

Licence Variation

Licence - 20350



SANTOS NSW (EASTERN) PTY LTD
ABN 11 009 321 662
GPO BOX 1010
BRISBANE QLD 4000

Attention: cl 3(a), 3(b)

Notice Number 1549128
File Number EF13/5437
Date 18-Jul-2017

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. The licensee applied to vary the licence on 5 April 2017.
- C. This notice varies the licence to allow irrigation of treated water to occur at the Leewood Water Management Facility.
- D. This notice also includes changes to operating and monitoring requirements associated with the irrigation of treated water.

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:
 - Condition A2.1: Updated reference to the map of the Leewood Water Management Facility.
 - Condition A3.3: Removed to allow irrigation of treated water to occur at the premises.
 - Condition P1.3: Updated map reference in location descriptions for Points 37, 38, 39, 40, 41, 42, 43, 71, 72, 73, 74 and 77 updated. Added Points 80, 81, 82, 83, 84, 85 and 86.
 - Condition O5.2: Updated to reflect updated guidelines.
 - Condition O5.3: Added waste classification condition.

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- Conditions O6.1 to O6.3: Updated to improve clarity.
- Condition O6.4: Added to require that the Soil and Water Management Plan is updated prior to irrigation of treated water occurring.
- Conditions O6.6 and O6.7: Added in relation to irrigation of treated water.
- Condition M2.2: Added monitoring requirements at Points 80, 81 and 82. Changed the frequency of monitoring for calcium at Point 77. Added soil monitoring requirements at Points 83, 84, 85 and 86.
- Condition M2.3: Added definition for Special Method 2.
- Condition M2.5: Added definition for Special Frequency 1 which requires that soil samples must be taken prior to irrigation of treated water occurring.

cl 3(a), 3(b)

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Head Regional Operation Unit
North - Armidale
(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

- 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).

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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	Scale
Petroleum exploration, assessment and production	> 0.50-6 PJ annual production capacity

Region
North - Armidale
Ground Floor, NSW Govt Offices, 85 Faulkner Street
ARMIDALE NSW 2350
Phone: (02) 6773 7000
Fax: (02) 6772 2336
PO Box 494 ARMIDALE
NSW 2350

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Released by the Environment Protection Authority under the GIPA Act Ref: GIPA/EP/482

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Released by the Environment Protection Authority under the GIPA Act. Ref: GIPA EPA482

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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* or the *Petroleum (Onshore) Act*, and approval has not been granted.

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

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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:

'SANTOS NSW (EASTERN) PTY LTD EPL NO 20350 BASE MAP' DATED 26/11/13 AND WITH EPA REFERENCE NUMBER DOC13/86511.
 'SANTOS NSW (EASTERN) PTY LTD EPL NO 20350 NORTH' DATED 26/11/13 AND WITH EPA REFERENCE NUMBER DOC13/86511-01
 'SANTOS NSW (EASTERN) PTY LTD EPL NO 20350 CENTRE' DATED 26/11/13 AND WITH EPA REFERENCE NUMBER DOC13/86511-02
 'SANTOS NSW (EASTERN) PTY LTD EPL NO 20350 SOUTH' DATED 26/11/13 AND WITH EPA REFERENCE NUMBER DOC13/86511-03
 'SANTOS NSW (EASTERN) PTY LTD BIBBLEWINDI WATER MANAGEMENT FACILITY' DATED 26/02/14 AND WITH EPA REFERENCE NUMBER DOC14/23635
 'SANTOS NSW (EASTERN) PTY LTD LEEWOOD WATER MANAGEMENT FACILITY' DATED 16 JUNE 2017 AND WITH EPA REFERENCE NUMBER DOC14/23682
 'SANTOS NSW (EASTERN) PTY LTD TINTSFIELD WATER MANAGEMENT FACILITY' DATED JULY 2016 AND WITH EPA REFERENCE NUMBER DOC14/23671

- A2.2 In relation to A2.1, the premises includes 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.
- A2.3 For the purposes of this licence, the premises also includes 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.
- A2.4 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

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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 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.

