments made by Santos in the Leewood Stage 1 REF.

No non-compliance issues were identified during the audit, with only three minor observations of concern noted. No corrective actions are considered to be required.

Contents

Executive Summary.....	3
1. Introduction.....	6
1.1. Background.....	6
1.2. Audit objectives.....	6
1.3. Audit scope.....	6
1.4. Audit criteria.....	6
1.5. Audit team.....	6
2. Audit methods.....	7
2.1. Preliminary document review.....	7
2.2. Opening meeting.....	7
2.3. Site interviews and inspections.....	7
2.3.1 Data collection and verification.....	7
2.3.2 Site inspections.....	8
2.4. Closing meeting.....	8
2.5. Compliance assessment definitions.....	8
2.6. Reporting.....	9
3. Compliance assessment.....	10
3.1. Compliance assessment summary.....	10
3.2. Observations of concern.....	10
4. Operational performance.....	11
4.1. Management commitment.....	11
4.2. Community consultation.....	11
4.3. Construction supervision.....	11
4.4. Groundwater monitoring.....	12
4.5. Pond liners and leak detection systems.....	12
4.6. Erosion and sediment control.....	12
4.7. Waste management.....	13
5. Audit conclusions.....	14

Photo Plates

Plate 1	5ML tank at the Bibblewindi Facilities Area
Plate 2	Bibblewindi inlet manifold and associated pipework
Plate 3	Bibblewindi outlet manifold, associated pumps, pipework and metering equipment
Plate 4	Bibblewindi gas fired engines and backup diesel generator
Plate 5	Bohena Creek crossing along the flow line route
Plate 6	Flow line route heading from Bohena Creek to Bibblewindi
Plate 7	Newell Highway pipeline crossing site
Plate 8	Newell Highway/Old Mill Road intersection upgrade

Plate 9 Leewood inlet manifold and associated pumps and metering equipment

Plate 10 Polymer product sprayed on pond batters at Bibblewindi Pond 2

Appendices

Appendix 1 Santos response to draft audit report

Appendix 2 Compliance Assessment – Leewood Stage 1 Activity Approval Conditions

Appendix 3 Compliance Assessment – Leewood Stage 1 Santos REF Statement of Commitments

1. Introduction

1.1. Background

A compliance audit was undertaken of the Leewood Stage 1 Produced Water and Brine Management Ponds, located within PAL0002 near Narrabri, and operated by Santos NSW Pty Ltd (Santos). This audit is part of the compliance audit program being undertaken by the Department of Industry - Division of Resources and Energy (the department). The on-site component of the audit was conducted on 20 August 2015.

The Leewood Ponds Stage 1 project involved the construction of one 300 megalitre (ML) brine pond and one 300 ML brine or produced water pond (collectively referred to as the Leewood ponds) on a Santos owned property known as "Leewood", located on the Newell Highway approximately 24 kilometres south west of Narrabri, NSW. It also involved the construction of a water flow line to Leewood from the existing Bibblewindi Water Management Facility, located approximately 16 kilometres to the south of Leewood in the Pilliga State Forest. Additional surface infrastructure, including a water distribution manifold, water pump skids, local power supply and water holding tanks, also formed part of the proposed activity.

Operation of the Leewood facility involved the transfer and storage of produced water and brine from Bibblewindi Water Management Facility to Leewood, as well as the transfer and storage of produced water from pilot wells once they are returned to operation.

1.2. Audit objectives

The objective of the audit was to assess the level of compliance with the commitments made by Santos in the Review of Environmental Factors (REF) prepared for Stage 1 of the Leewood project, and the conditions contained in the corresponding approval issued by the department.

1.3. Audit scope

The scope of the audit included:

- the Leewood water management facility and associated infrastructure, including the Bibblewindi 5ML balance tank, and the 16km flowline route.
- assessment of compliance for the period 19 March 2013 to 19 August 2015.

1.4. Audit criteria

The audit criteria against which compliance was assessed included:

- conditions of the PAL2 approval to construct and operate Leewood produced water and brine management ponds issued by DRE and dated 19 March 2013
- commitments made in the Leewood – Produced Water and Brine Management Ponds: Review of Environmental Factors, prepared by RPS on behalf of Santos, dated 18/12/2012 (Report No. PR113369 Rev 0/December 2012)

1.5. Audit team

The audit was led by Jenny Ehmsen, Principal Compliance Auditor; an Exemplar Global¹ registered Lead Environmental Auditor (Certificate No. 15186). The audit team included the following Environmental Sustainability Unit (ESU), and Environment Protection Authority (EPA) staff:

- Ben Gazi, Graduate Officer, ESU
- Mark Clyne, Head of Operations Gas Regulation, NSW EPA
- Jenny Rushton, Operations, NSW EPA
- James Pridgeon, Operations, NSW EPA

¹ Previously RABQSA

2. Audit methods

The audit process involved the interview of Santos personnel, a review of documentation and samples of records provided by Santos and a site inspection of the operations to determine the level of compliance of the project and the current status of the project's environmental performance. The audit process and methodology is described in more detail in the sections below.

2.1. Preliminary document review

Prior to the audit, documentation associated with the Leewood Ponds project was reviewed by the audit team. This involved a review of the following documentation:

- Review of Environmental Factors: Leewood – Produced Water & Brine Management Ponds, prepared for Santos by RPS Australia East Pty Ltd, Revision 0 dated December 2012
- PAL2 Approval to construct and operate Leewood produced water and brine management ponds issued by NSW Trade & Investment, Division of Resources and Energy, dated 19 March 2013
- Submission from Department of Primary Industries, Office of Water, PAL2 Santos Leewood Produced Water and Brine Management Ponds dated 24/1/2013
- Submission from EPA, Review of Environmental Factors – Leewood Produced Water and Brine Management Ponds, dated 24/1/2013
- Narrabri Gas Field: Groundwater Monitoring and Modelling Plan, Revision 0 dated 12/12/2012 prepared by Santos Ltd
- Project Approval 07_0023 issued to Santos NSW (Eastern) Pty Limited for the Narrabri Coal Seam Gas utilisation project, issued by Department of Planning and Environment as amended May 2014
- Narrabri Coal Seam Gas Utilisation Project, PEL238, Gunnedah Basin, NSW, Part 3A Environmental Assessment (Project Application 07_0023) dated May 2008
- Review of Environmental Factors: Leewood Produced Water Treatment and Beneficial Reuse Project, prepared for Santos NSW (Eastern) Pty Limited by RPS Australia East Pty Ltd, Revision 5 dated June 2015.
- Submission from Department of Primary Industries, Office of Water, Review of Environmental Factors – Leewood Produced Water Treatment and Beneficial Reuse Project Phase 2 – Santos, dated 21/4/2015
- Submission from EPA, Leewood Produced Water Treatment and Beneficial Reuse Project, dated 22/4/2015

2.2. Opening meeting

The opening meeting was held at the Narrabri Operations Centre conference room, Yarrie Lake Road, Narrabri commencing at 8.10am on Thursday 20 August 2015.

The audit team was introduced and the scope of their responsibilities was conveyed to the auditees. The objectives and scope of the audit were outlined. The methods to be used by the team to conduct the audit were explained.

It was stated that the audit team would be interviewing personnel, reviewing documentation, examining records and conducting a site inspection in order to address specific compliance requirements, and relevant activity approvals for the Leewood Ponds project.

2.3. Site interviews and inspections

2.3.1 Data collection and verification

Where possible, documents and data collected during the audit process were reviewed on site. A number of documents were available to the audit team prior to the on-site component of the audit. Several documents that were not available during the on-site component of the audit were provided following the audit for review.

All information obtained during the audit process was verified by the audit team where possible. For example, statements made by site personnel were verified by viewing documentation and/or site inspections where possible. Where suitable verification could not be provided, this has been identified in the audit findings as not determined.

2.3.2 Site inspections

A site inspection was undertaken comprising the following elements of the Leewood Ponds project:

- Bibblewindi 5ML balance tank (**Plate 1**)
- Bibblewindi inlet manifold and associated pipework (**Plate 2**)
- Bibblewindi outlet manifold, associated pipework, pumps and metering infrastructure (**Plate 3**)
- Bibblewindi gas fired engines and back up diesel generator to run pumping infrastructure (**Plate 4**)
- Bibblewindi to Bohena Creek flowline route, including the Bohena Creek crossing (**Plates 5 and 6**)
- Newell Highway pipeline crossing site (**Plate 7**)
- Newell Highway/Old Mill Road intersection upgrade area (**Plate 8**)
- Leewood produced water and brine management ponds, topsoil and spoil stockpiles, former construction laydown areas
- Leewood inlet manifolds and associated pumps and metering equipment (**Plate 9**)
- Leak detection monitoring bores around the perimeter of the ponds
- Nested monitoring bores at the perimeter of the Leewood property
- Leewood construction water bore

2.4. Closing meeting

The closing meeting was held at Narrabri Operations Centre conference room, Yarrie Lake Road, Narrabri commencing at 4.45pm on Thursday 20 August 2015.

The objectives of this meeting were to discuss any outstanding matters, present preliminary findings and outline the process for finalising the audit report.

2.5. Compliance assessment definitions

The reporting of results from the compliance audit was determined based on the definitions presented below in **Table 2.1**.

Table 2.1 Audit assessment categories

Assessment	Criteria
Compliance	Sufficient and appropriate evidence is available to demonstrate the particular requirement has been complied with.
Non-compliance	<p>Clear evidence has been collected to demonstrate the particular requirement has not been complied with. There are three subcategories of non-compliance reflecting the severity and level of risk associated with the non-compliance:</p> <p>NC1 – the absence of planning or implementation of a required operational element which has the potential to result in a significant risk</p> <p>NC2 – an isolated lapse or absence of control in the implementation of an operational element which is unlikely to result in a significant risk</p> <p>NC3 – an administrative or reporting non-compliance which does not have a direct environmental or safety significance</p>
Observation of Concern	Where an auditee may be compliant at the time of the audit but there are issues that exist that could result in the potential for future non-compliance if not addressed.

