

Licence Variation



Licence - 20350

SANTOS NSW (EASTERN) PTY LTD
GPO BOX 1010
BRISBANE QLD 4000

Attention: Ron Anderson

Notice Number 1593616
File Number EF13/5437
Date 11-Apr-2021

NOTICE OF VARIATION OF LICENCE NO. 20350

BACKGROUND

- A. SANTOS NSW (EASTERN) PTY LTD (“the licensee”) is the holder of Environment Protection Licence No. 20350 (“the licence”) issued under the *Protection of the Environment Operations Act 1997* (“the Act”). The licence authorises the carrying out of activities at X LINE ROAD, NARRABRI, NSW, 2390 (“the premises”).
- B. On 03-Apr-2020 the Environment Protection Authority (EPA) received an application for the variation of the licence. The application requested:
- i. Removal of some specific groundwater monitoring points at the Bibblewindi Water Treatment Facility, Tintsville Water Management Facility and regional bores Nyora and Tullamullen from the licence. Those being points 16,17, 19, 22, 23, 24, 25, 29, 30, 31, 32, 33, 34, 35, 36, 50, 51, 52, 53, 55, 58, 67 & 68.
 - ii. Amendment of condition M2 sampling methods, frequency, trigger values and definitions for monitoring points 7, 8, 9, 10, 11, 12, 13, 14, 15, 18, 20, 21, 26, 27, 28, 37, 38, 39, 40, 41, 42, 43, 56, 57, 59, 60, 61, 62, 63,64, 65, 66, 78, 79, 80, 81 & 82.
 - iii. Amendment of Special Conditions to reflect the current status and use of Tintsville Ponds.
 - iv. Reduction of monitoring requirements to reflect the current status and use of Tintsville Ponds.
- C. On 19 March 2021 the Licensee submitted an amendment to the application. The amendment requested further changes to the licence to state that:
- i. drilling fluids can be re-used in the drilling process at the Premises, and
 - ii. rock-based drill cuttings can be applied to land at the Premises.
- D. In 2015 The NSW Department of Planning and Environment published the *Code of Practice - Produced Water Management, Storage and Transfer* which describes the mandatory environmental protections and monitoring requirements the EPA regulates to for produced water management.

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- E. The Licensee has taken Tintsville Ponds out of service and the ponds are not receiving produced water.
- F. The EPA has been assessing data from groundwater monitoring bores listed on the licence since 2013. Review and assessment of groundwater monitoring results up until 2021 shows no ongoing issues at the Bibblewindi Water Management Facility or the Tintsville Water Management Facility.
- G. Regional groundwater monitoring bores located at Nyora and Tullamullen monitor ambient (or background) conditions outside the Premises. A comprehensive baseline data suite from these monitoring bores has been recorded, completing their original monitoring objective.
- H. No groundwater monitoring bores are being destroyed. In the event of a pollution incident or other need sampling can still be conducted.
- I. Groundwater monitoring bores will remain on the licence for the Bibblewindi Water Management Facility and the Tintsville Water Management Facility for ongoing ambient monitoring.
- J. This variation does not authorise any increase in the environmental impact of the activity authorised or controlled by the licence.
- K. This Licence does not authorise the listed scheduled activities where approval for these activities is also required under the *Environmental Planning and Assessment Act 1979* and/or the *Petroleum (Onshore) Act 1991*, and approval has not been granted under these acts.

VARIATION OF LICENCE NO. 20350

1. By this notice the EPA varies licence No. 20350. The attached licence document contains all variations that are made to the licence by this notice.
2. The following variations have been made to the licence:
 - **Administrative Condition A1.2** has been reworded for accuracy and clarity.
 - **Premises and monitoring point maps** have been amended to reflect the licence variation:
 - a. Bibblewindi Water Management Facility EPA Reference No. DOC14/23635
 - b. Tintsville Water Management Facility EPA Reference No. DOC14/23671
 - c. Centre Map EPA Reference No. DOC13/86511-02
 - d. Base Map EPA Reference No. DOC13/86511
 - **Monitoring Condition P1.3** has been amended to remove of monitoring points 16,17, 19, 22, 23, 24, 25, 29, 30, 31, 32, 33, 34, 35, 36, 50, 51, 52, 53, 55, 58, 67 & 68 from the licence.
 - **Monitoring Condition M2:** The frequency and sampling method has been amended for monitoring points 7, 8, 9, 10, 11, 12, 13, 14, 15, 18, 20, 21, 26, 27, 28, 37, 38, 39, 40, 41, 42, 43, 56, 57, 59, 60, 61, 62, 63,64, 65, 66, 78, 79, 80, 81 & 82.
 - **Monitoring Condition M2.4** has been amended to add a definition for Special Frequency 2 relating to monitoring requirements.
 - **Monitoring Condition M2.5:** Addition of trigger values for in situ monitoring to trigger additional sampling for monitoring points 7, 8, 9, 10, 11, 12, 13, 14, 15, 18, 20, 21, 26, 27, 28, 37, 38, 39, 40, 41, 42, 43, 56, 57, 59, 60, 61, 62, 63,64, 65, 66, 78, 79, 80, 81 & 82.

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- **Monitoring Condition** M2.9 has been added to the licence and pertains to surface water monitoring requirements for monitoring points 74 & 76 (Tintsville Ponds) and the storage of produced water or by-products.
- **Monitoring Condition** M2.9 has been added to the licence and pertains to the monitoring requirements of groundwater points (sentinel bores) around Tintsville Ponds.
- **Special Condition** E1.1 has been amended pertaining to any future use of the Tintsville Water Management Facility, specifically Tintsville Ponds.
- **Special Condition** E1.2: Removal of date specific condition relating to actions and activities at Tintsville Ponds.
- **Waste Condition** L3.3 has been added to reflect the Licensee's request for drilling fluids to be reused at the Premises.
- **Waste Condition** L3.4 has been added to reflect the Licensee's request for drill cuttings to be applied to land within the Premises.
- **Special Dictionary:** definitions for 'drill cuttings' and 'drill fluids' added to reflect new waste conditions

.....
Duncan McGregor
Acting Unit Head
Regional West - Dubbo
(by Delegation)

INFORMATION ABOUT THIS NOTICE

- This notice is issued under section 58(5) of the Act.
- Details provided in this notice, along with an updated version of the licence, will be available on the EPA's Public Register (<http://www.epa.nsw.gov.au/prpoeo/index.htm>) in accordance with section 308 of the Act.

Appeals against this decision

- You can appeal to the Land and Environment Court against this decision. The deadline for lodging the appeal is 21 days after you were given notice of this decision.

When this notice begins to operate

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- The variations to the licence specified in this notice begin to operate immediately from the date of this notice, unless another date is specified in this notice.
- If an appeal is made against this decision to vary the licence and the Land and Environment Court directs that the decision is stayed the decision does not operate until the stay ceases to have effect or the Land and Environment Court confirms the decision or the appeal is withdrawn (whichever occurs first).



Environment Protection Licence

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Licence Details

Number:	20350
Anniversary Date:	01-May

Licensee

SANTOS NSW (EASTERN) PTY LTD

GPO BOX 1010

BRISBANE QLD 4000

Premises

NARRABRI GAS FIELD

X LINE ROAD

NARRABRI NSW 2390

Scheduled Activity

Petroleum exploration, assessment and production

Fee Based Activity

Petroleum exploration, assessment and production

Scale

> 0.50-6 PJ annual production capacity

Region

Regional West - Dubbo

Level 1, 48-52 Wingewarra Street

DUBBO NSW 2830

Phone: (02) 6883 5333

Fax: (02) 6884 8675

PO Box 2111

DUBBO NSW 2830



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Information about this licence

Dictionary

A definition of terms used in the licence can be found in the dictionary at the end of this licence.

Responsibilities of licensee

Separate to the requirements of this licence, general obligations of licensees are set out in the Protection of the Environment Operations Act 1997 ("the Act") and the Regulations made under the Act. These include obligations to:

- ensure persons associated with you comply with this licence, as set out in section 64 of the Act;
- control the pollution of waters and the pollution of air (see for example sections 120 - 132 of the Act);
- report incidents causing or threatening material environmental harm to the environment, as set out in Part 5.7 of the Act.

Variation of licence conditions

The licence holder can apply to vary the conditions of this licence. An application form for this purpose is available from the EPA.

The EPA may also vary the conditions of the licence at any time by written notice without an application being made.

Where a licence has been granted in relation to development which was assessed under the Environmental Planning and Assessment Act 1979 in accordance with the procedures applying to integrated development, the EPA may not impose conditions which are inconsistent with the development consent conditions until the licence is first reviewed under Part 3.6 of the Act.

Duration of licence

This licence will remain in force until the licence is surrendered by the licence holder or until it is suspended or revoked by the EPA or the Minister. A licence may only be surrendered with the written approval of the EPA.