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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
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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
7	Groundwater quality monitoring (Bibblwindi 27A)		Shallow aquifer monitoring bore targeting the Upper Pilliga Sandstones labelled 'Bibblwindi 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 (Bibblwindi 27B)		Shallow aquifer monitoring bore targeting the Lower Pilliga Sandstones labelled 'Bibblwindi 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 (Bibblwindi 26H)		Shallow aquifer monitoring bore targeting the Upper Pilliga Sandstone labelled 'Bibblwindi 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 (Bibblwindi 26H(B))		Shallow aquifer monitoring bore targeting the Lower Pilliga Sandstones labelled 'Bibblwindi 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

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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
14	Groundwater quality monitoring (Dewhurst 3A)	Shallow aquifer monitoring bore targetting 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 targetting 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
16	Groundwater quality monitoring (Nyora A)	Shallow aquifer monitoring bore targetting the Orallo Formation labelled 'Nyora A' 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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17	Groundwater quality monitoring (Nyora B)	Shallow aquifer monitoring bore targetting the Upper Pilliga Sandstones labelled 'Nyora 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
18	Groundwater quality monitoring (Bibblewindi 27C)	Shallow aquifer monitoring bore targetting 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
19	Groundwater quality monitoring (Dewhurst 13)	Deep aquifer monitoring targetting the Maules Creek Group and the Goonbri Formation, labelled 'Dewhurst 13' 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 targetting 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 targetting 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
22	Groundwater quality monitoring (Tullamullen A)	Shallow aquifer monitoring bore targetting the Napperby formation and labelled 'Tullamullen A' on map titled 'Santos NSW (Eastern) Pty Ltd Discharge and Monitoring Point Locations' dated 22/11/13 and with EPA reference No. DOC13/86651
23	Groundwater quality monitoring (Tullamullen B)	Shallow aquifer monitoring bore targetting the Digby formation and labelled 'Tullamullen 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

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24	Groundwater quality monitoring (BWDMW13D)	Groundwater monitoring bore labelled BWDMW13D on map titled 'Santos NSW (Eastern) Pty Ltd Bibblewindi Water Management Facility' dated 26/02/2014 and with EPA reference No DOC14/23635
25	Groundwater quality monitoring (BWDMW13S)	Groundwater monitoring bore labelled BWDMW13S on map titled 'Santos NSW (Eastern) Pty Ltd Bibblewindi Water Management Facility' dated 26/02/2014 and with EPA reference No DOC14/23635
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
29	Groundwater quality monitoring (BWDMW2)	Groundwater monitoring bore labelled BWDMW2 on map titled 'Santos NSW (Eastern) Pty Ltd Bibblewindi Water Management Facility' dated 26/02/2014 and with EPA reference No DOC14/23635
30	Groundwater quality monitoring (BWDMW3)	Groundwater monitoring bore labelled BWDMW3 on map titled 'Santos NSW (Eastern) Pty Ltd Bibblewindi Water Management Facility' dated 26/02/2014 and with EPA reference No DOC14/23635
31	Groundwater quality monitoring (BWDMW4D)	Groundwater monitoring bore labelled BWDMW4D on map titled 'Santos NSW (Eastern) Pty Ltd Bibblewindi Water Management Facility' dated 26/02/2014 and with EPA reference No DOC14/23635
32	Groundwater quality monitoring (BWDMW4)	Groundwater monitoring bore labelled BWDMW4 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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33	Groundwater quality monitoring (BWDMW15S)	Groundwater monitoring bore labelled BWDMW15S on map titled 'Santos NSW (Eastern) Pty Ltd Bibblewindi Water Management Facility' dated 26/02/2014 and with EPA reference No DOC14/23635
34	Groundwater quality monitoring (BWDMW15D)	Groundwater monitoring bore labelled BWDMW15D on map titled 'Santos NSW (Eastern) Pty Ltd Bibblewindi Water Management Facility' dated 26/02/2014 and with EPA reference No DOC14/23635
35	Groundwater quality monitoring (BWDMW16S)	Groundwater monitoring bore labelled BWDMW16S on map titled 'Santos NSW (Eastern) Pty Ltd Bibblewindi Water Management Facility' dated 26/02/2014 and with EPA reference No DOC14/23635
36	Groundwater quality monitoring (BWDMW16D)	Groundwater monitoring bore labelled BWDMW16D on map titled 'Santos NSW (Eastern) Pty Ltd Bibblewindi Water Management Facility' dated 26/02/2014 and with EPA reference No DOC14/23635
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