Assessment	Criteria
Not determined	<p>The necessary evidence has not been collected to enable an assessment of compliance to be made within the scope of the audit.</p> <p>Reasons why the audit team could not collect the required information include:</p> <ul style="list-style-type: none"> ▪ insufficient information on the file relating to the period covered by the audit or insufficient evidence collected to reach a conclusion ▪ the wording on the criteria (approval condition) meant that no evidence could be gathered or it was too difficult to gather the evidence. <p>A "Not Determined" assessment was also made where the condition was outside of the scope of the audit.</p>
Not applicable	<p>The circumstances of the authorisation or title holder have changed and are no longer relevant, e.g. construction has been completed, design amendments have removed the need for the requirement, and/or plant has been removed, etc.</p> <p>An invoking element in the criteria was not activated within the scope of the audit.</p>

2.6. Reporting

Following completion of the site audit, the audit checklists were completed and audit notes were reviewed in order to compile a list of outstanding matters to be noted in the audit report. This report was prepared to provide an overview of the status of compliance by reference to the relevant compliance documentation and any other observations of the auditors during the site inspections and interviews.

The draft audit findings were forwarded to Santos for comment. The representations made by Santos in relation to the audit findings are included in **Appendix 1**. Consideration was given to the representations made during the finalisation of the audit report.

3. Compliance assessment

The findings of the audit are presented in this section. Detailed assessments of compliance with relevant compliance criteria are provided in **Appendices 2 and 3**.

The findings of this audit are based upon visual observations of the operations being undertaken on site and the surrounding vicinity, interviews with site personnel and our interpretation of the documentation provided by Santos. Opinions presented herein apply to the operations as they existed at the time of the audit and from information provided by site personnel. Any changes to this information of which the audit team is not aware and has not had the opportunity to evaluate therefore cannot be considered in this report.

3.1. Compliance assessment summary

Table 3.1 provides a summary of the compliance assessment for the Leewood Ponds Project. Generally, the audit findings show that Santos has achieved a very high level of compliance, with no non-compliances and only three observations of concern identified. It was noted that none of the observations of concern related specifically to conditions of approval, with all being related to commitments made by Santos in the REF.

Table 3.1 Summary of audit findings

Document	ND	NA	C	NC1	NC2	NC3	O	Total
Leewood Stage 1 REF Approval	2	2	16	0	0	0	0	20
Leewood Stage 1 REF Commitments	48	11	95	0	0	0	3	157

Where:

ND = not determined	NC1 = noncompliant category 1
NA = not applicable	NC2 = not compliant category 2
C = compliant	NC3 = not compliant category 3
O = observation of concern	

3.2. Observations of concern

A total of three Observations of Concern were identified during the audit. These are described below in **Table 3.2**.

Table 3.2 Observations of Concern identified during the audit

Requirement	Observation of Concern
Approximately six months construction and operation for the duration of Santos' CSG exploration activities in PAL 2 and PEL 238.	The construction period was longer than 6 months (being approximately 12 months), however evidence was sighted to indicate that neighbours and other stakeholders were kept updated about construction progress and timing.
Works will commence in the first quarter of 2013.	Works did not commence until the second half of 2013, however evidence was sighted to indicate that neighbours and other stakeholders were kept updated about construction progress and timing.
The proposed works should avoid the SUGAR pits. The SUGAR pits will be flagged and a temporary barrier erected around them prior to commencement of works. No works will occur within this zone. The barriers will be removed at the completion of construction.	Barrier fencing was erected around the SUGAR pit sites, however, it was noted that the barriers have not been removed from the sites despite construction being completed. The auditor did not have any issues with the barriers being maintained.

4. Operational performance

4.1. Management commitment

Based on observations made on site, evidence sighted during a review of documents and records, and interviews of site personnel, the auditor formed the view that Santos has demonstrated significant commitment to undertaking works in accordance with the requirements of the activity approval and the commitments made in the REF.

Santos is currently using the Comtrack software to identify and track compliance obligations. Given that no non-compliances were detected during the audit, Santos' use of the Comtrack system appears to be very effective in ensuring compliance with identified obligations.

Interviews with Santos' Principal Adviser Compliance, Operations Superintendent, Water Management Leader and the Team Leader Community and Land all confirmed that staff are aware of their obligations and clearly understand compliance requirements.

4.2. Community consultation

Evidence reviewed during the audit indicates that Santos has established a comprehensive community consultation program for the Leewood Ponds project as part of a broader consultation program for the Narrabri Gas Project. The Leewood Stage 1 Stakeholder Engagement Plan includes an identification of relevant stakeholders. These include:

- Government agencies (federal, state, local)
- Landholders (directly affected, indirectly affected, and broader regional context)
- Community groups
- Aboriginal groups
- Contractors and local businesses

For the Leewood project, Santos established a Leewood neighbours forum which met regularly to update neighbouring landholders with information about the progress of the project and any issues that may have arisen. Leewood Project Updates were also distributed within the community and a Leewood Project Update presentation was provided to the Narrabri Community Consultative Committee in July 2014.

Santos is currently using the Consultation Manager software to log all of its consultation activities, community enquiries and complaints. As part of the management of its consultation activities, Santos has also developed Consultation Manager Data Integrity Guidelines – Narrabri Gas Project to assist stakeholders to accurately record stakeholder interactions in Consultation Manager.

Records reviewed during the audit showed that consultation activities, enquiries and complaints are very well managed.

4.3. Construction supervision

For the duration of the construction of the Leewood Ponds, Santos utilised the services of Golder Associates to provide design services for the ponds and undertake construction supervision. Golder produced a Technical Specification and a set of construction drawings for the Santos Leewood Ponds (dated June 2013) which detailed the construction requirements for the project. A review of the Technical Specification showed that specific requirements from the conditions of approval and the statement of commitments made in the REF had been included in the specification such that contractors would be aware of the requirements.

Throughout the construction process, Golder undertook site inspections, and provided full time oversight and quality control of the earthworks construction and installation of the geosynthetic liners. As each pond cell reached practical completion, Golder issued As-Constructed Interim Certifications to certify that the ponds had been constructed in accordance with the Technical Specification and Drawings and were ready to be commissioned.

At the completion of commissioning of each pond, Golder provided a detailed Construction Report which included:

- the results of all material testing required to be performed by the Technical Specification

- technical information and certificates documenting the properties of the materials used in construction
- as built surveys
- a summary of the construction methodologies, testing methods, testing frequencies and equipment employed in construction.

A review of the construction reports, quality assurance documentation and the as-built drawings confirmed that the project had been constructed in accordance with the description of the project documented in the REF, as amended by the minor modifications that had been approved by the department.

4.4. Groundwater monitoring

As part of the exploration development of the Narrabri Gas Field, Santos designed and implemented a Groundwater Monitoring and Modelling Plan to collect groundwater data to supplement the existing regional baseline dataset. The hydrogeology of the Narrabri gas field area generally differentiates between shallow and deep groundwater aquifers. In this regard, Santos has established both a shallow aquifer monitoring bore network (SAMB) and a deep aquifer monitoring bore network (DAMB). The results from these monitoring networks provide a baseline set of groundwater quality and quantity data from which to characterise and assess any potential impacts.

The activity approval for the Leewood Ponds further required that the groundwater monitoring of the water storages must be capable of monitoring the condition of the shallowest aquifer below the Leewood site.

The hydrogeology assessments and the development of the regional groundwater model that have been undertaken by Santos provide evidence that it has an understanding of the groundwater regime in the area, in order to identify and monitor the shallowest aquifer below the Leewood site.

During the assessment phase for the Leewood Stage 2 project, NSW Office of Water (NOW) identified a concern that the Phase 2 REF indicated three sets of nested bores constructed on the property boundary, rather than the ring of shallow monitoring bores around the ponds (which NOW supported) which were included in the Leewood Stage 1 REF. NOW requested clarification on the status of the monitoring bores proposed in Stage 1 REF and justification provided for any variation.

During the audit, the audit team sighted the three sets of nested monitoring bore along the northern and southern boundaries of the Leewood property. It was also observed that a series of seven shallow monitoring bores has also been constructed around the immediate perimeter of the ponds as described in the Stage 1 REF. These shallow bores are all to a depth of 10 metres and will generally be dry unless there is a leak in the ponds.

4.5. Pond liners and leak detection systems

In addition to the groundwater monitoring systems described in Section 4.4, the design of the ponds has incorporated a leak detection system to detect any leakages from the ponds. The pond liner comprises a dual liner system with a primary geomembrane liner underlain by a series of sumps and drains, which in turn is underlain by a composite secondary geomembrane liner. Underneath the secondary liner is a geosynthetic clay liner on the floor of the pond and compacted clay layers on the slopes of the pond.

Golder Associates undertook an assessment of the liner systems and concluded that the results of the assessment indicated that the proposed lining system was expected to provide equivalent flow performance to that which would be provided by the 900mm clay liner required by the NSW EPA and the conditions of the activity approval issued by the department.

Evidence that the leak detection system was capable of detecting leaks in the primary pond liner was confirmed during the commissioning of Production Pond B. Pond sump monitoring sheets reviewed for February 2015 showed that flows were detected in the sumps during the commissioning phase of the pond. The pond was subsequently emptied, a hole in the liner repaired, and the pond refilled with water. No further flows were detected during the second commissioning of the pond, indicating that there was integrity of the liner system.

4.6. Erosion and sediment control

Santos has developed and implemented erosion and sediment control plans for the operational phase of the Leewood Ponds project. During the audit site inspection, the auditor confirmed that controls identified on the Erosion and Sediment Control Plan – Leewood Ponds (SWMP-LP-ESCP-0001, Revision 1 dated 17/8/2015) had been implemented in the field.

It was also confirmed that controls identified on the Erosion and Sediment Control Plan – Bibblewindi Facilities Area (SWMP-BFA-PR-0003, Revision 3, dated 20/4/2015) had also been implemented in the field. It was noted that, despite the polymer product applied to the inside batters of Pond 2 at Bibblewindi, there was evidence of erosion restarting, indicating that the polymer product may need to be reapplied (refer to **Plate 10**).

4.7. Waste management

Given that construction has been completed and the ponds are now operational, very little waste is generated from the operations. No wastes were observed on site during the audit site inspection.