Licence review

The Act requires that the EPA review your licence at least every 5 years after the issue of the licence, as set out in Part 3.6 and Schedule 5 of the Act. You will receive advance notice of the licence review.

Fees and annual return to be sent to the EPA

For each licence fee period you must pay:

- an administrative fee; and
- a load-based fee (if applicable).



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The EPA publication “A Guide to Licensing” contains information about how to calculate your licence fees. The licence requires that an Annual Return, comprising a Statement of Compliance and a summary of any monitoring required by the licence (including the recording of complaints), be submitted to the EPA. The Annual Return must be submitted within 60 days after the end of each reporting period. See condition R1 regarding the Annual Return reporting requirements.

Usually the licence fee period is the same as the reporting period.

Transfer of licence

The licence holder can apply to transfer the licence to another person. An application form for this purpose is available from the EPA.

Public register and access to monitoring data

Part 9.5 of the Act requires the EPA to keep a public register of details and decisions of the EPA in relation to, for example:

- licence applications;
- licence conditions and variations;
- statements of compliance;
- load based licensing information; and
- load reduction agreements.

Under s320 of the Act application can be made to the EPA for access to monitoring data which has been submitted to the EPA by licensees.

This licence is issued to:

SANTOS NSW (EASTERN) PTY LTD
GPO BOX 1010
BRISBANE QLD 4000

subject to the conditions which follow.

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1 Administrative Conditions

A1 What the licence authorises and regulates

A1.1 This licence authorises the carrying out of the scheduled activities listed below at the premises specified in A2. The activities are listed according to their scheduled activity classification, fee-based activity classification and the scale of the operation.

Unless otherwise further restricted by a condition of this licence, the scale at which the activity is carried out must not exceed the maximum scale specified in this condition.

Scheduled Activity	Fee Based Activity	Scale
Petroleum exploration, assessment and production	Petroleum exploration, assessment and production	> 0.50 - 6 PJ annual production capacity

A1.2 This licence does not authorise the above scheduled activities where approval for these activities is also required under the *Environmental Planning and Assessment Act 1979* and/or the *Petroleum (Onshore) Act 1991*, and approval has not been granted under these acts.

A2 Premises or plant to which this licence applies

A2.1 The licence applies to the following premises:

Premises Details
NARRABRI GAS FIELD
X LINE ROAD
NARRABRI
NSW 2390
<p>PREMISES INCLUDES THE WELLS, PONDS AND INFRASTRUCTURE IDENTIFIED ON THE FOLLOWING MAPS AND ALSO INCLUDES THE ADDITIONAL AREAS IDENTIFIED IN CONDITION A2.2 AND A2.3:</p> <p>'SANTOS NSW (EASTERN) PTY LTD EPL NO 20350 BASE MAP' DATED OCT.18 AND WITH EPA REFERENCE NUMBER DOC13/86511</p> <p>'SANTOS NSW (EASTERN) PTY LTD EPL NO 20350 NORTH' DATED OCT.18 AND WITH EPA REFERENCE NUMBER DOC13/86511-01</p> <p>'SANTOS NSW (EASTERN) PTY LTD EPL NO 20350 CENTRE' DATED OCT.18 AND WITH EPA REFERENCE NUMBER DOC13/86511-02</p> <p>'SANTOS NSW (EASTERN) PTY LTD EPL NO 20350 SOUTH' DATED OCT.18 AND WITH EPA REFERENCE NUMBER DOC13/86511-03</p> <p>'SANTOS NSW (EASTERN) PTY LTD BIBBLEWINDI WATER MANAGEMENT FACILITY' DATED 26/02/14 AND WITH EPA REFERENCE NUMBER DOC14/23635</p> <p>'SANTOS NSW (EASTERN) PTY LTD LEEWOOD WATER MANAGEMENT FACILITY' DATED 16 JUNE 2017 AND WITH EPA REFERENCE NUMBER DOC14/23682</p> <p>'SANTOS NSW (EASTERN) PTY LTD TINTSFIELD WATER MANAGEMENT FACILITY' DATED JULY 2016 AND WITH EPA REFERENCE NUMBER DOC14/23671</p>

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A2.2 In relation to condition A2.1 above, the premises also includes:

- a) wells sites, trunk lines, any associated water storages, water treatment facilities, utilisation areas, temporary work areas and infrastructure associated with the gas gathering system, gas well and trunk lines that are associated with the wells shown on the maps listed in condition A2.1; and
- b) the immediate areas in a 10 metre radius of all infrastructure in connection to the operation of the gas wells as described in condition A2.1. All well sites described in condition A2.1 and A2.2 have a nominal area of 100m x 100m and are surrounded by fencing.

A2.3 Any maps referred to in this section and included as part of this licence indicate the activity that is authorised by this licence to be undertaken at each well site.

A3 Other activities

A3.1 This licence applies to all other activities carried on at the premises, including:

Ancillary Activity
Construction, commissioning and operation of the Leewood Phase 2 Water and Brine Treatment Plant and associated infrastructure

A3.2 The works specified in A3.1 for the Leewood Phase 2 Project must be carried out at the location(s) and in accordance with the Leewood Produced Water Treatment Plant and Beneficial Project approval issued by the NSW Department of Industry, Skills and Regional Development with reference number MCV15/245#3 dated 18 August 2015 and the following documents:

1. "Leewood Produced Water Treatment Plant and Beneficial Reuse Project - Review of Environmental Factors" dated 5 June 2015
2. Letter titled "Leewood produced water Treatment and Beneficial reuse Project Review of Environmental Factors - provision of Additional Information and Response to Comments and Recommendations" dated 5 June 2015
3. Letter titled "Leewood produced water Treatment and Beneficial Reuse Project Review of Environmental Factors - Provision of Additional Information and Response to Comments and Recommendation" dated 12 June 2015
4. Letter titled "Leewood produced water Treatment and Beneficial Reuse" dated 28 July 2015.

A4 Information supplied to the EPA

A4.1 Works and activities must be carried out in accordance with the proposal contained in the licence application, except as expressly provided by a condition of this licence.

In this condition the reference to "the licence application" includes a reference to:

- a) the applications for any licences (including former pollution control approvals) which this licence replaces under the Protection of the Environment Operations (Savings and Transitional) Regulation 1998; and
- b) the licence information form provided by the licensee to the EPA to assist the EPA in connection with

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the issuing of this licence.

2 Discharges to Air and Water and Applications to Land

P1 Location of monitoring/discharge points and areas

P1.1 The following points referred to in the table below are identified in this licence for the purposes of monitoring and/or the setting of limits for the emission of pollutants to the air from the point.

<i>Air</i>			
EPA identification no.	Type of Monitoring Point	Type of Discharge Point	Location Description
1		Discharge to air	Flare located at the Bibblewindi Water Transfer Facility labelled as 'Bibblewindi Flare' on map titled 'Santos NSW (Eastern) Pty Ltd Bibblewindi Water Management Facility' dated 26/02/14 and with EPA Reference No Doc14/23635
2		Discharge to air	Flare located adjacent to the Dewhurst 14 well lease within the Dewhurst 13-18H Pilot.
3		Discharge to air	Flare located at Dewhurst 22 well lease within the Dewhurst 22-25 pilot.
4		Discharge to air	Flare located on Dewhurst 28 well lease within the Dewhurst 26-29 pilot.
6		Discharge to air	Flare located within PPL3 for Tintsville 2-7 pilot and labelled 'Tintsville Flare' on map titled 'Santos NSW (Eastern) Pty Ltd Tintsville Water Management Facility' dated July 2016 and with EPA reference No. DOC14/23671

P1.2 The following utilisation areas referred to in the table below are identified in this licence for the purposes of the monitoring and/or the setting of limits for any application of solids or liquids to the utilisation area.

P1.3 The following points referred to in the table are identified in this licence for the purposes of the monitoring and/or the setting of limits for discharges of pollutants to water from the point.

