

Request:	Information on rehabilitation commitments and conditions for well sites
Response:	<p>Examples in date order:</p> <p>Biblewindi Nine Spot Project (2006) Company: Eastern Star Gas Limited Available from DIGS https://search.geoscience.nsw.gov.au/report/R00070422</p> <p>Title: The Biblewindi Nine Spot Project, Review of Environmental Factors – Water Management 2006. Biblewindi and Bohena Corehole Program, PEL 238, Gunnedah Basin</p> <p>Review of Environmental Factors:</p> <p>2.2.10 Rehabilitation (Page 26)</p> <p>Final decommissioning of evaporation pond will not occur until an alternative method of water management is implemented. The planning process for the installation of a gathering system to transmit water and gas to the Wilga Park Power Station represents the most viable option in this regard. At the point where the evaporation ponds have ceased receiving water from the wells, a decision on its fate will be made by ESG in consultation with DPI Mineral Resources and Forestry NSW.</p> <p>Conceptually, the process of site rehabilitation after the facility is decommissioned will consist of the following steps:</p> <ol style="list-style-type: none"> 1. The removal of waters contained within the facility via the alternative method of water management; 2. The removal of the liner material to a licensed disposal facility or for recycling if possible; 3. The removal of all infrastructure associated with the operation of the facility; 4. The replacement of subsoils into the excavation 5. The compaction of the subsoils across the site to assist in subsidence prevention 6. The supplementation of subsoils and near surface soils where required with imported materials from Forestry NSW approved sources to account for any subsidence 7. The replacement of topsoils 8. The reintroduction of any stockpiled vegetation or timber to assist in the retention of seed bearing topsoils as per the recently agreed

strategy with Forestry NSW.

The finalised rehabilitation plan will be subject to the approval of DPI Mineral Resources and Forestry NSW and be complimentary to any green offsets strategy implemented as a means to offset the original disturbance.

Approval:

A copy of the approval letter with conditions is attached.
(Attachment 1)

Bohena (2007)

Company: Eastern Star Gas Limited

Available from DIGS

<https://search.geoscience.nsw.gov.au/report/R00070433>

Title: The Bohena Coal Seam Gas Project, Review of Environmental Factors 2007. Bibblewindi and Bohena Corehole Program, PEL 238, Gunnedah Basin

Review of Environmental Factors:

4.3.3 Rehabilitation and Site Restoration (page 24):

At the completion of the drilling and core collection activities and the plug and abandonment procedures implemented as per the drilling proposal, rehabilitation activity can commence.

The process includes the removal of all imported soil materials in the aim of encouraging the regeneration potential of the replaced topsoils.

The return of natural contours will assist with erosion control and all efforts will be made to assist the rehabilitation of the area as per the most recent site rehabilitation strategy formulated with Forestry NSW.

The most recent development in this strategy has been to retention of all vegetative material removed from the site. This material is stockpiled and spread across the site after the seed bearing topsoils have been replaced; the strategy is designed to provide a barrier to the loss of topsoil and seeds from site after rehabilitation activities have ceased.

The encouragement of seed germination and overall soil stability has proven to be an effective method of rehabilitating sites within shorter timeframes.

Approval:

A copy of the approval letter with conditions is attached.
(Attachment 2)

Tintsville (2009)

Company: Eastern Star Gas Limited

Available from DIGS

<https://search.geoscience.nsw.gov.au/report/R00070433>

Title: The Tintsville CSG Pilot, Review of Environmental Factors 2009. Narrabri Coal Seam Gas Project, PEL 238, Gunnedah Basin

Review of Environmental Factors:

5.4 Rehabilitation (page 41):

The rehabilitation of the GGS corridor will commence as soon as practicable after the construction activities have ceased. The main objective of the rehabilitation program will be to return the land disturbed by the proposed GGS installation back to previous land use as soon as practicable.

As no vegetation will be cleared by the proposed installation process, the rehabilitation will focus on obtaining groundcover across the right of way using quick to germinate grass species. In consultation with the landholders of each lot intersected along the 3km length, it is proposed that oversowing of the right of way will occur as soon as practicable to stabilise the disturbed topsoils.

5.4.1 Pond Decommissioning

At the completion of the production testing program, the pond will be emptied of all production water and concentrates, the liner removed for disposal and the site rehabilitated.

5.4.2 Concentrate disposal

It is envisaged that the disposal of the concentrated brine component will involve an additional treatment and handling off site before the liner can be removed. Details of a management plan for concentrates are being developed and will be incorporated into all water and operations management plans upon completion.

Investigations into plant capable of concentrating the brine component to less than 1% of its initial volume are well advanced and will be discussed with DII with a view to incorporation into the project water and operations management plans.