Waste management records for the construction phase were reviewed as part of the audit. Based on the waste records reviewed, the auditor formed the opinion that wastes were generally classified and disposed of according to requirements. Evidence was available to indicate the type and volume of wastes generated, collected and disposed of, with records indicating the disposal option for each waste type.

5. Audit conclusions

The objective of the audit was to assess the level of compliance with the commitments made by Santos in the Review of Environmental Factors (REF) prepared for Stage 1 of the Leewood project, and the conditions contained in the corresponding approval issued by the department.

From the evidence reviewed during the audit, and observations made on site during the audit site inspections, the auditor concluded that Santos has achieved a very high level of compliance with the obligations imposed by the conditions of the activity approval for the Leewood Stage 1 project, and the commitments made by Santos in the Leewood Stage 1 REF.

No non-compliance issues were identified during the audit, with only three minor observations of concern noted. No corrective actions are considered to be required.

Photo Plates



Plate 1 – 5ML tank at the Bibblewindi Facilities Area



Plate 2 – Bibblewindi inlet manifold and associated pipework



Plate 3 – Biblewindi outlet manifold, associated pumps, pipework and metering equipment



Plate 4 – Biblewindi gas fired engines and backup diesel generator



Plate 5 – Bohena Creek crossing along the flow line route



Plate 6 – Flow line route heading from Bohena Creek to Bibblewindi – note the fenced area containing a riser vent along the flow line



Plate 7 – Newell Highway pipeline crossing site (note pipeline signs indicating presence of pipelines)



Plate 8 – Newell Highway/Old Mill Road intersection upgrade



Plate 9 – Leewood inlet manifold and associated pumps and metering equipment

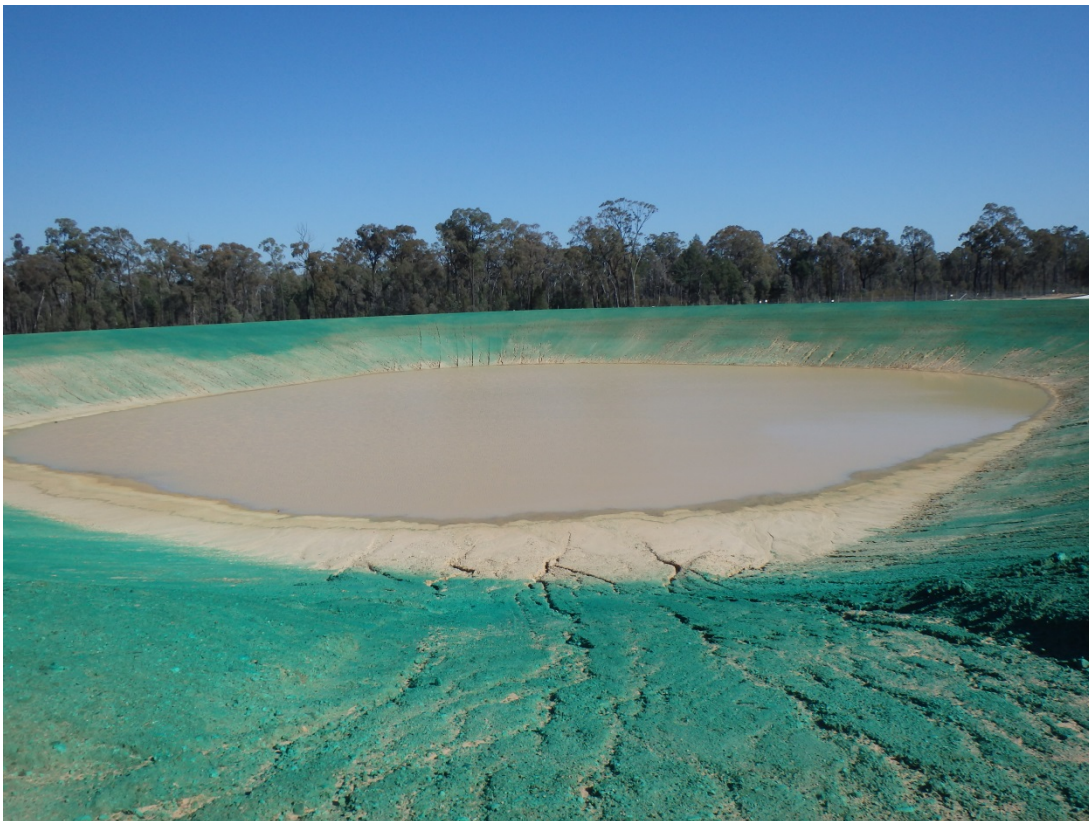


Plate 10 – Polymer product sprayed on pond batters at Bibblewindi Pond 2

Appendix 1

Santos Response to Draft Audit Report

Santos Ltd
ABN 80 007 550 923
Narrabri Operations Centre
300 Yarrie Lake Road
Narrabri NSW 2390
Telephone: 61 2 6792 9000
www.santos.com

Santos
We have the energy.

14 September 2015

Ms Jenny Ehmsen
Principal Compliance Auditor
NSW Department of Industry
PO Box 344
Hunter Regional Mail Centre
NSW 2310

Dear Ms Ehmsen,

Thank you for the opportunity to review the draft audit report for the Leewood Phase 1 - Review of Environmental Factors (REF) commitments and approval.

Santos appreciates the recognition of achieving a high level of compliance for this project, and for the findings of no non-compliances and no corrective actions being required. Santos places a high level of importance on ensuring we do what we say, and it is gratifying that the audit findings has confirmed our actions align with our commitments.

I wish to confirm that:

- all ponds have a dual liner system including a leak collection and notification system
- one water line was installed in the 16km right of way from the Bibblewindi Transfer Tank to the Leewood Facility.

It would be appreciated if the draft report could be modified to reflect the above.

If you have any queries, please don't hesitate to contact Mr Ron Anderson on (02) 67929061.

Yours sincerely,



Neale House
Manager Environment and Water

Appendix 2

Compliance Assessment – Leewood Stage 1 Activity Approval Conditions

Compliance Assessment Checklist

Instrument PAL2 Approval to construct and operate Leewood produced water and brine management ponds
Current Holder Santos NSW Limited
Issue/Renewal Date 19-Mar-13

Reference	Obligation	Compliance Status	Audit Evidence/Comments
CONDITIONS			
General Conditions			
1(a)	The works must be carried out at the location(s) and in accordance with the methods contained in: 'Review of Environmental Factors, Leewood - Produced Water & Brine Management Ponds' including Appendices 1 to 12 submitted by Santos NSW Pty Ltd (Santos); and	Compliant	Inspection of the Leewood facilities, the Bibblewindi facilities and the flow line route, and a review of documents and records associated with construction of the project, the auditor concluded that the works have been carried out in accordance with the REF.
2	All works must be completed and the site fully rehabilitated within the term of PAL2, except as amended by the following conditions.	Not applicable	Site is currently operational. PAL2 is currently awaiting renewal.
Community consultation			
3	The licence holder must engage with the community in relation to the planning for and conduct of operations authorised under this approval. The consultation must be undertaken in accordance with the <i>Guideline for community consultation requirements for the exploration of coal and petroleum, including coal seam gas</i> (NSW Trade & Investment, 2012) as amended or replaced from time to time.	Compliant	Sighted Leewood Stage 1 Stakeholder Engagement Plan - identifies stakeholders and proposed consultation strategies for each stakeholder type. Sighted examples of consultation activities - eg letter to neighbour dated 30/7/2013 providing regular project update, sighted minutes of CCC meetings on Santos website, sighted letters to neighbours prior to construction, and also prior to construction of water bore. Reviewed activities, complaints and consultations in Consultation Manager - records noted to be well maintained.
Access to activity approval and relevant documents			
4(a)	The licence holder must ensure that a copy of this activity approval, the REF described at Condition 1(a), and any relevant documentation relating to the conduct of the activity is: accessible on the site of active prospecting operations authorised by this activity approval; and	Not Determined	A copy of the approval and the REF was available for review at the Santos Narrabri Operations Centre. There are now no permanent staff located at Leewood or the Bibblewindi tank, so no site offices in which to locate copies of approvals. It was not determined whether or not copies of site documentation was available on site during construction.
4(b)	The licence holder must ensure that a copy of this activity approval, the REF described at Condition 1, and any relevant documentation relating to the conduct of the activity is: made available to all supervisors or other persons concerned in the day to day management of prospecting operations authorised by this exploration licence.		
Environmental harm			
5	The licence holder must implement all reasonably practicable measures to prevent and/or minimise harm to the environment that may result from the conduct of prospecting operations under this licence.	Compliant	No issues of concern were identified during the audit site inspection. Appropriate environmental controls were observed to be in place.

