

## **ATMOSPHERIC EMISSION LICENCE AS CONTEMPLATED IN SECTION 40 OF THE NATIONAL ENVIRONMENTAL MANAGEMENT: AIR QUALITY ACT, 2004, (ACT NO. 39 OF 2004)**

The Atmospheric Emission Licence issued to Sasol Nitro Ekandustria in terms of section 40(1) (a) of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) ("the Act"), in respect of the following Listed Activities:

- Subcategory 4.13: Lead Smelting
- Category 6: Organic Chemicals Industry
- Subcategory: 8.3: Burning Grounds

The Atmospheric Emission Licence has been issued on the basis of information provided in the company's application dated 26 March 2013 and information that became available during processing of the application.

The Atmospheric Emission Licence is valid until 31 March 2017.

The reason for issuance of the current licence is to ensure transitional arrangement, in terms of section 61 of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004).

The Atmospheric Emission Licence is issued subject to the conditions and requirements set out below which form part of the Atmospheric Emission Licence which are binding on the holder of the Atmospheric Emission Licence ("the holder").

### **1. PROVISIONAL ATMOSPHERIC EMISSION LICENCE ADMINISTRATION**

Name of the Licensing Authority	City of Tshwane
Atmospheric Emission Licence Number	9/16/1/2/10/R
Atmospheric Emission Licence Issue Date	2014/03/28
Atmospheric Emission Licence Type	Atmospheric Emission Licence
Review Date, not later than	31 March 2016

Air Quality Officer Signature: \_\_\_\_\_

Date: 2014/03/28

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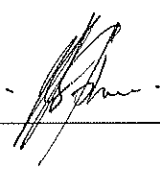
## 2. PROVISIONAL ATMOSPHERIC EMISSION LICENCE HOLDER DETAILS

Enterprise Name	Sasol Nitro
Trading as	Sasol Nitro Ekandustria
Enterprise Registration Number (Registration Numbers if Joint Venture)	1968-0013914-06
Registered Address	486 Brandbach road Ekandustria
Postal Address	PO Box 1467 Bronkhorstspuit 1020
Telephone Number (General)	013 933 6000
Industry Sector	Manufacture of Explosives
Name of Responsible Officer	Mr. L. P. Cullinan
Name of Emission Control Officer	Mr. Ristoff Van Zyl
Telephone Number	016 920 4913
Cell Phone Number	083 632 5975
Fax Number	011 219 2438
Email Address	Ristoff.vanzyl@sasol.com
After Hours Contact Details	082 459 7055
Land Use Zoning as per Town Planning Scheme	Industrial

## 3. SITUATION AND EXTENT OF PLANT

### 3.1 Location and Extent of Plant

Physical Address of the Premises	486 Brandbach Road, Ekandustria
Description of Site (Erf)	Portion 2, Lunsriem 612 JR
Coordinates of Approximate Centre of Operations	UTM reference – Grid Zone: 25 28 DA North-South: N -25.687210 S -25.690537 East - West: E 28.689004 W 28.678505
Extent (km <sup>2</sup> )	3.65
Elevation Above Mean Sea Level (m)	1501
Province	Gauteng
Metropolitan Municipality	City of Tshwane

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### 3.2 Description of Surrounding Land Use (within 5 km radius)

Land use within the 5 km radius from the Sasol Nitro facility is for industrial and farming purposes as well as the residential areas of Ekangala, Dark City and Rethabiseng.



## 4. GENERAL CONDITIONS

### 4.1 Process and ownership changes

The holder of the Provisional Atmospheric Emission Licence must ensure that all unit processes and apparatus used for the purpose of undertaking the listed activity in question, and all appliances and mitigation measures for preventing or reducing atmospheric emissions, are at all times properly maintained and operated.

No building, plant or site of works related to the listed activity or activities used by the licence holder shall be extended, altered or added to the listed activity without an environmental authorisation from the competent

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authority. The investigation, assessment and communication of potential impact of such an activity must follow the basic assessment procedure as prescribed in the Environmental Impact Assessment Regulations published in terms of section 24(5) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA), as amended.