5.4.3 Liner Disposal

The HDPE will be removed from the evaporation pond and disposed of in a licensed disposal facility.

Where an alternative to the disposal of the liner can be identified (reuse or recycling), ESG will consult with DII and provide amended plans as required.

5.4.4 Rehabilitation Earthworks

After the removal of the liner, the main excavation and borrow pits will be filled in with subsoils and recontoured to approximate pre-existing condition. Drainage lines and small surface contours will be installed as required to ensure that rainfall and surface water does not

flow towards the area under rehabilitation and cause ongoing issues with inundation and excessive settling.

The main focus of this stage of rehabilitation is to minimise any impacts associated with the subsidence of reinstalled subsoils across the site. Where required, additional fill from an approved source will be placed on areas where excessive slumping may be an issue.

5.4.5 Topsoil Redistribution

At the completion of the major earthworks to reinstall excavated subsoils, the redistribution of the stockpiled topsoils will commence.

5.4.6 Site Rehabilitation Monitoring

The monitoring of the site will occur at least on a monthly basis during the 12 month period from the cessation of rehabilitation earthworks.

Aspects of the rehabilitation program that will be monitored for the duration of the operational period will include:

- Any evidence of slumping within the area of the GGS trench;
- Any suggestion of excessive erosion or topsoil instability;
- Any issues with the adequate drainage of the corridor; and
- Weeds regrowth

Remedial action will be taken where issues such as described or otherwise are evident. No time limits will be placed upon the duration of the monitoring and maintenance program. The success of the site rehabilitation will be assessed with the assistance of the landholder. After this initial 12 month period, the monitoring of the site will occur at least every three months or until such time as the rehabilitation is signed off by the landholder.

Approval:

A copy of the approval letter with conditions is attached.
(Attachment 3)

Dewhurst 26-29 (2013)

Company: Santos Ltd

Available from DIGS

<https://search.geoscience.nsw.gov.au/report/R00070648>

Title: Dewhurst 26-29, Review of Environmental Factors 2013. PEL 238, Gunnedah Basin and Review of Environmental Factors – Additional Information

Review of Environmental Factors:

(Attached at rear – 5 pages)

Briefing Officer:

Annie Moody

Date:

8 March 2016

2.0 Rehabilitation

Rehabilitation of the well lease areas and access tracks will occur in two stages.

The first stage will occur following drilling. At this point partial rehabilitation will occur to reduce the size of the lease area to the minimum area to support remaining infrastructure and ongoing maintenance requirements. For Dewhurst 26, Dewhurst 27 and Dewhurst 29 this will ultimately be approximately 20 x 20 metres or 0.04 hectares. The access tracks to the lease areas will remain. For Dewhurst 28 there will be no partial rehabilitation as the full lease area will be required to accommodate the supporting surface infrastructure.

Stage 2 rehabilitation will occur at the completion of operations. Pilot wells and ancillary infrastructure would be decommissioned and lease areas rehabilitated or suspended.

If exploration and appraisal activities confirm the CSG resource as commercially viable, approval may be sought for production. A production project may include the use of the pilot wells, flow lines, supporting facilities and ancillary infrastructure but would be subject to further environmental assessment and government approvals. In the event that Santos decides to seek approval for a production project, the wells would be suspended until determination of the role, if any, the wells would play in a commercial gas production project. If Santos does not pursue a commercial gas production project, or a well or supporting infrastructure is not a part of a commercial gas production project for which approval is sought, then the pilot wells and infrastructure would be decommissioned and rehabilitated. Stage 2 rehabilitated will involve decommissioning the wells in accordance with the *NSW Code of Practice for Coal Seam Gas Well Integrity* (DTIRIS 2012), which would generally involve:

- sealing the wells from bottom to top by plugging with cement in approximately 200 metre increments
- pressure testing the cement plug across the surface casing shoe to ensure the wells are sealed
- removing the well heads at a depth of greater than 1.5 metres below surface and burying.

Surface infrastructure would be removed. Buried surface infrastructure, including flow lines and gathering systems, would be flushed, capped at each end and left in-situ in accordance with legislative requirements.

- Rehabilitation of well leases would include:
 - replacing sub-soil across the well leases, contouring to the landscape and partially compacting
 - placing top-soil uniformly across the well leases, and grading to natural levels
 - revegetating well leases with native species from existing seed bank within top soil
 - removing perimeter fencing
 - controlling weeds.

Sodicity depth will be determined prior to excavation. Any identified sodic soils will be stockpiled separately from non-sodic soils. Any sodic soils used in rehabilitation will be treated with gypsum and mulch to reduce erosion risk and improve infiltration and plant water associations to promote successful rehabilitation.