Water and land

EPA Identification no.	Type of Monitoring Point	Type of Discharge Point	Location Description
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7	Groundwater quality monitoring (Bibblewindi 27A)	Shallow aquifer monitoring bore targetting the Upper Pilliga Sandstones labelled 'Bibblewindi 27A' on map titled 'Santos NSW (Eastern) Pty Ltd Discharge and Monitoring Point Locations' dated 22/11/13 and with EPA reference No. DOC13/86651
8	Groundwater quality monitoring (Bibblewindi 27B)	Shallow aquifer monitoring bore targetting the Lower Pilliga Sandstones labelled 'Bibblewindi 27B' on map titled 'Santos NSW (Eastern) Pty Ltd Discharge and Monitoring Point Locations' dated 22/11/13 and with EPA reference No. DOC13/86651
9	Groundwater quality monitoring (Bibblewindi 26H)	Shallow aquifer monitoring bore targetting the Upper Pilliga Sandstone labelled 'Bibblewindi 26H' on map titled 'Santos NSW (Eastern) Pty Ltd Discharge and Monitoring Point Locations' dated 22/11/13 and with EPA reference No. DOC13/86651
10	Groundwater quality monitoring (Bibblewindi 26H(B))	Shallow aquifer monitoring bore targetting the Lower Pilliga Sandstones labelled 'Bibblewindi 26H(B)' on map titled 'Santos NSW (Eastern) Pty Ltd Discharge and Monitoring Point Locations' dated 22/11/13 and with EPA reference No. DOC13/86651
11	Groundwater quality monitoring (Dewhurst 14A)	Shallow aquifer monitoring bore targetting the Upper Pilliga Sandstone labelled 'Dewhurst 14A' on map titled 'Santos NSW (Eastern) Pty Ltd Discharge and Monitoring Point Locations' dated 22/11/13 and with EPA reference No. DOC13/86651
12	Groundwater quality monitoring (Dewhurst 14B)	Shallow aquifer monitoring bore targetting the Lower Pilliga Sandstones labelled 'Dewhurst 14B' on map titled 'Santos NSW (Eastern) Pty Ltd Discharge and Monitoring Point Locations' dated 22/11/13 and with EPA reference No. DOC13/86651
13	Groundwater quality monitoring (Dewhurst 14C)	Shallow aquifer monitoring bore targetting the Purlawaugh Formation labelled 'Dewhurst 14C' on map titled 'Santos NSW (Eastern) Pty Ltd Discharge and Monitoring Point Locations' dated 22/11/13 and with EPA reference No. DOC13/86651

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14	Groundwater quality monitoring (Dewhurst 3A)	Shallow aquifer monitoring bore targeting the Upper Pilliga Sandstones labelled 'Dewhurst 3A' on map titled 'Santos NSW (Eastern) Pty Ltd Discharge and Monitoring Point Locations' dated 22/11/13 and with EPA reference No. DOC13/86651
15	Groundwater quality monitoring (Dewhurst 3B)	Shallow aquifer monitoring bore targeting the Lower Pilliga Sandstones labelled 'Dewhurst 3B' on map titled 'Santos NSW (Eastern) Pty Ltd Discharge and Monitoring Point Locations' dated 22/11/13 and with EPA reference No. DOC13/86651
18	Groundwater quality monitoring (Bibblewindi 27C)	Shallow aquifer monitoring bore targeting the Orallo formation labelled 'Bibblewindi 27C' on map titled 'Santos NSW (Eastern) Pty Ltd Discharge and Monitoring Point Locations' dated 22/11/13 and with EPA reference No. DOC13/86651
20	Groundwater quality monitoring (Bohena 14A)	Shallow aquifer monitoring bore targeting the Orallo formation and labelled 'Bohena 14A' on map titled 'Santos NSW (Eastern) Pty Ltd Discharge and Monitoring Point Locations' dated 22/11/13 and with EPA reference No. DOC13/86651
21	Groundwater quality monitoring (Bohena 14B)	Shallow aquifer monitoring bore targeting the Upper Pilliga Sandstone and labelled 'Bohena 14B' on map titled 'Santos NSW (Eastern) Pty Ltd Discharge and Monitoring Point Locations' dated 22/11/13 and with EPA reference No. DOC13/86651
26	Groundwater quality monitoring (BWDMW12S)	Groundwater monitoring bore labelled BWDMW12S on map titled 'Santos NSW (Eastern) Pty Ltd Bibblewindi Water Management Facility' dated 26/02/2014 and with EPA reference No DOC14/23635
27	Groundwater quality monitoring (BWDMW12D)	Groundwater monitoring bore labelled BWDMW12D on map titled 'Santos NSW (Eastern) Pty Ltd Bibblewindi Water Management Facility' dated 26/02/2014 and with EPA reference No DOC14/23635
28	Groundwater quality monitoring (BWDMW12I)	Groundwater monitoring bore labelled BWDMW12I on map titled 'Santos NSW (Eastern) Pty Ltd Bibblewindi Water Management Facility' dated 26/02/2014 and with EPA reference No DOC14/23635

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37	Groundwater quality monitoring (LWDMW1D)	Groundwater monitoring bore labelled LWDMW1D on map titled 'Santos NSW (Eastern) Pty Ltd Leewood Water Management Facility' dated 16 June 2017 and with EPA reference No DOC14/23682
38	Groundwater quality monitoring (LWDMW1S)	Groundwater monitoring bore labelled LWDMW1S on map titled 'Santos NSW (Eastern) Pty Ltd Leewood Water Management Facility' dated 16 June 2017 and with EPA reference No DOC14/23682
39	Groundwater quality monitoring (LWDMW1I)	Groundwater monitoring bore labelled LWDMW1I on map titled 'Santos NSW (Eastern) Pty Ltd Leewood Water Management Facility' dated 16 June 2017 and with EPA reference No DOC14/23682
40	Groundwater quality monitoring (LWDMW2S)	Groundwater monitoring bore labelled LWDMW2S on map titled 'Santos NSW (Eastern) Pty Ltd Leewood Water Management Facility' dated 16 June 2017 and with EPA reference No DOC14/23682
41	Groundwater quality monitoring (LWDMW2D)	Groundwater monitoring bore labelled LWDMW2D on map titled 'Santos NSW (Eastern) Pty Ltd Leewood Water Management Facility' dated 16 June 2017 and with EPA reference No DOC14/23682
42	Groundwater quality monitoring (LWDMW3D)	Groundwater monitoring bore labelled LWDMW3D on map titled 'Santos NSW (Eastern) Pty Ltd Leewood Water Management Facility' dated 16 June 2017 and with EPA reference No DOC14/23682
43	Groundwater quality monitoring (LWDMW3S)	Groundwater monitoring bore labelled LWDMW3S on map titled 'Santos NSW (Eastern) Pty Ltd Leewood Water Management Facility' dated 16 June 2017 and with EPA reference No DOC14/23682
44	Groundwater level monitoring (Dewhurst 8A-1)	Deep aquifer monitoring bore labelled 'Dewhurst 8A-1' on map titled 'Santos NSW (Eastern) Pty Ltd EPL No 20350 Discharge and Monitoring Point Locations' dated 22 November 2013 and with EPA reference No. DOC13/86651

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45	Groundwater level monitoring (Dewhurst 8A-2)	Deep aquifer monitoring bore labelled 'Dewhurst 8A-2' on map titled 'Santos NSW (Eastern) Pty Ltd EPL No 20350 Discharge and Monitoring Point Locations' dated 22 November 2013 and with EPA reference No. DOC13/86651
46	Groundwater level monitoring (Dewhurst 8A-3)	Deep aquifer monitoring bore labelled 'Dewhurst 8A-3' on map titled 'Santos NSW (Eastern) Pty Ltd EPL No 20350 Discharge and Monitoring Point Locations' dated 22 November 2013 and with EPA reference No. DOC13/86651
47	Groundwater level monitoring (Bibblewindi 28A)	Shallow aquifer monitoring bore labelled 'Bibblewindi 28A' on map titled 'Santos NSW (Eastern) Pty Ltd EPL No 20350 Discharge and Monitoring Point Locations' dated 22 November 2013 and with EPA reference No. DOC13/86651
48	Groundwater level monitoring (Bibblewindi 28B)	Shallow aquifer monitoring bore labelled 'Bibblewindi 28B' on map titled 'Santos NSW (Eastern) Pty Ltd EPL No 20350 Discharge and Monitoring Point Locations' dated 22 November 2013 and with EPA reference No. DOC13/86651
49	Groundwater level monitoring (Bibblewindi 28C)	Shallow aquifer monitoring bore labelled 'Bibblewindi 28C' on map titled 'Santos NSW (Eastern) Pty Ltd EPL No 20350 Discharge and Monitoring Point Locations' dated 22 November 2013 and with EPA reference No. DOC13/86651
56	Groundwater quality monitoring (WPKMW09D)	Groundwater monitoring bore labelled 'WPKMW09D' on map titled 'Santos NSW (Eastern) Pty Ltd Tintfield Water Management Facility' dated July 2016 and with EPA reference No. DOC14/23671
57	Groundwater quality monitoring (WPKMW09S)	Groundwater monitoring bore labelled 'WPKMW09S' on map titled 'Santos NSW (Eastern) Pty Ltd Tintfield Water Management Facility' dated July 2016 and with EPA reference No. DOC14/23671
59	Groundwater quality monitoring (WPKMW13I)	Groundwater monitoring bore labelled 'WPKMW13I' on map titled 'Santos NSW (Eastern) Pty Ltd Tintfield Water Management Facility' dated July 2016 and with EPA reference No. DOC14/23671

