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Rehabilitation Progress Update – Project Overview

14 November 2012

Overview

- Pilliga State Forest
- Background
- Initial clean up work
- Compliance issues
- Rehabilitation Plan
  - Dieback
  - Excess Ponds
  - Lease Site Rehabilitation
  - Well Plugging and Abandonment
- Future work plans
- Summary of work

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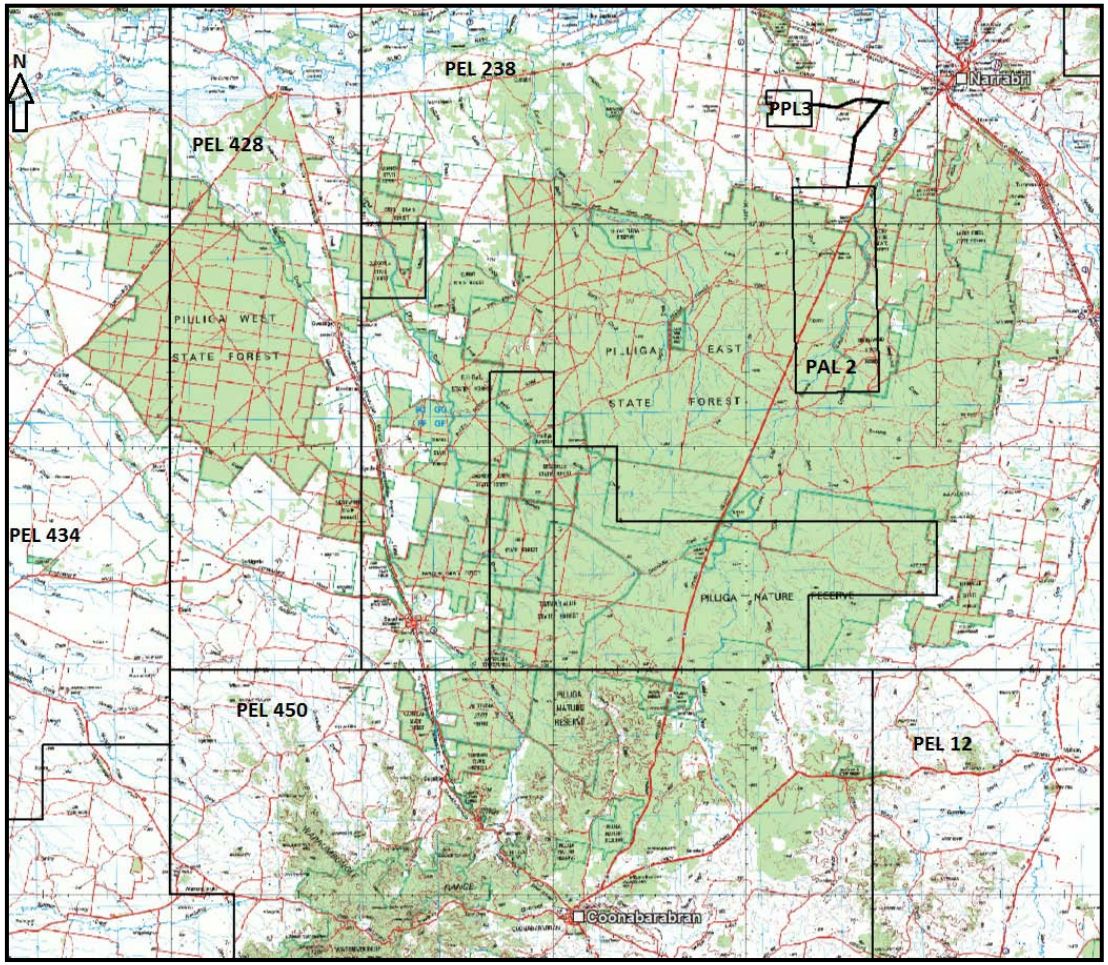
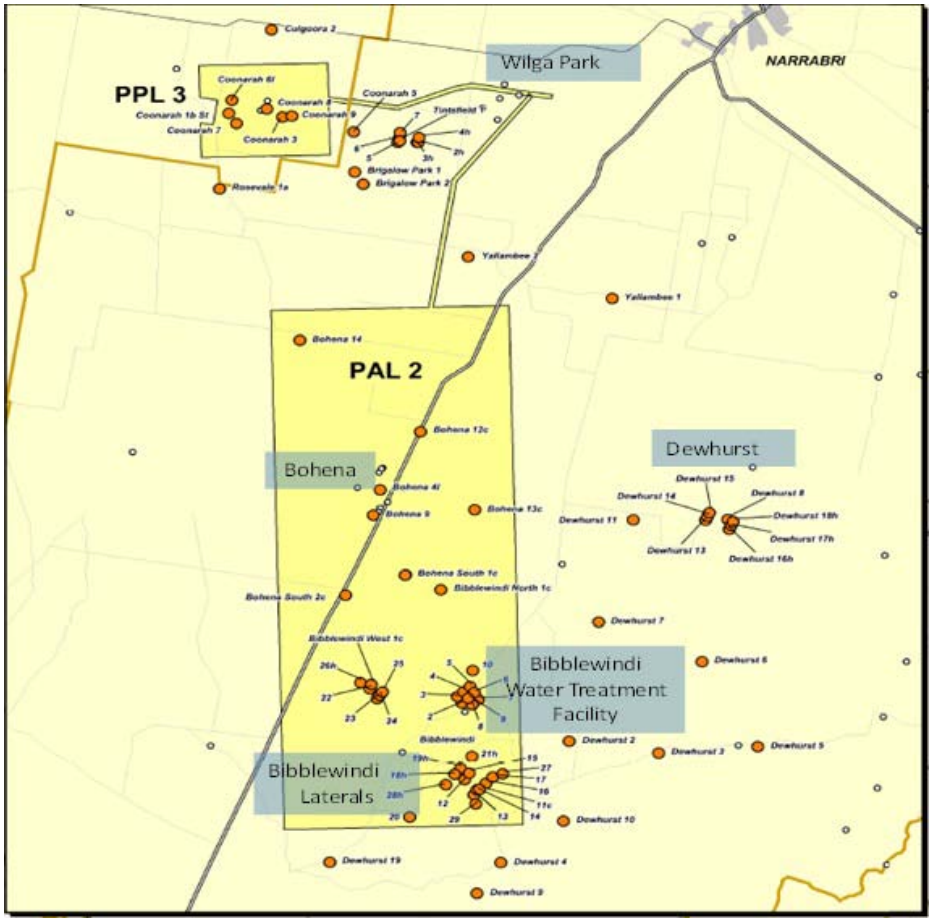
Pilliga State Forest