A rehabilitation strategy will be developed in conjunction with the landowner, Forest Corporation of NSW (Forestry NSW) and taking into consideration the conditions within the Permit to Occupy.

Further details regarding rehabilitation are provided below.

2.1 Provide rehabilitation objectives of the pilot well sites and associated infrastructure

The objectives for the rehabilitation program are to:

- Stabilise the site to minimise erosion
- Return the disturbed areas to a self-sustaining native forest condition, typical of adjacent reference forest ecosystems
- Rehabilitate the disturbed areas to the satisfaction of the landholder (Forestry NSW).

2.2 Identify rehabilitation completion criteria for disturbed areas covering phases of rehabilitation

Rehabilitation completion criteria derived from the PEL 238 conditions and the Permit to Occupy are summarised in Table 1.

Table 1 Rehabilitation standards

Phase of rehabilitation	Indicator	Criteria
Decommissioning	Infrastructure and buildings	All plant, equipment, containers, waste materials and temporary buildings will be removed from the site.
	Pits	Sumps, pits, slumps and depressions to be backfilled and covered with topsoil.
	Fencing	Fencing will be removed from perimeter of lease area.
	Waste	All waste to be removed from site and disposed of in an appropriately licenced facility.
	Access tracks	Access tracks nominated by Forestry NSW for retention shall be left in an operational condition with all drainage structures fully operational and road surface in good condition and correctly shaped.
	Gathering system	Pipes flushed and capped each end.
Landform establishment	Topography	Site to be graded and reshaped to reinstate, as far as practicable, the original contour and drainage. Note if industrial matting is used during drilling, site grading will not be required as there will be no change to the landform.
		Topography to mimic the micro topographical undulations of the surrounding area.
Erosion and sediment control		Any cleared land should be deep ripped on the contour to minimise runoff channelling / erosion.
Growth media development	Soil quality	Spread retained topsoil. If required, any imported soil to be from Forestry NSW approved sources and be stored in appropriately located stockpiles.
Ecosystem establishment	Species type	Respreading of vegetation, brush and woody material retained from the clearing activity.
	Species composition	Tree and shrub population to be similar to that of surrounding undisturbed areas.

Phase of rehabilitation	Indicator	Criteria
	Plant selection	<p>In most cases, the rehabilitated sites will be left to revegetate naturally. In cases where this approach fails to deliver the required results, assisted re-vegetation may be undertaken. Any assisted revegetation will utilise species that:</p> <ul style="list-style-type: none"> ▪ Are locally available to eliminate the introduction and establishment of foreign species from other areas of the Pilliga and/or weeds. ▪ Reduce erosion of sediment by wind or water by root mass created in rehabilitated soils. ▪ Enhance the speed of plant colonisation of rehabilitated soils beyond that expected from surrounding areas alone. ▪ Provide microsites for further natural species ingress into the rehabilitated areas, especially tree species which require some immediate low-level shelter, soil moisture and organic content. ▪ Provide wildlife habitat in the rehabilitated areas.
Ecosystem development	Stability	Provide a ground cover to reduce erosion of soils, contribute organic material to the site and to act as a "nurse" cover for incoming shrub and tree seedlings.
	Coverage	Within five to ten growing seasons, shrub and tree species saplings should be populating rehabilitated areas if ground cover species have established.
	Land use	Area accomplishes and remains as a healthy native woodland
	Resilience to Disturbance	Established species survive and/or regenerate after disturbance. Weeds do not dominate native species after disturbance or after rain. Pests do not occur in substantial numbers or visibly affect the development of native plant species.
	Sustainability	Species are capable of setting viable seed, flowering or otherwise reproducing. Evidence of second generation of shrub and understorey species.
Monitoring and reporting	Reporting to regulator	Report to be submitted to Office of Coal Seam Gas (OCSG) within DTIRIS following the completion of all rehabilitation activities (civil works, waste removal etc.) in accordance with condition 34 of PEL 238
	Monitoring	Species density, distribution and mortality will be monitored, as well as ingress of additional species (native or weedy) onto the site.

2.3 Provide details of rehabilitation methods for disturbed areas and expected timeframes

Section 2.7.6.2 of the REF (page 37) summarises the rehabilitation activities that will take place.

Further detail of the activities that will occur includes:

- Construction of erosion and sediment control measures which may include the placement of a surface layer of mulch across the top of the treated soils to minimise erosion. This will be assessed on a site by site basis and agreed with Forestry NSW.
- Surface contouring of the rehabilitation areas, such as contour ploughing and creation of "hummock" and low relief features.
- Spreading of retained woody material.
- Access tracks will be blocked by timber to minimise disturbance of the site by vehicles and to maximise natural regeneration.