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60	Groundwater quality monitoring (WPKMW13S)	Groundwater monitoring bore labelled 'WPKMW13S' on map titled 'Santos NSW (Eastern) Pty Ltd Tintfield Water Management Facility' dated July 2016 and with EPA reference No. DOC14/23671
61	Groundwater quality monitoring (WPKMW14D)	Groundwater monitoring bore labelled 'WPKMW14D' on map titled 'Santos NSW (Eastern) Pty Ltd Tintfield Water Management Facility' dated July 2016 and with EPA reference No. DOC14/23671
62	Groundwater quality monitoring (WPKMW14S)	Groundwater monitoring bore labelled 'WPKMW14S' on map titled 'Santos NSW (Eastern) Pty Ltd Tintfield Water Management Facility' dated July 2016 and with EPA reference No. DOC14/23671
63	Groundwater quality monitoring (WPKMW15D)	Groundwater monitoring bore labelled 'WPKMW15D' on map titled 'Santos NSW (Eastern) Pty Ltd Tintfield Water Management Facility' dated July 2016 and with EPA reference No. DOC14/23671
64	Groundwater quality monitoring (WPKMW15S)	Groundwater monitoring bore labelled 'WPKMW15S' on map titled 'Santos NSW (Eastern) Pty Ltd Tintfield Water Management Facility' dated July 2016 and with EPA reference No. DOC14/23671
65	Groundwater quality monitoring (WPKMW16D)	Groundwater monitoring bore labelled 'WPKMW16D' on map titled 'Santos NSW (Eastern) Pty Ltd Tintfield Water Management Facility' dated July 2016 and with EPA reference No. DOC14/23671
66	Groundwater quality monitoring (WPKMW16S)	Groundwater monitoring bore labelled 'WPKMW16S' on map titled 'Santos NSW (Eastern) Pty Ltd Tintfield Water Management Facility' dated July 2016 and with EPA reference No. DOC14/23671
69	Produced water storage dam (Pond 2)	Surface water monitoring from pond labelled 'Pond 2' on map titled 'Santos NSW (Eastern) Pty Ltd Bibblewindi Water Management Facility' dated 26/02/2014 and with EPA reference No DOC14/23635
70	Produced water storage dam (Pond 3)	Surface water monitoring from pond labelled 'Pond 3' on map titled 'Santos NSW (Eastern) Pty Ltd Bibblewindi Water Management Facility' dated 26/02/2014 and with EPA reference No DOC14/23635

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71	Produced water storage dam (Leewood Cell 4)		Surface water monitoring from pond labelled 'Leewood Cell 4' on map titled 'Santos NSW (Eastern) Pty Ltd Leewood Water Management Facility' dated 16 June 2017 and with EPA reference No DOC14/23682
72	Produced water storage dam (Leewood Cell 3)		Surface water monitoring from pond labelled 'Leewood Cell 3' on map titled 'Santos NSW (Eastern) Pty Ltd Leewood Water Management Facility' dated 16 June 2017 and with EPA reference No DOC14/23682
73	Produced water storage dam (Leewood Cell 2)		Surface water monitoring from pond labelled 'Leewood Cell 2' on map titled 'Santos NSW (Eastern) Pty Ltd Leewood Water Management Facility' dated 16 June 2017 and with EPA reference No DOC14/23682
74	Produced water storage dam (Leewood Cell 1)		Surface water monitoring from pond labelled 'Leewood Cell 1' on map titled 'Santos NSW (Eastern) Pty Ltd Leewood Water Management Facility' dated 16 June 2017 and with EPA reference No DOC14/23682
75	Produced water storage dam (Tintsville Pond 1)		Surface water monitoring from pond labelled 'Pond 1' on map titled 'Santos NSW (Eastern) Pty Ltd Tintsville Water Management Facility' dated July 2016 and with EPA reference No DOC14/23671
76	Produced water storage dam (Tintsville Pond 2)		Surface water monitoring from pond labelled 'Pond 2' on map titled 'Santos NSW (Eastern) Pty Ltd Tintsville Water Management Facility' dated July 2016 and with EPA reference No DOC14/23671
77	Treated water discharge quality monitoring (Leewood Water and Brine Treatment Plant)	Treated water discharge quality monitoring (Leewood Water and Brine Treatment Plant)	Treated water storage tank discharge quality monitoring labelled "LWWTPDM1" on map titled 'Santos NSW (Eastern) Pty Ltd Leewood Water Management Facility' dated 16 June 2017 and with EPA reference No DOC14/23682
78	Groundwater quality monitoring (WPKMW18S)		Groundwater monitoring bore labelled 'WPKMW18S' on map titled 'Santos NSW (Eastern) Pty Ltd Tintsville Water Management Facility' dated July 2016 and with EPA reference No. DOC14/23671

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79	Groundwater quality monitoring (WPKMW181)	Groundwater monitoring bore labelled 'WPKMW181' on map titled 'Santos NSW (Eastern) Pty Ltd Tintfield Water Management Facility' dated July 2016 and with EPA reference No. DOC14/23671
80	Groundwater quality monitoring (LWDMW4)	Groundwater monitoring bore labelled LWDMW4 on map titled 'Santos NSW (Eastern) Pty Ltd Leewood Water Management Facility' dated 16 June 2017 and with EPA reference No DOC14/23682
81	Groundwater quality monitoring (LWDMW5).	Groundwater monitoring bore labelled LWDMW5 on map titled 'Santos NSW (Eastern) Pty Ltd Leewood Water Management Facility' dated 16 June 2017 and with EPA reference No DOC14/23682
82	Groundwater quality monitoring (LWDMW6).	Groundwater monitoring bore labelled LWDMW6 on map titled 'Santos NSW (Eastern) Pty Ltd Leewood Water Management Facility' dated 16 June 2017 and with EPA reference No DOC14/23682
83	Soil quality monitoring (SMP1).	Soil quality monitoring point in the utilisation area labelled SMP1 on map titled 'Santos NSW (Eastern) Pty Ltd Leewood Water Management Facility' dated 16 June 2017 and with EPA reference No DOC14/23682
84	Soil quality monitoring (SMP2).	Soil quality monitoring point in the utilisation area labelled SMP2 on map titled 'Santos NSW (Eastern) Pty Ltd Leewood Water Management Facility' dated 16 June 2017 and with EPA reference No DOC14/23682
85	Soil quality monitoring (SMP3).	Soil quality monitoring point in the utilisation area labelled SMP3 on map titled 'Santos NSW (Eastern) Pty Ltd Leewood Water Management Facility' dated 16 June 2017 and with EPA reference No DOC14/23682
86	Soil quality monitoring (SMP4).	Soil quality monitoring point in the utilisation area labelled SMP4 on map titled 'Santos NSW (Eastern) Pty Ltd Leewood Water Management Facility' dated 16 June 2017 and with EPA reference No DOC14/23682

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3 Limit Conditions

L1 Pollution of waters

- L1.1 Except as may be expressly provided in any other condition of this licence, the licensee must comply with section 120 of the Protection of the Environment Operations Act 1997.

L2 Load limits

- L2.1 The actual load of an assessable pollutant discharged from the premises during the reporting period must not exceed the load limit specified for the assessable pollutant in the table below.

Note: An assessable pollutant is a pollutant which affects the licence fee payable for the licence.

- L2.2 The actual load of an assessable pollutant must be calculated in accordance with the relevant load calculation protocol.

Assessable Pollutant	Load limit (kg)
Benzene (Air)	
Benzo(a)pyrene (equivalent) (Air)	
Fine Particulates (Air)	
Hydrogen Sulfide (Air)	
Nitrogen Oxides (Air)	
Sulfur Oxides (Air)	
Volatile organic compounds (Air)	

L3 Waste

- L3.1 The licensee must not cause, permit or allow any waste generated outside the premises to be received at the premises for storage, treatment, processing, reprocessing or disposal or any waste generated at the premises to be disposed of at the premises, except as expressly permitted by the licence.
- L3.2 This condition only applies to the storage, treatment, processing, reprocessing or disposal of waste at the premises if those activities require an environment protection licence.
- L3.3 The licensee may transport and reuse drilling and completion fluids from well sites in accordance with the Waste Management Plan approved under development consent SSD 6456.
- L3.4 The licensee may transport and apply drill cuttings from any of their well sites to land at the Premises in accordance with the Waste Management Plan and Rehabilitation Management Plan approved under development consent SSD 6456.

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L4 Noise limits

Operational activities limits

L4.1 Noise generated at the premises must not exceed the noise limits in the table below:

Location	Day Noise Limit LAeq(15 minute)	Evening Noise Limit LAeq(15 minute)	Night Noise Limit LAeq(15 minute)
any residential sensitive receptor not subject to a private negotiated agreement	35dB(A)	35dB(A)	35dB(A)

L4.2 For the purpose of Condition L4.1:

- a) Day is defined as the period from 7am to 6pm Monday to Saturday and 8am to 6pm Sundays and Public Holidays;
- b) Evening is defined as the period from 6pm to 10pm; and
- c) Night is defined as the period from 10pm to 7am Monday to Saturday and 10pm to 8am Sundays and Public Holidays.