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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
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 (Biblewindi 28A)	Shallow aquifer monitoring bore labelled 'Biblewindi 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

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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
50	Groundwater quality monitoring (WPKMW01)	Groundwater monitoring bore labelled 'WPKMW01' on map titled 'Santos NSW (Eastern) Pty Ltd Tintfield Water Management Facility' dated July 2016 and with EPA reference No. DOC14/23671
51	Groundwater quality monitoring (WPKMW01D)	Groundwater monitoring bore labelled 'WPKMW01D' on map titled 'Santos NSW (Eastern) Pty Ltd Tintfield Water Management Facility' dated July 2016 and with EPA reference No. DOC14/23671
52	Groundwater quality monitoring (WPKMW02)	Groundwater monitoring bore labelled 'WPKMW02' on map titled 'Santos NSW (Eastern) Pty Ltd Tintfield Water Management Facility' dated July 2016 and with EPA reference No. DOC14/23671
53	Groundwater quality monitoring (WPKMW04)	Groundwater monitoring bore labelled 'WPKMW04' on map titled 'Santos NSW (Eastern) Pty Ltd Tintfield Water Management Facility' dated July 2016 and with EPA reference No. DOC14/23671
55	Groundwater quality monitoring (WPKMW08)	Groundwater monitoring bore labelled 'WPKMW08' on map titled 'Santos NSW (Eastern) Pty Ltd Tintfield Water Management Facility' dated July 2016 and with EPA reference No. DOC14/23671
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

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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
58	Groundwater quality monitoring (WPKMW12S)	Groundwater monitoring bore labelled 'WPKMW12S' 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
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

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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
67	Groundwater quality monitoring (WPKMW17D)	Groundwater monitoring bore labelled 'WPKMW17D' on map titled 'Santos NSW (Eastern) Pty Ltd Tintfield Water Management Facility' dated July 2016 and with EPA reference No. DOC14/23671
68	Groundwater quality monitoring (WPKMW17S)	Groundwater monitoring bore labelled 'WPKMW17S' 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
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

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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 "LWWTDPDM1" 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
79	Groundwater quality monitoring (WPKMW18I)		Groundwater monitoring bore labelled 'WPKMW18I' on map titled 'Santos NSW (Eastern) Pty Ltd Tintsville 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

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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

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.

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- 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.

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 3.1:
- Day is defined as the period from 7am to 6pm Monday to Saturday and 8am to 6pm Sundays and Public Holidays;
 - Evening is defined as the period from 6pm to 10pm; and
 - Night is defined as the period from 10pm to 7am Monday to Saturday and 10pm to 8am Sundays and Public Holidays.

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- L4.3 To determine compliance:
- a) with the Leq(15 minute) noise limits in condition L3.2, 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 L3.2, 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 L3.2.
- L4.4 A non-compliance of condition L3.2 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 L3.2; and/or
 - at a point other than the most affected point at a location.
- L4.5 The noise limits set out in condition L3.2 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.
- L4.6 For the purposes of condition L3.5:
- 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.

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L5.2 Exceptions to standard construction hours

The following activities may be carried out outside of the hours permitted by Condition L4.1:

- a) Construction work that causes $L_{Aeq(15\text{minute})}$ 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.

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.

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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 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.

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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).

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:

- in a legible form, or in a form that can readily be reduced to a legible form;
- kept for at least 4 years after the monitoring or event to which they relate took place; and
- 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:

- the date(s) on which the sample was taken;
- the time(s) at which the sample was collected;
- the point at which the sample was taken; and
- the name of the person who collected the sample.