The timing of rehabilitation activities is summarised in Table 2.

Table 2 Rehabilitation milestones

Milestone	Timing relative to well plug & abandon
Scope development and procurement for surface rehabilitation works	1-3 months prior to well plugging and abandonment (P&A) completion
Well plug and abandon complete	0
Bubble test to confirm plug and abandon process completed	1-2 weeks
Rehabilitation report submitted outlining program of rehabilitation works	3 months
Rehabilitation complete	3-6 months
Post rehabilitation completion report submitted	6-9 months following completion of works

2.4 Provide a final landform plan showing final contours and the target vegetation/habitat outcomes

The potential impacts on landform from the proposed activity are expected to be relatively minor and limited to small scale surface disturbances. Due to the relatively flat nature of the lease areas, only minor reshaping will occur. The conceptual final landform will mimic the micro topographical undulations of the surrounding area.

As part of the design of the lease area, changes to surface levels will be minimised with opportunity to utilise above ground tanks rather than pits fully investigated. Further, the use of industrial matting will eliminate any changes to landform (Page 21-22 of the REF).

Figure 1 provides a concept of a typical well lease area and access track.

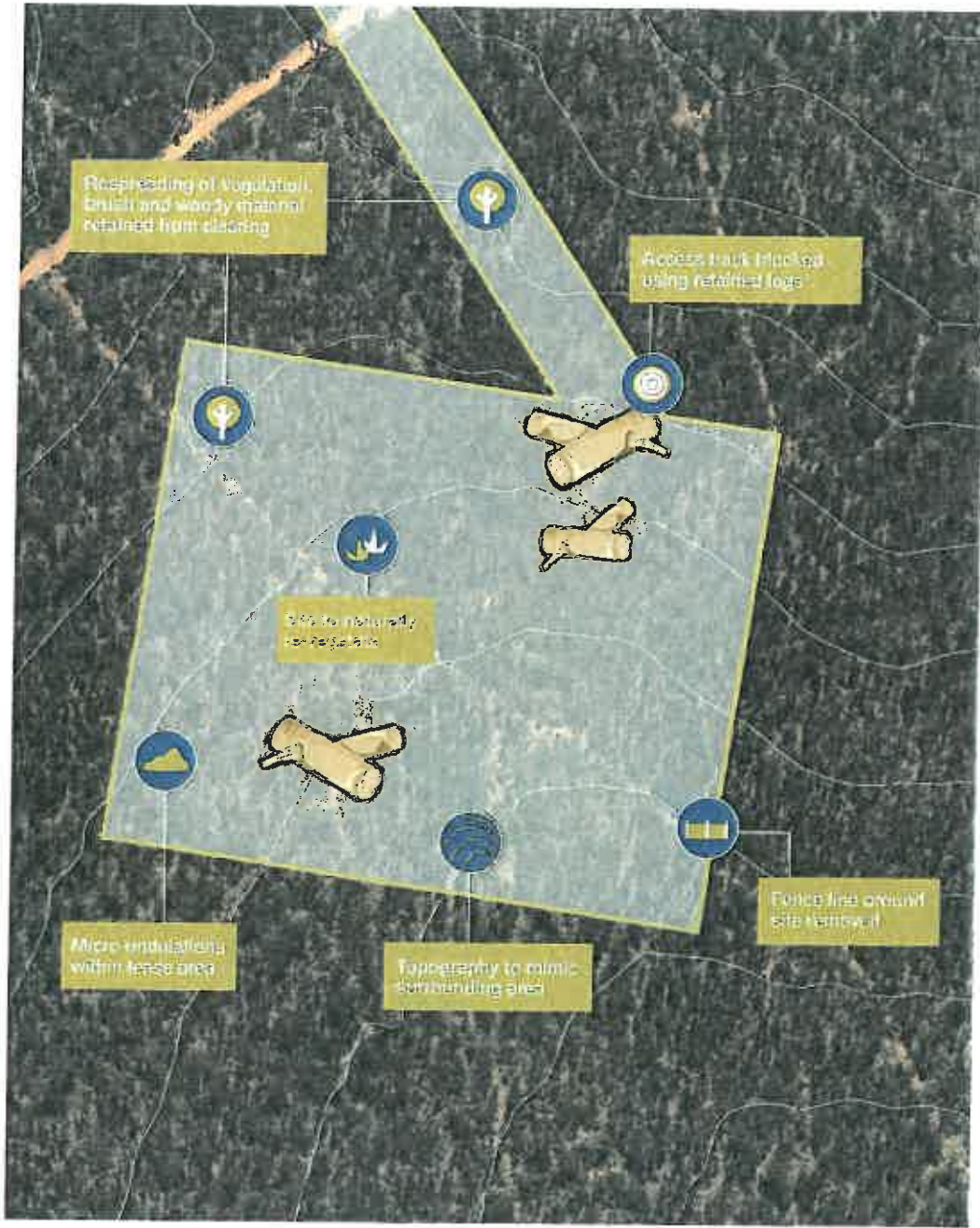


Figure 1 Conceptual final landform for a typical well lease



NSW DEPARTMENT OF
PRIMARY INDUSTRIES

Now incorporating Department of Mineral Resources
ABN 61 734 124 190-003

OUR REF: 05/6386-02

Tim Donnan
Environmental Officer
Eastern Star Gas Limited
GPO Box 4526
SYDNEY NSW 2001

Dear Tim,

PEL238: Amended approval to construct and operate the Bibblewindi Water Management Dam and subsequently dewater coalbed methane wells Bibblewindi No. 2-9.

NOTE: This replaces the previous letter of approval dated 7 July 2006.

In accordance with Part 5 of the *Environmental Planning and Assessment Act 1979*, the Assistant Director Environment has determined that there will not be a significant effect on the environment if the proposed prospecting operations are carried out in accordance with the methods and location(s) detailed in the following documents:

- The Bibblewindi Nine Spot Project Review of Environmental Factors – Water Management PEL238, Gunnedah Basin New South Wales by Eastern Star Gas, dated May 2006.
- Flora Survey for proposed evaporation pond, PEL238 Coal Seam Gas Project, by Idyll Spaces Environmental Consultants, dated 2 June 2006.
- Fauna Study Proposed Water Management Facility at Bibblewindi PEL 238 Coal Seam Gas by Kendall and Kendall Ecological Consultants, dated May 2006.
