Environment Protection Authority

COMPLIANCE AUDIT PROGRAM

NSW EPA

ENVIRONMENT PROTECTION AUTHORITY

Environment
Protection
Authority
New South Wales

ENVIRONMENT PROTECTION AUTHORITY

FINAL

COMPLIANCE AUDIT REPORT
(FOCUSSING ON LOAD BASED LICENSING REQUIREMENTS)

INCITEC LIMITED
COCKLE CREEK WORKS
FIRST STREET
BOOLAROO
NSW 2284

AUGUST 2003

EXECUTIVE SUMMARY

An EPA Compliance Audit was undertaken at the Incitec Cockle Creek Works located at First Street, Boolaroo, as part of a state wide audit program. The main objectives of the audit were to assess compliance with the Load-Based Licensing (LBL) requirements of the: *Protection of the Environment Operations (General) Regulation 1998; Load Calculation Protocol* (May 2002); and the environment protection licence (Number 208) issued to the enterprise for the reporting period between 31 October 2001 and 30 October 2002. This audit report also provides a time frame for follow-up action to address non-compliance.

Assessment of compliance was undertaken by a detailed site inspection, discussion with officials of the Enterprise and a review of all records and documentation relating to LBL requirements specific to the Enterprise. The procedures and protocols for conducting compliance audits are detailed in the EPA Compliance Audit Handbook (1996). Officers of the EPA carried out the site inspection on 12 March 2003.

The audit established that during the reporting period 2001-2002 the majority of LBL requirements specific to the Enterprise were being complied with.

The non-compliances, which the audit identified related to the following:

- The use of unapproved analysis methods for air and water pollutants;
- The lack of records of a program specification;
- The licensee did not have a sample handling procedure to guarantee the security and integrity of the sample results;
- The use of an uncertified laboratory for conducting water analysis;
- Failure to calibrate flow monitoring equipment; and,
- Sampling records did not include the time at which the samples were taken, point at which the samples are taken or the name of the person who collected the sample.

Issues of concern identified by the audit in relation to the LBL requirements of the POEO Licence No. 208 were:

- Load limits for Coarse Particulates (applicable from 5/2/2002).

As part of the audit follow-up procedures, any incorrect data submitted and used to calculate Load Based Fees reported in the Annual Return for the 2001/02 reporting period will be amended and updated on EPA administrative records. In addition EPA procedures for reconciling any fee discrepancy as a result of incorrect data will be initiated and the Enterprise will be informed of any action required to be taken.

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1.0 INTRODUCTION

An EPA Compliance Audit has been undertaken at the Incitec Cockle Creek Works located at First Street, Boolaroo. The audit focused on the Enterprise's compliance with Load Based Licensing (LBL) requirements, as part of a state wide program of compliance audits. The audit inspection was undertaken on 12 March 2003.

The procedures and processes for conducting EPA Compliance Audits are detailed in the *EPA Compliance Audit Handbook.*

This report has been prepared to present the findings of the audit and no responsibility is accepted for its use in any other context, or for any other purpose.

1.1 Audit objectives

The objectives of the audit were to:

- determine whether the enterprise is complying with all LBL requirements under environmental legislation and statutory instruments administered by the EPA;
- determine whether the enterprise has calculated the pollutant load using the appropriate methodology as stated in the Load Calculation Protocol; and
- outline a time frame for follow-up action to address any non-compliance identified.

1.2 Scope of the audit

The scope of the audit was limited to an examination of the activities undertaken in association with LBL requirements at the Incitec Cockle Creek Works located at First Street, Boolaroo during the reporting period between 31 October 2001 and 30 October 2002.

Activities examined during the audit included:

- Raw materials handling;
- Storage of chemicals and fuels;
- Production of fertiliser;
- Storage and handling of finished products;
- Sampling and analysis of air and water;
- Record keeping; and
- Calculation of the pollution load from the activity.

1.3 Audit criteria, evidence and findings

Assessment of compliance was undertaken against the following audit criteria:

- the LBL requirements in the *Protection of the Environment Operations (General) Regulation 1998*;
- the *Load Calculation Protocol* (EPA, gazetted June 1999);
- the *Load Calculation Protocol* (EPA, gazetted May 2002) including any revised methods agreed to in writing between the licensee and the EPA ; and,
- the LBL requirements set out in Environment Protection Licence No. 208 issued under the Protection of the Environment Operations Act (POEO) 1997, with 31 October being the anniversary date.

Audit evidence was collected during discussions with site personnel, examination of documentation provided by the licensee and/or contained on EPA files, together with observations made during the audit inspection.

Findings of non-compliance with the LBL requirements are summarised in an action program, with a time frame for follow-up action necessary to address any non-compliance identified within the scope of the audit.

1.4 Premises and process description

Incitec Ltd operates a fertiliser manufacturing plant located at First Street, Boolaroo (in the south western suburbs of Newcastle). The plant produces a range of superphosphate fertilisers. The process involves treating phosphate rock with sulphuric acid to increase the solubility of phosphorus, making it more available for plant uptake. Phosphate rock is imported to Australia through the Incitec facility at Koorangang Island, where the product is crushed to appropriate particle size. The crushed rock is then transported by road tanker to the Cockle Creek site.

The Cockle Creek facility produces approximately 330,000 tonnes of fertiliser per year. The manufacturing process involves the reaction of ground phosphate rock with 65 – 75% sulphuric acid. Rock and acid are mixed in a reaction vessel, held in an enclosed area (or Den) while the reaction goes to partial completion (approximately 30 minutes). The material is then transferred to a storage area where the reaction continues. Following storage (or curing) the material is loaded onto trucks or trains for transportation off site (for packaging or direct sale).

1.5 Statutory instruments issued to the Enterprise

The EPA has issued the following statutory instruments to the Enterprise:

- A licence (No. 208) under the Protection of the Environment Operations Act (POEO) 1997, with 31 October being the anniversary date.

2.0 ASSESSMENT OF COMPLIANCE

2.1 Compliance with Audit Criteria

The findings of the audit indicate that the majority of LBL requirements were being complied with.

Details of assessment of compliance with the audit criteria are presented in tables as follows: the Load Calculation Protocol in Table 2.1(a); Licence No. 208 in 2.1 (b) and the Protection of the Environment Operations (General) Regulation 1998 in Table 2.1(c).

Table 2.1(a): Compliance with Load Calculation Protocol

ASSESSMENT OF COMPLIANCE WITH LOAD-BASED LICENSING REQUIREMENTS			
CONDITION NO.	**COMPLIANCE**	**COMMENT**	**ACTION REQUIRED BY THE ENTERPRISE**
1.2 Licensee must personally certify load calculations	Yes		
2.1 (1) General requirements for source monitoring	No	Water samples: All water samples used in load calculations are collected at EPA licensed discharge point 1. This sample point discharges spent scrubber liquor from the premises. However the licence also contains three other water discharge points (EPA licence points 16, 17 & 18). Discharge from these points occurs only during rainfall events and these may contribute to the loads of assessable water pollutants discharged from the premises. These discharge events are monitored for Phosphorus, however no flow measurements are taken and therefore it is not possible to calculate the load generated. The main source of Phosphorus in this runoff water is from dust and other material on roadways and sealed surfaces. While the sampling points are representative, the water monitoring procedures do not provide data representative of the actual loads discharged from the premises. See additional comments on monitoring procedures in 2.1(3)	The licensee must establish sampling points and monitoring procedures to provide data representative of the actual loads generated at the facility.
	Yes	Air samples: The major point source of air emissions is the DEN Scrubber stack. The licensee carried out three stack tests on this discharge during the reporting period. In addition the licensee carried out a fugitive emissions study on the plant focussing on the storage shed. All air monitoring was conducted by external consultants.	

2.1 (2) General requirements for source monitoring	Yes	Requirements of the EPA licence.	
	No	**EPA Approved Methods for the Sampling and Analysis of Air Pollutants in NSW** There are three assessable air pollutants applicable to this activity. The licensee has used the services of an external laboratory to conduct the analysis of air pollutants. The analysis methods for Coarse Particulates, Fine Particulates and Fluoride used by this laboratory are listed as follows: AS 2724.3, AS 3580.9.6, AS 3580.10.1, AS 3580.10.2 and in-house method QWI-EN/EA 142. The EPA approved methods manual for air pollutants lists the following analysis methods; Fluoride: USEPA Method 13A or 13B; Coarse Particulates: other approved method 9 and Fine Particulates: USEPA (1997) method 201 or 201A. The external laboratory is not using the approved test methods for the analysis of air pollutants. **EPA Approved Methods for the Sampling and Analysis of Water Pollutants in NSW** The EPA approved methods manual lists the flowing analysis methods for Total Phosphorus; Persulphate digestion APHA section 4500-P B.5; or Jirka Modification followed by APHA section 4500-P C,D,E or F. Analysis for Total Phosphorus has been carried out by the licensee using an "inhouse" method based on APHA 4500-P C. Many of the steps outlined in the procedure provided by the licensee varied significantly from the APHA 4500-P C method. The laboratory is not using the approved test method for the analysis of water pollutants.	The licensee must conduct monitoring strictly in accordance with the *EPA Approved Methods for the Sampling and Analysis of Water Pollutants in NSW and EPA Approved Methods for the Sampling and Analysis of Air Pollutants in NSW.*

2.1 (3) General requirements for source monitoring	Yes	Records of actual monitoring undertaken	
	No	Program specification The audit team were advised by the site representatives that no program specification describing the intended monitoring was prepared for the reporting period. Sample handling procedures Water monitoring: The audit team were advised by the site representatives that no sample handling procedures used to guarantee the security and integrity of the sample results were prepared for the reporting period. Air monitoring: The licensee engaged the services of an external consultant to undertake stack testing and fugitive emissions testing during the reporting period. The consultants provided sample handling procedures for Fluoride (only) to the EPA. These procedures did not provide details of procedures used to guarantee the security and integrity of the sample results.	For auditing purposes the licensee must keep all records used to calculate licence fees including a program specification and sample handling procedures used to guarantee the security and integrity of sample results.
2.1 (4) General requirements for source monitoring	Yes		
2.1.1 Practical Quantification Limits (PQL's)	This is a statement advising the licensee that they may use PQL's in load calculations, if the results are below the PQL's listed in Table 2 of the Load Calculation Protocol. It was noted that the only parameters relevant to this premises is Total Phosphorus (with a PQL of 0.02 mg/l). It was noted that the licensee has not used PQL's in the calculation of actual loads of Phosphorus.		

<table>
<tr><td>2.1.2
Missed samples</td><td colspan="3">Not applicable

<u>Chemical analysis</u>
No samples for chemical analysis were missed by the licensee during the reporting period. The minimum sampling requirements are set out in Table 4 of the Load Calculation Protocol. This table indicates that for Incitec (average Dry-Weather Flow of 9 kL/day) sampling of Total Phosphorus should be conducted at a minimum frequency of quarterly sampling. The licensee has conducted daily testing of total phosphorus in accordance with the licence requirements.

<u>Flow measurements</u>
No flow measurements were missed by the licensee during the reporting period. The total flow discharged through discharge point 1 is measured using pump run hours. The licensee has recorded daily flow measurements based on the pump run hour data. It is noted that the volume reported does not include stormwater, which enters the system downstream of the pump. See comments in section 2.2.2.

<u>Air pollutants</u>
Two stack tests were carried out during the reporting period. Section 2.1.2 is not applicable as a required frequency of sampling is not set out in Section 2.3 for the monitoring of air pollutants.</td></tr>
<tr><td rowspan="2">2.1.3
Laboratory accreditation requirements</td><td>Yes</td><td><u>Air pollutants</u>
Use of a certified laboratory for testing of assessable air pollutants and both laboratories having an effective quality assurance program.</td><td></td></tr>
<tr><td>No</td><td><u>Water Pollutants</u>
Use of a non-certified laboratory for analysis of water pollutants, failure to send duplicate water samples to a certified laboratory for blind analysis and failure to advise the EPA of the use of a non accredited laboratory.
Analysis of assessable water pollutants (total phosphorus) is undertaken at the Incitec Kooragang Island laboratory. This laboratory is not certified to do this analysis by an independent accreditation body acceptable to the EPA such as NATA. In order to use a non certified laboratory the licensee must send duplicates of 5% of samples to certified analysis and must inform the EPA in writing of their use of a non-certified laboratory.</td><td>The licensee must ensure that analysis of water pollutants is carried out at a laboratory certified to do this analysis by an independent accreditation body acceptable to the EPA such as NATA. If the licensee continues to use a non certified laboratory they must send duplicate water samples to a certified laboratory for blind analysis and advise the EPA in writing of their use of a non accredited laboratory.</td></tr>
</table>

2.2.1 Monitoring of discharge concentration	Yes		
2.2.2 Monitoring of discharge volume	No	Flow is monitored through EPA authorised discharge point 1 using pump run hours. The site representatives advised that stormwater can enter the system (downstream of the pump) thereby increasing the volume discharged through the authorised licence discharge point. While this additional flow is mainly stormwater runoff – it is likely that this will contain loads of assessable pollutants. In addition the three additional water discharge points (Points 16, 17 & 18) also contain loads of assessable pollutants. The flow volume through each of these discharge points is not monitored.	The flow monitoring apparatus must be located so that the whole volume that contains loads of assessable pollutants is calculated
2.2.2 Accuracy and calibration of flow monitoring equipment (keeping of records of calibrations)	No	Discharge volume through authorised discharge point 1 is measured by calculating pump run time and multiplying the run time in minutes by a factor of 7.5 litres per minute. The site representative advised that no calibration was undertaken during the reporting period to establish the accuracy of the flow data.	The licensee must calibrate (or where appropriate service or adjust) flow monitoring equipment according to the manufacturers instructions or at least once a year to demonstrate the range of accuracy that has been achieved.
2.2.3 Accounting for received background pollutants	Not applicable The requirements of this section of the Load Calculation Protocol did not apply to the premises. All pollutant loads contained in discharges from licensed activities originated from the "polluting" activities of the licensee.		

2.2.4 Deducting pollutant loads transferred to other licensed activities.	Not applicable The licensee has not applied for any deduction for transferring pollutant loads to other licensed premises. All assessable loads are discharged through the authorised discharge points to a drain that flows to Cockle Creek. No loads are transferred to another licensed activity.		
2.2.5 Calculating actual pollutant loads discharged to waters.	No	1. Calculate the observed load: The enterprise has not used the correct procedure in 2.2.5 to calculate the actual pollutant load discharged to waters. The licensee has calculated the daily load using the following formula; run time of the discharge pump*750* concentration of pollutant 1,000,000. This method of calculating the observed daily load is not the method specified in the LCP. It should be noted that the use of the method specified in 2.2.5 would provide the same result.	The licensee must use the steps outlined in section 2.2.5 of the Load Calculation Protocol to calculate the actual loads of the assessable pollutants and record the results on a copy of the load calculation worksheet provided in Part B of the Protocol.
	Yes	2. Sum the observed daily loads: 3. Divide the observed daily load by the total volume for those days: 4. Multiply the flow weighted concentration by the total volume for the fee period: Copy calculations into the worksheet in part B of the protocol	
2.3 Further requirements for monitoring of air pollutants	Yes		

2.3.1 Continuous Emission Monitoring Systems	Not Applicable The licensee has not used Continuous Emission Monitoring Systems to calculate actual loads of pollutants at the premises. The licensee carried out two stack tests over the period and carried out a range of fugitive emissions testing to calculate the actual loads.		
2.3.2 Periodic emission monitoring	Yes		
2.3.3 Calculating actual loads of air pollutants from periodic monitoring	Not determined	The site representative advised that a combination of fugitive emissions testing and stack testing were used to calculate the actual load of assessable air pollutants. Records of the fugitive emissions results and (part of) the stack testing results were provided to the EPA during the audit. The licensee was unable to provide details of the steps used to calculate the actual load of air pollutants for the reporting period and no records of the calculations could be provided to the EPA. As such it could not be determined if the correct steps (outlined in Section 2.3.3) were undertaken to calculate the actual loads of air pollutants.	The licensee must use the steps outlined in section 2.3.3 of the Load Calculation Protocol to calculate the actual loads of air pollutants from periodic monitoring
2.4 Variations to monitoring methods for air and water pollutants	Not applicable The enterprise has not proposed a variation of monitoring requirements. Analysis is carried out by external contractors (air pollutants) and Incitec Laboratory at Kooragang Island (water pollutant).		
3 Using emission factors to calculate actual loads	This is a series of statements describing the use of emission factors to calculate the loads of assessable pollutants from certain activities. It is noted that both generic and site specific emission factors are acceptable methods for use in the calculation of the loads of assessable air pollutants for this activity (production of single superphosphate).		