L4.3 To determine compliance:

- a) with the Leq(15 minute) noise limits in condition L4.1, the noise measurement equipment must be located:
 - approximately on the property boundary, where any dwelling is situated 30m or less from the property boundary closest to the premises; or
 - within 30 meters of a dwelling facade, but not closer than 3m, where any dwelling on the property is situated more than 30 meters from the property boundary closest to the premises; or, where applicable
 - within approximately 50 meters of the boundary of a National Park or a Nature Reserve.
- b) with the noise limits in condition L4.1, the noise measurements equipment must be located:
 - at the most affected point at a location where there is no dwelling at the location; or
 - at the most affected point within an area at a location prescribed by condition L4.1.

L4.4 A non-compliance of condition L4.1 will still occur where noise generated from the premises in excess of the appropriate limit is measured:

- at a location other than an area prescribed by condition L4.1; and/or
- at a point other than the most affected point at a location.

L4.5 The noise limits set out in condition L4.1 apply under all meteorological conditions except for the following:

- a) Wind speeds greater than 3metres/second at 10 metres above ground level; or
- b) Stability category F temperature inversion conditions and wind speeds greater than 2metres/second at 10 metres above the ground level; or
- c) Stability category G temperature inversion conditions.

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L4.6 For the purposes of condition L4.5:

- a) Data recorded by a meteorological station (at a location to be negotiated with the EPA) must be used to determine meteorological conditions; and
- b) Temperature inversion conditions (stability category) are to be determined by the sigma-theta method referred to in Part E4 of Appendix E to the NSW Industrial Noise Policy.

L4.7 For the purposes of determining the noise generated at the premises the modification factors in Section 4 of the NSW Industrial Noise Policy must be applied, as appropriate, to the noise levels measured by the noise monitoring equipment.

L5 Hours of operation

Construction activities limits

L5.1 Standard construction hours

Unless otherwise specified by any other condition of this licence, all construction activities are:

- a) restricted to between the hours of 7:00am and 6:00pm Monday to Friday;
- b) restricted to between the hours of 8:00am and 1:00pm Saturday; and
- c) not to be undertaken on Sundays or Public Holidays.

L5.2 Exceptions to standard construction hours

The following activities may be carried out outside of the hours permitted by Condition L5.1:

- a) Construction work that causes $L_{Aeq(15minute)}$ noise levels that are no more than 5dB above rating background level at any residence not subject to a private negotiated agreement, in accordance with the *Interim Construction Noise Guideline* (DECC, 2009);
- b) The delivery of plant, equipment and materials which is required to be delivered outside of the standard construction hours by Police and/or other authorised authorities; and
- c) Emergency work to avoid loss of life, damage to property and/or environmental harm.
The licensee must on becoming aware of the need to undertake emergency work – notify the NSW Environment Protection Authority Environment Line on 131 555.

L6 Potentially offensive odour

L6.1 No condition of this licence identifies a potentially offensive odour for the purposes of section 129 of the Protection of the Environment Operations Act 1997.

Note: Section 129 of the Protection of the Environment Operations Act 1997, provides that the licensee must not cause or permit the emission of any offensive odour from the premises but provides a defence if the emission is identified in the relevant environment protection licence as a potentially offensive odour and the odour was emitted in accordance with the conditions of a licence directed at minimising odour.

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4 Operating Conditions

O1 Activities must be carried out in a competent manner

O1.1 Licensed activities must be carried out in a competent manner.

This includes:

- a) the processing, handling, movement and storage of materials and substances used to carry out the activity; and
- b) the treatment, storage, processing, reprocessing, transport and disposal of waste generated by the activity.

O2 Maintenance of plant and equipment

O2.1 All plant and equipment installed at the premises or used in connection with the licensed activity:

- a) must be maintained in a proper and efficient condition; and
- b) must be operated in a proper and efficient manner.

O3 Dust

O3.1 All areas in or on the premises must be maintained in a condition that prevents or minimises the emission into the air of dust.

O3.2 Any activity in or on the premises must be carried out by such practicable means as to prevent or minimise the emission into the air of dust.

O3.3 Any plant in or on the premises must be operated by such practicable means as to prevent or minimise the emission of dust into the air.

O4 Emergency response

O4.1 An Emergency Response Plan must be developed which documents the procedures to deal with all types of incidents (eg spill, explosions or fire) that may occur at the premises or outside of the premises (eg during transfer) which are likely to cause harm to the environment.

O5 Processes and management

O5.1 The licensee must ensure that waste identified for recycling is stored separately from other waste.

O5.2 Any liquid and/or non-liquid waste for processing, storage, resource recovery or disposal at the premises must be assessed and classified in accordance with the EPA Waste Classification Guidelines as in force from time to time.

O5.3 Waste must be classified in accordance with the EPA Waste Classification Guidelines as in force from

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time to time prior to dispatching from the premises.

- O5.4 All above ground tanks containing material that is likely to cause environmental harm must be bunded or have an alternative spill containment system in place.

O6 Other operating conditions

Soil and Water Management Plan

- O6.1 A Soil and Water Management Plan (SWMP) must be prepared and implemented in accordance with the requirements outlined in Managing Urban Stormwater: Soils and Construction, Vol 1, 4th Edition (Landcom, 2004) within 3 months from the issue date of this licence.

- O6.2 The SWMP must include, but is not limited to, the following:

1. a discussion around the management of existing and future sediment basins, specifically, how these will be managed to prevent pollution, and
2. a description of the measures taken to minimise soil erosion and the discharge of sediment and other pollutants to lands and/or waters for the duration of the licence.

- O6.3 The SWMP should also refer to relevant Volume 2 guidance including but not limited to Managing Urban Stormwater: Soils and Construction - Volume 2a Installation of Services and Managing Urban Stormwater: Soils and Construction - Vol 2c Unsealed Roads.

- O6.4 The SWMP must be updated to reflect the proposed irrigation of treated water at the premises, prior to irrigation occurring.

Gas and Water Flow lines

- O6.5 The licensee must manually operate the high point vents and low point drains on the water and gas gathering piping networks at the premises.

Irrigation of Utilisation Area(s)

- O6.6 The quantity of treated water applied to the utilisation area(s) must not exceed the capacity of the utilisation area(s) to effectively utilise the water.

For the purpose of this condition, "effectively utilise" includes the use of the water for pasture or crop production, as well as the ability of the soil to absorb the nutrient, salt, hydraulic loads and the applied organic material without causing harm to the environment.

- O6.7 Treated water application to the utilisation area(s) must not occur in a manner that causes surface run-off from the utilisation area(s).

Gas Leak Detection and Repair Program

- O6.8 The licensee must design and implement a Gas Leak Detection and Repair (LDAR) program for all gas

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process plant and equipment on the premises. The LDAR program must include the following:

1. The objective of the LDAR is to prevent and minimise the emission of air pollutants (consistent with condition E3 of this licence).
2. All gas process plant and equipment must be checked for leaks at an interval not exceeding six (6) months, unless otherwise approved in writing by the EPA
3. All leaks must be repaired within 15 days of detection, unless otherwise approved in writing by the EPA.

5 Monitoring and Recording Conditions

M1 Monitoring records

- M1.1 The results of any monitoring required to be conducted by this licence or a load calculation protocol must be recorded and retained as set out in this condition.
- M1.2 All records required to be kept by this licence must be:
- a) in a legible form, or in a form that can readily be reduced to a legible form;
 - b) kept for at least 4 years after the monitoring or event to which they relate took place; and
 - c) produced in a legible form to any authorised officer of the EPA who asks to see them.
- M1.3 The following records must be kept in respect of any samples required to be collected for the purposes of this licence:
- a) the date(s) on which the sample was taken;
 - b) the time(s) at which the sample was collected;
 - c) the point at which the sample was taken; and
 - d) the name of the person who collected the sample.