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Pilliga State Forest

- The Pilliga Forest comprises 500,000 hectares (3000 sq.km) between Narrabri and Coonabarabran.
- Gas exploration activities have occurred in the Pilliga since the 1960s.
- In 2005, the NSW Government assessed the entire Pilliga area.
- The area reserved under the National Parks Act was more than doubled to about half the Pilliga.
- The other half was set aside by the Government as State Forest “to ensure the long-term sustainability of the region's important timber, gas, minerals and apiary sectors”.
- The northeast Pilliga, where Santos’ operations are located, was specifically identified as an area where a gas industry was likely to be developed.
- It is estimated all Santos’ activities, historic and future will directly disturb ~2,500ha or about 0.5% of the Pilliga’s total acreage.

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Background

- Eastern Star Gas (ESG) began exploration activities in the Pilliga in 2003.
- Santos acquired ESG and its activities in November 2011.
- It soon became apparent that many of the former ESG sites, facilities and practices did not meet Santos' standards.
- In December, 2011 issues with the Bibblewindi water treatment facility led Santos to shut the facility down and shut in the gas field.
- Santos undertook a series of high level investigations into ESG's facilities to identify issues to be addressed.
- A Santos report completed in February 2012 outlined a number of issues and lead to a number of more detailed studies regarding ponds, dieback, land clearing, and the water treatment plant.
- As a result of these studies a number of clean up tasks were identified, rehabilitation plans were formulated, scoped and a works plan identified.