3.1 Generic Emission Factors	Not applicable The enterprise has not used generic emission factors to calculate the loads from the premises. The licensee has used source monitoring to calculate the annual load.
3.2 Site Specific Emission Factors	Not applicable The enterprise has not used generic emission factors to calculate the loads from the premises. The licensee has used source monitoring to calculate the annual load.
3.2.1 Predictive Emission Monitoring System	Not Applicable The enterprise has not used Predictive Emission Monitoring System (PEMS) to calculate the loads from the premises. The licensee has used source monitoring to calculate the annual load. It is noted that PEMS is an acceptable method for calculating loads for single superphosphate production (see table in section 7.4).
4 Using mass balance calculations	Not Applicable The enterprise has not used any Mass Balance calculation in the calculation of the loads at the premises. Source monitoring has been used in the calculations. It is noted that mass balance calculations are not a valid method of calculating loads at single superphosphate production facilities.
5 Weighted pollutant loads	This is a statement advising the licensee that weighted pollutant loads may be calculated and this may result in lower fees payable to the EPA. No assessment of compliance is required.
5.1 Effluent reuse	These are statements advising the licensee that effluent reuse should be sustainable, environmentally safe and agronomically appropriate. It also advises that Section 120 of the POEO Act makes it an offence to cause or permit pollution of NSW waters. No assessment of compliance is required.
5.1.1 Effluent reuse on the licensed premises	Not applicable The licensee does not reuse effluent on the licensed premises. The premises described on Environment Protection Licence No. 208 for the reporting period relates to the premises at First St, Boolaroo. The site representative advised that some stormwater captured at the premises is reused as part of the process – however this is not measured as part of the actual load discharged and no discount is sought for this load.

5.1.2 Transfer of effluent for reuse beyond the licensed premises	Not applicable The enterprise does not transfer effluent for reuse beyond the licensed premises. All effluent is discharged to the tributary of Cockle Creek via the licensed discharge points.
5.2 Flow optimised discharges	Not applicable The licensee has not sought a discount for flow optimised discharges.
5.3 Discount for the Hunter River Salinity Trading Scheme	Not applicable The premises are not located within the Hunter River catchment and therefore the conditions relating to the Hunter River Salinity Trading Scheme do not apply.
6 Load reduction agreements	Not applicable The enterprise has not entered into any load reduction agreements for this licence.

Table 2.1(b): Compliance with Environment Protection Licence

ASSESSMENT OF COMPLIANCE WITH LOAD-BASED LICENSING REQUIREMENTS			
CONDITION NO.	**COMPLIANCE**	**COMMENT**	**ACTION REQUIRED BY THE ENTERPRISE**
Licence 208 **A1.2**	Yes		
Licence 208 **L2.1**	Not applicable This condition did not apply for the entire reporting period. From the commencement of the reporting period (31 October 2001) until 4 February 2002 no load limits for assessable pollutants were specified in the table under his licence condition. A licence variation came into effect on 5 February 2002 and this licence variation added load limits to the licence. These load limits were Coarse Particulates (41530 kg); Fine Particulates (208945 kg); Fluoride (129780 kg) and Total Phosphorus (623kg). See further observation regarding exceedance of load limits for Coarse Particulates.		
Licence 208 **L2.2**	No	See comments re section 2.2.2 & 2.2.5 of the LCP.	The licensee must calculate the actual load of an assessable pollutant in accordance with the relevant load calculation protocol.
Licence 208 **M1.1**	Yes		
Licence 208 **M1.2 (a) & (c)**	Yes		
Licence 208 **M1.2 (b)**	Beyond the scope of the audit It is beyond the scope of the audit to assess if the records made of the monitoring undertaken within the reporting period will be kept for 4 years. The EPA has no reason to believe that the records will not be kept for 4 years.		
Licence 208 **M1.3 (a)**	Yes	Date which the sample was taken	

Licence 208 **M1.3 (b),(c) & (d)**	No	<u>The time at which the samples were taken, point at which the samples are taken and the name of the person who collected the sample.</u> Records of samples required to be collected for air and water analysis were provided to the EPA as required. The records consisted of spreadsheets and tables summarising the monitoring data from the premises. These records did not include **the time at which the samples were taken, point at which the samples were taken or the name of the person who collected the sample.**	The licensee must keep records in respect of any samples required to be collected for the purposes of this licence including the time at which the samples were taken, point at which the samples are taken or the name of the person who collected the sample.
Licence 208 **R1.1**	Yes		
Licence 208 **R1.2**	Yes		
Licence 208 **R1.3**	Not applicable The licence has not been transferred to a new licensee during the reporting period.		
Licence 208 **R1.4**	Not applicable The licence has not been surrendered, revoked by the EPA or the Minister during the reporting period.		
Licence 208 **R1.5**	Yes		
Licence 208 **R1.6**	Not applicable The licensee was able to complete the annual return and therefore this condition does not apply. The site representative advised that the licensee was able to complete each part of the annual return as required.		
Licence 208 **R1.7**	Beyond the scope It is beyond the scope of the audit to assess if the licensee will keep a copy of the annual return for 4 years.		
Licence 208 **R1.8**	Yes		

Licence 208 **R1.9**	This is a statement advising the licensee that any person who has been given written approval to certify a certificate of compliance under a licence issued under the Pollution Control Act 1970 is taken to be approved for the purposes of this condition until the date of the first review of this licence.

Table 2.1(c): Compliance with Legislation – Protection of the Environment Operations (General) Regulation 1998

ASSESSMENT OF COMPLIANCE WITH LOAD-BASED LICENSING REQUIREMENTS			
CONDITION NO.	**COMPLIANCE**	**COMMENT**	**ACTION REQUIRED BY THE ENTERPRISE**
POEO (General) Regulation 1998 **18(1)**	No	Calculation of actual load See comments re section 2.2.2 & 2.2.5 of the LCP	The licensee must calculate the actual load for each assessable pollutant discharged under the licensee's licence during the licence fee period (whether or not the pollutant was discharged in accordance with the licence). For that purpose, the licensee must carry out all necessary monitoring and other steps to enable the calculation to be made for the relevant period.
POEO (General) Regulation 1998 **18(2)**	Yes		
POEO (General) Regulation 1998 **18(5)**	Not applicable All effluent at the premises is discharged to a tributary of Cockle Creek (mainly via an authorised discharge point). The licensee has not calculated a weighted load for any portion of the effluent at the premises.		
POEO (General) Regulation 1998 **22(1)**	Yes	Step 1 - Selection of the applicable fee rate threshold factor	
		Step 2 - Determination of the actual quantity of the activity	
		Step 3 - Calculation of the fee rate threshold (FRT)	

POEO (General) Regulation 1998 **23(1)**	Yes	Step 1 - Determination of the classification or classifications of the activity	
		Step 2 - Determination of the assessable pollutants for each activity classification	
		Step 3 - Determination of the assessable load of each assessable pollutant	
		Step 4 - Calculation of fee rate threshold for each assessable pollutant	
		Step 5 - Calculation of fee for each pollutant	
		Step 6 - totalling of the fees for each assessable pollutant	
		Step 7 - subtracting the administrative fee	

3.0 FURTHER OBSERVATIONS

Further observations are recorded where issues were observed that do not strictly relate to the scope of the audit or assessment of compliance. Further observations are considered to be indicators of potential non-compliances or areas where environmental performance may be improved.

Load limits for Coarse Particulates (applicable from 5/2/2002).

Load limits for each assessable pollutant were added to the Environment Protection Licence on 5 February 2002. These limits are listed under condition L2.1 of the licence. The load limit for Coarse Particulates is 41,530 kg/annum, however during the reporting period being audited the enterprise reported a load of 66,395.3 kg for Coarse Particulates. While the load limits did not apply for the complete reporting period it appears that the enterprise may have difficulty in meeting this load limit for future reporting periods.

4.0 SUMMARY OF LOAD-BASED FEE FINDINGS

Based on the information provided, the audit identified that the Licensee has accurately calculated the load of assessable pollutants emitted during the 2001/2002 reporting period.

5.0 ACTION PROGRAM

Condition No.	*Action Required by the Enterprise*	*Complete By*
2.1 (1) General requirements for source monitoring	The licensee must establish sampling points and monitoring procedures to provide data representative of the actual loads generated at the facility. The Licensee must provide advice to the EPA on whether sampling points and monitoring procedures have been established to provide data representative of the actual loads generated at the facility.	Next annual return With the Annual Return required for the current reporting period (31 October 2002 – 30 October 2003)
2.1 (2) General requirements for source monitoring	The licensee must conduct monitoring strictly in accordance with the *EPA Approved Methods for the Sampling and Analysis of Water Pollutants in NSW and EPA Approved Methods for the Sampling and Analysis of Air Pollutants in NSW.* The Licensee must provide advice to the EPA on whether monitoring has been conducted strictly in accordance with the *EPA Approved Methods for the Sampling and Analysis of Water Pollutants in NSW* and *the EPA Approved Methods for the Sampling and Analysis of Air Pollutants in NSW.*	Next annual return With the Annual Return required for the current reporting period (31 October 2002 – 30 October 2003)
2.1 (3) General requirements for source monitoring	For auditing purposes the licensee must keep all records used to calculate licence fees including a program specification and sample handling procedures used to guarantee the security and integrity of sample results. The Licensee must provide advice to the EPA on whether all records used to calculate licence fees including a program specification and sample handling procedures used to guarantee the security and integrity of sample results have been kept.	Next annual return With the Annual Return required for the current reporting period (31 October 2002 – 30 October 2003)
2.1.3 Laboratory Accreditation Requirements	The licensee must ensure that analysis of water pollutants is carried out at a laboratory certified to do this analysis by an independent accreditation body acceptable to the EPA such as NATA. If the licensee continues to use a non certified laboratory they must send duplicate water samples to a certified laboratory for blind analysis and advise the EPA in writing of their use of a non accredited laboratory. The Licensee must provide advice to the EPA on whether the analysis of water pollutants is being conducted at a laboratory certified to do this analysis by an independent accreditation body acceptable to the EPA such as NATA.	Next annual return With the Annual Return required for the current reporting period (31 October 2002 – 30 October 2003)

Condition No.	*Action Required by the Enterprise*	*Complete By*
2.2.2 Monitoring of discharge volume	The flow monitoring apparatus must be located so that the whole volume that contains loads of assessable pollutants is calculated. The Licensee must provide advice to the EPA on whether flow monitoring apparatus has been located so that the whole volume that contains loads of assessable pollutants is calculated.	Next annual return With the Annual Return required for the current reporting period (31 October 2002 – 30 October 2003)
2.2.2 Accuracy and calibration of flow monitoring equipment	The licensee must calibrate (or where appropriate service or adjust) flow monitoring equipment according to the manufacturers instructions or at least once a year to demonstrate the range of accuracy that has been achieved. The Licensee must provide advice to the EPA on whether flow monitoring equipment has been calibrated (or where appropriate serviced or adjusted).	Next annual return With the Annual Return required for the current reporting period (31 October 2002 – 30 October 2003)
2.2.5 Calculating actual pollutant loads discharged to waters.	The licensee must use the steps outlined in section 2.2.5 of the Load Calculation Protocol to calculate the actual loads of the assessable pollutants and record the results on a copy of the load calculation worksheet provided in Part B of the Protocol. The Licensee must provide advice to the EPA on whether the steps outlined in section 2.2.5 of the Load Calculation Protocol have been used to calculate the actual loads of the assessable pollutants and that the results have been recorded on a copy of the load calculation worksheet provided in Part B of the Protocol.	Next annual return With the Annual Return required for the current reporting period (31 October 2002 – 30 October 2003)
Licence 208 **M1.3 (b),(c) & (d)**	The licensee must keep records in respect of any samples required to be collected for the purposes of this licence including the time at which the samples were taken, point at which the samples are taken or the name of the person who collected the sample. The Licensee must provide advice to the EPA on whether the records (outlined in condition M1.3 of the Environment Protection Licence) in respect of any samples collected have been kept.	Next annual return With the Annual Return required for the current reporting period (31 October 2002 – 30 October 2003)

6.0 APPENDICES

Appendix A: Load Calculation Protocol

Note: only the relevant section of Part B of the Load Calculation Protocol has been included.

Load Calculation Protocol

for use by holders of NSW Environment Protection Licences when calculating assessable pollutant loads

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About this document

This document is the Load Calculation Protocol referred to in the Protection of the Environment Operations (General) Regulation 1998 (the Regulation). It sets out the methods that holders of licences issued under the *Protection of the Environment Operations Act 1997* (the Act) must use to calculate assessable pollutant loads.

The Protocol has two parts:

- Part A provides generic information applicable to all licence-holders that are required by the Regulation to calculate pollutant loads.
- Part B sets out additional specific requirements that relate to particular fee-based activity classifications of licensed activities listed in Schedule 1 of the Regulation. It includes a Worksheet with spaces to record the results of calculations required by the Protocol.

This document is available on the Environment Protection Authority's website or by contacting the EPA on 131 555. Copies of the Act and the Regulation are available from the NSW Government Information Service on (02) 9743 7200 or the EPA website.

In the case of any inconsistency between the Protocol and the Regulation, the latter prevails to the extent of the inconsistency. Where the Protocol and the licence require different types of monitoring, each must be conducted. Contact your EPA Regional Manager if you find significant anomalies.

The Protocol came into effect on 1 July 1999 for the fee-based activity classifications referred to in it.

A revised Load Calculation Protocol will be gazetted from time to time, reflecting agreed new improvements or additions. Changes will be notified in the *Government Gazette*. Where the EPA agrees in writing to a new or revised method of load calculation being available for one or more licensees, this Protocol authorises them to use those methods for a period not exceeding 12 months (i.e. until the Protocol itself is updated and the update is gazetted).

This version of the Protocol was gazetted on 10 May 2002.