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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 7,8,9,10,11,12,13,14,15,16,17,18,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,50,51,52,53,55,56,57,58,59,60,61,62,63,64,65,66,67,68,78,79,80,81,82

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
Fluoride	milligrams per litre	Every 6 months	Grab sample
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
Methane	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
Potassium	milligrams per litre	Every 6 months	Grab sample
Reactive Phosphorus	milligrams per litre	Every 6 months	Grab sample

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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
Standing Water Level	metres	Quarterly	In situ
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
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

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

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

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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

POINT 77

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

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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
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

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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 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.
- M2.5 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.

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

- 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.

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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

M8 Other monitoring and recording conditions

Gas Leak Detection and Repair Program

- M8.1 The licensee must operate a Leak Detection and Repair (LDAR) program for all relevant components of plant and equipment in order to detect gas leaks.
- M8.2 The LDAR program must monitor for the detection of leaks in accordance with a method that is to be negotiated between the licensee and the EPA by 30 July 2014.

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:
- a Statement of Compliance,
 - a Monitoring and Complaints Summary,
 - a Statement of Compliance - Licence Conditions,

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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 a copy of the form that must be completed and returned to the EPA.

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

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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

R4.1 The licensee must submit to the EPA updated spatial information with the Annual Return when there have

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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 Summary Report

- R4.3 The licensee must submit a brief summary report on the Leak Detection and Repair (LDAR) program with the annual return. The summary report must include, but may not be limited to:
- The total number of components inspected, as well as the number and percentage of minor, major and significant leaking components found by component types;
 - The type of components and the scale of the leak for any equipment where leaks are found;
 - The emission level of leaking equipment and emission level of re-check after leak was repaired;
 - The repair responses and times as listed in the table below.

Table: Repair Responses and Times

Scale of leak (ppmv)	Initial remedial repair in response	Actual repair time
1000 - <10000 (Minor)		
>=10000 - <50000 (Major)		
>=50000 (Significant)		

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.

8 Special Conditions

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E1 Liner Integrity Monitoring Program

E1.1 The licensee must implement the following Liner Integrity Monitoring Program for the Tintsville Water Management Facility.

1. Operate the ponds in a 'duty' and 'standby' format until 31 December 2019 as described in the table below.
2. Inspect the liner of the standby pond by the deadlines specified in the table below.
3. The inspections must be conducted by a qualified third party.
4. The licensee must provide a minimum of seven (7) days' notice to the EPA before each transfer event.
5. Any perforations observed during the liner inspection program must be reported to the EPA before the close of business (5pm) on the day that they are observed.
6. The water level in the duty pond must be monitored and recorded on a weekly basis. Any water added or extracted from the duty pond must also be recorded.
7. A report must be prepared and provided to the EPA within four weeks of the deadlines specified in the table below. The report must include the following:

- a) A summary of the findings of the liner inspection.
- b) Photos of all identified defects.
- c) Map showing locations of all defects.
- d) Verification documentation for all repairs.
- e) An assessment of the likelihood of identified defects resulting in leakage and extent of any leakage.
- f) Historical operational use during the past reporting period including data detailing any additions or extractions from the pond for the preceding 12 months.

Date works must be completed before	Pond 1	Pond 2
16 December 2016	Transfer water to pond 2, and convert to standby by mode. Inspect and report in accordance with the above conditions	Receive water from pond 1 and convert to 'duty' mode
15 December 2017	Receive water from pond 2 and convert to 'duty' mode	Transfer water to pond 1, and convert to standby by mode. Inspect and report in accordance with the above conditions
16 December 2018	Transfer water to pond 2, and convert to standby by mode. Inspect and report in accordance with the above conditions	Receive water from pond 1 and convert to 'duty' mode
15 December 2019	Produced water transferred to Leewood and taken out of service, or upgraded to comply with Code of Practice as required in Condition E1.2	Produced water transferred to Leewood and taken out of service, or upgraded to comply with Code of Practice as required in Condition E1.2

E1.2 By 15 December 2019, Santos will either; transfer the produced water to Leewood and take the Tintsville ponds out of service; OR have upgrade the ponds in compliance with the NSW Government's Exploration Code of Practice: Produced water management, storage and transfer, including installing a double liner with sumps and real time leak detection.

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E2 Special Dictionary

E2.1 .

Construction activities	include drilling of wells and construction of inf
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

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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

cl 3(a), 3(b)

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