- Aboriginal Heritage Investigations for Review of Environmental Factors (REF) "Bibblewindi Nine Spot Project" Water Management Facility On Behalf of Eastern Star Gas Ltd by Edward Trindall, dated May 2006.
- Letter and attached plan addressed to DPI-Mineral Resources entitled RE: Amendment to PEL238 Bibblewindi Nine Spot Water Management REF by ESG, dated 31 July 2006.
- Any current landholder agreements
- Schedule of Onshore Petroleum Exploration and Production Safety Requirements (Department of Mineral Resources August 2005)
- Code of Environmental Practice – Onshore (APPEA 1996)

In accordance with Schedule 2, Condition 1 of PEL238, the titleholder is granted approval to conduct site preparation works, construct and operate the Bibblewindi Water Management Dam, and subsequently dewater coalbed methane wells Bibblewindi No. 2-9, subject to the conditions set out below.

A breach of these conditions is a breach of Condition 1 in Schedule 2 of PEL238 and is an offence under Section 136A of the *Petroleum (Onshore) Act 1991*.

Environmental Sustainability Branch
516 High Street Maitland NSW 2320
PO Box 344 Hunter Region Mail Centre NSW 2310

www.dpi.nsw.gov.au
Tel: 02 4931 6605
Fax: 02 4931 6780

Note that the Department intends to add a requirement for ESG to submit a Petroleum Operations Plan and Annual Environmental Management Report for all activities in PEL238. ESG will be notified when this occurs.

General conditions

1. The works must be carried out at the location(s) and in accordance with the methods contained in:
 - The Bibblewindi Nine Spot Project Review of Environmental Factors – Water Management PEL238, Gunnedah Basin New South Wales by Eastern Star Gas, dated May 2006.
 - Flora Survey for proposed evaporation pond, PEL238 Coal Seam Gas Project by Idyll Spaces Environmental Consultants, dated 2 June 2006.
 - Fauna Study Proposed Water Management Facility at Bibblewindi PEL 238 Coal Seam Gas by Kendall and Kendall Ecological Consultants, dated May 2006.
 - Aboriginal Heritage Investigations for Review of Environmental Factors (REF) "Biblewindi Nine Spot Project" Water Management Facility On Behalf of Eastern Star Gas Ltd by Edward Trindall, dated May 2006.
 - Letter and attached plan addressed to DPI-Mineral Resources entitled RE: Amendment to PEL238 Bibblewindi Nine Spot Water Management REF by ESG, dated 31 July 2006.
 - Any current landholder agreements
 - Schedule of Onshore Petroleum Exploration and Production Safety Requirements (Department of Mineral Resources August 2005).
 - Code of Environmental Practice – Onshore (APPEA 1996)Except as amended by the following conditions.