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Environment Protection Authority
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Phone: 131 555 (information and publication requests)
Fax: (02) 9995 5999
Email: info@epa.nsw.gov.au
Website: www.epa.nsw.gov.au

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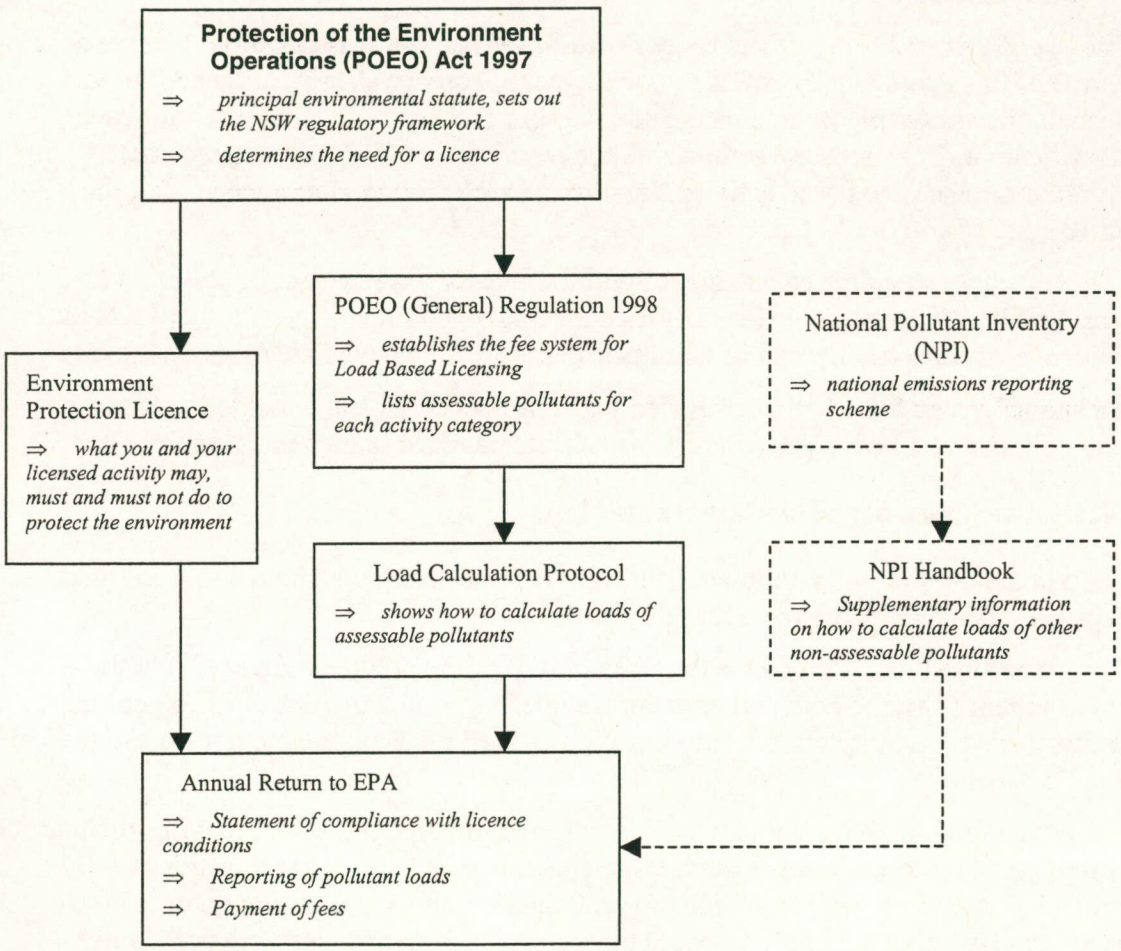
PART A

1 Generic requirements

1.1 Overview of the regulatory framework

This section explains how this load calculation protocol fits into NSW's environmental regulatory framework. It also explains the relationship between Load-Based Licensing (LBL) and the National Pollutant Inventory (NPI). The figure below shows the relationships between the various elements of these schemes.



1.1.1 Linkages between LBL and the NPI

LBL is NSW's pollution licensing scheme. Failure to comply with its requirements is an offence and can involve significant penalties.

The NPI is a national reporting scheme, administered in NSW by the EPA. Similar emission data may be required by both LBL and NPI for some substances. Where this is the case, it is recommended that LBL data is used for NPI purposes. For further details on the NPI, call the EPA on 131 555, or go to the NPI website at http://www.npi.gov.au.

1.2 Assessable pollutants and assessable pollutant loads

Schedule 1 of the Regulation lists the 'fee-based' classification of licensed activities—a subset of licensed activities—and specifies assessable pollutants for these activity classifications.

For example, the assessable pollutants for the fee-based activity classification of Cement Production are:

Air Pollutants	Water Pollutants
Fine particulates	None
Coarse particulates	
Nitrogen oxides (NO_x)	
Sulfur oxides (SO_x)	

The list of assessable pollutants for each fee-based activity classification is repeated in Part B of this Protocol. If more than one fee-based activity classification applies to a licence, the assessable pollutants include the sum of those pollutants listed for each classification. Licensees are responsible for ensuring that they follow the correct protocol for each fee-based activity classification relevant to their licence. Call the EPA on 131 555 if you need help.

The Regulation requires calculation of pollution loads and payment of pollutant load fees based on the assessable loads of each assessable pollutant. This Protocol sets out the range of acceptable methods that licensees may use to calculate assessable loads.

An annual return form will be provided with the licence. The assessable loads and fee calculations must be recorded on the worksheets included in the annual return.

1.2.1 Categories of pollution loads under LBL

The **assessable load** of a pollutant is the **least** of the actual, weighted or agreed load. Fees are calculated using the assessable load.

The **actual load** of a pollutant is the mass (in kg) of the pollutant released into the environment from the potential emission sources listed in Part B of this Protocol for each fee-based activity classification. It is calculated by using the methods prescribed in this Protocol.

The actual load includes liquid wastes transferred to other parties. Exceptions include pollutants discharged to sewer services operated by water supply authorities or fully contained within controlled production processes on-site or at other sites, or loads transferred to other licensees whose activities have the same assessable pollutants (where recipients include received loads in their own assessable loads). Actual loads do not include pollutants contained in solid wastes that are lawfully transferred to landfill or other waste facilities or that are subsequently recycled, reprocessed or consumed.

Actual loads also include loads received from other licensed premises, unless these loads are managed so that one of the exceptions listed above applies.

The **weighted load** of a pollutant is the actual load adjusted using one of the load-weighting methods set out in Section 5 of this Protocol. Weighted loads can result in lower fees being payable in recognition of practices or circumstances that reduce environmental harm without reducing the actual pollutant loads. Examples include

ceasing or reducing discharges during unfavourable conditions, and sustainable effluent reuse.

The **agreed load** is a load that will be achieved through future improvements as part of a Load Reduction Agreement, or an amount permitted to be reported as part of a 'bubble' licence agreement with the EPA. More information about agreed loads is provided in Section 6 of this Protocol.

1.2.2 Record-keeping and submission of information to the EPA

The system of load calculations may be described as 'audited self-assessment'. Licensees are required to take all the necessary steps to calculate pollutant loads. Generally, the EPA needs to see only the final load figures and the subsequent fee calculations. This information is to be reported to the EPA annually using the pro-forma annual return that is provided to each licensee.

Licensees are required to keep all records used to calculate licence fees for four years after the licence fee was paid or became payable, whichever is the later date. Licensees may be asked to produce the records for auditing at any time. It is a condition of each licence that the licensee (or the approved delegate) must personally certify each year that load calculations have been correctly completed and records have been kept as required by this Protocol. There are significant penalties for failure to comply with this requirement.

1.3 Overview of methods for calculating actual loads

There are three methods for calculating actual pollutant loads. Some, however, may not be suitable in a particular situation. The methods are source monitoring, emission factors and mass balance calculations.

Source Monitoring (SM)—see Section 2

Loads are calculated by direct measurement or representative sampling at the facility. The details of how to undertake source monitoring are fully described in Section 2 of this Protocol.

Emission Factors (EF)—see Section 3

Emission factors are formulae that relate known emission characteristics to other variables that are easier or more economical to monitor than the pollutants themselves. For example, it may be known that a particular boiler generates x kg of NO_x for every hour of stable operation and y kg of SO_x for every tonne of coal consumed.

Two classes of emission factors are available: generic and site-specific. All licensees may use applicable generic factors that are based on industry-wide data and are conservative. Where a licensee following an EPA-approved demonstration program of monitoring can show a better level of performance than the level calculated from generic factors, the EPA may authorise the use of a site-specific emission factor. In some cases, a Predictive Emission Monitoring System (PEMS) may be used.

Mass Balance Calculations (MB)—see Section 4

A mass balance generally involves the calculation of pollutant load from a particular activity by quantifying the materials going into and out of a process.

1.3.1 Selecting load calculation methods

For the purpose of load calculations, Part B of this Protocol divides each activity into a number of components. Each of these components has been identified during the Protocol development phase as a potential source of discharge of an assessable pollutant.

The tables in Part B show components of activity and assessable pollutants for each applicable fee-based activity classification, and list the allowable methods of pollutant load calculation. Where more than one method is shown as acceptable, licensees may use any of the acceptable methods, as shown in Table 1.

Table 1: Acceptable load calculation methods of assessable air pollutants for sample industry

Component or activity	Assessable pollutants			
(Potential source of pollutants)	*1. Fine particulates*	*2. Coarse particulates*	*3. Sulfur oxides*	*4. Nitrogen oxides*
Raw material processing	SM—PM; EF	SM—PM; EF	*	*
Stack discharge (chimney)	SM—PM; EF	SM—PM; EF	SM—CEMS; EF; MB	SM—CEMS; EF; MB

SM—source monitoring (see Section 2 and Part B) (PM—periodic monitoring; CEMS—continuous emission monitoring system), EF—emission factors (see Section 3 and Part B); MB—mass balance (see Section 4 and Part B); * no load calculation required: report zero in calculations.

1.3.2 LBL Technical Review Panel

The Regulation establishes an LBL Technical Review Panel to advise the EPA on the current or desirable contents of the Load Calculation Protocol. The Panel includes representatives of licensees, local government, environment groups, the EPA and an independent adviser.

The EPA is committed to providing accurate and cost-effective methods for calculating pollutant loads. It expects that licensees will want to see additional or revised load calculation methods included in the Protocol over time. These could include:

- development of site-specific emission factors
- changes to generic emission factors to reflect new data or new abatement strategies
- modification of sampling or analysis methods
- addition of new monitoring techniques
- addition of other load calculation methods (in addition to source monitoring, emission factors and mass balance).

Licensees proposing changes for consideration should first contact the LBL Technical Review Panel's liaison officer by phoning the EPA on 131 555.

1.3.3 Summary example of how to calculate and report loads

1 Identify classification(s) of activity and assessable pollutants

Consult Schedule 1 of the Regulation and identify all the fee-based classifications of activity that apply to the licensed activity. (The document *Guide to Licensing—Part A* and *Part B,* sent to all licensees, includes a copy of Schedule 1.) These should be the same as the fee-based classifications shown on the licence. Call the EPA regional

office (the telephone number is listed in the licence) and ask to have the licence amended if this not the case.

Note the names of the assessable pollutants for each applicable classification.

2 Select method for calculating actual loads

Refer to Part B of the Protocol for the relevant fee-based activity classifications and select the preferred load calculation method for each pollutant in each component of activity.

3 Undertake load calculations using methods in protocol

Calculate the load for each component of activity listed in Part B. Where source monitoring is used, follow the directions in Section 2. If emission factors are used, follow the directions in Section 3. Requirements for mass balance calculations are set out in Section 4.

4 Calculate and record total actual loads

Record the results of the calculations for each assessable pollutant for each component or activity in Worksheet 2 in Part B. Then add up the total actual load of each assessable pollutant on the same Worksheet.

4a Calculate any weighted loads (optional)

See Section 5 of this Protocol. Record the resulting weighted loads on the Worksheet.

4b Note any agreed load (as agreed in a Load Reduction Agreement)

See Section 6 of this Protocol. Record the applicable agreed load in the load calculation Worksheet. Agreed loads are available where the licensee has made a commitment to reduce pollutant loads by an agreed future date, or where the licence is part of a licence 'bubble'.

5 Copy the load data into the annual return

Copy the actual load data (and any weighted or agreed load data) for each assessable pollutant into the fee calculation pages of the annual return. The annual return is a separate form provided with the licence that includes certification of licence compliance.

Complete the fee calculations and the other parts of the annual return by following the instructions provided with it. The statement of compliance with the annual return must be certified (signed) by the licensee (or approved delegate) and submitted to the EPA within 60 days after the end of the licence fee period. Licence fee payments are also due at this time. If you need help to complete the annual return (or need an additional copy), call the EPA (details are shown in the licence).

Note: Retain Parts A and B of this Protocol with all the load calculation records. Send the EPA only copies of the annual return worksheets.

2 Using source monitoring to calculate actual loads

Source monitoring involves collecting volume and concentration data, and may be continuous or periodic.

Actual loads of air and water pollutants emitted or discharged over a given time period can be determined by monitoring the volume of emissions/discharges over that time period and the pollutant concentration (pollutant mass per unit volume) in the emission/discharge, i.e.

$$\text{pollutant load} = \text{pollutant concentration} \times \text{volume}$$

Volume normally needs to be measured continuously. Pollutant concentration, however, provided that it remains generally constant, can be established via a statistically-rigorous sampling regime.

2.1 General requirements for source monitoring

For activities requiring source monitoring or where the licensee has chosen source monitoring to calculate actual pollutant loads for a component of the activity, load data must be collected in accordance with the following requirements:

1. Sampling points and monitoring procedures must be established to provide data representative of the actual loads generated at the facility.
2. Monitoring of loads discharged to the environment **must** be conducted strictly in accordance with:
   - the requirements of the EPA licence
   - the EPA's *Approved Methods for the Sampling and Analysis of Air Pollutants in NSW* for air pollutants
   - the EPA's *Approved Methods for the Sampling and Analysis of Water Pollutants in NSW* for water pollutants.
3. For auditing purposes, all records used to calculate licence fees must be kept. These include:
   - the program specification (including a site map), which describes the intended monitoring program
   - the actual monitoring undertaken and the nature of the monitoring (if any monitoring is undertaken) and the reasons why the actual monitoring varied from the intended monitoring program
   - the sample handling procedures used to guarantee the security and integrity of sample results, e.g. sample date; results; units of measurement; method used, including sampling and analysis procedure, sample preservation and storage before transfer to the laboratory for analysis; name of officer collecting and handling the samples; name of laboratory; laboratory sample number; and name of the monitoring point.
4. Where there is a discrepancy between the monitoring frequency obligations required by a specific licence and those set out in this document, the most rigorous monitoring regime is to be used.

2.1.1 Practical Quantitation Limit (PQL)

The PQL is the lowest level at which a substance can be routinely quantified and reported by a laboratory.

When a sample result is reported at below the PQL for the test, half the PQL value may be used for the result of analysis of that sample for load calculation purposes. Where 50% or more of the sample values for a particular pollutant are below the PQL, zero may be reported for those samples. This applies to samples collected during the licence fee period.

The approved methods for air sampling and analysis (see Section 2.1) generally list only one analysis method for each analyte (substance to be analysed). However, the approved sampling and analysis methods for water list a number of methods for each analyte.

For the purposes of LBL load fee calculations, Table 2 lists the maximum acceptable PQL for each analyte in discharges to waters, irrespective of which approved method is used.