Any changes in processes or production increases, by the licence holder which may have an impact on atmospheric emissions, will require prior approval by the City of Tshwane.

Any changes to the type and quantities of input materials and products, or to production equipment and treatment facilities which may have an impact on atmospheric emissions will require prior written approval by the City of Tshwane.

The licence holder must, in writing, inform the licensing authority of any change of ownership of the enterprise. The City of Tshwane must be informed within 30 (thirty) days after the change of ownership.

The licence holder must immediately on cessation or decommissioning of the listed activity inform, in writing, the City of Tshwane.

#### **4.2 General duty of care**

The holder of the licence must, when undertaking the listed activity, adhere to the duty of care obligations as set out in section 28 of the NEMA.

The licence holder must undertake the necessary measures to minimize or contain the atmospheric emissions. The measures are set out in section 28(3) of the NEMA.

Failure to comply with the above condition is a breach of the duty of care, and the licence holder will be subject to the sanctions set out in section 28 of the NEMA.

#### **4.3 Sampling and/or analysis requirements**

Measurement, calculation and/or sampling and analysis shall be carried out in accordance with any nationally or internationally acceptable standard. A different method may be acceptable to the City of Tshwane as long as it has been consulted and agreed to the satisfactory documentation necessary in confirming the equivalent test reliability, quality and equivalence of analyses.

The licence holder is responsible for quality assurance of methods and performance. Where the holder of the licence uses external laboratories for sampling or analysis, accredited laboratories shall be used.

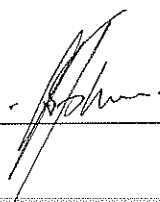
#### **4.4 General requirements for licence holder**

The licence holder is responsible for ensuring compliance with the conditions of this licence by any person acting on his, her or its behalf, including but not limited to, an employee, agent, sub-contractor or person rendering a service to the holder of the licence.

The licence does not relieve the licence holder to comply with any other statutory requirements that may be applicable to the carrying on of the listed activity.

A copy of the licence must be kept at the premises where the listed activity is undertaken. The licence must be made available to the environmental management inspector representing the licensing authority who requests to see it.

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The licence holder must inform, in writing, the City of Tshwane of any change to its details including the name of the emission control officer, postal address and/or telephonic details.

#### 4.5 Statutory obligations

The licence holder must comply with the obligations as set out in Chapter 5 of the Act.

#### 4.6 Annual payment of Provisional Atmospheric Emission Licence processing fee

The licence holder must, for the period of validity of the licence, pay the processing fee annually to the City of Tshwane. The payable fee will be communicated to the licence holder after promulgation of the licensing fee calculator by National Government.

### 5. NATURE OF PROCESS

#### 5.1 Process Description

##### Production of Monomethylaminenitrate:

Monomethylamine Nitrate (MMAN) is a sensitizer used in the production of explosives. It is manufactured by combining monomethylamine (MMA) with nitric acid. The combination of the two liquids is done in a reactor creating an exothermic reaction which forms MMAN and due the heat of the reaction the water contained in the nitric acid is boiled off. The steam from the reaction leaves the top of the reactor through a stack that enters a scrubber column. The MMAN formed is further processed and pumped to storage tanks.

Due to the violent boiling action in the reactor there are traces of MMAN and MMA entrained in the steam leaving the reactor. The steam enters the scrubber column from the base and flows up the scrubber column and exits through the scrubber stack. Flowing counter current to the steam is scrubber liquid at the correct PH which will react with any free MMA to form MMAN and the MMAN entrained in the steam will be scrubbed out by the liquid..

The monomethylaminenitrate is then used in downstream processes to produce a variety of explosives in non-listed activity processes. Lead is also used as part of the process to produce detonators.

All the off specification lead related products from the process are processed in a lead furnace, where the lead is recovered for recycling.

##### Lead furnace:

Ten boxes of lead are inserted into the lead furnace. Melting of the lead takes place at 700 degrees Celsius. After melting of lead has occurred symex powder is added into the pot. Ingots are removed and placed in containers for disposal.