Reference	Obligation	Compliance Status	Audit Evidence/Comments
CONDITIONS			
6	The standard of permeability of ponds and balance tank liners is required to be equivalent or better than that expected for clay landfills in the EPA's Environmental Guidelines: Solid Waste Landfills (1996) ie clay to be not less than 900mm and a permeability not less than $1 \times 10^{-9} \text{ ms}^{-1}$	Compliant	Sighted Memo from Golder Associates dated 15/2/2013 "Leewood Ponds - Proposed Liner Assessment" which identifies that the liner systems designed for the Leewood ponds meet the intent of the performance requirements outlined in the NSW EPA publication 'Environmental Guidelines: Solida Waste Landfills (1996)'. Also sighted Design Report for Leewood Ponds dated November 2012, prepared by Golder Associates. Also sighted Brine Pond 2 Construction Report dated July 2014 prepared by Golder Associates which confirmed that the pond was constructed in accordance with the requirements of the technical specification.
7	The Leewood site and excavations are to be fenced, designed or otherwise managed to prevent hazards and harm to native fauna.	Compliant	Observed fences installed at the Leewood Ponds - two fences have been installed - an outer perimeter manproof fence around the Leewood ponds site, and an inner animal proof fence constructed around the perimeter of the ponds.
8	Clearing of native trees and shrubs is to be minimised at all times.	Compliant	No excessive clearing was observed during the site inspection. Vegetation clearance was noted to be restricted to the site of the ponds and the topsoil and overburden emplacement areas at Leewood.
9	Vehicles must be kept clean and free of mud and soil so as to prevent weeds being brought to the site.	Compliant	Sighted E-NSW Pest Plant Hygiene Declaration forms and Weed Hygiene Declarations for plant and equipment used on the construction of the Leewood Ponds (for example, Weed Hygiene Declarations dated 21/8/2013 for Daracon CAT Ejector Body Moxy Plant No. 3480, CAT Moxy Plant No 3420, CAT Moxy Plant No. 3502, sighted ENSW Pest Plant Hygiene Inspection Forms dated 19/11/2013 for Catepillar Dozer DEK3489, Cat Excavator CBA04085, Dynapac Padfoot Roller 90494C (dated 12/3/2013).
Erosion and sediment control			
10	The licence holder must prevent erosion and pollution of watercourses resulting from the conduct of by implementing effective erosion and sediment control measures. The planning, design and construction of erosion and sediment control measures must be conducted in accordance with <i>Managing Urban Stormwater: Soils and Construction</i> (DECC, 2007).	Compliant	No evidence of significant erosion was observed during the audit site inspection. It was observed that Santos is using a polymer emulsion on stockpile sites at Leewood and on the pond embankments at Bibblewindi to control erosion. Sighted ESCP's prepared by Daracon throughout the construction phase of the project (for example ESCP Rev 2 dated 15/10/2013, Rev 3 dated 19/11/2013, Rev 4 dated 25/2/2014) . Also sighted operational ESCP Revision 1 dated 17/8/2015 prepared by Aquatech Consulting Pty Ltd. Controls identified on the Rev 1 operational ESCP were observed to be installed on site.

Reference	Obligation	Compliance Status	Audit Evidence/Comments
CONDITIONS			
11	Construction activity within 40m of any watercourse, including construction of the drill pad, upgrades to access roads and any watercourse crossing, should be designed by a suitably qualified person, consistent with the <i>NSW Guidelines for Controlled Activities</i> (July, 2012).	Compliant	Construction of the flow line required the crossing of Bohena Creek. Sighted 'Technical Guide: Preparing Erosion and Sediment Control Plans (ESCPs) for Narrabri Gas Development Project' dated January 2014, prepared by Strategic Environmental and Engineering Consulting Pty Ltd. Also sighted 'Soil and Water Management Plan for Narrabri Gas Development Project' Rev 3 dated December 2014, prepared by Strategic Environmental and Engineering Consulting Pty Ltd. The controls identified for the construction of the Bohena Creek crossing included that the the construction would not be undertaken during periods of flow in the creek. A review of weather records and site construction notes indicates that there was no flow in the creek during the crossing construction.
Groundwater monitoring			
12	Groundwater monitoring of the water storages must be developed capable of monitoring the condition of the shallowest aquifer below the Leewood site.	Compliant	Groundwater monitoring around the Leewood Ponds site is currently undertaken using a series of nested bores at three sites at the boundaries of the Leewood property. These bores were installed prior to the construction of the ponds, providing baseline data for the shallow aquifers for the monitoring program. A further series of seven shallow bores have been constructed around the perimeter of the ponds to monitor for the presence of water which could infer a leak in the ponds.
Fire prevention			
13	The licence holder must take all reasonably practicable precautions against causing an outbreak of fire.		
Roads and tracks			
14	The licence holder must pay to the relevant roads authority, the reasonable costs incurred in fixing any damage to any public roads resulting from operations carried out under the exploration licence. If no agreement on reasonable costs can be negotiated by the parties, the matter must be referred to the Director-General for resolution.	Not applicable	Santos undertook the upgrade of the Old Mill Road/Newell Highway intersection as part of the construction works. Works were done in accordance with RMS and NSC requirements. Sighted Work as Executed drawings.
Waste management			
15	The licence holder must ensure that:		
	(a) the site is maintained in a clean and tidy condition at all times	Compliant	Both the Leewood site and the Bibblewindi site were observed to be maintained in a clean and tidy condition at the time of the audit.
	(b) all waste, including contaminated residues, must be collected, segregated and securely deposited in properly constructed containers and disposed lawfully.	Compliant	Sighted Waste Management Plan Revision 2 dated February 2014. Reviewed waste management records - volumes and types of wastes were noted to be recorded. Wastes were primarily generated during construction phase, very little operational wastes.
16	The licence holder must maintain records of:		
	(a) all waste generated as a result of operations under this exploration licence	Compliant	Reviewed waste records - sighted copies of site services dockets from Narrabri Septic Services for wastewater removal, Namoi Waste Corp for skip bin removal and bulk bin collection. Also sighted spreadsheet which summarises types and volumes of wastes generated, classified by contractor.

Reference	Obligation	Compliance Status	Audit Evidence/Comments
CONDITIONS			
	(b) the means of disposal of all waste.	Compliant	Reviewed waste records - sighted copies of site services dockets from Narrabri Septic Services for wastewater removal, Namoi Waste Corp for skip bin removal and bulk bin collection. Records identify disposal destination.
Rehabilitation			
17	All disturbance resulting from operations carried out under this activity approval must be rehabilitated by the licence holder to the satisfaction of the Minister.	Not Determined	It was observed during the audit site inspection that the flow line route has been rehabilitated to a good standard. Both the Bibblewindi site and the Leewood site are still operational, hence rehabilitation has not been undertaken on those sites. However, it was noted that construction areas no longer required have commenced rehabilitation.
18	The licence holder must ensure that all topsoil removed in the course of prospecting operations is stockpiled for later use in rehabilitating those operations.	Compliant	Sighted topsoil stockpile at the Leewood ponds site. Review of the construction reports for the ponds showed that topsoil from the site was reused during the vegetation of the pond embankments.
19	The Right Of Way flowline corridor is to be contained to the size and rehabilitated in a way consistent with rehabilitation approved in the Wilga Park Project (Narrabri Coal Seam Gas Project, Application 07 0023).	Compliant	No additional clearing was observed along the flowline route inspected during the audit. Rehabilitation of the flow line route has been completed and was observed to be of a good standard.
20	In rehabilitating the disturbance, the licence holder must ensure that: (a) all machinery, buildings and other infrastructure are removed from the area (b) the area is left in a clean, tidy and stable condition (c) there is no adverse environmental effect outside the disturbed area (d) the land is properly drained and protected from soil erosion (e) the land is not a potential source of pollution (f) the land is compatible with the surrounding land and land use requirements (g) the landforms, soils, hydrology and flora require no greater maintenance than that in, or on, the surrounding land (h) the land does not pose a threat to public safety (i) in cases where vegetation has been removed or damaged: (i) where previous vegetation was native, species used for revegetation are endemic to the area (ii) where the previous vegetation was not native, species used for revegetation are appropriate to the area (iii) any revegetation is of an appropriate density and diversity	Not Determined	Both the Bibblewindi site and the Leewood site are still operational, hence rehabilitation has not been undertaken on those sites. However, it was noted that construction areas no longer required have commenced rehabilitation. The flow line route has generally been rehabilitated to a good standard.

Not Determined	2
Not applicable	2
Compliant	16
Not Compliant - NC1	0
Not Compliant - NC2	0
Not Compliant - NC3	0
Observation	0

Appendix 3

Compliance Assessment – Leewood Stage 1 Santos REF Statement of Commitments

Compliance Assessment Checklist

Instrument Review of Environmental Factors: Leewood Produced Water & Brine Management Ponds
Current Holder Santos NSW Limited
Issue/Renewal Date 1-Dec-12

Reference	Obligation	Compliance Status	Audit Evidence/Comments
REF Commitments			
	Activity type and location		
	The proposed activity will be carried out at Leewood, within the existing right of way between Leewood and Bibblewindi and at Bibblewindi, as described in section 2 of the REF. The proposed activity will generally include: A produced water flow line and return flow line of approximately 16 kilometres in length, linking the proposed brine pond at Leewood to the existing Bibblewindi Pond 3 in the Pilliga State Forest. These flow lines are to be located within the previously cleared right of way associated with the existing gas flow line which links Wilga Park Power Station with the Bibblewindi Water Management Site.	Compliant	Sighted flowline route with associated riser vents.
	Additional piping to connect existing water gathering systems terminating at Bibblewindi to new infrastructure.	Compliant	Sighted produced water inlet manifold at Bibblewindi, also sighted water pumping infrastructure for connection to Leewood.
	One five ML produced water tank with associated pumping station and power supply, to be located adjacent the existing Bibblewindi 3 Pond.	Compliant	Sighted 5ML tank at Bibblewindi.
	One 300 ML produced water pond at Leewood.	Compliant	Pond is divided into two cells
	One 300 ML brine pond at Leewood.	Compliant	Pond is divided into two cells
	A produced water distribution manifold and associated piping at Leewood, to allow water distribution into produced water and brine storage ponds.	Compliant	Sighted water distribution manifold at Leewood.
	Associated construction compound, road and intersection upgrades, site offices and car parking areas at Leewood.	Not Determined	Construction has been completed. Intersection upgrade was observed to have been completed at intersection of Old Mill Road and Newell Highway.
	Following construction, transfer and storage of produced water and brine currently stored at the Bibblewindi Water Management Facility and produced water from existing pilots in PEL 238 and PAL 2 to the Leewood ponds.	Compliant	Water transfer from Pond 3 at Bibblewindi has been completed. Water is now in Pond 1 at Leewood.
	Hours of operation		
	Hours of operation (including construction) will be 7am till 6pm, seven days a week.	Not Determined	Construction has been completed.
	Activity duration		
	Approximately six months construction and operation for the duration of Santos' CSG exploration activities in PAL 2 and PEL 238.	Observation	The construction period was longer than 6 months (being approximately 12 months), however evidence was sighted to indicate that neighbours and other stakeholders were kept updated about construction progress and timing.