Table 2: Acceptable PQLs for analytes discharged to waters

Analyte (pollutant)	PQL
Arsenic (As)	10 µg/L
BOD	2 mg/L
Cadmium (Cd)	5 µg/L
Chromium (Cr)	10 µg/L
Copper (Cu)	10 µg/L
Lead (Pb)	20 µg/L
Mercury (Hg)	0.5 µg/L
Oil and grease (O&G)	10 mg/L
Pesticides (as listed in Regulation) (other than organophosphorus compounds)	0.05 µg/L
PCBs	0.2 µg/L
Organophosphorus compounds (diazinon, chlorpyrifos, malathion, parathion)	0.5 µg/L
Fluorinated hydrocarbons	5 µg/L
Salt (NaCl)	5 mg/L
Selenium (Se)	10 µg/L
Total nitrogen (N)	0.3 mg/L
Total polycyclic aromatic hydrocarbons (PAHs)	10 µg/L
Total phenolics	1 mg/L
Total phosphorus (P)	0.02 mg/L
Total suspended solids (SS)	3 mg/L
Zinc (Zn)	50 µg/L

2.1.2 Missed samples

Table 3 shows what to do when the required frequency of sampling set out in Sections 2.2 and 2.3 has not been met. Licensees must meet the greater of these requirements. In some cases, where the required number of samples is not collected, the missing data can be replaced using data obtained over the previous 12 months. Table 3 shows a number of actions, one of which must be followed in calculating loads, depending on the flow

rate, the resulting required sampling frequency and the amount of missing data. If scheduled samples are missed, they may be replaced only within the allowable period (i.e. the minimum time between sample collection must be maintained).

Table 3: Procedure for missed samples

Procedure for missed samples [a]	Required sampling regime				
	< 5 per year	5–12 per year	13–25 per year	26–53 per year	> 53 per year or continuous
Action 'A' threshold: Replace missing data with mean of data obtained over the previous 12 months.	not applicable	not applicable	miss 1 sample	miss 1 or 2 samples	miss up to 2.5% of samples (continuous monitoring up to 15% of time missed allowable)
Action 'B' threshold: Replace missing data with mean of data obtained over the previous 12 months + 20%.	not applicable	miss 1 or 2 samples	miss 2 or 3 samples	miss 3 or 4 samples	miss between 2.5% and 5% of samples (continuous monitoring up to 20% of time missed allowable)
Action 'C' threshold: Report failure to collect required samples to EPA's regional manager within 7 days of failure. Use data from the same time period for the previous year or the mean of the data obtained over the current 12 months + 30%.	miss any samples	miss > 2 samples	miss > 3 samples	miss > 4 samples	miss > 5% of samples (continuous monitoring > 20% of time missed allowable)

[a] the arithmetic mean should be used when using historical data.

2.1.3 Laboratory accreditation requirements

Analyses must be done by a laboratory certified to do those analyses by an independent accreditation body acceptable to the EPA, such as the National Association of Testing Authorities (NATA).

Exemptions from the certification requirement are available in special circumstances as specified below. (These exemptions form part of the transitional arrangements to full implementation of LBL and will be reviewed by the EPA in 2001–02).

If the requirement of a certified laboratory is impractical because of remote location or special circumstances, a non-certified laboratory may be used for the analysis, provided some duplicate samples are sent for independent blind analysis to a certified laboratory. Duplicates of at least 5% of samples (minimum of 1 sample) must be analysed by the certified laboratory each year. The duplicate samples must be representative of normal operating conditions and must be taken in the first quarter of the licence fee period. If normal operating conditions do not occur in the first quarter, samples should be collected as soon as normal operating conditions are attained.

Note that all laboratories used for analysis must have an effective quality assurance program. Where a 20% or greater variance is reported, licensees must investigate the reasons for the variance and take all necessary follow-up actions.

Where a licensee uses a non-certified laboratory, they must advise the EPA of the fact in writing. The advice must include a statement of the reasons for the use of a non-certified laboratory, a list of the analytes tested, variances in results, and the name of the laboratory that did the analyses. The advice must be sent to the EPA with the Annual Return.

2.2 Further requirements for monitoring of water pollutants

2.2.1 Monitoring of discharge concentration

All samples must be collected so that the sample is representative of the condition being investigated and in a manner consistent with the collection, handling and preservation principles in *Standard Methods for the Examination of Water and Wastewater* (American Public Health Association [APHA], 19th edition, 1995, Washington DC).

The sampling location should be as close as practicable to the actual point of discharge, or as otherwise required in the licence.

Samples must be analysed for water pollutants by the methods set out in the EPA's *Approved Methods for the Sampling and Analysis of Water Pollutants in NSW.*

Minimum sampling frequencies are given in Table 4 (refer to Section 2.1 point 4 for clarification where monitoring frequency discrepancies between a licence and the Protocol exist).

Table 4: Sampling frequency for activities where licence permits discharge to waters at any time

Average dry-weather flow (kL/day) discharged	Minimum sampling frequency for assessable pollutants	
	BOD, oil & grease, suspended solids, total nitrogen, total phosphorus, salt	All other pollutants
< 1200	Quarterly grab sample, min. 80 days apart	Quarterly
1200–3600	6 representative composite* samples per year, min. 50 days apart	
3601–24 000	12 representative composite* samples, per year, min. 25 days apart	
> 24 000	24 representative composite* samples, per year, min. 15 days apart	

* A composite sample is defined here as at least 3 grab samples forming the composite, with the first and last samples taken at least 7 hours apart.

For activities where the licence does not permit discharge to waters (except during or following wet weather), all assessable pollutants must be monitored by the collection and analysis of one representative sample of each overflow event to a maximum of 6 samples per year.

2.2.2 Monitoring of discharge volume

Volume is calculated by multiplying recorded flow during a single period or over a specified series of time periods:

Discharge volume = sum of (flow rate × time)

Flow monitoring apparatus must be located so that the whole volume that contains loads of assessable pollutants is calculated in compliance with the requirements given in Table 5.

To record different disposal methods for portions of the effluent (in order to benefit from lower fees through load weighting of less than all the effluent), the volume of each portion must be calculated separately.

Where flow rate measurements are missed, apply the requirements set out in Table 3.

Table 5: Minimum acceptable methods for monitoring flow rate for STPs and other licensed activities

Average dry-weather flow rate at sampling point (kL/day)	Minimum method for measuring flow rate[1]
< 1200	Measure pump capacity *in situ* (under a range of operating conditions as applicable) and record hours run under each; or Use water input data and subtract verifiable and documented amounts lost or consumed (i.e. not included in discharges); or For gravity-operated sewage treatment systems only: estimate based on 300 litres per head of population per day.[2]
≥ 1200	Continuous measurement device; or Use volume balance calculation for water: Determine water entering and then subtract verifiable and documented amounts lost or consumed.

[1] For STPs, outflow measurement is the preferred method of monitoring flow. Inflow data may be used. If so, net evaporation losses may be deducted from the inflow data, calculated as follows:

Estimated discharge = inflow – sum of [(evaporation – rainfall) × pond or lagoon surface area]

[2] Using 300 litres per head of population per day and the most recent census data avoids the need to make allowances for non-residential flows. Where census population does not correlate well with the population served by the STP, use population/tenement (from census) multiplied by the number of connections.

Accuracy and calibration of flow monitoring equipment

Flow-monitoring equipment (primary flow control structures and flow-sensing and recording equipment) should have a level of accuracy equivalent to 10% of the mean flow rate. Equipment must be calibrated (or where appropriate, serviced and adjusted) according to the manufacturer's instructions or at least once a year to demonstrate the range of accuracy that has been achieved. Records of the calibration procedure and its results must be kept for 4 years after applicable pollution load fees are paid or payable, whichever is later.

2.2.3 Accounting for received background pollutants

In some cases, a portion of pollutant loads contained in discharges from licensed activities during the licence fee period may have originated from ambient sources rather than the 'polluting' activities of licensees. The proportion of the pollutant load derived from ambient sources may be deducted when calculating the actual load.

The ambient input pollutant loads must be:

- contained in runoff from the catchment above the premises or waters extracted from natural water bodies—e.g. rivers, harbours, oceans—not being water contaminated by activities conducted at the licensed premises (either past or present activities)

- monitored using the same monitoring protocol as prescribed for calculating pollutant discharge loads (including record-keeping).

2.2.4 Deducting pollutant loads transferred to other licensed activities

Where assessable pollutant loads are transferred with the consent of the recipient via pipelines, tankers or other secure enclosed methods to other premises, the amount of these loads may be deducted from the actual load calculations.

This deduction applies only if the activity or the recipient's premises is licensed under the POEO Act and:

- either the licence fee classification of the recipient's licence includes at least the same assessable water pollutants as the donor licensee, and the recipient licensee includes the loads received in doing its own actual pollutant load calculations, or
- the recipient reprocesses or consumes the pollutant loads so that they are not discharged or emitted to the environment (i.e. recycled, reprocessed or consumed as discussed in Section 1.2.1).

For information about all other transfers, see Sections 1.2.1 and 5.1.2.

2.2.5 Calculating actual pollutant loads discharged to waters

For each assessable pollutant, having determined the concentration of assessable pollutant and volume data in relation to a discharge, use the steps below to calculate the actual loads of the assessable pollutant.

1. Calculate the observed load on each day a pollutant concentration sample is collected:

$$L_d = C_d \times V_d / 1000$$

where

L_d = day's observed load of the pollutant (kg)

C_d = concentration of the pollutant on the day (mg/L)

V_d = day's total volume of discharge (kL).

2. Sum the observed daily loads (kg).
3. Divide the total from Step 2 by the total volume (kL) for those days. The result is the flow-weighted concentration (kg/kL).
4. Multiply the flow-weighted concentration from Step 3 (kg/kL) by the total volume of the licence fee period (kL).

Repeat for each assessable pollutant and record the results on a copy of load calculation Worksheet 2 provided in Part B of this Protocol.

2.2.5.1 Calculating actual pollutant loads discharged to waters where $V_d = 0$

1. If sampling is conducted on a day when $V_d = 0$, BUT there is some discharge during the 'sampling frequency period', determine a time-weighted load (L_t) instead, for that sample only as follows:

   $$L_p = C_p \times V_p / 1000$$

   $$L_t = L_p / n$$

   Where:

   L_p = calculated load of the pollutant (kg) over minimum sampling frequency period

   C_p = concentration of the pollutant (mg/L) on the day when $V_d = 0$

   V_p = total flow (kL) over minimum sampling frequency period (as determined by Table 4)

   L_t = day's observed load of the pollutant (kg) when $V_d = 0$

   n = number of days in the minimum sampling frequency period (as determined by Table 4)

   V_p should be calculated using methods outlined in Table 5.

2. Sum the observed daily and/or time-weighted loads.

3. Divide the total from Step 2 by the total volume (kL) for those days – use $V_t = V_p/n$ to obtain average daily volume flow during sampling period when $V_d = 0$.

4. Multiply the flow-weighted concentration from Step 3 (kg/kL) by the total volume of the licence fee period (kL).

2.3 Further requirements for monitoring of air pollutants

Emission testing must be sufficient to identify the assessable pollutants and determine the load of pollution emitted over all modes of plant operation.

There are two main groups of monitoring methods generally applicable for calculating loads of air pollutants: continuous and periodic.

2.3.1 Continuous Emission Monitoring Systems (CEMS)

A CEMS provides a continuous record of emissions over an extended and generally uninterrupted period of time. Various approaches can be used to measure the concentration of pollutants in the gas stream. Once the pollutant concentration is known, emission rates are obtained by multiplying the pollutant concentration by the volumetric stack gas flow rate.

CEMS is suitable for monitoring NO_x, SO_x, H_2S, benzene and volatile organic compound (VOC) emissions. The requirements for CEMS are given in the EPA's *Approved Methods for the Sampling and Analysis of Air Pollutants in NSW.*

2.3.2 Periodic emission monitoring

Monitoring emission quality

Sampling locations and analysis methods for air quality monitoring are provided in the EPA's *Approved Methods for the Sampling and Analysis of Air Pollutants in NSW.*

Sampling must be done during each licence fee period and be of sufficient duration to produce representative data that may be reliably extrapolated to provide estimates of emissions across the full range of operating conditions and emissions likely to be experienced during the licence fee period.

Monitoring emission volume

Volume is generally calculated by multiplying recorded flow during a single period or over a specified series of time periods:

Emission volume = sum of (flow rate × time)

Gas-flow monitoring apparatus must be located so that the whole volume that contains loads of assessable pollutants is calculated accurately.

Reducing the costs of periodic monitoring

In some cases, the costs of sampling programs may be reduced by establishing a predictive emission monitoring system—see Section 3.2.1.

2.3.3 Calculating actual loads of air pollutants from periodic monitoring

For each assessable pollutant, having determined the concentration of pollutant discharge and volumetric flow data, use the steps below to calculate the actual loads discharged.

1 For each sampling period, calculate the mass pollutant emission rate (mg/s) by multiplying the concentration of the pollutant in the sample (mg/m^3) by the volumetric flow rate (m^3/s).

2 Sum the calculated mass pollutant emission rate from step 1, and divide the result by the number of sampling periods. The result is the flow-weighted average mass pollutant emission rate (mg/s).

3 Multiply the rate from step 2 by the number of seconds of flow that occurred during the licence period, then divide by 1 000 000. The result is the assessable pollutant load for the licence fee period (kg).

Repeat for each assessable pollutant and record the results on a copy of load calculation Worksheet 2 provided in Part B of this Protocol.

2.4 Variations to monitoring methods for air or water pollutants

You may propose a variation to the monitoring requirements set out above by applying to the LBL Technical Review Panel. Call the Panel's liaison officer by phoning the EPA on 131 555.

3 Using emission factors to calculate actual loads

An emission factor is an estimated pollutant emission rate relative to the level of industrial or other readily measurable activity. Licensees may use emission factors for load calculation where Part B of the Protocol lists emission factors as an applicable method for a specific activity.

Two types of emission factors are generally acceptable:

- **Generic emission factors** are generally derived from broad average emission data. The emission factors where provided in this Protocol are intended to be conservative (i.e. they should ensure that high emitters cannot undercalculate loads through the use of emission factors). The EPA will regularly revise generic emission factors as updated monitoring data becomes available.
- **Site-specific emission factors**, which individual licensees may develop. For example, a Predictive Emission Monitoring System (PEMS) may be used to develop a site-specific estimate for combustion sources or other stack emissions.

  Site-specific emission factors, other than PEMS, generally require EPA approval following assessment by the LBL Technical Review Panel (see Section 3.2). Following their approval, all site-specific emission factors will be listed in Part B for each relevant activity classification. These will be available to everyone in the Protocol when it is next revised. Licensees must demonstrate that the site-specific emission factor will reflect the full range of operating conditions and emissions likely to be experienced during the licence fee period.

Using emission factors (EFs) shown in the tables in Part B

1. Select emission factors for each relevant component of activity for each pollutant from the appropriate table in Part B (each activity has a separate table). Select the factors most appropriate to the control technology in place. If none of the listed control technologies applies to the component of activity, use the default emission factors listed.
2. Calculate the load for each component of the activity. Multiply the emission factor selected in Step 1 by the quantity of activity (using the relevant units of measure shown). Copy the results into Worksheet 2 in Part B.
3. Calculate the total load by adding the totals for each component. Copy the results into Worksheet 2 in Part B.

3.1 Generic emission factors

Generic emission factors can apply broadly across various listed activity classifications (such as de-dusting equipment) or for a single classification only.