##### Burning Ground:

Since the plant is an explosive manufacturing facility, the facility is required, through the Explosives Act, to destroy explosive contaminated waste on a Burning Ground. The burning ground consists of various areas

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where dedicated contaminated waste is burned. Access and the type of waste taken to the burning ground is controlled and burning normally takes place on a daily basis during daytime.

## 5.2 Listed Activities

Category of Listed Activity	Sub-category of the Listed Activity	Listed Activity Name	Description of the Listed Activity
4	4.13	Lead Smelting	The extraction, processing and use of lead in production by the application of heat
6	6	Organic Chemicals Manufacturing	The production of organic chemicals not specified elsewhere
8	8.3	Burning Grounds	Facilities where waste material from the manufacture of explosives and contaminated explosive packaging material; are destroyed.

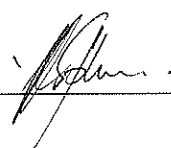
## 5.3 Unit Processes

Unit Process	Function of Unit Process	Batch or Continuous Process
Neutraliser unit	React monomethylamine with nitric acid to form monomethylaminenitrate	Batch
Burning grounds	Thermal destruction of explosive contaminated waste	Batch
Lead furnace	Recovering of lead with heat	Batch

## 5.4 Hours of Operation

Unit Process / Plant	Operating Hours	No. Days of Operation per Year
Neutraliser unit	24 hours	365
Burning grounds	09:00 – 17:00	365
Lead furnace	09:00 – 17:00	365

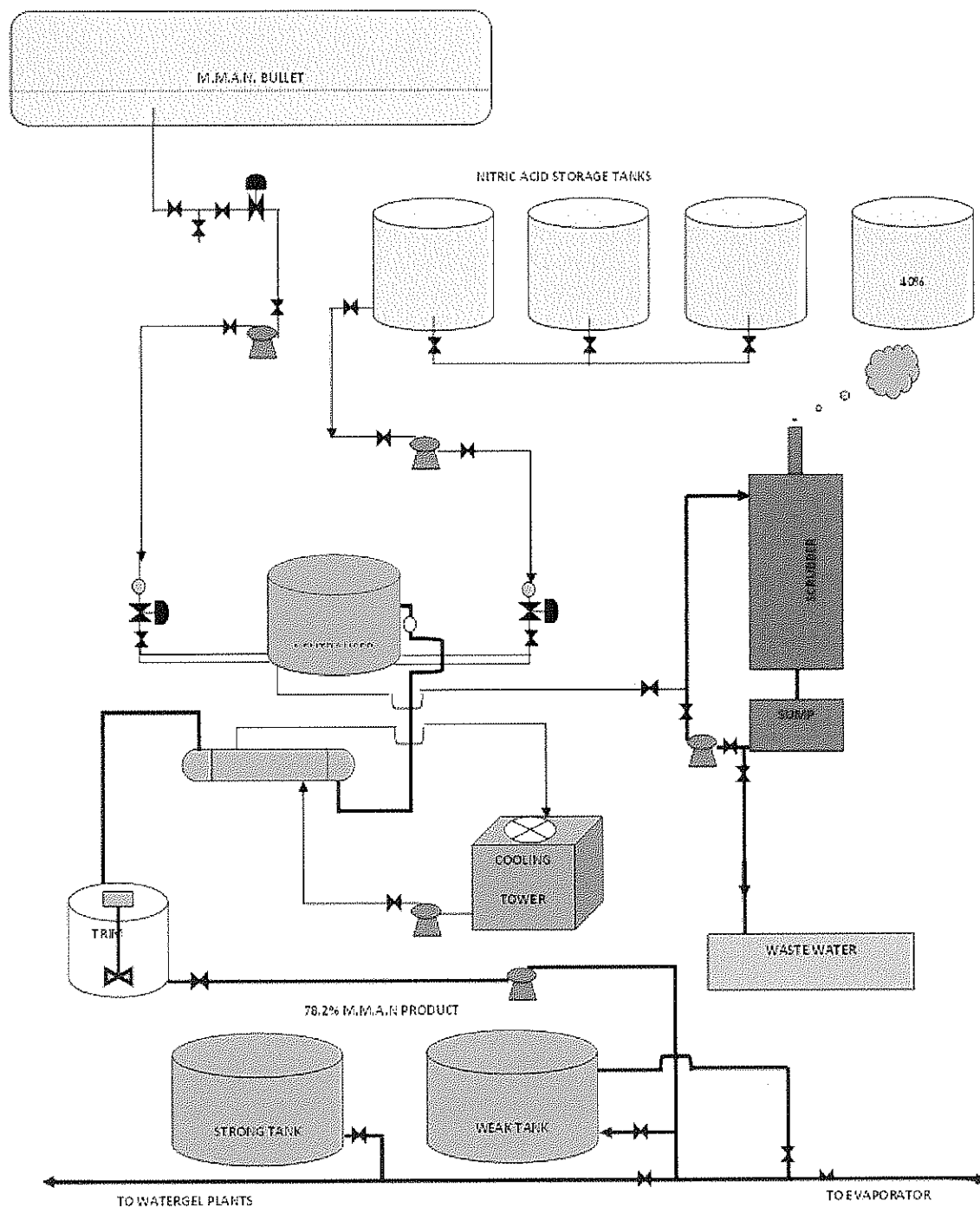
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## 5.5 Graphical process information