M2 Requirement to monitor concentration of pollutants discharged

- M2.1 For each monitoring/discharge point or utilisation area specified below (by a point number), the licensee must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in Column 1. The licensee must use the sampling method, units of measure, and sample at the frequency, specified opposite in the other columns:
- M2.2 Water and/ or Land Monitoring Requirements

POINT 7,8,9,10,11,12,13,14,15,18,20,21,26,27,28,37,38,39,40,41,42,43,56,57,59,60,61,62,63,64,65,66,78,79,80,81,82

Pollutant	Units of measure	Frequency	Sampling Method
Aluminium	milligrams per litre	Special Frequency 2	Representative sample
Ammonia	milligrams per litre	Special Frequency 2	Representative sample
Arsenic	milligrams per litre	Special Frequency 2	Representative sample
Barium	milligrams per litre	Special Frequency 2	Representative sample
Beryllium	milligrams per litre	Special Frequency 2	Representative sample
Bicarbonate	milligrams per litre	Special Frequency 2	Representative sample

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Boron	milligrams per litre	Special Frequency 2	Representative sample
Bromide	milligrams per litre	Special Frequency 2	Representative sample
Cadmium	milligrams per litre	Special Frequency 2	Representative sample
Calcium	milligrams per litre	Special Frequency 2	Representative sample
Carbonate	milligrams per litre	Special Frequency 2	Representative sample
Chloride	milligrams per litre	Special Frequency 2	Representative sample
Chromium	milligrams per litre	Special Frequency 2	Representative sample
Cobalt	milligrams per litre	Special Frequency 2	Representative sample
Copper	milligrams per litre	Special Frequency 2	Representative sample
Dissolved Oxygen	milligrams per litre	Quarterly	In situ
Electrical conductivity	microsiemens per centimetre	Quarterly	In situ
Fluoride	milligrams per litre	Special Frequency 2	Representative sample
Iron	milligrams per litre	Special Frequency 2	Representative sample
Lead	milligrams per litre	Special Frequency 2	Representative sample
Magnesium	milligrams per litre	Special Frequency 2	Representative sample
Manganese	milligrams per litre	Special Frequency 2	Representative sample
Mercury	milligrams per litre	Special Frequency 2	Representative sample
Methane	milligrams per litre	Special Frequency 2	Representative sample
Molybdenum	milligrams per litre	Special Frequency 2	Representative sample
Nickel	milligrams per litre	Special Frequency 2	Representative sample
Nitrate	milligrams per litre	Special Frequency 2	Representative sample
Nitrite	milligrams per litre	Special Frequency 2	Representative sample
pH	pH	Quarterly	In situ
Potassium	milligrams per litre	Special Frequency 2	Representative sample
Reactive Phosphorus	milligrams per litre	Special Frequency 2	Representative sample
Redox potential	milligrams per litre	Quarterly	In situ
Selenium	milligrams per litre	Special Frequency 2	Representative sample
Sodium	milligrams per litre	Special Frequency 2	Representative sample
Standing Water Level	metres	Quarterly	In situ
Strontium (dissolved)	milligrams per litre	Special Frequency 2	Representative sample
Sulfate	milligrams per litre	Special Frequency 2	Representative sample
Total dissolved solids	milligrams per litre	Special Frequency 2	Representative sample
Uranium	milligrams per litre	Special Frequency 2	Representative sample
Vanadium	milligrams per litre	Special Frequency 2	Representative sample
Zinc	milligrams per litre	Special Frequency 2	Representative sample

POINT 44,45,46,47,48,49

Pollutant	Units of measure	Frequency	Sampling Method
Standing Water Level	metres	Daily	In situ

POINT 69,70,71,72,73,74,75,76

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Pollutant	Units of measure	Frequency	Sampling Method
Aluminium	milligrams per litre	Every 6 months	Grab sample
Ammonia	milligrams per litre	Every 6 months	Grab sample
Arsenic	milligrams per litre	Every 6 months	Grab sample
Barium	milligrams per litre	Every 6 months	Grab sample
Beryllium	milligrams per litre	Every 6 months	Grab sample
Bicarbonate	milligrams per litre	Every 6 months	Grab sample
Boron	milligrams per litre	Every 6 months	Grab sample
Bromide	milligrams per litre	Every 6 months	Grab sample
Cadmium	milligrams per litre	Every 6 months	Grab sample
Calcium	milligrams per litre	Every 6 months	Grab sample
Carbonate	milligrams per litre	Every 6 months	Grab sample
Chloride	milligrams per litre	Every 6 months	Grab sample
Chromium	milligrams per litre	Every 6 months	Grab sample
Cobalt	milligrams per litre	Every 6 months	Grab sample
Copper	milligrams per litre	Every 6 months	Grab sample
Dissolved Oxygen	milligrams per litre	Quarterly	In situ
Electrical conductivity	microsiemens per centimetre	Quarterly	In situ
Iron	milligrams per litre	Every 6 months	Grab sample
Lead	milligrams per litre	Every 6 months	Grab sample
Magnesium	milligrams per litre	Every 6 months	Grab sample
Manganese	milligrams per litre	Every 6 months	Grab sample
Mercury	milligrams per litre	Every 6 months	Grab sample
Molybdenum	milligrams per litre	Every 6 months	Grab sample
Nickel	milligrams per litre	Every 6 months	Grab sample
Nitrate	milligrams per litre	Every 6 months	Grab sample
Nitrite	milligrams per litre	Every 6 months	Grab sample
pH	pH	Quarterly	In situ
Phosphorus (total)	milligrams per litre	Every 6 months	Grab sample
Potassium	milligrams per litre	Every 6 months	Grab sample
Redox potential	milligrams per litre	Quarterly	In situ
Selenium	milligrams per litre	Every 6 months	Grab sample
Sodium	milligrams per litre	Every 6 months	Grab sample
Sodium Adsorption Ratio	sodium adsorption ratio	Every 6 months	Grab sample
Strontium (dissolved)	milligrams per litre	Every 6 months	Grab sample
Sulfate	milligrams per litre	Every 6 months	Grab sample
Total dissolved solids	milligrams per litre	Every 6 months	Grab sample
Total organic carbon	milligrams per litre	Every 6 months	Grab sample
Uranium	milligrams per litre	Every 6 months	Grab sample
Vanadium	milligrams per litre	Every 6 months	Grab sample
Zinc	milligrams per litre	Every 6 months	Grab sample

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Pollutant	Units of measure	Frequency	Sampling Method
Alkalinity (as calcium carbonate)	milligrams per litre	Monthly	Grab sample
Ammonia	milligrams per litre	Monthly	Grab sample
Bicarbonate	milligrams per litre	Monthly	Grab sample
Boron	milligrams per litre	Monthly	Grab sample
Calcium	milligrams per litre	Monthly	Grab sample
Carbonate	milligrams per litre	Monthly	Grab sample
Chloride	milligrams per litre	Monthly	Grab sample
Chlorine (total residual)	milligrams per litre	Monthly	Grab sample
Electrical conductivity	microsiemens per centimetre	Continuous	Special Method 1
Fluoride	milligrams per litre	Monthly	Grab sample
Hardness (as calcium carbonate)	milligrams per litre	Monthly	Grab sample
Magnesium	milligrams per litre	Monthly	Grab sample
Nitrate	milligrams per litre	Monthly	Grab sample
Nitrite	milligrams per litre	Monthly	Grab sample
Nitrogen (total)	milligrams per litre	Monthly	Grab sample
pH	pH	Continuous	Special Method 1
Phosphorus	milligrams per litre	Monthly	Grab sample
Potassium	milligrams per litre	Monthly	Grab sample
Silica	milligrams per litre	Monthly	Grab sample
Sodium	milligrams per litre	Monthly	Grab sample
Sodium Adsorption Ratio	sodium adsorption ratio	Monthly	Grab sample
Sulfate	milligrams per litre	Monthly	Grab sample
Total dissolved solids	milligrams per litre	Monthly	Grab sample
Turbidity	nephelometric turbidity units	Monthly	Grab sample

POINT 83,84,85,86

Pollutant	Units of measure	Frequency	Sampling Method
Aluminium	milligrams per kilogram	Special Frequency 1	Special Method 2
Available phosphorus	milligrams per kilogram	Special Frequency 1	Special Method 2
Boron	milligrams per kilogram	Special Frequency 1	Special Method 2
Calcium	milligrams per kilogram	Special Frequency 1	Special Method 2
Cation Exchange Capacity	centimoles of positive charge per kilogram of soil	Special Frequency 1	Special Method 2
Chloride	milligrams per kilogram	Special Frequency 1	Special Method 2
Copper	milligrams per kilogram	Special Frequency 1	Special Method 2
Electrical conductivity	microsiemens per centimetre	Special Frequency 1	Special Method 2
Exchangeable sodium percentage	percent	Special Frequency 1	Special Method 2

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Hydraulic conductivity	metres per second	Special Frequency 1	Special Method 2
Iron	milligrams per kilogram	Special Frequency 1	Special Method 2
Magnesium	milligrams per kilogram	Special Frequency 1	Special Method 2
Manganese	milligrams per kilogram	Special Frequency 1	Special Method 2
Nitrogen (nitrate)	milligrams per kilogram	Special Frequency 1	Special Method 2
Organic carbon	percent	Special Frequency 1	Special Method 2
pH	pH	Special Frequency 1	Special Method 2
Phosphorus	milligrams per kilogram	Special Frequency 1	Special Method 2
Potassium	milligrams per kilogram	Special Frequency 1	Special Method 2
Sodium	milligrams per kilogram	Special Frequency 1	Special Method 2
Sodium Adsorption Ratio	sodium adsorption ratio	Special Frequency 1	Special Method 2
Sulfate	milligrams per kilogram	Special Frequency 1	Special Method 2
Zinc	milligrams per kilogram	Special Frequency 1	Special Method 2

M2.3 For the purpose of Condition M2 the following definitions apply to the required methods specified in the tables:

Method	Definition
Special Method 1	Automated logger
Special Method 2	Within a 25m radius of each monitoring point, 3 soil cores to a depth of 3m must be taken. From these soil cores, samples must be taken from depths of 0-25cm, 25-50cm, 50-75cm, 75-100cm, 100-200cm and 200-300cm. Samples of the same depth from the 3 soil cores must be composited and analysed.