Reference	Obligation	Compliance Status	Audit Evidence/Comments
REF Commitments			
	Proposed commencement date		
	Works will commence in the first quarter of 2013.	Observation	Works did not commence until the second half of 2013, however evidence was sighted to indicate that neighbours and other stakeholders were kept updated about construction progress and timing.
	Maximum area of disturbance		
	Approximately 48.2 hectares at Leewood and 19.38 hectares along the right of way.	Compliant	Disturbance footprint appears to be in accordance with the footprint identified in the REF, based on site observations and a review of construction documentation.
	Rehabilitation commitments and timeframe		
	The project area will be rehabilitated to its pre-operational condition (or better) once operational activities have ceased.	Not Determined	The Leewood and Bibblewindi site are still operational.
	A detailed rehabilitation strategy for the project area will be developed at the end of the life of the proposed activity.	Not Determined	The Leewood and Bibblewindi site are still operational.
	Community consultation and complaint management		
	Community consultation and complaint management will be undertaken in accordance with section 2.3 of the REF.	Compliant	Sighted Leewood Stage 1 Stakeholder Engagement Plan - identifies stakeholders and proposed consultation strategies for each stakeholder type. Sighted examples of consultation activities - eg letter to neighbour dated 30/7/2013 providing regular project update, sighted minutes of CCC meetings on Santos website, sighted letters to neighbours prior to construction, and also prior to construction of water bore. Reviewed activities, complaints and consultations in Consultation Manager - records noted to be well maintained.
	Soil quality and land stability		
	A specific erosion and sediment control plan (ESCP) will be developed and implemented for the proposed activity by the Principal Contractor based on a detailed investigation of site conditions. The ESCP will incorporate (as a minimum) those measures identified in section 2.6.7.	Compliant	Sighted ESCP's prepared by Daracon throughout the construction phase of the project (for example ESCP Rev 2 dated 15/10/2013, Rev 3 dated 19/11/2013, Rev 4 dated 25/2/2014).
	An investigation of soils will be undertaken prior to commencement of ploughing to determine feasibility of method for length of flowline installation. Traditional trenching will only be used when ploughing is determined unfeasible.	Compliant	Sighted Geotechnical Investigation Water Treatment Facility Upgrade Newell Highway Bibblewindi via Narrabri NSW prepared for Santos by Butler Partners Pty Ltd dated 10 July 2012 (Report No. 012-145A).
	Topsoil will be stripped and stockpiled (separately to the subsoils) at Leewood for later use on embankment batters. Stockpiles will be managed according to best management practices, including:	Compliant	Topsoil stripping operations were documented in the pond construction reports (Section 3.1.2 of the Produced Water Ponds 1 and 2 Construction Report, and Section 3.1.2 of the Brine Pond 2 Construction Report).
	Maintaining topsoil stockpiles at a height of no greater than 1.2 metres.	Compliant	The topsoil stockpile at Leewood was inspected during the audit. The stockpile was observed to be no more than 1.2m in height.
	Stabilising stockpiles using a temporary sterile cover crop or other acceptable materials.	Compliant	The overburden stockpile was observed to be covered with a polymer spray to control erosion.
	Should the topsoil at Leewood need to be stockpiled for more than 12 months, alternative arrangements will be undertaken to ensure that the physical, biological and chemical integrity of the topsoil is not diminished. This may include use of the topsoil for fill elsewhere on at Leewood.	Compliant	Topsoil from the stockpile was used to cover the pond embankments prior to vegetation and was also used to repair erosion scours on the embankments following a severe storm event.
	Topsoil will be spread onto pond embankments at a minimum depth of 0.3 metres (if sufficient quantities are available) as soon as possible following construction to encourage vegetation growth.	Compliant	Topsoil layer construction was noted to be documented in Section 3.3.2 of the Brine Pond 2 construction report and Section 3.2.4.2 of the Produced Water Ponds 1 and 2 construction report.

Reference	Obligation	Compliance Status	Audit Evidence/Comments
REF Commitments			
	Topsoil spread onto the embankments will be treated with good quality agricultural lime, applied at a rate of approximately one tonne per hectare.	Compliant	The construction reports detail the lime and gypsum enhancement of the topsoil prior to spreading.
	Reinstatement of the right of way will occur as soon as possible after ploughing or trenching.	Compliant	It was observed during the audit site inspection that the ROW had been reinstated.
	Ploughing through Bohena Creek will not be undertaken if flows are present. Bohena Creek will not be trenched.	Compliant	The controls identified for the construction of the Bohena Creek crossing included that the the construction would not be undertaken during periods of flow in the creek. A review of weather records and site construction notes indicates that there was no flow in the creek during the crossing construction.
	Bank stabilisation measures will be employed at Bohena Creek during flowline installation and the bank will be reinstated immediately following construction.	Compliant	No issues were observed in the creek at the crossing site and the banks had been rehabilitated.
	With the exception of the Newell Highway crossing and where the flowline reaches Bibblewindi, flowline installation works are to occur only within the existing right of way. Vegetation removal along these areas of the right of way will only involve slashing of grasses and disturbance associated with ripping and ploughing, or trenching if necessary.	Compliant	Inspection of the flow line route confirmed that works had been confined to the existing right of way. No significant vegetation clearing appears to have been undertaken.
	The additional area required outside the cleared right of way at the Newell Highway crossing is to be kept to a minimum and no greater than 20m x 30m. The additional work area is to be clearly marked and no works are to occur outside this area.	Compliant	Clearing observed at the Newell Highway crossing site was not excessive. Santos advised that the construction contractor had made use of an already cleared forestry stockpile site to minimise clearing. Rehabilitation works had been undertaken at the crossing site.
	Where the flowline route extends outside the existing right of way at Bibblewindi, clearing will be kept to the minimum required, with a maximum width of 12 metres.	Compliant	Observations made on site during the audit site inspection indicated that this requirement had been met.
	Vehicular traffic along the right of way will be kept to a minimum.	Compliant	No traffic was observed on the ROW during the audit. Santos advised that vehicles only traverse the ROW to carry out inspections and maintenance. Observations made during the audit site inspection showed that track usage is currently not causing adverse impacts.
	Where trenching is to be undertaken, topsoil will be stockpiled on the one side of the trench. Subsoils removed from the trench will also be placed on the same side and profile inversion avoided during reinstatement.	Not applicable	Trenching was not undertaken on any of the sections of flow line inspected during the audit.
	Existing and proposed access tracks will be topped with gravel where necessary to reduce the erosion potential during construction. Cleared work areas will also be treated with an appropriate surface material to minimise erosion.	Compliant	Sighted gravelled cleared work areas at both Bubblewindi and Leewood facilities - no evidence of erosion sighted at these sites.
	The quantity of chemicals, fuels and oils stored on site will be minimised, where practicable.	Compliant	No fuels and oils were observed to be stored at the Leewood site. A 500 litre diesel tank was observed at the Bibblewindi tank site.
	All chemicals, fuels and oils stored within the project area will be kept in an appropriately secured, bunded storage shed in accordance with the relevant MSDS.	Compliant	The diesel fuel stored at Bibblewindi is backup to the gas fired engines to run the pump infrastructure. It was observed that the tank is a double skinned tank with hoses having leak protection sheaths installed.
	An MSDS register of all chemicals used or stored in the project area will be maintained.	Compliant	Sighted Daracon Hazardous Substances Site Register for the Leewood Ponds Project site. Also sighted risk assessments for all chemicals on the register.

Reference	Obligation	Compliance Status	Audit Evidence/Comments
REF Commitments			
	Maintenance of vehicles, plant and equipment will occur off site at an appropriately licensed facility unless deemed appropriate to conduct such maintenance on site.	Compliant	Given that construction has been completed, it is not possible to verify this requirement throughout the construction period. Plant and equipment requirements for the operational phase of the project are minimal and Santos advised that maintenance of plant is generally not undertaken on site. No evidence was sighted during the audit site inspection to indicate that servicing is carried out on site.
	Refuelling of plant and equipment at Leewood will occur in a designated, bunded area. Refuelling along the right of way will not occur within 40 metres of Bohena Creek.	Compliant	Given that construction has been completed, it is not possible to verify this requirement was met throughout the construction period. Plant and equipment requirements for the operational phase of the project are minimal and Santos advised that refuelling of plant is generally not undertaken on site, with the exception of the refilling of the diesel tank at Bibblewindi. Santos has a procedure in place for the refuelling operations and spill kits are carried on the fuel truck.
	A spill kit will be available at all active work sites within the project area during construction and personnel will be trained in its use.	Not Determined	Given that construction has been completed, it is not possible to verify this requirement.
	Any spills or leaks will be contained and cleaned up immediately using the spill kit. Contaminated material (such as contaminated soil or absorbent materials) will be removed from the site for disposal at a licensed waste facility.	Not Determined	Given that construction has been completed, it is not possible to verify this requirement.
	Plant and equipment will be inspected daily to ensure these are properly maintained.	Not Determined	Given that construction has been completed, it is not possible to verify this requirement.
	Upgrades to the Old Mill Road and Newell Highway intersection will include spray seal surfacing for the first 30 metres and rumble strips to remove potential contaminants.	Compliant	Observations made on site at the Old Mill Road intersection showed that at least 30 metres of Old Mill Road had been spray sealed. Given that construction has been completed, rumble strips are no longer required.
	Monitoring and maintenance of the ponds will occur in accordance with section 2.6.5 to ensure a dam failure or overflow event is avoided. In the unlikely event that a dam failure or overflow did occur, Santos will implement a comprehensive rehabilitation program of all affected areas.	Compliant	Sighted pond inspection and maintenance records. For example, Pond Inspection Checklists for Leewood Ponds Cell 1 dated 1/7/14, 29/8/14, 4/9/14, for Cell 2 dated 29/8/14, 4/9/14, Cell 3 dated 29/9/14, 23/1/15, 26/6/15, Cell 4 dated 29/9/14, 24/2/15, 17/7/15. Checklists identify any issues noted with all issues entered into the IMS for action and closeout.
	Groundwater		
	Water Supply Works and Water Use Approvals will be obtained from NOW prior to constructing the proposed water bore.	Compliant	Sighted Water Supply Works Approval No 90WA832041 granted 20/5/2013
	Appropriate Aquifer Access Licences will be sourced and transferred to the approved works prior to construction of the bore.	Compliant	Sighted Water Access Licence No WAL15847 dated 3/2/2014 for category: Aquifer
	A driller licensed with the appropriate qualifications under the National Water Drillers Licensing Accreditation will be present to supervise the drilling through the aquifers and as required by regulations only to the limit of their technical capabilities in regards to water well drilling (unless exemptions are obtained).	Compliant	Particulars of driller are listed on the Form A submitted to NOW. Watsons Drilling (Licence No. 1930, Class 6) undertook the bore construction.
	Drilling operations and waste management procedures for the water bore will be in accordance with accepted industry practices and in accordance with the processes outlined in this REF.	Not Determined	Given that works have been completed, it is not possible to verify this requirement at this time.
	No chemicals or lubricants (apart from those used to fuel machinery) will be used in the Bohena Creek crossing. Refuelling of construction vehicles will not be undertaken within 40 metres of Bohena Creek.	Not Determined	Given that works have been completed, it is not possible to verify this requirement at this time.