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Rehabilitation Process

Carrying out thorough, successful rehabilitation of sites is a complex process particularly in an ecologically significant area like the Pilliga. It takes considerable time and has various stages:

- Detailed studies of the existing site and historical practices
- Development of a rehabilitation plan and analytical testing
- Regulatory review of the scope of work for each site
- Procurement of contractors
- Execution of work
- Analytical testing and validation of work conducted
- Close-out

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Initial Work - General Site Upgrades

- While these more detailed remediation and rehabilitation plans were being developed and work programs finalised, improvements were made across all sites including:
  - Improved signage identifying sites and contacts
  - Fencing
  - Repairs to access tracks
  - General clean up of a number of sites
  - Field soil plot trials began to assess the most effective means of remediating impacted soil across operational areas

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Wilga Park Storage Yard

Before – 15 Jan 2012

After – 29 Oct 2012

- Rehabilitation activities were completed in February and March 2012.

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Wilga Park Storage Yard

Before – 15 Feb 2012

After – 29 Oct 2012

- Rehabilitation activities included removal of residual equipment and drilling supplies.
- Previously stockpiled soil was sampled, classified, and removed in accordance with regulatory guidelines.

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Narrabri Operations Centre

Before – 16 Feb 2012

After – 29 Oct 2012

- Removal and safe disposal of excess chemical containers
- General clean up of area

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Compliance Issues

- In addition to problems with the standards of facilities and maintenance of sites, regulatory compliance issues were discovered during Santos' assessment and review process.
- The most significant concerned the sites near the Bibblewindi water treatment plant.
- In January 2012, Santos discovered an internal report stating that on 25 June 2011 approximately 10,000 litres of untreated saline water leaked from a pipe near the reverse osmosis plant at Bibblewindi.
- The leak had gone unreported and visibly impacted the nearby vegetation.
- Santos reported the incident to the regulator and began a full investigation.
- It was also discovered that over-clearing had occurred on some sites.

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Bibblewindi Dieback

Before – 16 March 2012

After – 30 Oct 2012

- A remediation plan was developed, including soil treatment trials.
- Full rehabilitation scope compiled, sent for regulatory review.
- Tree felling and mulching began at the end of October 2012 to remove impacted vegetation.
- Additional work out for tender - anticipated start date end of November.
- Earthworks expected to be completed by February 2013.

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Bibblewindi Water Treatment Plant

- Following Santos decision to shut down the plant in December and evidence of the spill in January, a review of the water treatment facility:
  - the reverse osmosis plant had a history of operational issues
  - the plant and ponds were not constructed to Santos standards and Santos has concerns with the integrity of the facilities
- It has been decided to construct a new central water treatment facility to manage all of the water from the proposed gas exploration development.
- An execution plan was prepared to properly shut down the Bibblewindi facility, and the removal of the plant began in October 2012.

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Bibblewindi Water Treatment Plant

Before – 9 Jan 2012

During – 30 Oct 2012

- Removal of the water treatment facility began in October 2012
- Expected date of completion is December 2013

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Bibblewindi Ponds

- Three storage ponds are located at the Bibblewindi facility location.
- Substantial work has been carried out this year on the ponds:
  - Improvements to the condition of the pond banks
  - Stabilisation of the ponds
  - Integrity checks
  - Laboratory analysis of contents
- The decision to construct a new water storage facility means the ponds will eventually be removed and the site rehabilitated.
- Until then, to consolidate water in one location, water from around the fields is being centralised at the large Bibblewindi 3 pond.
- Water will remain in Bibblewindi 3 until the new facility completed.
- As a precautionary measure, additional monitoring devices are being installed and will remain in place until the stored water can be transferred to the new facility.

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Excess Ponds

- There were a number of ponds throughout the permit area that were surplus to needs, some predating ESG.
- Following development of rehabilitation plans, regulatory approval, and procurement the execution phase is currently underway at Bohena 3 and 6, Bohena South and at Dewhurst.
- Execution includes:
  - Dewatering of the existing ponds and transporting of water to Bibblewindi 3.
  - Treatment of sediment in the pond and transporting it to the licensed Summerhill Landfill in Newcastle for proper disposal.
  - Removal of the pond liner and similar disposal in Newcastle.
  - Earthworks to till gypsum into the soil, return the area to its original contours and spread organic mulch to promote growth.