Where emission factors are based on abatement technology (e.g. scrubbers or baghouses), the listed emission controls must be operating for at least 98% of operating time. If the control technology is operating less than 98% of operating time then a combination of controlled and default factors must be used, apportioned according to the percentage of time of each operating condition.

Where failure of emission control equipment automatically shuts down emitting activities, control may be assumed to operate 100% of the time.

3.1.1 Use of generic emission factors for de-dusting

Emission factors based on manufacturers' performance guarantees may be used to calculate loads of fine and coarse particulates from de-dusting apparatus as follows.

Supplier guarantees performance for fine and total particulates

If the supplier of the equipment can provide a performance guarantee for fine and total particulate emissions as a concentration, use those emission rates to calculate the fine and total particulate load (emission rate (mg/m^3) × flow (m^3/s) × time (s)). Coarse particulates are equal to the total particulate load minus fine particulates.

Supplier guarantees performance for total particulates only

If the supplier can provide a performance guarantee only for total particulate concentration, calculate the total particulate load for the licence period and divide total particulates into fine and coarse particulates using the values in Table 6.

Table 6: Factors for the calculation of fine particulates

Equipment	% fine particulates	% coarse particulates
Bag filters	99%	1%
Electrostatic precipitators	96%	4%
Other de-dusting equipment	75%	25%

Note: Where the table in Part B of this Protocol for a specific activity stipulates an alternative percentage value based on the specific nature of the material handled, use that value.

3.2 Site-specific emission factors

In general, emission factors generated from site-specific data are superior to generic emission factors derived from averaged industry data. However, site-specific emission factors must reflect the full range of operating conditions and emissions likely to be experienced during the licence fee period.

To be used for calculating actual loads, site-specific emission factors must be approved in writing by the EPA before use. Applications for approval will generally be referred by the EPA to the LBL Technical Review Panel unless they follow precedents that have already been considered by the Panel.

A licensee who wishes to develop a site-specific emission factor should call the LBL Technical Review Panel's liaison officer by phoning the EPA on 131 555. You should liaise with the Panel before committing to a monitoring program that is intended to justify the case for a site-specific emission factor.

All approved site-specific emission factors will be included in future editions of this Protocol, and the supporting monitoring data and program description made available for public inspection on request.

3.2.1 Predictive Emission Monitoring Systems (PEMS)

A PEMS is where a licensee uses a representative monitoring campaign to establish consistent relationships between pollutant discharge rates and other operational parameters that are simpler to monitor (e.g. quantity of steam produced, unit loading, rate of fuel consumption, stack or furnace temperature). Monitoring of the operational parameters can then be used to calculate emissions at lower cost than by either continuous or periodic emission monitoring. PEMS must include a suitable program of lower-intensity validation monitoring to ensure that the calculated relationships remain accurate over time.

PEMS can be used for the estimation of most pollutants from fuel-burning equipment, as shown in the tables in Part B of this Protocol for each activity classification. Some licensees may be able to use source emissions data from previous monitoring campaigns to establish a PEMS. Others may have to undertake a one-off campaign during their first year of calculation of actual loads.

To use a PEMS to calculate actual loads, the following steps must be completed:

- The licensee must develop a PEMS that will reflect the full range of operating conditions and emissions likely to be experienced during the licence fee period.
- The licensee must lodge a copy of the PEMS specification (including a description of the monitoring program undertaken and copies of the data obtained) with the EPA during the licence fee period (where it will be available to any interested member of the public). The specification must be lodged with your EPA Regional Manager.
- The lodged specification must be accompanied by a declaration signed by the licensee (or the person authorised by the EPA to sign the licensee's certificate of compliance; see Section 1.3.3 in relation to the annual return). The declaration must include a statement of the assessable pollutants, the components of activity and the maximum error ranges of the PEMS. A form is available from your EPA Regional Office.
- Where the declared error range of the PEMS is greater than 10%, an amount equal to the part of the error range in excess of 10% (i.e. error range minus 10%) must be added to load values calculated using the PEMS.
- Refer to the following documents for specific guidance: *Example Specifications and Test Procedures for Predictive Emission Monitoring Systems*, and *Alternative Monitoring Protocol—PEMS for NO_x and CO from Industrial Furnaces*. These documents are available from the US EPA's Emission Measurement Centre Web site at http://www.epa.gov/ttnemc01/cem.html or from your EPA Regional Office.

4 Use of mass balance calculations

Mass balance involves the quantification of material flows going into and out of a process, where the difference between inputs and outputs is assumed to be discharged to the environment. Mass balance can be used only when input and output streams can be accurately quantified. Mass balance techniques can be applied to individual components of activity or across an entire activity, but only where the applicable table in Part B authorises its use.

It is essential to recognise that the estimates derived by using mass balances are only as good as the values used in the calculations. For example, small errors in data or calculation parameters (e.g. pressure, temperature, stream concentration, flow, control efficiencies) can result in large errors in the final emission estimates. Additionally, failure to use representative samples when sampling input or output materials will also contribute to the uncertainty of the result.

To use a mass balance specification to calculate assessable loads, the following steps must be completed:

- The licensee must develop a mass balance that will reflect the full range of operating conditions and emissions likely to be experienced during the licence fee period.
- The licensee must lodge a copy of their mass balance (including a description of the estimation techniques) with the EPA during the licence fee period (where it will be available to any interested member of the public). The mass balance must be lodged with your EPA Regional Manager.
- The lodged mass balance must be accompanied by a declaration signed by the licensee (or the person authorised by the EPA to sign the licensee's certificate of compliance; see Section 1.3.3 in relation to the annual return). The declaration must include a statement of the assessable pollutants, the components of activity and the maximum error ranges of the mass balance. A form is available from your EPA Regional Office.
- Where the declared error range of the mass balance is greater than 10%, an amount equal to the part of the error range in excess of 10% (i.e. error range minus 10%) must be added to load values calculated using the mass balance.

5 Weighting pollutant loads (optional)

Through appropriate planning and management, the environmental harm of some pollutant load discharges may be reduced. These reductions can result in lower fees by allowing calculation of weighted loads. The load-weighting measures currently available are listed in this section.

5.1 Effluent reuse

The EPA encourages sustainable reuse of effluent or liquid wastes. This section of the Protocol covers the provision for fee reductions of up to 100% for sustainable reuse of effluent. However, the task of defining workable benchmarks of sustainability is complex.

Effluent should be applied to land only where it is environmentally safe and agronomically appropriate. In the absence of satisfactory management practices, there is a danger that inappropriate effluent reuse could result in a mere transfer of environmental impacts from waters to land. Such an outcome is unacceptable to the EPA, the community and those industries committed to sound environmental management of their operations.

The *Protection of the Environment Operations Act 1997* (s.120) makes it a serious offence for anyone to pollute or to cause or permit pollution of NSW waters. This applies equally to surface and ground waters.

5.1.1 Effluent reuse on the licensed premises

In the case of direct reuse of effluent (e.g. irrigation of crops), weighted loads are calculated by multiplying the actual loads of each pollutant by 'reuse discount factors'. There are different performance criteria for achieving discounts for each pollutant.

The reuse discount factor for each pollutant is the sum of a 'pollutant management factor' (0, 0.25 or 0.5) and a 'water management factor' (0, 0.25 or 0.5). Better performance leads to a lower factor and thus a higher fee discount, i.e. the best possible score is 0 + 0 = 0 (100% discount), and the least beneficial is 0.5 + 0.5 = 1 (nil discount). The procedure for using these factors to obtain fee reductions is shown below.

There are a number of other cases where reuse discounts apply (e.g. transferring effluent to other licensed premises)—see Sections 2.2.4 and 5.1.2.

How to calculate weighted loads

Use the work table below to record your calculations of weighted loads. In the case of direct effluent reuse (e.g. irrigation of crops), follow Steps 1 to 5 below. For all other cases contact the Regional Manager.

If a range of discount factors applies to different portions of the effluent (e.g. different disposal or reuse methods for parts of the total load), divide the load into portions, apply the appropriate discount factors to each portion, and then sum the values to calculate total weighted loads of each pollutant.

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Worksheet 1: Calculating reuse discount factors and weighted loads

Pollutant (if assessable)	(A) Annual load of re-used effluent	(B) Pollutant management factor (from Table 7 below)	(C) Water management factor (from Table 8 below)	(D) Discount factor (B + C)	(E) Weighted load (actual load × discount factor (A × D))
Phosphorus					
Nitrogen					
BOD					
Suspended solids					
Oil & grease					
Salt					
Metals & pesticides					

Step 1

Copy the actual loads calculated in accordance with Sections 2, 3 or 4 into column A of Worksheet 1.

Step 2

Refer to Table 7 to determine the correct pollutant management factor for each pollutant assessable at the licensed site and enter the factor values into column B.

Note: to receive a pollutant management factor of 0.0 or 0.25 for nutrients (phosphorus and nitrogen), the equivalent pollutant management factor for salt must also be met, even where it is not an assessable pollutant for the particular licensed activity. These factors are shown in Table 9.

Step 3

Use Table 8 to determine the correct water management factor for the reuse site. Enter the value into each cell of column C. Note that there will be only one applicable factor, which will apply for all pollutants.

Step 4

Calculate the Reuse Discount Factor for each pollutant by adding the values entered in columns B and C for each pollutant and enter the results for each pollutant into column D.

Step 5

Calculate the Weighted load of each pollutant by multiplying these actual loads by the applicable discount factors (Column D) and enter the results into Column E.

Step 6

Copy the Weighted load data into Worksheet 2 in Part B.

Table 7: Pollutant management factors

	Applicable pollutant management factor		
	0.0 (full discount)	0.25 (partial discount)	0.5 (no discount)
Pollutant	**Management performance benchmarks**		
Phosphorus & nitrogen (To gain discount, salt criteria with equal or better discount must also be met)	Nitrogen and phosphorus balance maintained as outlined in Note 1 below	Nitrogen and phosphorus balance maintained as outlined in Note 2 below	Other
BOD	< 1200 kg/ha/month applied (max. 10%/day)	< 1500 kg/ha/month applied (max. 10%/day)	Other
SS	< 15 t/ha/year applied (max. 10%/day)	Not applicable	Other
Oil & grease	No visible grease on soil surface	Not applicable	Other
Salt	See Table 9A	See Table 9B	Other
Metals & pesticides	Based on annual monitoring data, the increase in soil levels of pollutants cannot exceed 50% of the difference between the background level and the allowable level in the soil	Based on annual monitoring data, the increase in soil levels of pollutants cannot exceed 30% of the difference between the background level and the allowable level in the soil	Other

Table 8: Water management factors

Applicable water management factor		
0.0 (full discount)	**0.25 (partial discount)**	**0.5 (no discount)**
Application rate controlled by irrigation scheduling or soil moisture monitoring to ensure that effluent or liquid waste does not percolate deeper than the root zone or intersect groundwaters, except during scheduled salt flushing as per management plan (see Note 3 regarding storage requirements).	Application ceases during and after rainfall as necessary to prevent waterlogging or runoff (see Note 3 regarding storage requirements).	Other

Table 9: Criteria for salt management (see Note 4)

A) Discount factor of 0.0

TDS mg/L	SAR	$Na^+ + Cl^-$ (mg/L)	Management conditions	Monitoring conditions
< 200	Any		N/A	N/A
< 500	< 3	N/A	N/A	N/A
	> 3	N/A	Apply gypsum (or equivalent in agricultural lime) every 5 years at 2 t/ha or whenever soil ESP exceeds 5% within plant root zone.	Only if SAR > 6, in which case monitor Na in soil once per year.
< 1000	> 3	< 500	As above. Application to cease if EC_{se} exceeds 4 dS/m in plant root zone.	Only if SAR > 6, monitor once per annum for Na, and EC_{se} in soil within and immediately below plant root zone.
		> 500	Apply gypsum (or equivalent in agricultural lime) whenever soil ESP exceeds 5%. Application to cease if EC_{se} exceeds 4 dS/m in plant root zone.	Monitor once per annum for Na, and EC_{se} in soil within and immediately above plant root zone.
< 1500	< 8	< 500	As above	As above plus monitor once per year available P and N below plant root zone.
	< 10	< 500	As above	As above plus monitor any important groundwater resource within 10 m of the surface of the ground.
< 2500	> 10	> 800	As above	As above
Any	Any	Any	Effluent applied at rate of no more than 50 mm per year. EC_{se} in plant root zone not to exceed 4 dS/m.	Monitor Na & EC_{se} in soil and apply gypsum if Na levels in plant root zone exceed 5%. Monitor available P and N below plant root zone once a year.

B) Discount factor of 0.25

TDS	SAR	$Na^+ + Cl^-$ (mg/L)	Management conditions	Monitoring conditions
Any	Any	Any	Effluent applied at rate of no more than 100 mm per year. Application to cease if EC_{se} exceeds 4 dS/m in plant root zone.	Monitor Na & EC_{se} in soil and apply gypsum if Na levels in plant root zone exceed 5%. Monitor available P and N below plant root zone once a year.
< 5000	< 15	< 1000	Effluent applied so that nutrient budget requirements are met (see Note 1 below). Application to cease if EC_{se} exceeds 4 dS/m in plant root zone.	Monitor Na & EC_{se} in soil and apply gypsum if Na levels in plant root zone exceed 5%. Monitor available P and N below plant root zone once a year. Monitor any important groundwater resource within 10 m of surface of ground.

Notes for Tables 7, 8 and 9

Note 1: Nutrient balance management

Nitrogen and phosphorus must be applied so that they are effectively used for plant growth or sustainable assimilation by the soil system. If N and P levels are rising below the plant root zone, the average amount of effluent applied per unit area must be decreased. The sustainable rate of application of nutrients (such as N and P) can sometimes limit the quantity of effluent to be used for irrigation in a given area. To obtain the fee discount, licensees must:

- have developed a 15-year forward management plan that shows how proposed annual nutrient application rates compare with the annual amounts to be taken up by the biological or physical processes of the crop–soil system. This should be done before the construction

of the effluent reuse scheme. Nutrient application rates must be based on the sustainable assimilation of nutrients over a rolling 15-year period.

- review the plan every 3 years to ensure that future planned application rates will continue to achieve sustainable assimilation over a rolling 15-year period.
- prepare annual nutrient balances showing nutrient application rates and the results of soil monitoring done as set out in the management plan, and how these outcomes compare with those anticipated in the management plan. Documentation of plan and annual balances must be kept for at least 4 years.

Note 2: as in Note 1, but with a 5–15-year planning timeframe.

Note 3: Wet-weather storage

Where licences allow for direct discharge to waters, this must always occur through an authorised discharge point. Wastewaters discharged via the authorised discharge point cannot benefit from reuse discounts. Where licences do not permit discharges to waters, adequate capacity to store effluent must be provided. Wet-weather storage must also be designed and installed to hold a volume calculated by a comprehensive water balance.

Note 4: EC_{se} (electrical conductivity of saturated extracts of soil)

For sensitive plant species, EC_{se} should be kept less than 2 dS/m. If EC_{se} exceeds this level, additional management practices including applying a leaching fraction will be required to ensure that plant growth is not reduced. Such changes in management practices must be supported by evaluation at the site that ensures that deliberate leaching of salt does not have an adverse impact on ground or surface water resources.