M2.4 For the purposes of Condition M2 the following definitions apply to the required frequency specified in the tables:

Frequency	Definition
Special Frequency 1	Samples must be taken prior to irrigation of treated water occurring and then yearly thereafter
Special Frequency 2	Samples must be taken annually. An additional representative sample for a full suite of analytes is to be taken at quarterly in situ monitoring should trigger values for electrical conductivity, pH or standing water level at the monitoring point be exceeded

M2.5 For the purposes of Condition M2 the following trigger values apply for quarterly in situ sampling at POINTS 7,8,9,10,11,12,13,14,15,18,20,21,26,27,28,37,38,39,40,41,42,43,56,57,59,60,61,62,63,64,65, 6, 6,78,79,80,81,82:

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Pollutant	Units of measure	Trigger value for additional sampling
Electrical conductivity	microsiemens per centimetre	>95th percentile of baseline data
pH	pH	<5th percentile of baseline data or >95th percentile of baseline data
Standing Water Level	metres	<5th percentile of baseline data

- M2.6 For the purposes of the table(s) above, Special Frequency 1 means that samples must be taken prior to irrigation of treated water occurring, and then yearly thereafter.
- M2.7 The monitoring frequency specified for monitoring point 77 (LWWTPDM1) commences upon the completion of the commissioning stage for the Water and Brine Treatment Plant as outlined in document titled "Energy NSW - Leewood Phase 2 - Water Treatment Plan" dated 19 November 2015.
- M2.8 Surface water monitoring for points 69 and 70 (Biblewindi Ponds) is not required when the ponds are not being used for the storage of produced water
- M2.9 Surface water monitoring for points 75 and 76 (Tintfield Ponds) is not required when the ponds are not being used for the storage of produced water or by-products, such as precipitates or sediments.
- M2.10 Monitoring of groundwater points (sentinel bores) around Tintfield Ponds is not required when the ponds are not being used for storage of produced water or by-products, such as precipitates or sediments.
- M2.11 If the Leewood Water Treatment Plant is not operating and irrigation is not occurring on the irrigation utilisation area, the following applies:
1. Monitoring in accordance with condition M2.2 of treated water (point 77) groundwater (points 80-82) and soil (points 83-86) in irrigation utilisation area is not required if irrigation did not occur in the period since the last monitoring event; and
 2. Prior to recommencement of irrigation after a period in which a monitoring event did not occur for the relevant monitoring point in accordance with the above, monitoring of the point 77, 80-82 and 83-86 will occur and then as per the frequency as set out in condition M2.2.

M3 Testing methods - concentration limits

- M3.1 Subject to any express provision to the contrary in this licence, monitoring for the concentration of a pollutant discharged to waters or applied to a utilisation area must be done in accordance with the Approved Methods Publication unless another method has been approved by the EPA in writing before any tests are conducted.

M4 Testing methods - load limits

Note: Division 3 of the *Protection of the Environment Operations (General) Regulation 2009* requires that monitoring of actual loads of assessable pollutants listed in L2.2 must be carried out in accordance with the relevant load calculation protocol set out for the fee-based activity classification listed in the Administrative Conditions of this licence.

M5 Recording of pollution complaints

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- M5.1 The licensee must keep a legible record of all complaints made to the licensee or any employee or agent of the licensee in relation to pollution arising from any activity to which this licence applies.
- M5.2 The record must include details of the following:
- the date and time of the complaint;
 - the method by which the complaint was made;
 - any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect;
 - the nature of the complaint;
 - the action taken by the licensee in relation to the complaint, including any follow-up contact with the complainant; and
 - if no action was taken by the licensee, the reasons why no action was taken.
- M5.3 The record of a complaint must be kept for at least 4 years after the complaint was made.
- M5.4 The record must be produced to any authorised officer of the EPA who asks to see them.

M6 Telephone complaints line

- M6.1 The licensee must operate during its operating hours a telephone complaints line for the purpose of receiving any complaints from members of the public in relation to activities conducted at the premises or by the vehicle or mobile plant, unless otherwise specified in the licence.
- M6.2 The licensee must notify the public of the complaints line telephone number and the fact that it is a complaints line so that the impacted community knows how to make a complaint.
- M6.3 The preceding two conditions do not apply until : the date of the issue of this licence.

M7 Requirement to monitor volume or mass

- M7.1 For each discharge point or utilisation area specified below, the licensee must monitor:
- the volume of liquids discharged to water or applied to the area;
 - the mass of solids applied to the area;
 - the mass of pollutants emitted to the air;
- at the frequency and using the method and units of measure, specified below.

POINT 69,70,71,72,73,74,75,76

Frequency	Unit of Measure	Sampling Method
Continuous	megalitres	Level sensor and continuous logger

6 Reporting Conditions

R1 Annual return documents

- R1.1 The licensee must complete and supply to the EPA an Annual Return in the approved form comprising:

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1. a Statement of Compliance,
2. a Monitoring and Complaints Summary,
3. a Statement of Compliance - Licence Conditions,
4. a Statement of Compliance - Load based Fee,
5. a Statement of Compliance - Requirement to Prepare Pollution Incident Response Management Plan,
6. a Statement of Compliance - Requirement to Publish Pollution Monitoring Data; and
7. a Statement of Compliance - Environmental Management Systems and Practices.

At the end of each reporting period, the EPA will provide to the licensee notification that the Annual Return is due.

R1.2 An Annual Return must be prepared in respect of each reporting period, except as provided below.

Note: The term "reporting period" is defined in the dictionary at the end of this licence. Do not complete the Annual Return until after the end of the reporting period.

R1.3 Where this licence is transferred from the licensee to a new licensee:

- a) the transferring licensee must prepare an Annual Return for the period commencing on the first day of the reporting period and ending on the date the application for the transfer of the licence to the new licensee is granted; and
- b) the new licensee must prepare an Annual Return for the period commencing on the date the application for the transfer of the licence is granted and ending on the last day of the reporting period.

Note: An application to transfer a licence must be made in the approved form for this purpose.

R1.4 Where this licence is surrendered by the licensee or revoked by the EPA or Minister, the licensee must prepare an Annual Return in respect of the period commencing on the first day of the reporting period and ending on:

- a) in relation to the surrender of a licence - the date when notice in writing of approval of the surrender is given; or
- b) in relation to the revocation of the licence - the date from which notice revoking the licence operates.

R1.5 The Annual Return for the reporting period must be supplied to the EPA via eConnect *EPA* or by registered post not later than 60 days after the end of each reporting period or in the case of a transferring licence not later than 60 days after the date the transfer was granted (the 'due date').

R1.6 Where the licensee is unable to complete a part of the Annual Return by the due date because the licensee was unable to calculate the actual load of a pollutant due to circumstances beyond the licensee's control, the licensee must notify the EPA in writing as soon as practicable, and in any event not later than the due date. The notification must specify:

- a) the assessable pollutants for which the actual load could not be calculated; and
- b) the relevant circumstances that were beyond the control of the licensee.

R1.7 The licensee must retain a copy of the Annual Return supplied to the EPA for a period of at least 4 years after the Annual Return was due to be supplied to the EPA.

R1.8 Within the Annual Return, the Statements of Compliance must be certified and the Monitoring and Complaints Summary must be signed by:

- a) the licence holder; or

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b) by a person approved in writing by the EPA to sign on behalf of the licence holder.

R2 Notification of environmental harm

R2.1 Notifications must be made by telephoning the Environment Line service on 131 555.

Note: The licensee or its employees must notify all relevant authorities of incidents causing or threatening material harm to the environment immediately after the person becomes aware of the incident in accordance with the requirements of Part 5.7 of the Act.

R2.2 The licensee must provide written details of the notification to the EPA within 7 days of the date on which the incident occurred.