Reference	Obligation	Compliance Status	Audit Evidence/Comments
REF Commitments			
	Excessive drilling mud losses at the HDD crossing and water bore will be cured by loss circulation material (cellulose material such as sawdust or other benign naturally occurring substances) to ensure most fluids return to the surface.	Not Determined	Given that works have been completed, it is not possible to verify this requirement at this time.
	At the completion of drilling (HDD and water bore) all drilling muds and contaminated cuttings will be disposed of at an appropriate licensed facility.	Not Determined	Given that works have been completed, it is not possible to verify this requirement at this time.
	An overall water monitoring program, inclusive of groundwater (as per section 2.6.5.5 of the REF) will be developed and implemented for the Leewood Ponds during the detailed design process.	Compliant	Sighted water monitoring results for nested water bores
	Surface Water		
	Pedestrian and vehicular traffic entering Bohena Creek will be minimised.	Not Determined	Given that works have been completed, it is not possible to verify this requirement at this time.
	Chemicals and hazardous substances will be used and stored according to regulatory requirements including the Work Health and Safety Act 2011.	Not Determined	Given that works have been completed, it is not possible to verify this requirement at this time.
	Refuelling of machinery will occur within designated areas away from surface water features. No refuelling will be undertaken within 40 metres of Bohena Creek.	Not Determined	Given that works have been completed, it is not possible to verify this requirement at this time.
	Works within the 100 year ARI affected area will be restricted to construction of a small turkeys nest.	Not applicable	A minor modification to the REF was approved 12/7/2013 which relocated this dam from its original position.
	Regular monitoring, maintenance and reporting of the Leewood ponds will be undertaken in accordance with the DSC requirements and as outlined in section 2.6.5. Any potential integrity issues will be rectified immediately following identification.	Compliant	Sighted pond inspection and maintenance records. For example, Pond Inspection Checklists for Leewood Ponds Cell 1 dated 1/7/14, 29/8/14, 4/9/14, for Cell 2 dated 29/8/14, 4/9/14, Cell 3 dated 29/9/14, 23/1/15, 26/6/15, Cell 4 dated 29/9/14, 24/2/15, 17/7/15. Checklists identify any issues noted with all issues entered into the IMS for action and closeout. Also sighted Type 3 Surveillance Report submitted to Dam Safety Committee.
	In the unlikely event that a dam failure or overflow did occur, Santos will implement a comprehensive rehabilitation program of all affected areas.	Not applicable	No dam failures have occurred.
	Drilling mud will be contained in surface tanks which will be regularly inspected and maintained.	Not Determined	Given that works have been completed, it is not possible to verify this requirement at this time.
	A minimum freeboard of 300 millimetres will be maintained for any tanks or pits containing liquid waste.	Not Determined	Given that works have been completed, it is not possible to verify this requirement at this time.
	Weather forecasts will be monitored and in the event that prolonged, severe wet weather or flooding is predicted, works will cease and plant, machinery and any chemicals will be secured and banded.	Not Determined	Given that works have been completed, it is not possible to verify this requirement at this time.
	Air quality and greenhouse gases		
	Areas of disturbance will be limited to the minimum required to carry out the proposed activity safely and efficiently.	Compliant	Site observations confirmed that areas of disturbance were generally as described in the REF - no excessive disturbance areas identified.
	Reinstatement of the right of way will be undertaken as soon as practical following installation.	Compliant	The ROW had been reinstated at the time of the audit.
	Vehicle movements along the right of way will be minimised.	Compliant	No traffic was observed on the ROW during the audit. Santos advised that vehicles only traverse the ROW to carry out inspections and maintenance. Observations made during the audit site inspection showed that track usage is currently not causing adverse impacts.
	Dust will be suppressed as required by spraying water on active sources, along access tracks and at Leewood and Bibblewindi during construction.	Not Determined	Given that works have been completed, it is not possible to verify this requirement at this time.

Reference	Obligation	Compliance Status	Audit Evidence/Comments
REF Commitments			
	Access tracks will be maintained with gravel as required.	Compliant	Gravel access tracks were observed at both Leewood and Bibblewindi.
	The water balancing tank at Bibblewindi will not be covered to allow for the dispersion of released hydrocarbons.	Compliant	Sighted tank at Bibblewindi.
	Site speed limits will be imposed to minimise dust generated by vehicle movements.	Compliant	Site speed limit signs observed at Bibblewindi and Leewood during audit site inspection.
	Vehicles, plant and equipment will be regularly maintained to ensure they are in good operating condition.	Not Determined	Given that works have been completed, it is not possible to verify this requirement at this time.
	Vehicles, plant and machinery will be turned off when not in use rather than left idling.	Not Determined	Given that works have been completed, it is not possible to verify this requirement at this time.
	Noise		
	Construction activities will only be undertaken during the proposed construction hours of 7am to 6pm.	Not Determined	Given that works have been completed, it is not possible to verify this requirement at this time. However, it was noted that this requirement was included in the Leewood Phase 1 Health, Safety, Environment and Community Induction powerpoint presentation.
	Community notification will be undertaken prior to commencement of construction.	Compliant	Sighted letters to landowners and general community updates for the Leewood project
	Adjacent landowners will be contacted prior to construction and kept informed of construction activities at all times.	Compliant	Sighted Leewood Stage 1 Stakeholder Engagement Plan - identifies stakeholders and proposed consultation strategies for each stakeholder type. Sighted examples of consultation activities - eg letter to neighbour dated 30/7/2013 providing regular project updates. Sighted Leewood neighbours list. Also sighted letter to neighbour dated 16/11/2012 advising of the commencement of construction. Sighted letter to neighbour dated 20/8/13 regarding Leewood neighbours meeting.
	Adjacent landowners will be advised of construction staging and the noisier activities including excavation and drilling and will be given a clear indication of how long noisy activities will take.	Compliant	For example, sighted letter to landowner dated 5/6/13 informing of the construction of the water bore, also sighted letter dated 19/4/13 to another neighbour advising of construction works.
	Contact details will be provided to residents in the vicinity of the project area, and a complaints register will be kept.	Compliant	Letters reviewed during the audit included relevant contact details. Santos currently uses Consultation Manager to log and track complaints. Consultation Manager records were reviewed during the audit.
	Where feasible and reasonable, particularly noisy activities will be undertaken during the middle of the day and not on Sundays.	Not Determined	Given that works have been completed, it is not possible to verify this requirement at this time.
	Broadband reversing alarms on vehicles should be used in place of tonal alarms wherever feasible.	Not Determined	Given that works have been completed, it is not possible to verify this requirement at this time.
	Plant and machinery not being used will be turned off.	Not Determined	Given that works have been completed, it is not possible to verify this requirement at this time.
	Reasonable and alternative work practices which generate less noise will be examined and implemented where feasible and reasonable.	Not Determined	Given that works have been completed, it is not possible to verify this requirement at this time.
	Heavy vehicle activity that passes through residential areas or the Narrabri town centre will be undertaken during standard construction hours (7:00am-6:00pm, Monday to Friday, 8:00am-1:00pm Saturdays) wherever feasible.	Not Determined	Given that works have been completed, it is not possible to verify this requirement at this time.
	All plant will be regularly maintained and fitted with manufacturer's standard noise mitigation equipment.	Not Determined	Given that works have been completed, it is not possible to verify this requirement at this time.

Reference	Obligation	Compliance Status	Audit Evidence/Comments
REF Commitments			
	Noise monitoring will be carried out at the commencement of construction of Leewood ponds to confirm noise levels at the nearest sensitive receivers.	Compliant	Sighted Noise Assessment Report: Construction Noise Monitoring and Assessment, Leewood Ponds (Report No. 2441 R2) dated 14/5/2014. Report concluded that noise emissions from operational construction plant will achieve the noise emission conditions outlined in the Leewood Phase 1 REF at the three potentially affected residences for work within standard construction hours and for most weather conditions if work is undertaken outside of standard hours.
	In the event of a noise complaint, the effectiveness of noise mitigation measures will be assessed and additional feasible and reasonable measures implemented, where necessary. This may include noise monitoring.	Not applicable	No noise complaints received.
	Santos will ensure that any community issues of concern are met with a prompt response.	Compliant	Reviewed Consultation Manager records - it was noted that actions are generally undertaken in a timely manner.
	Waste		
	Construction		
	A site waste management plan will be implemented by the contractors engaged to undertake the works.	Not Determined	Given that works have been completed, it is not possible to verify this requirement at this time.
	Appropriate waste receptacles will be provided in the project area including covered rubbish bins for disposal of domestic wastes.	Not Determined	Given that works have been completed, it is not possible to verify this requirement at this time.
	All wastes will be removed from the project area at the completion of works for recycling or disposal at an appropriately licensed facility.	Compliant	No wastes were observed on site during the audit site inspection.
	The type and volume of all waste removed from the project area will be recorded.	Compliant	Records reviewed during the audit identified the type, volume and disposal location of wastes generated during the construction phase.
	Portable toilets will be provided on site and will be regularly serviced by a licensed contractor.	Not Determined	Given that works have been completed, it is not possible to verify this requirement at this time. However, it was noted that waste records reviewed during the audit included invoices showing volume and type of wastes removed by Narrabri Septic Service (for example, Invoice 1370 dated 14/3/14 where 2500 litres of septic waste was transported to the Narrabri Council disposal site).
	Construction and operation		
	A waste management strategy based upon the principles of avoid, reduce, reuse and recycle will be implemented for the project area.	Compliant	Sighted Waste Management Plan Revision 2 dated February 2014. Reviewed waste management records - volumes and types of wastes were noted to be recorded. Wastes were primarily generated during construction phase, very little operational wastes.
	Management of waste, including its transport, will comply with the POEO Act and POEO (Waste) Regulation.	Compliant	Reviewed waste management records - volumes and types of wastes were noted to be recorded. Wastes were primarily generated during construction phase, very little operational wastes.
	Waste materials will be separated, classified and managed in accordance with the Waste Classification Guidelines Part 1: Classifying Waste (DECCW 2009).	Compliant	Sighted waste management records - wastes classified and managed according to different waste types.
	All staff and contractors will be made aware of waste management procedures during the site induction and through toolbox talks.	Compliant	Sighted Leewood Phase 1 Health, Safety, Environment and Community Induction powerpoint presentation.
	Chemical, fuel and oil containers will be managed according to the MSDS or manufacturers' directions to avoid potential impacts to the environment or human health.	Not Determined	Given that works have been completed, it is not possible to verify this requirement at this time. Operational requirements for chemicals, fuels and oils are minimal.