Bohena 3

Before – 26 April 2012

During – 29 October 2012

- Rehabilitation began at Bohena 3 in October 2012
- Expected date of completion 14 November 2012

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Bohena 6

Before – 26 April 2012

After – 29 October 2012

- Initial rehabilitation was conducted at Bohena 6 in March 2012
- Follow up work is scheduled for December 2012

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Bohena South

Before - 14 Mar 2012

During – 29 Oct 2012

- Preliminary work commenced 5 November 2012
- Estimated to be completed by mid February 2013

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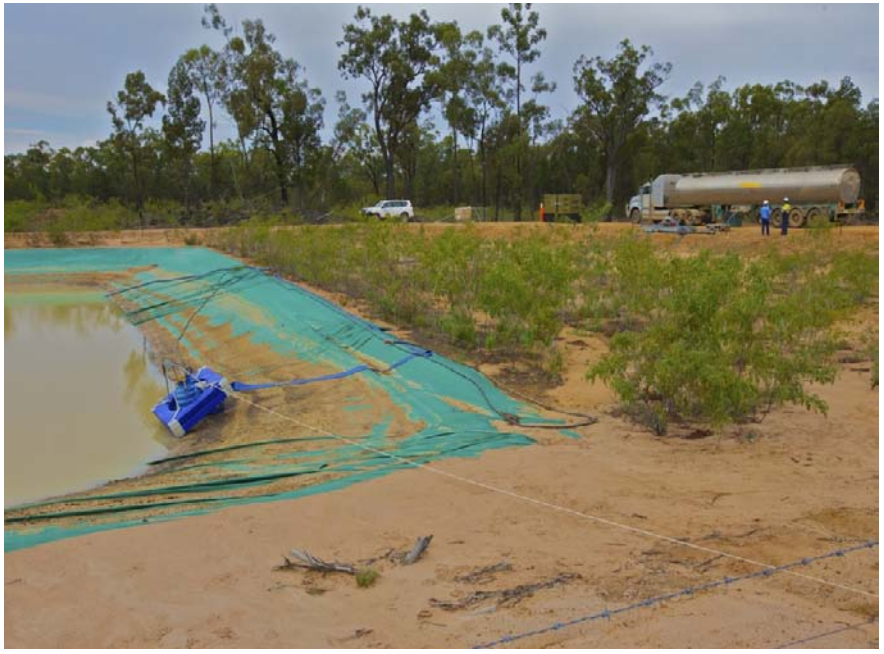
Dewhurst

Before - 17 July 2012

During – 30 October 2012



- The Dewhurst ponds and tanks are located on private land and will be decommissioned and the site will be rehabilitated.
- Currently being dewatered with rehabilitation activity to follow, scheduled for November 2012.
- Duration of rehabilitation work is expected to be 6 weeks.

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Lease Site Rehabilitation

- Lease site rehabilitation includes:
  - Rehabilitation of previously over-cleared land
  - Rehabilitation of historical well pads and removal of sumps
  - Plugging and well abandonment
  - Monitoring of progress of sites which have undergone rehabilitation
- Also follow up review and monitoring of previously rehabilitated sites.
- Regrowth on some older Bohena sites has not progressed as expected, so follow up work is planned to add organic material to the soil.
- Anticipate completion of the Bohena sites in mid December 2012.

Over-Cleared Sites

- Review of identified over cleared sites was carried out in early 2012.
- Many over-cleared sites will be resolved as a result of other rehabilitation activities.
- Six sites were identified with total over-clearing of about 3 hectares.
- Procurement for rehabilitation of the 6 identified sites is now complete and work will be conducted in conjunction with other rehabilitation activities.
- Dewhurst 8, 10 and 11 will be conducted in conjunction with Dewhurst Pond and sump rehabilitation work. Work is estimated to commence early January 2013.
- Bibblewindi 10, 11 and 20 will be conducted in conjunction with Bibblewindi partial rehabilitation activities with estimated completion date in mid December 2012.