5.1.2 Transfer of effluent for reuse beyond the licensed premises

In some cases where effluent is transferred to other licensed premises, loads of assessable pollutants transferred may be deducted from actual loads. These cases are set out in Section 2.2.4.

In all other cases, transfer or reuse of materials containing assessable pollutants beyond the licensed premises does not reduce assessable loads.

However, it is possible for a weighted load to be calculated where reuse occurs off-site (which will result in a lower licence fee). The licensee can calculate a weighted load for reuse that occurs off the licensed site (or that is conducted by other parties) exactly as described above in Section 5.1.1, provided that the licensee ensures that the reuse meets the applicable performance criteria. The EPA will be satisfied that the licensee has ensured the requisite level of performance if each of the following requirements is met:

1. Effluent is released to the recipient only after:
    - all necessary state (e.g. EPA, Department of Land and Water Conservation and others) and local government approvals are obtained (e.g. local councils must obtain Ministerial approval under s.60 of the *Local Government Act 1993* before allowing sewage from their area to be discharged, treated or supplied to any person; other approvals may also be required)
    - an agreed effluent management plan is in place between the recipient and the licensee that, if complied with, will result in the attainment of the relevant applicable performance criteria as set out in Section 5.1.1.

2. Pollution events associated with any aspect of the recipient's effluent reuse program are reported to the EPA. In the same way, the effluent supplier's licence requires the licensee to report pollution events on its premises to the EPA (as soon as practicable after the provider becomes aware of an incident).
3. Effluent supply is ceased as soon as practicable after the supplier becomes aware of a misuse of effluent or failure to implement any aspect of the effluent management plan.
4. The supplier regularly reviews the recipient's use of the effluent, including at least annual site visits to identify any corrective actions required to comply with or update the management plan, and keeps a record of visits, observations and corrective actions for at least 4 years.
5. Where the supplier distributes more than 1000 ML of effluent annually, a third party makes an annual assessment of the scheme and the report is submitted to the EPA.

5.2 Flow-optimised discharges

Discharging pollutants to waters only during high river flows may mimic the pattern of natural diffuse pollutant loads in waters (such as nutrients or suspended solids exports from the catchment). During high flows, pollutants may be flushed from a river system and thus their impact reduced, although downstream impacts need to be considered.

All industries may be eligible for a fee reduction where they discharge the following assessable pollutants to waters only during high river flows and if it can be shown that this strategy minimises the environmental impact of those discharges:

- matter causing biochemical oxygen demand
- total suspended solids
- total phosphorus
- total nitrogen
- oil and grease.

This discount factor applies only to flow-optimised discharges to non-tidal waters that drain to the NSW coast. This excludes waters of the Murray-Darling catchment.

Calculating the weighted load

A 50% load-weighting factor applies to the above pollutants provided that:

- the discharge occurs only during high flows in the receiving waters, where high flow is defined as a flow that exceeds the 20th percentile. Daily flow data must be available for at least 5 years for the reach of the river where the discharge occurs
- daily monitoring data for receiving water flows is collected or otherwise obtained to determine river flow.

Calculate the weighted load by multiplying the actual load of each of the assessable pollutants by 0.5.

5.3 Discount for the Hunter River Salinity Trading Scheme

The Hunter River Salinity Trading Scheme operates to prevent saline discharges exceeding conservative water quality levels. During high river flows, a total allowable discharge is calculated, and participants share this total according to their holdings of tradeable discharge credits. Discharge is prohibited during low river flows.

Scheme participants in the Hunter catchment may apply a weighting factor to loads of salt discharged provided that their licence states that they are a participant in the scheme and they have complied with all of the conditions of the licence relating to discharge during the licence fee period.

Calculate the weighted load by multiplying the actual load of salt by 0.25.

6 Load reduction agreements (optional)

Load Reduction Agreements (LRAs) are voluntary agreements between the EPA and licensees required to pay pollution load fees under the Protection of the Environment Operations (General) Regulation 1998. They provide immediate fee reductions for licensees willing to commit to future reductions of assessable pollutant loads, thereby freeing funds for investment in improving their environmental performance. Agreements last for a maximum of four years, giving licensees up to three full years to implement upgrades and one to demonstrate attainment of agreed load.

6.1 How do they work?

The licensee commits to reducing annual emissions for one or more *assessable pollutants* (specified in kilograms) to an agreed annual lower load, within a maximum of four years. Pollutant load fees are then calculated on the basis of the agreed loads. This means that fees are paid as if the agreed environmental improvements have already been achieved. For example, if a licensee plans to reduce annual phosphorus discharges from 1000 kg to 100 kg in 4 years time, an 'agreed' load of 100 kg may be reported in each year's annual return and used to calculate fees. Fee savings could be considerable.

If the licensee does not demonstrate achievement of the agreed load in the final year of the agreement (i.e. the actual or weighted load is not equal to or below the agreed load), the licensee must repay excess fee reductions to the EPA, commensurate with what has been achieved.

In return for the benefit of immediate fee reductions received under an LRA, licensees agree to ongoing lower annual load limits beyond the term of the LRA. This will ensure that environmental benefits will be ongoing. The new annual load limit would come into effect at the conclusion of the LRA.

6.1.1 Who can apply?

Current or prospective holders of an Environment Protection Licence with assessable pollutants can apply for an LRA at any time. For further information, contact the EPA on 131 555 or the local Regional EPA Office or look up the EPA website.

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PART B

7 Activity-specific requirements

This is Part B of the Load Calculation Protocol referred to in the Protection of the Environment Operations (General) Regulation 1998. Part A lists the generic requirements that apply to all fee-based activity classifications included in the LBL Scheme. Part B includes the activity, industry-specific load calculation tables and Worksheet. Licensees must refer to the tables in this part of the Protocol that apply to their licence, as described in Part A.

List of fee-based activity classifications and their assessable pollutants

Activity classification	Number in Schedule 1 of Regulation	Assessable pollutants	
		Air	Water
Cement or lime production	A10	Production—coarse & fine particulates, NO_x, SO_x	
Cement or lime handling	A11	Handling—coarse & fine particulates	
Glass production	A12	coarse & fine particulates, NO_x, SO_x	
Ceramics production (excluding glass)—brick production	A13	coarse & fine particulates, fluoride, SO_x, NO_x	
Agricultural fertiliser production and/or ammonium nitrate production	A14	Ammonium nitrate fertilisers: coarse & fine particulates, NO_x	total N
		Phosphate fertilisers: coarse & fine particulates, fluoride	total P
Paint production	A17	benzene, fine particulates, NO_x, VOCs	
Petrochemical production	A18	benzene, fine particulates, NO_x, VOCs	
Plastics production	A21	benzene, fine particulates, NO_x, VOCs	
Chemical storage—petroleum	A25	benzene, VOCs	
Coke production	A27	benzene, benzo(a)pyrene equiv., coarse & fine particulates, H_2S, NO_x, SO_x, VOCs	oil & grease (O&G), suspended solids (SS), total PAHs, total phenolics
Electricity generation	A34	benzo(a)pyrene equiv., coarse & fine particulates, fluoride, NO_x, SO_x	salt, Se, suspended solids (SS)
Primary iron and steel production	A55	benzene, benzo(a)pyrene equiv., coarse & fine particulates, H_2S, NO_x, SO_x, VOCs	As, Cd, Cr, Cu, Pb, Hg, oil & grease (O&G), Se, suspended solids (SS), Zn
Secondary iron and steel production	A56	coarse & fine particulates, NO_x, SO_x, VOCs	
Primary aluminium production	A57	coarse & fine particulates, fluoride, NO_x, SO_x	
Secondary aluminium production	A58	coarse & fine particulates, fluoride, NO_x, SO_x, VOCs	
Primary non-ferrous production (excl. Al)	A59	As, coarse & fine particulates, Pb, Hg, SO_x	As, Cd, Cr, Cu, Pb, Hg, Se, suspended solids (SS), Zn
Secondary non-ferrous production (excl. Al)	A60	coarse & fine particulates, Pb, NO_x, SO_x, VOCs	
Paper production using recycled materials	A66	coarse & fine particulates, NO_x	BOD, salt, suspended solids (SS), total N, total P, Zn
Other paper production	A67		
Petroleum refining	A68	benzene, benzo(a)pyrene equiv., fine particulates, H_2S, NO_x, SO_x, VOCs	BOD, oil & grease (O&G), suspended solids (SS), total PAHs, total phenolics
Waste oil recovery	A69	Pb, VOCs	oil & grease (O&G)

Sewage treatment	A71		219 to <10 000 ML/year—BOD, oil & grease (O&G), total N, total P, suspended solids (SS) > 10 000 ML/year—BOD, oil & grease (O&G), Cd, Cr, Cu, Pb, Hg, Se, suspended solids (SS), total N, pesticides & PCBs, total P, Zn
Biomedical waste incineration	A74	As, benzene, benzo(a)pyrene equiv., fine particulates, Pb, Hg, NO_x, SO_x	
Municipal solid waste incineration	A85	As, benzene, benzo(a)pyrene equiv., fine particulates, Pb, Hg, NO_x, SO_x	

7.4 A14 Agricultural fertiliser and/or ammonium nitrate production

Table A14—Acceptable load calculation methods and emission factors, where applicable

(kg per tonne produced per annum)

AIR

A) Ammonium nitrate production	*Assessable pollutants—AIR*		
Component or activity	*1 Coarse particulates*	*2 Fine particulates*	*3 NO_x*
1 Acid production	–	–	SM—PM EF—PEMS, SS, G
2 Solution formation			
(A) Neutraliser			
—default	SM—PM EF—PEMS, SS, G	SM—PM EF—PEMS, SS, G	–
—wet scrubber	SM—PM EF—PEMS, SS, G	SM—PM EF—PEMS, SS, G	–
(B) Evaporation or concentration			
—default	SM—PM EF—G = 0.15	SM—PM EF—G = 0.2	–
—wet scrubber	SM—PM EF—G = 0.15	SM—PM EF—G = 0.02	–
3 Solids formation & handling	SM—PM EF—PEMS, SS, G	SM—PM EF—PEMS, SS, G	–
4 Product bagging or shipping			
—default	SM—PM EF—PEMS, SS, G	SM—PM EF—PEMS, SS, G	–
—wet scrubber	SM—PM EF—PEMS, SS, G	SM—PM EF—PEMS, SS, G	–
TOTAL actual load (kg)			

B) Production of single superphosphate	*Assessable pollutants—AIR*		
Component or activity	*1 Coarse particulates*	*2 Fine particulates*	*3 Fluoride*
5 Rock or acid reaction	SM—PM EF—PEMS, SS, G	SM—PM EF—PEMS, SS, G	SM—PM EF—PEMS, SS, G
6 Granulation (maturing)	SM—PM EF—PEMS, SS, G	SM—PM EF—PEMS, SS, G	SM—PM EF—PEMS, SS, G
TOTAL actual load (kg)			

SM—source monitoring (PM—periodic monitoring; CEMS—continuous emission monitoring); EF—emission factor (G—generic; SS—site specific; PEMS—predictive emission monitoring system); MB—mass balance

NB: Where EF—G is shown without a numerical value, no adequate data is available for Australian conditions at this time and an EF—PEMS or EF—SS may be developed by the licensee.

Table A14 (continued)

WATER

C) Ammonium nitrate production		*Assessable pollutants—WATER*
Component or activity		*1 Total nitrogen*
7	Wastewater	SM
8	Pollutants in wastewater imported from other licensed activities	SM
TOTAL actual load (kg)		

D) Production of single superphosphate		*Assessable pollutants—WATER*
Component or activity		*1 Total phosphorus*
9	Wastewater	SM
10	Pollutants in wastewater imported from other licensed activities	SM
TOTAL actual load (kg)		

SM—source monitoring (PM—periodic monitoring; CEMS—continuous emission monitoring); EF—emission factor (G—generic; SS—site specific; PEMS—predictive emission monitoring system); MB—mass balance

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Worksheet 2

1. Copy the names of the assessable pollutants and the components of the activity from the relevant table in Part B into a table like the one below. Add more rows or columns if necessary.
2. Using Sections 2, 3 and 4, and Part B of this Protocol, calculate the actual pollutant loads for each component or activity. Repeat for each assessable pollutant for your industry.
3. Sum the loads of each assessable pollutant for each component to calculate the total actual loads and enter the results in the Worksheet.
4. Calculate any weighted loads (Section 5) and enter the amounts in the Worksheet.
5. Record any agreed loads shown in a load reduction agreement from the EPA (Section 6) in the indicated cells.
6. Use the values for actual, weighted and agreed loads to complete the annual return.

EPA premises number	No.
Activity classification	
Licence fee period	...../...../..... to ...../...../.....

AIR

	Assessable pollutants (kg per licence fee period)						
Component or activity	1	2	3	4	5	6	7
1							
2							
3							
4							
5							
6							
7							
Actual pollutant load (total of above)							
Weighted pollutant load							
Agreed pollutant load							

WATER

	Assessable pollutants (kg per licence fee period)						
Component or activity	1	2	3	4	5	6	7
1							
2							
3							
4							
5							
Actual pollutant load (total of above)							
Weighted pollutant load							
Agreed pollutant load							

Appendix B: Environment Protection Licence No. 208

Environment Protection Authority

Environment Protection Licence

Section 55 Protection of the Environment Operations Act 1997

- Licence number: 208
- File number: 270012
- Licence Anniversary Date: 31-October
- Review date not later than 05-Feb-2005

Licence Type
Premises

Licensee
INCITEC LTD.
PO Box 140
MORNINGSIDE QLD 4170

Licensed Premises
INCITEC COCKLE CREEK WORKS
MAIN ROAD
BOOLAROO NSW 2284

Fee Based Activity	Scale
Agricultural Fertilizer and/or Ammonium Nitrate Prodı Production of phosphate fertilizer(14b)	> 100000 - T produced

EPA Region
Hunter
Ground Floor, NSW Govt Offices, 117 Bull Street
NEWCASTLE WEST NSW 2302
Phone: 02 4926 9971
Fax: 02 4929 6712

PO Box 488G NEWCASTLE
NSW 2300

Information about this licence

Dictionary

The licence contains a dictionary, which defines terms used in the licence. It is found at the end of the 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.

Transfer of licence

Transfer of the licence to another person may be requested by the licensee using the form for this purpose available from the EPA.

Variation of licence conditions

Variations to the conditions of this licence may be requested by the licensee using the form for this purpose available from the EPA. The EPA may also vary a 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 3 years after the issue of the licence, as

set out in Part 3.6 of the Act. You will receive advance notice of the licence review. For licences held immediately before 1 July 1999, the first review will take place before 1 July 2002.

Fees and annual return to be sent to the EPA

The licence requires you to forward to the EPA an Annual Return, comprising a Statement of Compliance and a summary of any monitoring required by the licence (including the recording of complaints).

The Annual Return must be submitted within 60 days after the end of each reporting period. Where a licence is transferred, surrendered or revoked, a special reporting period applies.

For each licence fee period you must pay:

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

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

See condition R1 and the accompanying form regarding the Annual Return requirements.

The EPA publication "A Guide to Licensing" contains information about how to calculate your licence fees.

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

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.

Licence anniversary date

31-October

This licence is issued to

INCITEC LTD.
PO Box 140
MORNINGSIDE QLD 4170

subject to the conditions which follow:

1 Administrative conditions

A1 What the licence authorises and regulates

A1.1 Not applicable.