2. No more than 6ha may be cleared for the purposes of this approval.

Security

3. An additional security of \$300,000 for the dam and any activities associated with this approval is to be lodged with the Department prior to the commencement of the activities subject to this approval.

Site access and management

4. The titleholder must maintain access roads to any sites subject to this approval in a condition satisfactory to the Department and landholder requirements.
5. The site must be securely fenced with a lockable gate and adequate signs warning of potential dangers.
6. The title holder must maintain the site in a clean and tidy condition and undertake a program of ongoing environmental maintenance leading to full rehabilitation of the site.

Hours of operation

7. The activity is permitted to be undertaken 24 hours, 7 days per week.

Dust management

8. The titleholder must undertake a dust minimisation program to the satisfaction of the Department.

Flora and fauna management

9. Any vegetation clearance is to be undertaken in accordance with the requirements of Forests NSW.
10. The known Pilliga Mouse habitat (Shrub Community 1) and a 10m buffer zone must not be disturbed by the activities subject to this approval. This area must be surveyed and marked by a fauna/flora ecologist prior to the commencement of any activities.
11. The total clearing envelope is to be marked out before the commencement of clearing. Movement of plant, machinery, or materials beyond the clearing boundary is to be rigorously avoided.
12. Plant and machinery used for construction must be cleaned and free of seeds before entering the site to minimise the potential for introduction of weeds.
13. A Fauna and Flora Management Report must be supplied to the Department prior to the commissioning of the dam. This report must describe the fauna and flora management measures undertaken during the construction of the dam to the satisfaction of the Department.

Aboriginal Cultural Heritage

14. A representative of the Pilliga Forest Aboriginal Management Committee or person accepted by that committee must be present to oversee any excavation works.
15. If any aboriginal cultural material is discovered during excavation works, work must cease immediately in any affected areas pending instruction from the Department.
16. An Aboriginal Cultural Heritage Management Report must be supplied to the Department prior to the commissioning of the dam. This report must describe the aboriginal cultural heritage management measures undertaken by ESG during the construction of the dam to the satisfaction of the Department.

Water management and monitoring

17. A Dam Construction Verification Report must be supplied to the Department prior to the commissioning of the dam. This report must verify that the dam has been constructed to applicable engineering standards to the satisfaction of the Department.
18. A Dam Management Plan must be supplied to the Department prior to the commissioning of the dam. This plan must be to the satisfaction of the Department and detail the ongoing measures which will be undertaken to:
 - ensure the geotechnical integrity of the dam
 - monitor water quantity and quality
 - manage overflows
 - manage an emergency breach.

19. All produced formation water must be collected and stored in a secure manner which prevents leakage and contamination of soil, surface water and groundwater.
20. Pumping into the dam must be stopped before the approved freeboard level is reached. This freeboard level is 150mm as of the date of this approval.
21. The Department may amend the approved freeboard level at its discretion. Any Departmental instruction amending the approved freeboard level is to be complied with.
22. Overflows will only be permitted from the overflow valve if overtopping is imminent or where the titleholder can demonstrate that the water quality will have no appreciable effect at, or downstream of the discharge point. No discharge other than from the overflow valve will be permitted unless overtopping is imminent.
23. Remote monitoring equipment must be installed according to the requirements set out in the table below. This equipment must be supplemented by regular inspections and manual verification. When a specified shutdown trigger is met, pumping into the dam must cease. Data from this monitoring equipment must be logged at no more than 5 minute intervals and archived for the life of the dam. This data must be made available to the Department on request.

PARAMETER	LOCATION	SHUTDOWN TRIGGER
Water flow	Bibblewindi dam overflow valve	Overflow > 0 units
Dam water level	Bibblewindi dam overflow valve	<150mm freeboard
Electrical conductivity (EC)	Bibblewindi dam overflow valve	N/A
Rainfall	Bibblewindi dam area	N/A
Evaporation	Bibblewindi dam area	N/A

24. Any removal or discharge of water from the Bibblewindi site requires prior notification to the Department. This notification must include the following details:
 - a) Water source
 - b) Water volume
 - c) Water quality
 - d) Method of removal or discharge (e.g. truck, pipeline)
 - e) Intended frequency of removal or discharge
 - f) Discharge point (e.g. name, type, location, operator and environment protection licence details)

Site rehabilitation

25. The title holder must undertake a program of ongoing environmental maintenance leading to full rehabilitation of the site.
26. A Rehabilitation Report must be provided to the Department within two months for all disturbance arising from activities subject to this approval.

Should you wish to discuss any details of this approval, please contact Mr Stephen Barry directly on (02) 4931 6608.