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Historical Well Pads and Sumps

- Bibblewindi and Bohena well rehabilitation work has commenced.
- Sumps at Bibblewindi have been emptied and back-filled and general site rehabilitation is underway.
- Partial rehabilitation of Dewhurst sumps is to be completed in conjunction with Dewhurst Pond 8 rehabilitation.
- Work at these sites comprises a variety of activities including:
  - Plug and abandonment of existing wells
  - Safe removal of water from disused sumps
  - Remediation of the soil
  - Grading and restoration of surface contours
  - Rehabilitation process

Bohena 5

Before – 5 Sept 2012

After – 29 Oct 2012

- Well head decommissioning was completed in August 2012
- Site rehabilitation scheduled for completion in December 2012

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Bibblewindi 13

Before – 16 July 2012

During – 30 Oct 2012

- Rehabilitation activities began at Bibblewindi 13 on 8 October 2012
- Work concluded on 8 November 2012

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Bibblewindi 16

Before – 28 May 2012

During – 30 Oct 2012

- Rehabilitation began at Bibblewindi 16 on 8 October 2012
- Work concluded on 8 November 2012

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Bibblewindi 17

Before – 16 July 2012

During – 30 Oct 2012

- Rehabilitation began at Bibblewindi 17 on 13 October 2012
- Work concluded 8 November 2012

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Bibblewindi 21H

Before – 5 Sept 2012

During – 30 Oct 2012

- Rehabilitation began at Bibblewindi 21H on 14 October 2012
- Expected date of completion is mid November 2012

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Future Plans - Water Treatment

- Santos is in the process of decommissioning existing water treatment facilities at Bibblewindi and is seeking to develop a sustainable treatment facility to support its exploration and appraisal activities.
- Acquired 250ha ‘Leewood’ property outside the Forest earlier this year.
- Santos believes this property is a suitable site for new treatment facilities.
- Property is located adjacent to the State Forest, 24 kilometres south west of Narrabri and close to existing and planned operations.
- Benefits:
  - facilitate the decommissioning and remediation of existing Bibblewindi water treatment facility
  - reduce vehicle movements in the Forest with the new site directly off the Newell Highway
  - allow scope to demonstrate beneficial reuse of water eg. irrigation

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Leewood Development

- Proposed development at the Leewood site:
  - One 300ML produced water pond and one 300ML brine pond
  - Associated pipe work
  - One water bore
  - Additional facilities such as site office, storage, laydown and parking areas
- At Bibblewindi:
  - A 5ML produced water tank with associated pumping station and power supply adjacent the existing Bibblewindi 3 pond
- A produced water flow line and return flow line of approximately 16km
  - Flowlines will link Leewood ponds to the existing Bibblewindi 3 brine pond
  - Located within the previously cleared right of way for the gas flow line linking Wilga Park Power Station with the Bibblewindi Water Treatment Plant

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Leewood Water Management Facility

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Leewood Development Process

- Leewood Project will be split into two phases of work, storage and treatment.
- The Review of Environmental Factors (REF) for Phase 1 has been prepared and will be lodged with the regulator for approval.
- Phase 1 to be completed and operational by mid-2013 if approvals granted by early next year.
- Phase 1 will enable brine to be transferred from the existing Bibblewindi 3 pond in the Pilliga to the new Leewood Ponds and the Bibblewindi ponds to be decommissioned and rehabilitated.
- Approvals for Phase 2 will be lodged early in 2013, once the preliminary design is complete.

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Future Plans – Rehabilitation of Wells

- In addition to the wells being currently worked on, a thorough review of wells in the Pilliga area was undertaken in 2012.
- A plug and abandon strategy and an execution plan prepared on the 45 existing wells.
- Fifteen wells are planned to be reconditioned for future use.
- The 30 other wells will be plugged, abandoned and the sites rehabilitated, as they are no longer required under Santos' plans.
- With only about 50 new wells planned over Santos' entire NSW acreage over the next three years, the rehabilitation of 30 existing wells will significantly streamline our operational footprint.

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Well Abandonment Process

Bohena 5 – Sept - Oct 2012

Before

During

After

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Summary

- Substantial progress has been made this year with the remediation of sites in and around the Pilliga.
- When work is completed:
  - eight surplus ponds will have been removed and the sites remediated
  - more than 20 lease sites will have been rehabilitated including the removal of many disused sumps
  - Bibblewindi dieback will have been rehabilitated
  - Over-clearing of six sites (approximately 3 hectares) rehabilitated
  - Supplementary rehabilitation carried out where rehabilitation has been slow, including soil treatment at the old Bohena sites
  - 15 wells upgraded, 30 plugged, abandoned and rehabilitated
  - Construction of purpose built high quality water storage and treatment facility to safely meet water processing demands for our exploration and appraisal program

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