A1.2 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
Chemical Industries or Works - ag fertil

Fee Based Activity	Scale
Agricultural Fertilizer and/or Ammonium Nitrate Production - Production of phosphate fertilizer(14b)	> 100000 - T produced

A1.3 Not applicable.

A2 Premises to which this licence applies

A2.1 The licence applies to the following premises:

Premises Details
INCITEC COCKLE CREEK WORKS
MAIN ROAD
BOOLAROO
NSW
2284
LOT 1 DP 225720

A3 Other activities

A3.1 Not applicable.

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.

Air

EPA Identification no.	Type of Monitoring Point	Type of Discharge Point	Description of Location
2	Ambient air monitor		First Street, Boolaroo (HVAS and Meteorological Station)
3	Sample point		DEN scrubber stack discharge

P1.2 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.

P1.3 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.

Water and land

EPA identification no.	Type of monitoring point	Type of discharge point	Description of location
1	Drain discharge	Drain discharge	10cm pipe discharging to sulphide corporation drain (refer drawing A42356).
4	Groundwater - Bore 1		Northern end of site (Fig. 8 - plan sub. 10/1/1995)
5	Groundwater - Bore BH 18		Above the site boundary (Fig. 8 - plan sub. 10/1/1995)
6	Groundwater - Bore BH 12		Southern end of site, above boundary (Fig. 8 - plan sub. 10/1/1995)
7	Groundwater - Bore 13		Above site boundary (Fig. 8 - plan sub. 10/1/1995)
8	Groundwater - Bore BH 19		Inside boundary, northern end of site (Fig. 8 - plan sub. 10/1/1995)
9	Groundwater - Bore 2		Above superphosphate plant (Fig. 8 - plan sub. 10/1/1995)
10	Groundwater - Bore BH7		Southern end of site inside boundary (Fig. 8 - plan sub. 10/1/1995)
11	Groundwater - Bore 14		Adjacent to the southern boundary (Fig. 8 - plan sub. 10/1/1995)
12	Groundwater - Bore BH 22		Central area of plant inside boundary (Fig. 8 - plan sub. 10/1/1995)
13	Groundwater - Bore BH23		Northern off site bore (Fig. 8 -plan sub. 10/1/1995)
14	Groundwater - Bore BH21		Central off site bore (Fig. 8 - plan sub. 10/1/1995)
15	Groundwater - Bore BH20		Southern off site bore (Fig. 8 - plan sub. 10/1/1995)
16	Stormwater drain		Site drain 21
17	Stormwater drain		Site drain 22
18	Stormwater drain		Central section of the plant that discharges directly to the Pasminco Cockle Creek Smelter .

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)
Coarse Particulates (Air)	41530
Fine Particulates (Air)	208945
Fluoride (Air)	129780
Total Phosphorus (Enclosed Waters)	623

L3 Concentration limits

L3.1 For each monitoring/discharge point or utilisation area specified in the table\s below (by a point number), the concentration of a pollutant discharged at that point, or applied to that area, must not exceed the concentration limits specified for that pollutant in the table.

L3.2 Where a pH quality limit is specified in the table, the specified percentage of samples must be within the specified ranges.

L3.3 To avoid any doubt, this condition does not authorise the pollution of waters by any pollutant other than those specified in the table\s.

Water and Land

POINT 1

Pollutant	Units of Measure	50 percentile concentration limit	90 percentile concentration limit	3DGM concentration limit	100 percentile Concentration Limit
pH	pH				6.5-9.5
Total Phosphorus	kg/day				3.0
Fluoride	kg/day				7.8
Total Suspended Solids	mg/L		50		100

L3.4 Wastewater may only be discharged from the premises from ***Discharge Point 1*** when there is sufficient discharge flow from the Pasminco Cockle Creek Smelter Pty Ltd to dilute this discharge to reduce the calculated fluoride concentration to less than 13 milligrams per litre.

L4 Volume and mass limits

L4.1 For each discharge point or utilisation area specified below (by a point number), the volume/mass of:

(a) liquids discharged to water; or;

(b) solids or liquids applied to the area;

must not exceed the volume/mass limit specified for that discharge point or area.

Point	Unit of measure	Volume/Mass Limit
1	kL/day	500

L5 Waste

L5.1 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.

L6 Noise Limits

L6.1 Not applicable.

L7 Potentially offensive odour

L7.1 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.

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:

POINT 1

Pollutant	Units of measure	Frequency	Sampling Method
Fluoride	mg/L	Daily	24 hour composite sample
Total Phosphorus	mg/L	Daily	24 hour composite sample
Total Suspended Solids	mg/L	Daily	Grab sample
pH	pH	Continuous	In line instrumentation

POINT 2

Pollutant	Units of measure	Frequency	Sampling Method
Phosphate	ug/m3	Every 6 days	Australian Standard 2724.3
Total suspended particles	ug/m3	Every 6 days	Australian Standard 2724.3

POINT 3

Pollutant	Units of measure	Frequency	Sampling Method
Fluoride	g/m3	Quarterly	Clean Air (Plant & Equipment) Regulation 1997 Test Method 9
Odour	OU/m3	Quarterly	OM-7

POINTS 4,5,6,7,8,9,10,11,12,13,14,15

Pollutant	Units of measure	Frequency	Sampling Method
Ammonia	mg/L	Yearly	Grab sample
Bicarbonate	mg/L	Yearly	Grab sample
Cadmium	mg/L	Yearly	Grab sample
Calcium	mg/L	Yearly	Grab sample
Chloride	mg/L	Yearly	Grab sample
Conductivity	uS/cm	Yearly	Grab sample
Fluoride	mg/L	Yearly	Grab sample
Lead	mg/L	Yearly	Grab sample
Magnesium	mg/L	Yearly	Grab sample
Manganese	mg/L	Yearly	Grab sample
Nitrate	mg/L	Yearly	Grab sample
Oxidation Reduction Potential (Redox potential)	mV	Yearly	Grab sample
Phosphate	mg/L	Yearly	Grab sample
Potassium	mg/L	Yearly	Grab sample
Sodium	mg/L	Yearly	Grab sample
Sulfate	mg/L	Yearly	Grab sample
Total Dissolved Solids	mg/L	Yearly	Grab sample
Zinc	mg/L	Yearly	Grab sample
pH	pH	Yearly	Grab sample

POINTS 16,17,18

Pollutant	Units of measure	Frequency	Sampling Method
Arsenic	mg/L	Weekly	Grab sample
Cadmium	mg/L	Weekly	Grab sample
Fluoride	mg/L	Weekly	Grab sample
Lead	mg/L	Weekly	Grab sample
Phosphate	mg/L	Weekly	Grab sample
Total Suspended Solids	mg/L	Weekly	Grab sample
Zinc	mg/L	Weekly	Grab sample
pH	pH	Weekly	Grab sample

Note: Monitoring for points 16 to 18 is only required when flow conditions permit sampling.

M3 Testing methods - concentration limits

M3.1 Monitoring for the concentration of a pollutant emitted to the air required to be conducted by this licence must be done in accordance with:

(a) any methodology which is required by or under the Act to be used for the testing of the concentration of the pollutant; or

(b) if no such requirement is imposed by or under the Act, any methodology which a condition of this licence requires to be used for that testing; or

(c) if no such requirement is imposed by or under the Act or by a condition of this licence, any methodology approved in writing by the EPA for the purposes of that testing prior to the testing taking place.

Note: The Clean Air (Plant & Equipment) Regulation 1997 requires testing for certain purposes to be conducted in accordance with test methods contained in the publication "Approved Methods for the Sampling and Analysis of Air Pollutants in NSW".

M3.2 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.

Note: Testing methods - load limit

Note: Clause 18 (1) and (2) of the Protection of the Environment Operations (General) Regulation 1998 requires that monitoring of actual loads of assessable pollutants listed in L2.1 must be carried out in accordance with the testing method set out in the relevant load calculation protocol for the fee-based activity classification listed in condition A1.2.

M4 Recording of pollution complaints

M4.1 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.

M4.2 The record must include details of the following:

(a) the date and time of the complaint;
(b) the method by which the complaint was made;
(c) any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect;
(d) the nature of the complaint;
(e) the action taken by the licensee in relation to the complaint, including any follow-up contact with the complainant; and
(f) if no action was taken by the licensee, the reasons why no action was taken.

M4.3 The record of a complaint must be kept for at least 4 years after the complaint was made.

M4.4 The record must be produced to any authorised officer of the EPA who asks to see them.

M5 Telephone complaints line

M5.1 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.

M5.2 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.

M5.3 Conditions M5.1 and M5.2 do not apply until 3 months after:
(a) the date of the issue of this licence or
(b) if this licence is a replacement licence within the meaning of the Protection of the Environment Operations (Savings and Transitional) Regulation 1998, the date on which a copy of the licence was served on the licensee under clause 10 of that regulation.

M6 Requirement to monitor volume or mass

M6.1 For each discharge point or utilisation area specified below, the licensee must monitor:

(a) the volume of liquids discharged to water or applied to the area;
(b) the mass of solids applied to the area;
(c) the mass of pollutants emitted to the air;

at the frequency and using the method and units of measure, specified below.

POINT 1

Frequency	Unit Of Measure	Sampling Method
Daily	kL/day	In line instrumentation

M7 For each monitoring specified below (by a point number), the licensee must monitor (by sampling and obtaining results by analysis) each weather parameter 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:

Point 2 *Weather*

Parameter	Units of measure	Frequency	Sampling Method
Wind direction	*Degrees*	*Continuous*	*instrumental*
Wind speed or run	*m/sec*	*Continuous*	*instrumental*
Rainfall	*mm*	*Daily*	*instrumental*

6 Reporting conditions

R1 Annual return documents

What documents must an Annual Return contain?

R1.1 The licensee must complete and supply to the EPA an Annual Return in the approved form comprising:
(a) a Statement of Compliance; and
(b) a Monitoring and Complaints Summary.
A copy of the form in which the Annual Return must be supplied to the EPA accompanies this licence. Before 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.

Period covered by Annual Return

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.

Deadline for Annual Return

R1.5 The Annual Return for the reporting period must be supplied to the EPA 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').

Notification where actual load can not be calculated

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.

Licensee must retain copy of Annual Return

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.

Certifying of Statement of Compliance and Signing of Monitoring and Complaints Summary

R1.8 Within the Annual Return, the Statement 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.

R1.9 A person who has been given written approval to certify a certificate of compliance under a licence issued under the Pollution Control Act 1970 is taken to be approved for the purpose of this condition until the date of first review of this licence.

R2 Notification of environmental harm

Note: The licensee or its employees must notify the EPA of incidents causing or threatening material harm to the environment as soon as practicable after the person becomes aware of the incident in accordance with the requirements of Part 5.7 of the Act.

R2.1 Notifications must be made by telephoning the EPA's Pollution Line service on 131 555.

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; and
(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;
(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.

General conditions

G1 Copy of licence kept at the premises

G1.1 A copy of this licence must be kept at the premises to which the licence applies.

G1.2 The licence must be produced to any authorised officer of the EPA who asks to see it.

G1.3 The licence must be available for inspection by any employee or agent of the licensee working at the premises.

Pollution studies and reduction programs

U1 On or before 31 December 2002 the licensee must review the condition of all groundwater monitoring bores on the premises and where necessary either repair or replace any of the bores that do not comply with the specification for monitoring bores described in the document **"Specifications and Methods for the Construction of Departmental Groundwater Monitoring Bores in New South Wales"** published by the Department of Land and Water Conservation.

Note: Where Incitec and Pasminco Cockle Creek Smelter operate groundwater monitoring bores at the same location it is acceptable for both licensees to use the same bore.

U2 On or before 30 October 2002 the licensee must provide the EPA with a written report describing an action plan and timetable for upgrading the dust collection system at the truck unloading station located on the premises. The proposal must include actions to improve the enclosure of unloading point and improved dust extraction system to prevent dust emission during unloading operations. The action plan must be completed within twelve (12) months of it being approved in writing by the EPA.

U3 On or before 30 October 2002 the licensee must provide the EPA with a written report describing an action plan and timetable for upgrading stormwater management on the premises. The proposal must include actions to: -

- prevent contamination of stormwater leaving the premises,
- provide a properly designed first flush stormwater system,
- ensure the concentration of pollutants present in any stormwater discharge from the premises does not exceed the level specified for that pollutant in Schedule 2 and Regulation 8 of the Clean Waters Regulations 1972,
- maximise the beneficial reuse of stormwater runoff.
- Treatment of stormwater to reduce contamination levels.

The action plan must be completed within twelve (12) months, or such other time as may be specified by the EPA, of the plan being approved in writing by the EPA.

Special conditions

Dictionary

General Dictionary

In this licence, unless the contrary is indicated, the terms below have the following meanings:

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 1998
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 1998
assessable pollutants	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 1998
BOD	Means biochemical oxygen demand
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 1998.
flow weighted composite sample	Means a sample whose composites are sized in proportion to the flow at each composites time of collection.
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
industrial waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
inert 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 1998
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	Means that percentage [eg.50%] of the number of samples taken that must meet the concentration limit

relation to a concentration limit of a sample]	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.
reprocessing of 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
solid waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
treatment of waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
TSP	Means total suspended particles
TSS	Means total suspended solids
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 code	Means the waste codes listed in Appendix 5 of the EPA document A Guide to Licensing Part B.
waste type	Means Group A, Group B, Group C, inert, solid, industrial or hazardous waste

Mr Grahame Clarke

Head Regional Operations Unit

(By Delegation)

Date of this edition - 02-Mar-2002

End Notes

1	Licence varied by notice V/M upgrade, issued on 07-Jul-2000, which came into effect on 07-Jul-2000.
2	Licence varied by notice 1006848, issued on 05-Feb-2002, which came into effect on 02-Mar-2002.

Appendix C: Extracts from the Protection of the Environment Operations (General) Regulation 1998.

Extracts from Protection of the Environment Operations (General) Regulation 1998

Sect 18. Determination of assessable loads of assessable pollutants

(1) Licensee must calculate actual load
A licensee must calculate the actual load for each assessable pollutant discharged under the licensee's licence during the licence fee period (whether or not the pollutant was discharged in accordance with the licence). For that purpose, the licensee must carry out all necessary monitoring and other steps to enable the calculation to be made for the relevant period.

(2) Actual load calculated using methods in protocols
The actual load must be calculated using any of the methods provided in the load calculation protocol for the relevant activity issued by the EPA and in force. If there is no such protocol, the actual load for each assessable pollutant is taken to be zero.

(5) Licensee must calculate weighted load according to appropriate protocol
A licensee who calculates a weighted load must use the methods provided in the load calculation protocol for the activity.

Sect 22 Calculation of fee rate thresholds for assessable pollutants

(1) The steps to be taken to determine the fee rate threshold for the licence fee period for each assessable pollutant for an activity are as follows:
Step 1
Select the applicable fee rate threshold factor for the pollutant for the activity from Schedule 1.
Note. Fee rate threshold factors are expressed in units of kilograms of pollutants per the applicable unit of quantity of activity.
Step 2
Determine the actual quantity of activity during the licence fee period, calculated using the units of measure for the activity specified in respect of the activity in Schedule 1.
Step 3
Multiply the fee rate threshold factor selected in Step 1 by the quantity of activity determined in Step 2.

(2) If more than one classification in Schedule 1 applies, the fee rate threshold for each assessable pollutant is the sum of the fee rate thresholds for each applicable classification of activity calculated in accordance with this clause.