Yours Sincerely,



Ken Hollands 14.8.06
Assistant Director Environment
Environmental Sustainability Branch

THE

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NSW DEPARTMENT OF
PRIMARY INDUSTRIES

Now incorporating Department of Mineral Resources
ABN 61 734 124 180-003

Tim Donnan
Environmental Officer
Eastern Star Gas Ltd
GPO Box 4526
SYDNEY 2001

04/1084-03

Dear Tim,

PEL238 - 2007 Bibblewindi and Bohena Corehole Program: Approval to drill BH12C, BH13C, BHS2C, BWN1C and BWW1C petroleum exploration coreholes

In accordance with Condition 1 of PEL238 granted under the provisions of the *Petroleum (Onshore) Act 1991*, the titleholder is hereby granted approval to drill BH12C, BH13C, BHS2C, BWN1C and BWW1C, subject to the conditions set out below. These conditions relate specifically to this approval. The conditions are in addition to those previously attached to PEL238 and prevail to the extent of any inconsistency. A breach of these conditions is an offence under the *Petroleum (Onshore) Act 1991*.

CONDITIONS

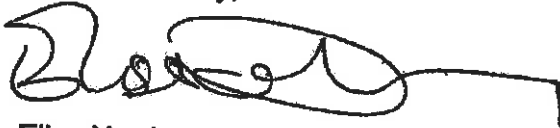
1. The works must be carried out at the location(s) and in accordance with the methods contained in:
 - The Bohena Coal Seam Gas Project Review of Environmental Factors 2007 Bibblewindi and Bohena Corehole Program PEL238, Gunnedah Basin New South Wales dated December 2006.Except as amended by the following conditions.
2. An additional security of \$25,000 for any activities associated with this approval is to be lodged with the Department prior to the commencement of the activities.
3. All produced formation water must be collected and stored in a secure manner which prevents leakage and contamination of soil, surface water and groundwater.
4. The title holder must maintain the site in a clean and tidy condition and undertake a program of ongoing environmental maintenance leading to full restoration of the site.

5. A Rehabilitation Report must be provided to the Department within two months of well abandonment for all surface and underground disturbance arising from activities subject to this approval.

Please contact the Team Leader - Coal & Petroleum of the Department's Titles Branch on (02) 4931 6456 in regards to the lodgement of the additional security requirement.

Should you wish to discuss any details of this approval, please contact Stephen Barry directly on (02) 4931 6608.

Yours Sincerely,



Elise Newberry
Assistant Director – Environment

DATE: 30 Jan 07



Mr Tim Donnan
Environmental Officer
Eastern Star gas Limited
GPO Box 4526
Sydney NSW 2001

Dear Sir,

**PEL238: 2009 Narrabri Coal Seam Gas Program,
Approval to Conduct Tintsville Production Pilot**

In accordance with Condition 1 of PEL 238 granted under the provisions of the *Petroleum (Onshore) Act 1991*, the titleholder is granted approval to conduct six boreholes drilling and production pilot activities subject to the conditions set out below. These conditions relate specifically to this approval and are in addition to those previously attached to PEL 238. A breach of conditions is an offence under the *Petroleum (Onshore) Act 1991*.

CONDITIONS

General

- 1) The activity must be carried out generally in accordance with the:
 - a) Eastern Star Gas letter of application dated 30 October 2009;
 - b) *Review of Environmental Factors Tintsville CSG Pilot, Narrabri Coal Seam Gas Project* submitted by Eastern Star Gas Limited, November 2009, Rev 03;
 - c) *Tintsville CSG Pilot Noise Management Plan, December 2009, Rev 03*; and,
 - d) Conditions of this approval.

If there is any inconsistency between the above documents, the most recent document prevails to the extent of the inconsistency.

Other

- 2) A Water Management Plan for the operation of the Tintsville CSG Production Pilot is to be submitted for assessment and approval prior to gas and water production commencing.
- 3) Construction and drilling activities are not permitted on public holidays.
- 4) A community contact telephone number is to be available for the receiving of complaints during construction and drilling operations.
 - a) Any complaints must be reported to I&I NSW within 24 hours of the complaint being received.

- b) For each complaint, a report on consultations and investigations undertaken with the complainant and proposed mitigation measures must be provided to I&I NSW for approval within 48 hours of the complaint being received.

An additional security of \$110,000 is required to be lodged to cover the rehabilitation liabilities associated with the activities under this approval. You will be contacted by the Department's Titles Unit regarding this requirement.

Should you wish to discuss any details of this approval, please contact Greg Summerhayes directly on (02) 4931 6705

Yours Sincerely,



Michael McFadyen
Manager Environmental Operations

Date: 22 DEC 09,



Santos NSW Pty Ltd
Sofia Oliver - Regulatory Approvals Coordinator
Level 16
40 Creek Street
Brisbane QLD 4000

File No: MCV13/205, Ref No: OUT13/23533

RE: PEL 238 Approval to undertake Dewhurst 26-29 Pilot Wells exploration program.