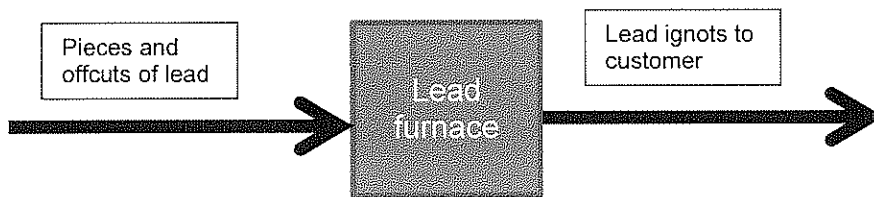
M.M.A.N. PLANT FLOW DIAGRAM



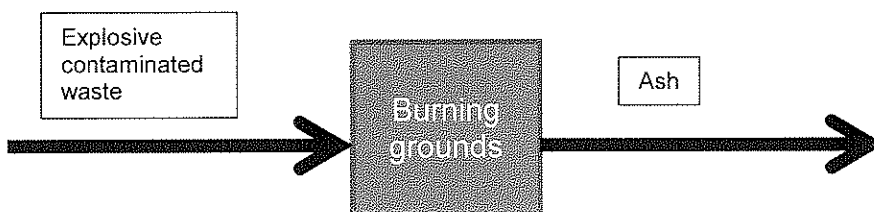
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### Lead furnace



### Burning ground



## 6. RAW MATERIALS AND PRODUCTS

### 6.1. Raw Materials Used

Raw Material Type	Maximum Permitted Consumption Rate (Volume)	Design Consumption Rate (Volume)	Actual Consumption Rate (Volume)	Units (quantity/period)
Based on intellectual properties as well as Competition law compliance, this information was not disclosed, however the information should be made available on site for review, should it be necessary.				

### 6.2. Production Rates

Raw Material Type	Maximum Permitted Consumption Rate (Volume)	Design Consumption Rate (Volume)	Actual Consumption Rate (Volume)	Units (quantity/period)
Based on intellectual properties as well as Competition law compliance, this information was not disclosed, however the information should be made available on site for review, should it be necessary.				

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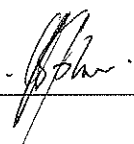
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## 6.3. Energy Sources Used

Energy Source	Actual Consumption Rate (Volume)	Units (quantity/period)
Electricity	250 000	kW/Month
Steam	6	tonnes/hour

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#### 6.4. Sources of atmospheric emission

##### 6.4.1 Point source parameters

Point Source code	Source name	Latitude (decimal degrees)	Longitude (decimal degrees)	Height of Release Above Ground (m)	Height Above Nearby Building (m)	Diameter at Stack Tip / Vent Exit (m)	Actual Gas Exit Temperature (°C)	Actual Gas Volumetric Flow (m³/hr)	Actual Gas Exit Velocity (m/s)
1	MMA Stack	S 25.68126°	E 28.686318°	5.8	3	0.4	104	1 100	2.4
2	Lead furnace stack	S 25.68278°	E 28.68722°	3.1	2m lower than pitch of nearest building	0.21 x 0.21	33	1 860	15.6