Sect 23 Calculation of load-based fee

The steps to determine the load-based fee in relation to a licence are as follows:
Step 1
Determine the classification or classifications of the activity.
Note. Refer to the activity classifications in Schedule 1.

Step 2

Determine if there are any assessable pollutants for the activity classification. If more than one activity classification is applicable, the assessable pollutants are those applying to each classification.

Note. Refer to the list of assessable pollutants under each activity classification in Schedule 1. If there are no assessable pollutants, no load-based fee is payable in relation to the activity.

Step 3

Determine the assessable load of each assessable pollutant. The assessable load is the least of the actual load or the weighted load (determined in accordance with clause 18) or the agreed load (determined in accordance with Division 5).

If more than one classification in Schedule 1 applies, the assessable load for each assessable pollutant is the sum of the assessable loads of that assessable pollutant for each applicable classification of activity calculated in accordance with this clause.

Step 4

Calculate the fee rate thresholds for each assessable pollutant.

Note. The method for calculating the fee rate thresholds is set out in clause 22.

Step 5

Calculate the fee for each pollutant. The fee for each pollutant is calculated using one of the formulas shown below. If the assessable load determined in Step 3 is greater than the fee rate threshold calculated in Step 4, use Formula 1. In all other cases, use Formula 2.

Formula 1

Fee (if the assessable load is greater than the fee rate threshold) =

$$\frac{(2AL\text{-}FRT) \times PFU \times PW \times CZ}{10{,}000}$$

Formula 2

Fee (in all other cases) =

$$\frac{AL \times PFU \times PW \times CZ}{10{,}000}$$

where:

AL = assessable load of the assessable pollutant discharged, expressed in kilograms (see Step 3 above),

CZ = pollutant critical zone weighting for the assessable pollutant (see clause 21),

FRT = the applicable fee rate threshold, expressed in kilograms (see Step 4 above),

PFU = the amount equal to one pollutant fee unit specified in clause 6 for the assessable pollutant,

PW = pollutant weighting for the assessable pollutant (see clause 20).

Step 6

Total the fees for each assessable pollutant.

Step 7

Subtract the amount of the administrative fee (excluding the amount of any increase in the administrative fee as a penalty for the late payment of the fee).

Despite anything else in this clause, the amount of the load-based fee can never be negative.

Appendix D: Enterprise comments on draft report

INCITEC PIVOT LTD
COCKLE CREEK SITE

Peter Holmes
Technical Manager
Superphosphate Plant
Incitec Pivot Ltd
PO Box 148
Mayfield
2304
1/7/2003

Attention of Mr Kieran Lynch
Environmental Protection Agency
Compliance Auditing Division
PO Box A290
Sydney South
NSW
1232

Kieran

Thank you for your draft of the audit of Incitec Ltd, Boolaroo (Licence No. 208).

As suggested in the letter accompanying the report, we would like to make a few comments & appreciate the extra week's grace your gave us to prepare the comments.

Re 2.1 (1)
We see the upgrading of flow monitoring & sampling at points 16,17 & 18 as desirable for better data to indicate the loads of nutrients in rainwater leaving the site & it is being done in the current year as part of a rainwater quality improvement plan under a site notice (No. 1027861 – 20/6/2003). The data to be used in design of a future stormwater treatment plant.
These drains are nominated as stormwater drains not discharge drains (ref. P1.3 of our licence) & we question the use of loadings from stormwater as part of load based licensing calculation.

Re 2.1 (2)
There is a problem with measuring both fine & coarse particulate in stacks that are saturated such as ours. The solids being water-soluble compound the problem. We raised the issue at the LBL workshops & made submissions to Mss Linda Crystal prior to the introduction of LBL on a measurement strategy for the site using total solids determinations & applying the ratio used in the industry protocols.
We believe that we followed the most conservative approach to the calculation of fine & coarse dust loads given the difficulty of using the approved method in our industry.

We will now approach the technical committee to gain approval for our methods that cannot comply & use complying methods where we are able.

Re2.1 (3)
Records are being retained of all data used for calculation of fees. Sample labelling & security procedures will be uprated.

Re2.1.3
The laboratory we use at Incitec Kooragang Island has undertaken achieving NATA registration for environmental analysis. This may take several months, so the EPA will be contacted & notified of the situation & the required check sampling undertaken.

Re2.3.3
A consultant determined the fugitive air load from the storage sheds & a report was not prepared as more testing was programmed but only one shed of four was able to be tested last year due to weather & process problems. A report is being prepared on the 2002 test & this will be sent to the EPA showing test procedures etc.
The shed tested (#2) has most probably the highest loading & this figure was applied to the four sheds to ensure that the most conservative approach was taken in the load calculation. All four sheds will be tested this year for a more accurate fugitive loading calculation.
The method used will be passed by the methods board for a compliance/ approval check.

Thanks

Peter Holmes

Peter Holmes

02-793827

SUBMISSION ON LOAD BASED LICENCING CONSULTATION PROGRAMME.

INCITEC LTD.
COCKLE CREEK SITE
EPA LICENCE NO. 208

Incitec ,Cockle Creek , would make the following comments/ submissions on Load Based Licensing .

- Incitec favors the principal of Load Based Licensing.
- The estimate of fees for license 208 prepared at the Newcastle Customs House 16/3/98 was unsatisfactory for the following reasons.
    - The estimate was purely economic & technical question were excluded.
    - No detail on how calculation was made.
    - Errors / inconsistencies existing calculation.
    - The estimate adds the administration charge to the load charge in some parts. This is contrary to regulations
    - Appears to still relate to industry default even when load figure were presented e.g. Fluoride in air was $9,048 with actual column showing zero.
    - Load charges are not in line with local EPA pressures, community expectations or site environmental improvement plans.
    - The interview concentrated on reducing charges by promising to reduce emissions that we knew were actually considerably lower.
- Technical problems with the basis for the protocols have been raised with more to come.
- The local EPA is emphasizing odours , liquid effluents to the local waterway including Fluoride which is not mentioned & is approving our success in minimizing Fluoride to air. Load based licensing would have us diverting resources to fine dust reduction.
- The detail in the calculation of the $ figures is needed.
- The local EPA should be more prominent in load based licensing negotiations

Peter Holmes

Technical Superintendent, Cockle Creek Site

Sent 1997 P. Holmes

April 21,1998

The Manager
Environmental Protection Authority
PO Box1135 Chatswood NSW 2057 (02)49793827

Attention: Ms Jane Crystal
Level 5 Economics

Dear Ms Crystal

Following our recent phone conversation , we have prepared the following submission for the Cockle Creek Site of Incitec Ltd (Licence Number 208) for assessment as the method for quantifying the environmental load under the Load Based Licensing regulations .

1.0 **Protocols for Superphosphate Manufacture**

The protocols for Superphosphate manufacture are based on American data that is not relevant to the Cockle Creek Site operation for the following reasons.

- We are unaware of any purpose built Single Superphosphate production plant in the USA. It was replaced by high analysis fertilisers from the late 1960'S. There has not been any articles on Single Superphosphate in technical journals for about 20 years.
- The protocols relate to a large interrelated fertiliser complex with the capacity to make phosphoric acid , sulphuric acid, ammonia ,high analysis superphosphates ,ammonium phosphates with storage for raw materials such as phosphate rock .This is not the situation at the Cockle Creek site.
- The operation of making Superphosphate is split between the Kooragang Island site & the Cockle Creek site. Phosphate rock storage ,handling & grinding is carried out at Kooragang Island with the ground phosphate rock transported to the Cockle Creek plant for processing to Single Superphosphate.

Incitec believes that use of the protocols puts the wrong emphasis on the environmental impacts of the Cockle Creek operation as seen by the local EPA , the local community & Incitec itself.

The issues could be summarised as:-

- Odour
- Liquid effluent to the local waterway (Cockle Creek)

2.0 **Proposed Submission**

Based on Components numbered 6 to 9 already submitted .
(Attachments A,B,C,D)

2.1 Component Number 6 Rock Receival Operations

The loss of dust to the environment from this operation is negligible due to the following features of the operation which is only a subset of the type of operation in the protocol.

- Ground phosphate rock is delivered in sealed trucks.
- Unloading operations are carried out in a receival area that is curtained & under negative pressure.
- The remainder of the operation is within a sealed building.
- The dust collection equipment exhausts to the interior of the building & not to atmosphere.

Load Submission:

Fine Dust	Nil
Coarse Dust	Nil

2.2 Component Number 7 Rock / Acid Reaction

It is a license requirement to monitor emissions from the component 6 stack for Fluoride & the liquid effluent's for Fluoride & Phosphate. Dust levels were tested as part of the commissioning of the odour scrubber in 1993.

The total dust load from the stack was determined as total dust. As mentioned in earlier submissions , Incitec & it's consultants say their is no viable method to determine fine & corse particulates in a saturated gas flow.

It is proposed to split the fine/coarse fractions of the total dust as 2 parts fine : 1 part coarse similarly to the protocols & our experience in measuring fertilisers dust in dry conditions. This becomes academic when the low total dust flow is considered.

Load Submission

(a) **Load to Air**

Fluoride	196.2 Kg's /Year
Fine Dust	3883Kgs /Year
Coarse Dust	1941Kgs /Year

(b) **Load to Enclosed Waters**

Fluoride	166 Kg's /Year
Phosphate	23.7 Kg's. /Year

2.3 Component No. 8 Granulation & Curing Operations)

Similarly to component No.7 , this operation has been monitored for years & it is proposed that the loads on the environment be based on results from the test points nominated.

The same situation to dust would also apply.

Load Submission

Load to Air	
Fluoride	230.8 Kg's /Year
Fine Dust	4568Kgs /Year
Coarse Dust	2284Kgs /Year

2.4 Component No. 9 Single Superphosphate Dispatch

Dust losses from this operation is currently monitored by a high volume dust sampler on the site boundary. The level of Single Superphosphate dust loss is assessed by assuming that the Phosphorous content of the dust collected is Single Superphosphate.

The location was selected so that results would be the worst case scenario namely:-

- The shortest boundary.
- Closest to main despatch operations.
- The side with the closest residential area.

This initial submission uses the worst case data to calculate the load on the environment for dust losses to the atmosphere.

Load Submission

Fine Dust	12.9Kgs /Year
Coarse Dust	6.45Kgs /Year

3.0 **Total Environmental Load**

The total loads from the four sections was then totalled as shown below:-

3.1 **Total Load to Atmosphere**

Fluoride	593 Kg's /Year
Fine Dust	8463.9Kgs /Year
Coarse Dust	4231.45Kgs /Year

3.2 **Total Load to Enclosed Waters**

Fluoride	166 Kg's /Year
Phosphate	23.7Kgs /Year

We propose that these figures be used to calculate the initial load based licensing fee for the Cockle Creek site

4.0 **Load Reductions**

We would like to discuss the following at our next interview.

4.1 Load to Enclosed Waters

The flow to enclosed waters will be reduced to zero within two years. This a site environmental improvement planned for some time with two trials already completed.

4.2 Dust to Atmosphere (Components 7 & 8)

Incitec will undertake regular total dust determinations from the sample points of components 7 & 8 ,plus dispersion modelling to assess how much leaves the site. This will then be the basis of either renegotiation of fees or reduction programmes.

4.3 Dust to Atmosphere (Component 9)

The load will be reduced by at least 50 % in 3 years. It is part of our site environmental plan.

5.0 **Administration Fee**

The administration fee seem out of proportion to an operation employing only 45 personnel with a low hazard process.

The Single Superphosphate market is intensely competitive with interstate & overseas competition for a market dependent upon wool price which is not expected to improve for several years.

Profits are related to high volume sales with low profit margins due to the high cost of raw materials.

We ask that this increase be reviewed in the light of economic hardship.

6.0 **Next Interview**

We would like to discuss this submission with you at your earliest convenience.

Yours Sincerely

Peter Holmes

Technical Superintendent , Incitec Cockle Creek Site.

EPA

Environment
Protection
Authority
New South Wales

PO Box 1135 Chatswood NSW 2057
Telephone. 02. 9795 5000 Facsimile. 02. 9325 5678
www.epa.nsw.gov.au

Mr Peter Holmes
Technical Superintendent
Incitec Boolaroo
PO Box 148
MAYFIELD NSW 2304

Our Reference:

Your Reference:

Contact: Simon Smith - (02) 9325 5537

Dear Mr Holmes

Re: Proposed Pollution Control Regulation 1998

Thank you for your recent submission regarding the Load Based Licensing Scheme. We appreciate the feedback you have provided about the proposed Regulation. Each of the issues that you have raised will be considered carefully as a final draft Regulation is prepared. In revising the Regulation, the EPA will also be taking into account issues raised verbally during both the regional seminars and in the individual discussions.

The revised Regulation, together with details of all of the comments received during the consultation period will then be forwarded to the Minister for the Government's consideration. The Government's intention is that the final Regulation will be gazetted such that the Scheme can commence on 1 September as outlined during the Regional Seminars.

Thank you for taking the time to contribute to the development of the Load Based Licensing Scheme. Throughout the development process, input from stakeholders has made an immense contribution to ensuring that the final result will be the best possible environment protection licensing Scheme for NSW.

There will be further opportunities to participate in the finalisation of the load calculation protocols. If you are interested and have not already registered, please indicate your interest to Ms Lara Whyte on 02-9325 5848.

Yours sincerely

DREW COLLINS
Director Economics and Environmental Reporting

Appendix E: Cover letter to final report

Our Reference : 270012/A7
Contact : Trevor Henderson, (02) 4908 6824; Fax (02) 4908 6810

NSW EPA

Regulation and Audit

Mr Peter Smith
Safety, Health and Environment Advisor
Incitec
PO BOX 80
MAYFIELD NSW 2304

Dear Mr Smith,

Re. Final Load Based Licence Compliance Audit Report – Incitec Cockle Creek Works (EPA Licence No. 208

The Environment Protection Authority (EPA) is pleased to present a copy of the Final Compliance Audit Report *(Focussing on Load Based Licensing Requirements)* for the Incitec Cockle Creek Works in Boolaroo. (EPA licence No. 208).

The comments provided by you in your letter on 4 July 2003 have been considered when finalising the report and are attached as an Appendix to the report. In particular the EPA notes the additional measures being put in place by Incitec to ensure compliance with LBL requirements by the end of the reporting period. With regard to monitoring of loads from stormwater discharges (non compliance in section 2.1 (1)), all loads of assessable pollutants from activities at the premises must be calculated. The EPA notes that these discharge points (EPA points 16, 17 & 18) are listed as stormwater drains however monitoring results for these points (reported in the annual return) shows mean phosphate concentrations of 10.83 mg/l, 19.6 mg/l and 46.3 mg/l respectively. If these discharges do not relate to activities being conducted at the premises, Incitec may investigate mechanisms to account for these pollutants in the Load Calculation Protocol.

I would like to take this opportunity to thank you and your staff for the co-operation during the Audit. If you require further information or clarification on any matters regarding this audit, please do not hesitate to contact Trevor Henderson on (02) 4908 6824.

Yours sincerely,

8/8/03

Christopher Kelly
A/Manager Compliance Audit

Environment Protection Authority
PO Box A290 Sydney South NSW 1232 Australia Telephone 61 2 9995 5000 Facsimile 61 2 9995 5999 www.epa.nsw.gov.au
59-61 Goulburn Street Sydney NSW 2000