Reference	Obligation	Compliance Status	Audit Evidence/Comments
REF Commitments			
	Hazardous substance and chemical use		
	Chemicals and hazardous substances will be used and stored according to regulatory requirements including the Occupational Health and Safety Act 2000.	Not Determined	Given that works have been completed, it is not possible to verify this requirement at this time. Operational requirements for chemicals and hazardous substances are very minimal.
	Any dangerous goods will be transported according to regulatory requirements under the Dangerous Goods (Road and Rail Transport) Act 2008.	Not Determined	Given that works have been completed, it is not possible to verify this requirement at this time.
	Biological impacts		
	No clearing will occur within the retained remnant vegetation in the north east of Leewood which contain the EEC Brigalow and known Grey-crowned Babbler nesting sites. Access to this area will be prohibited during the construction phase to maintain the ecological integrity of this habitat. During operation, the existing access track through this vegetation may be utilised by small vehicles, however no additional clearing will occur.	Compliant	Sighted retained remnant vegetation area at Leewood - no evidence of construction impacts observed.
	No additional clearing will occur outside the existing ROW, other than the HDD work area and associated launch and receive pits adjacent to the Newell Highway and where the flowline route extends outside the existing right of way at Bibblewindi.	Compliant	Inspected sections of flow line route during audit site inspection - no evidence of additional clearing observed.
	Appropriate measures will be employed to ensure that machinery utilised in the project area are free of materials (soils etc.) such that they do not infect vegetation within the project area with <i>Phytophthora cinnamomi</i> , or cause the distribution of weed species. No seeds or plants will be removed from the project area.	Compliant	Sighted E-NSW Pest Plant Hygiene Declaration forms and Weed Hygiene Declarations for plant and equipment used on the construction of the Leewood Ponds (for example, Weed Hygiene Declarations dated 21/8/2013 for Daracon CAT Ejector Body Moxy Plant No. 3480, CAT Moxy Plant No 3420, CAT Moxy Plant No. 3502, sighted ENSW Pest Plant Hygiene Inspection Forms dated 19/11/2013 for Caterpillar Dozer DEK3489, Cat Excavator CBA04085, Dynapac Padfoot Roller 90494C (dated 12/3/2013).
	Declared Noxious weeds (including Prickly Pear/ Tiger Pear) will be managed in accordance with local and state guidelines.	Compliant	Sighted Pest Plant Management Plan - Operations Rev 0 dated June 2013. No weed issues were observed during the audit site inspection.
	Vehicle speeds will be minimised at all times on site to reduce the risk of fauna strike.	Compliant	Site speed limit signs observed at Bibblewindi and Leewood during audit site inspection. Santos also uses a vehicle management and tracking system.
	Clearing of large eucalypts and hollowing bearing trees within the location of the proposed new access point off Old Mill Road will be avoided.	Compliant	Santos reported no large Eucalypts or hollow bearing trees were removed. The location of the access road was subject to a REF amendment application on 8 July 2013 which was approved on 12 July 2013. Sighted Pre-Clearance Ecological Assessment: Newell Highway/Old Mill Road Upgrade dated 12/12/2013.
	A security fence around the toe of the external embankment will be installed to limit ground dwelling fauna from entering the pond. The fence will be inspected regularly for damage and any repairs carried out to prevent animal access to the ponds.	Compliant	Sighted fence in place during audit site inspection.
	An appropriate type of material (such as astro-turf or netting) will be installed at regular intervals along internal batter face of ponds to provide emergency egress for fauna.	Compliant	Sighted netting at intervals along the perimeter of each dam cell.
	When necessary to remove habitat/hollow bearing trees, an environmental representative or ecologist will be present to ensure that fauna are handled appropriately.	Compliant	Sighted inspection record identifying fauna spotter onsite for the duration of tree felling operations. No fauna recorded during the tree felling operations.

Reference	Obligation	Compliance Status	Audit Evidence/Comments
REF Commitments			
	All disturbed areas outside of the impact footprint will be rehabilitated with endemic native vegetation following construction.	Compliant	Sighted rehabilitation progress during audit site inspection.
	Public safety		
	Monitoring of the pond construction will be undertaken for the duration of works to ensure integrity of the construction. This will include: Periodic inspections by a dam engineer or representative	Compliant	Sighted construction records and construction reports prepared by Golder Associates.
	Full time Level 1 Supervision (in accordance with AS 3798) of earthworks for pond embankment construction. All geotechnical testing required will be undertaken by a NATA accredited testing organisation.	Compliant	Santos utilised the services of Golder Associates for construction supervision. Sighted As constructed Interim Certifications dated 18/9/14 and 30/6/14
	Full time Construction Quality Assurance (CQA) monitoring of the geosynthetics installation will be carried out by a representative of the dam engineer field staff member for all geomembrane lining systems installed in the ponds.	Compliant	Documented as part of Construction Reports prepared by Golder Associates who undertook supervision of the construction works.
	The perimeter of the ponds will be secured with continuous minimum 1.8 metre high security fence and sign posted at regular intervals to indicate access restrictions prior to commissioning.	Compliant	Fence sighted during audit site inspection.
	An appropriate material (such as astro-turf or netting) will be provided at regular intervals along internal batter face of the ponds to provide emergency egress for humans. Emergency life rings to be provided at these locations.	Compliant	Sighted netting at intervals along the perimeter of each dam cell.
	Pond embankments will be constructed at maximum batter of 1V:4H.	Compliant	Sighted construction as built drawings and design certification from Golder Associates.
	Pond crests will be minimum five metre width with one way access restricted to light vehicles only.	Compliant	Observed on site and confirmed by as built drawings.
	A 500 mm height safety bund will be provided where access ramps join the embankment crest.	Compliant	Santos advised that during the detailed design phase, it was identified that placement of 500 mm bund at the top of these access ramps would have created erosion issues at the south western, south eastern, and north eastern ramps. i.e the junction was in the flow path for stormwater runoff. A REF amendment application on 13 December 2013 (approved on 20 December 2013) was made to place additional material on the southern and eastern slopes of the embankments thus reducing the slope of the embankments. However, to address the safety issues, a 20km/hr speed limit was imposed on the Leewood facility - sighted sign on the front gate to advise this. All Santos vehicles and contractors' vehicles have IVMS installed which monitors vehicle speed. Sighted bollards installed at the top of the ramp on the south western, south eastern, and north eastern ramps instead of the bunds. The centre ramp on the eastern side was assessed as suitable for a bund and it was installed. Although the safety bunds have not been installed on all of the access ramps, the intention of the commitment has been met with the installation of safety bollards.
	A continuous one way access track will be provided around the pond perimeter to allow ease of access for maintenance purposes. Safety bollards will be provided where drains or pipework cross beneath the perimeter access track.	Compliant	Safety bollards sighted during audit site inspection. Also noted on as built construction drawings.
	Electronic pond water monitoring devices will be designed and constructed such that requirement for pond entry for maintenance purposes is reduced.	Compliant	Sighted pond monitoring equipment during audit site inspection.

Reference	Obligation	Compliance Status	Audit Evidence/Comments
REF Commitments			
	Pond outlet pontoon structures located over pond water will include steel mesh and guard rails to facilitate safe operational and maintenance access.	Not applicable	No pond outlet pontoon structures were observed during the site inspection and none are shown on the as built drawings.
	A water operations plan will be developed which set out a guide for the hydraulic operation, monitoring and maintenance of the ponds. As a minimum, the manual will cover those operational, inspections, reporting and monitoring requirements outlined in section 2.6.5. The manual will be prepared prior to first fill of the ponds.	Compliant	Sighted 'Gunnedah Basin - Monitoring and Inspection of the Leewood Water Storage Ponds (Doc No. 7056-200-PRO-0001)'. Also sighted Leewood Water Storage Facilities Operator Manual (Doc No. 7056-200-ORM-0001). Documents outline the inspection, monitoring and reporting requirements for operation of the Leewood water management facilities.
	A Dam Safety Emergency Plan (DSEP) will be prepared and submitted to the DSC prior to operation of the ponds. The DSEP will provide emergency response procedures that should be followed by operations staff responsible for the management of the Leewood ponds. It will be referred to in the event of a release of stored water or brine from the ponds which may present a risk to personnel and or/public and the surrounding environment.	Compliant	Sighted Dam Safety Emergency Plan (Doc No. 7056-650-PLA-0001 Rev 1)
	General site safety protocols, incident management and emergency procedures (including bushfire risk) will be implemented during the construction and operation works.	Compliant	Safety protocols and processes were noted to be included in the Leewood Phase 1 Health, Safety, Environment and Community Induction powerpoint presentation.
	A groundwater monitoring program as per section 2.6.5.5 will be implemented at Leewood to provide an ongoing assessment of the effectiveness of the environmental control measures and to limit risk of impact on any shallow aquifers associated with the ponds.	Compliant	
	Construction and operational sites (including Leewood and Bibblewindi) will be fenced and locked after construction hours. The right of way will not be fenced and locked but construction equipment will be left secured.	Compliant	Sighted fences and locked gates during audit site inspection.
	Traffic		
	Access to and from adjacent properties will be maintained for the duration of construction.	Not Determined	Given that works have been completed, it is not possible to verify this requirement at this time.
	Construction will only occur during the proposed construction hours (7am to 6pm, seven days per week).	Not Determined	Given that works have been completed, it is not possible to verify this requirement at this time. However, it was noted that this requirement was included in the Leewood Phase 1 Health, Safety, Environment and Community Induction powerpoint presentation.
	Parking for staff during construction and operation will be accommodated within the project area.	Not Determined	Given that works have been completed, it is not possible to verify this requirement at this time.
	Construction traffic will not be permitted to queue or park within Old Mill Road, other State forest roads or the Newell Highway unless to carry out works.	Not Determined	Given that works have been completed, it is not possible to verify this requirement at this time.
	Heavy construction equipment will be delivered to the project area at the beginning of the construction period and will remain on-site until the project is complete.	Not Determined	Given that works have been completed, it is not possible to verify this requirement at this time.
	Truck routes during construction will be restricted to the direct route via the Newell Highway to minimise impacts on local roads.	Not Determined	Given that works have been completed, it is not possible to verify this requirement at this time.
	There will be no transportation of bulk fill on the Newell Highway.	Not Determined	Given that works have been completed, it is not possible to verify this requirement at this time.
	Oversized vehicles required for transporting earthmoving equipment will be undertaken in accordance with the relevant requirements of Roads and Maritime Services (RMS).	Not Determined	Given that works have been completed, it is not possible to verify this requirement at this time.