Pursuant to Condition 2 of PEL 238 granted under the provisions of the *Petroleum (onshore) Act 1991*, the licence holder presented for the Minister's approval a Category 3 exploration program comprising the drilling and operation of 4 pilot wells known as Dewhurst 26-29 Pilot Wells.

I, Greg Summerhayes, Manager Licensing and Approvals Office of Coal Seam Gas, under delegation from the Minister for Resources and Energy, dated 16 May 2013, in accordance with Condition 2 of PEL238 that became effective on 15 February 2013, approve the *Dewhurst 26-29 Pilot Wells - PEL 238, Gunnedah basin, NSW* exploration program, subject to the Conditions of Schedule 2 of PEL238 and to the additional conditions set out below. A breach of these conditions is an offence under the *Petroleum (Onshore) Act 1991*.

CONDITIONS.

General Conditions.

1. The works must be carried out at the location(s) and in accordance with the methods contained in:
 - a. *Review of Environmental Factors, Dewhurst 26-29 Pilot Wells - PEL 238, Gunnedah basin, NSW* dated March 2013; and
 - b. *Dewhurst 26-29 Pilot Wells - PEL 238, Gunnedah basin, NSW Review of Environmental Factors (REF) – Additional Information* dated June 2013.
2. All works must be completed and the site fully rehabilitated by the end of the current term of PEL 238, being **2 August 2016**, unless an extension to this period is approved by the Minister before this time.

Access to activity approval and relevant documents

3. 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:
 - a) accessible on the site of active prospecting operations authorised by this activity approval; and
 - b) made available to all supervisors or other persons concerned in the day to day management of prospecting operations authorised by this exploration licence.

Fracture stimulation

4. Fracture stimulation, the process by which a well is "stimulated" when fluids are forced at high pressure into hydrocarbon-bearing formations to create a conductive flow path into the target formation resulting in enhanced flow of hydrocarbons to the wellhead, is not approved.

Rehabilitation

5. Quantitative rehabilitation completion criteria for disturbed areas must be submitted to, and approved by the Minister within 3 months of the date of this approval. The licence holder must take account of the pre-disturbance vegetation characteristics (density and diversity) of the project area in the development of the rehabilitation completion criteria.

Water Licensing Requirements

6. Licenses must be obtained from the NSW Office of Water to account for the take of water associated with the project.

Bore construction and Abandonment

7. A Form A (construction report) must be submitted to the NSW Office of Water for all monitoring bore completed.
8. All groundwater data obtained throughout the activity is to be made available to the NSW Office of Water on request.

Drill Pad and Access Road Construction

9. 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 NSW Guidelines for Controlled Activities (July 2012).

Security

10. An additional security deposit is to be lodged with the Department. You will be contact by the Departments Titles Branch regarding the lodgment of this security.

Waste

11. Any liquid and/or non liquid waste for processing, resource recovery or disposal at the premises must be assessed and classified in accordance with the DECC Waste Classification Guidelines, prior to dispatching from the site.

Groundwater Monitoring

12. Groundwater monitoring must be conducted in accordance with and at the locations shown in the *Narrabri Gas Field, Groundwater Monitoring and Modelling Plan*, dated December 2012, which was approved on 9 July 2013 or as may be subsequently approved by the Minister.

Sediment and Erosion Control Plan

13. A Sediment and Erosion Control Plan must be prepared and implemented. The plan must describe the measures that will be employed to minimise soil erosion and the discharge of sediment and other pollutants to lands and/or waters during construction activities. The

plan should be prepared in accordance with the requirements for such plans outlined in Managing Urban Stormwater: Soils and construction.

Note: The Environmental Protection Authority (EPA) has advised that this proposed exploration program is a scheduled activity under the Protect of Environment Operations Act 1997 (the POEO Act). The titleholder is required to make a separate application to the EPA for an environmental protection license to be issued under the POEO Act.

An environmental protection license issued by the EPA will set conditions for the protection of the environment, waste management, monitoring and reporting, and limits of pollution from noise, discharges to air, water and applications to land. An environmental protection license will supersede those conditions of this approval which are provided as conditions for protection of the environment. Where there is any inconsistency, the conditions of the environmental protection license will prevail.

Should you wish to discuss any details of this approval please contact the Office of Coal Seam Gas on 02 4931 6705

Yours Sincerely,



Greg Summerhayes
Manager Licensing and Approvals, Office of Coal Seam Gas.

Date: 16 August 2013