R3 Written report

R3.1 Where an authorised officer of the EPA suspects on reasonable grounds that:

- a) where this licence applies to premises, an event has occurred at the premises; or
- b) where this licence applies to vehicles or mobile plant, an event has occurred in connection with the carrying out of the activities authorised by this licence, and the event has caused, is causing or is likely to cause material harm to the environment (whether the harm occurs on or off premises to which the licence applies), the authorised officer may request a written report of the event.

R3.2 The licensee must make all reasonable inquiries in relation to the event and supply the report to the EPA within such time as may be specified in the request.

R3.3 The request may require a report which includes any or all of the following information:

- a) the cause, time and duration of the event;
- b) the type, volume and concentration of every pollutant discharged as a result of the event;
- c) the name, address and business hours telephone number of employees or agents of the licensee, or a specified class of them, who witnessed the event;
- d) the name, address and business hours telephone number of every other person (of whom the licensee is aware) who witnessed the event, unless the licensee has been unable to obtain that information after making reasonable effort;
- e) action taken by the licensee in relation to the event, including any follow-up contact with any complainants;
- f) details of any measure taken or proposed to be taken to prevent or mitigate against a recurrence of such an event; and
- g) any other relevant matters.

R3.4 The EPA may make a written request for further details in relation to any of the above matters if it is not satisfied with the report provided by the licensee. The licensee must provide such further details to the EPA within the time specified in the request.

R4 Other reporting conditions

Spatial Information

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- R4.1 The licensee must submit to the EPA updated spatial information with the Annual Return when there have been infrastructure changes to the licence as identified in condition A2.1. The information must be provided in an ESRI geodatabase or shapefile format or any ESRI compatible dataset in GDA94.

Groundwater Monitoring Report

- R4.2 The licensee must supply with the Annual Return a Groundwater Monitoring Report for groundwater monitoring points identified by this licence which provides:
- an analysis and interpretation of monitoring results and
 - actions to correct any identified adverse trends.

Gas Leak Detection and Repair Program Reporting

- R4.3 The licensee must retain records of the Gas Leak Detection and Repair (LDAR) program for a period of at least four years from the date the leak was detected.

Note: For the purpose of condition R4.3, 'records' must include:

- The total number of leaks detected during the reporting period;
- The type of component/s repaired as part of the LDAR program during the reporting period; and,
- The time taken to complete each repair.

- R4.4 The licensee must submit a brief summary report on the Gas LDAR program with the annual return. The summary report must include, but may not be limited to the following:
- The total number and type of components not repaired within the required timeframes in O6.8.3
 - Reviewing current leak detection practices and technology implemented at the premises to ensure it is fit for purpose
 - The licensee must carry out a full review of the Leak Detection and Repair Program every 5 years. In undertaking the review, the licensee must benchmark the effectiveness of current leak detection practices in the existing LDAR program with best available leak detection practices and technology.

7 General Conditions

G1 Copy of licence kept at the premises or plant

- G1.1 A copy of this licence must be kept at the mobile plant to which the licence applies.
- G1.2 A copy of this licence must be kept at the premises to which the licence applies.
- G1.3 The licence must be produced to any authorised officer of the EPA who asks to see it.
- G1.4 The licence must be available for inspection by any employee or agent of the licensee working at the premises.

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8 Special Conditions

E1 Tintsville Water Management Facility

E1.1 The Tintsville Water Management Facility must not receive produced water until the following measures have been prepared and implemented.

1. A revised Produced Water Management Plan.
2. Any pond receiving produced water has been upgraded to comply with the NSW Government Exploration Code of Practice: Produced Water Management, Storage and Transfer which is subject to amendment from time to time.
3. Installation of double lining with sumps and real time leak detection on any pond receiving produced water.

E2 Special Dictionary

E2.1

Term	Definition
Construction activities	include drilling of wells and construction of infrastructure including pipelines, well pads, water treatment facility, flares and access roads.
Operational activities	includes well maintenance activities as well as all activities not defined under construction activities
Drill cuttings	Drill cuttings are the waste rock and spoil extracted from wells during drilling.
Drill fluid	Water-based fluids used in the drilling process to cool and lubricate the drill bit, and also to carry drill cuttings to the surface.
Completion fluid	A low solid mud or salt solution (brine) used for well testing and upon a well's completion. It is intended to minimise formation damage and to control formation pressure.

E3 Air Impurities

E3.1 Activities occurring at the premises must be carried out in a manner what will minimise the emissions of air pollutants from the premises

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Dictionary

General Dictionary

3DGM [in relation to a concentration limit]	Means the three day geometric mean, which is calculated by multiplying the results of the analysis of three samples collected on consecutive days and then taking the cubed root of that amount. Where one or more of the samples is zero or below the detection limit for the analysis, then 1 or the detection limit respectively should be used in place of those samples
Act	Means the Protection of the Environment Operations Act 1997
activity	Means a scheduled or non-scheduled activity within the meaning of the Protection of the Environment Operations Act 1997
actual load	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
AM	Together with a number, means an ambient air monitoring method of that number prescribed by the <i>Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales</i> .
AMG	Australian Map Grid
anniversary date	The anniversary date is the anniversary each year of the date of issue of the licence. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.
annual return	Is defined in R1.1
Approved Methods Publication	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
assessable pollutants	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
BOD	Means biochemical oxygen demand
CEM	Together with a number, means a continuous emission monitoring method of that number prescribed by the <i>Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales</i> .
COD	Means chemical oxygen demand
composite sample	Unless otherwise specifically approved in writing by the EPA, a sample consisting of 24 individual samples collected at hourly intervals and each having an equivalent volume.
cond.	Means conductivity
environment	Has the same meaning as in the Protection of the Environment Operations Act 1997
environment protection legislation	Has the same meaning as in the Protection of the Environment Administration Act 1991
EPA	Means Environment Protection Authority of New South Wales.
fee-based activity classification	Means the numbered short descriptions in Schedule 1 of the Protection of the Environment Operations (General) Regulation 2009.
general solid waste (non-putrescible)	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997

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flow weighted composite sample	Means a sample whose composites are sized in proportion to the flow at each composites time of collection.
general solid waste (putrescible)	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
grab sample	Means a single sample taken at a point at a single time
hazardous waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
licensee	Means the licence holder described at the front of this licence
load calculation protocol	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
local authority	Has the same meaning as in the Protection of the Environment Operations Act 1997
material harm	Has the same meaning as in section 147 Protection of the Environment Operations Act 1997
MBAS	Means methylene blue active substances
Minister	Means the Minister administering the Protection of the Environment Operations Act 1997
mobile plant	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
motor vehicle	Has the same meaning as in the Protection of the Environment Operations Act 1997
O&G	Means oil and grease
percentile [in relation to a concentration limit of a sample]	Means that percentage [eg.50%] of the number of samples taken that must meet the concentration limit specified in the licence for that pollutant over a specified period of time. In this licence, the specified period of time is the Reporting Period unless otherwise stated in this licence.
plant	Includes all plant within the meaning of the Protection of the Environment Operations Act 1997 as well as motor vehicles.
pollution of waters [or water pollution]	Has the same meaning as in the Protection of the Environment Operations Act 1997
premises	Means the premises described in condition A2.1
public authority	Has the same meaning as in the Protection of the Environment Operations Act 1997
regional office	Means the relevant EPA office referred to in the Contacting the EPA document accompanying this licence
reporting period	For the purposes of this licence, the reporting period means the period of 12 months after the issue of the licence, and each subsequent period of 12 months. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.
restricted solid waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
scheduled activity	Means an activity listed in Schedule 1 of the Protection of the Environment Operations Act 1997
special waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
TM	Together with a number, means a test method of that number prescribed by the <i>Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales</i> .



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TSP	Means total suspended particles
TSS	Means total suspended solids
Type 1 substance	Means the elements antimony, arsenic, cadmium, lead or mercury or any compound containing one or more of those elements
Type 2 substance	Means the elements beryllium, chromium, cobalt, manganese, nickel, selenium, tin or vanadium or any compound containing one or more of those elements
utilisation area	Means any area shown as a utilisation area on a map submitted with the application for this licence
waste	Has the same meaning as in the Protection of the Environment Operations Act 1997
waste type	Means liquid, restricted solid waste, general solid waste (putrescible), general solid waste (non - putrescible), special waste or hazardous waste

Ms Carmen Dwyer

Environment Protection Authority

(By Delegation)

Date of this edition: 01-May-2014

End Notes

2	Licence varied by notice	1525279 issued on 29-Oct-2014
3	Licence varied by notice	1529290 issued on 07-Aug-2015
4	Licence varied by notice	1534515 issued on 26-Nov-2015
5	Licence varied by notice	1537959 issued on 30-Mar-2016
6	Licence varied by notice	1542305 issued on 20-Dec-2016
7	Licence varied by notice	1549128 issued on 18-Jul-2017
8	Licence varied by notice	1557968 issued on 11-Oct-2018
9	Licence varied by notice	1573774 issued on 09-Jan-2019