Reference	Obligation	Compliance Status	Audit Evidence/Comments
REF Commitments			
	The site access plan outlined in section 4.8 of the transport assessment (Appendix 3) will be implemented during construction (including the intersection upgrade at the Newell Highway and Old Mill Road) and traffic managed accordingly.	Not Determined	Given that works have been completed, it is not possible to verify this requirement at this time.
	Prior to the commencement of construction, all required approvals will be sought from RMS and/or Narrabri Council. This will include approval for the intersection design and a road occupancy licence.	Compliant	Sighted Works Authorisation Deed with RMS. Intersection upgrade works were undertaken by Daracon.
	Construction traffic will only access Leewood via Old Mill Road. Operational traffic may use the existing site access directly onto the Newell Highway, or via a new access point along the southern boundary of Leewood.	Not Determined	Given that works have been completed, it is not possible to verify this requirement at this time. However, it was noted that vehicular access to the Leewood site for operational personnel is via Old Mill Road.
	Amenity		
	Topsoil from pond construction will be stockpiled along the eastern boundary of Leewood to provide visual screening during pond construction	Not applicable	Sighted approval for minor modifications to Leewood Phase 1 dated 12/7/2013 which permitted the relocation of the topsoil stockpile from the eastern boundary.
	A landscaped buffer of minimum 10 metre width will be established along the eastern boundary of Leewood to provide visual screening in the longer term. Species used in the landscaped buffer will comprise local endemic species and be selected in consultation with the Namoi Catchment Management Authority.	Not applicable	Sighted approval for minor modifications to Leewood Phase 1 dated 12/7/2013 which removed the requirement for the landscaped buffer.
	The project area will be kept in a clean and tidy manner during site preparation, construction activities and operation.	Compliant	Both Leewood and Bibblewindi sites and the sections of flow line route inspected during the audit were observed to be maintained in a clean and tidy condition.
	Community services, infrastructure and sites of importance		
	The consultation activities outlined in 2.3 will be implemented.	Compliant	Sighted Leewood Stage 1 Stakeholder Engagement Plan - identifies stakeholders and proposed consultation strategies for each stakeholder type. Sighted examples of consultation activities - eg letter to neighbour dated 30/7/2013 providing regular project update, sighted minutes of CCC meetings on Santos website, sighted letters to neighbours prior to construction, and also prior to construction of water bore. Reviewed activities, complaints and consultations in Consultation Manager - records noted to be well maintained.
	The landowner and local community will continue to be consulted with leading up to and during the proposed works.	Compliant	Santos undertook regular Leewood neighbours meetings - sighted letters to landowners dated 30/7/13, 16/11/12, 5/6/13 and 19/4/13. Also sighted regular Leewood Updates provided to community.
	All community enquiries and complaints will continue to be responded to promptly.	Compliant	Reviewed enquiry and complaint records in Consultation Manager.
	The community will be promptly informed of any changes to timing or scheduling which will have an adverse impact on them.	Compliant	Sighted regular community updates on the Leewood project. For example Leewood Updates dated August 2013, September 2013, October 2013, November 2013, December 2013, January 2014, and February 2014.
	Narrabri Shire Council will be notified prior to commencement of works and liaised with throughout construction.	Compliant	The Santos Team Leader Community and Land meets monthly with Narrabri Council GM and approximately every 6 weeks with the Mayor and/or Deputy Mayor.
	Access will be maintained throughout the Pilliga State Forest for the duration of the construction period.	Not Determined	Given that works have been completed, it is not possible to verify this requirement at this time.
	Access throughout the State forest will be maintained throughout the duration of the construction phase.	Not Determined	see above

Reference	Obligation	Compliance Status	Audit Evidence/Comments
REF Commitments			
	Should the construction extend significantly beyond six months, (e.g. due to wet weather) adjacent landholders and Narrabri Shire Council will be informed.	Compliant	Sighted notifications to landholders (Leewood neighbour updates) regarding progress of construction activities. For example, letter to neighbour dated 19/4/13 regarding construction of monitoring bores, letter to neighbour dated 5/6/13 regarding the construction of the water bore, letter to neighbours dated 20/8/13 regarding next Leewood neighbours meeting.
	Economic issues		
	Materials and services will be sourced locally where possible and feasible.	Not Determined	
	Natural resources		
	Removal of mature trees in the State forest will only be undertaken at the Old Mill Road intersection, at the identified access point between Old Mill Road and Leewood to facilitate safe turning radiuses for heavy vehicles and along the flowline route at Bibblewindi.	Compliant	The location of the access road was subject to a REF amendment application on 8 July 2013 which was approved on 12 July 2013. Sighted Pre-Clearance Ecological Assessment: Newell Highway/Old Mill Road Upgrade dated 12/12/2013. Also sighted inspection record identifying fauna spotter onsite for the duration of tree felling operations. No fauna recorded during the tree felling operations.
	Forests NSW will be kept informed of activities during construction and operation.	Compliant	Sighted records in Consultation Manager.
	All works will be undertaken in accordance with the Occupation Permit.	Not Determined	Conditions of the Occupation Permit were not within the scope of the audit.
	Works associated with the proposed activity will not impact on agricultural production at any adjacent properties.	Compliant	No adverse impacts were identified on agricultural production on any adjacent properties.
	Aboriginal cultural heritage		
	Project staff and contractors will be made aware of their statutory obligations for heritage under the NPW Act and the Heritage Act, through the site induction and toolbox talks.	Compliant	Given that construction works have been completed, it is not possible to verify this requirement during the construction period. However, it was noted that this requirement was included in the Leewood Phase 1 Health, Safety, Environment and Community Induction powerpoint presentation.
	The work area will be clearly demarcated on site to ensure that plant and vehicles keep within the approved area of disturbance. No works will be undertaken in the vegetated area in the north east corner of the site.	Compliant	Sighted possible scarred trees - identified and fenced. Observations made during site inspection did not indicate any activities in the vegetated area in the north east of the site.
	If any previously unidentified Aboriginal site/s are identified during works, then works in the immediate area will cease, the area will be cordoned off and the OEH Enviroline 131 555 will be contacted. A suitably qualified archaeologist will be contacted so that the site can be assessed and managed.	Not applicable	No previously unidentified sites located during works.
	In the event that skeletal remains are uncovered, work must cease immediately in that area and the proponent, Santos must contact the NSW Police Coroner to determine if the material is of Aboriginal origin. If determined to be Aboriginal, the OEH Enviroline 131 555 and relevant Aboriginal stakeholders must be contacted to determine an action plan for the management of the skeletal remains prior to works re-commencing.	Not applicable	No skeletal remains uncovered during works.
	European cultural heritage		
	The proposed works should avoid the SUGAR pits. The SUGAR pits will be flagged and a temporary barrier erected around them prior to commencement of works. No works will occur within this zone.	Compliant	Sighted barriers around the SUGAR pit sites.

Reference	Obligation	Compliance Status	Audit Evidence/Comments
REF Commitments			
	A plan showing the location of the potential heritage items and the exclusion zone will be retained on site and all on-site personnel advised accordingly.	Not Determined	Given that construction works have been completed, it is not possible to verify this requirement during the construction period. However, it was noted that this requirement was included in the Leewood Phase 1 Health, Safety, Environment and Community Induction powerpoint presentation.
	The barriers will be removed at the completion of construction.	Observation	It was noted that the barriers have not been removed around the SUGAR pit sites despite construction being completed, however, the auditor did not have any issues with the barriers being maintained.
	If impact on the historic heritage items cannot be avoided by the proposed activity further investigation under the Heritage Act 1977 including the preparation of a Statement of Heritage Impact will be required.	Not applicable	Impacts on historic heritage were avoided and Statement of Heritage Impact was not required.
	If any previously unidentified potential European cultural heritage material is identified during works, then works in the immediate area will cease, the area will be cordoned off and the OEH Heritage Branch will be contacted. A suitably qualified archaeologist will be contacted so that the site can be assessed and managed.	Not applicable	No previously unidentified heritage items were located during works.
	Cumulative		
	Santos will work with Narrabri Shire Council to ensure issues relating to increased pressure on labour resources, temporary and permanent accommodation, road infrastructure and telecommunications are addressed appropriately at a strategic level.	Compliant	Sighted records in Consultation Manager detailing regular consultations with Narrabri Shire Council.

Not Determined	48
Not applicable	11
Compliant	95
Not Compliant - NC1	0
Not Compliant - NC2	0
Not Compliant - NC3	0
Observation	3