##### 6.4.2 Area and/or Line Source Parameters

Unique Area Source ID	Source Name	Source Description	Height of Release Above Ground (m)	Length of Area (m)	Width of Area (m)
1	Burning Ground	Area for combustion of explosive contaminated waste	N/A	N/A	N/A

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## 7. APPLIANCES AND MEASURES TO PREVENT AIR POLLUTION

### 7.1 Appliances and control measures

Associated Source Code	Appliances				Air Pollution Control Technology							
	Appliance / Process Equipment Number	Appliance Type / Description	Appliance Serial Number	Appliance Manufacture Date	Product Name and Model	Technology Type	Commission Date	Date of Significant Modification / Upgrade	Design Capacity	Nominal Capacity	Permitted Minimum Control Efficiency (%)	Permitted Minimum Utilization (%)
1	MMA Scrubber (E-02)	Scrubber	N/A	1994	N/A	N/A	1994	None	1.3m³/h	871 kg/h	98	98
2	Lead recycling plant	C-series Scrubber	CK98/11230/23	2008	Air & Allied Technologies C-series	Wet Packed Bed	Feb 2009	None	2500 m³/h @ 500 mg/m³	2300 m³/h @ 300mg/m³	98	98

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## 7.2 Point source – maximum emission rates (under normal working conditions)

Point Source Code	Listed Activity No.	Pollutant Name	Maximum Release Rate			Duration of Emissions
			(mg/Nm <sup>3</sup> ) (under normal conditions of 273 Kelvin and 101 KPa)	Date to be Achieved By	Average Period	
1	Subcategory 4.13 Lead Smelting	Particulate Matter	30	Immediately	Daily	Continuous
			30	1 April 2015		
		Lead (as fraction of total suspended particles)	2	Immediately	Daily	Continuous
			2	1 April 2015		
2	Category 6: Organic Chemicals Industry	Methylamines (CH <sub>3</sub> N)	10	Immediately	Daily	Continuous
			10	1 April 2015		
		Total volatile compounds (thermal or non-thermal)	150/ 40000	Immediately	Daily	Continuous
			150/40000	1 April 2015		
Burning Grounds	Category 8.3: Burning Grounds	Dust Fall	a	Immediately	a	Periodic
		Sulphur Dioxide	b	Immediately	a	Periodic

a [Three months running average not to exceed limit value for adjacent land use according to dust control regulations promulgated in terms of section 32 of NEM: AQA (Act no. 39 of 2004)]

b (Twelve months of running average not to exceed limit value as per GN 1210 of 24 December. Passive diffusive measurement, approved by the licensing authority, carried out monthly.)

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### 7.3 Point Source – Maximum Permissible Emission Rates (Under Start Up, Maintenance and Shut - Down Conditions)

The following conditions must be adhered to at minimum during start up, maintenance and shut down conditions:

Should normal start up, maintenance and shutdown conditions exceed a period of 48 hours, Section 30 of the National Environmental Management Act, 1998 (Act No. 107 of 1998), shall apply.

### 7.4 Area source – emission monitoring and reporting requirements

Point Source Code	Emissions Sampling / Monitoring Method	Sampling Frequency	Sampling Duration	Parameters to be measured	Parameters to be reported	Conditions under which monitoring should be stopped	Reporting Frequency
1	Periodic	Annually	As per method	PM & Lead	PM & Lead	Upon written approval by the Air Quality Officer	Annually
2	Periodic	Bi-Annually	As per method	CH <sub>5</sub> N & TVOC	CH <sub>5</sub> N & TVOC	Upon written approval by the Air Quality Officer	Bi-Annually
Burning Grounds	Periodic	Bi-Annually	As per method	Dust fall & SO <sub>2</sub>	Dust fall & SO <sub>2</sub>	Upon written approval by the Air Quality Officer	Bi-Annually

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### 7.5 Area and/or line source – management and mitigation measures

Area and/or Line Source Code	Area and/or Line Source Description	Description of Specific Measures	Timeframe for Achieving Required Control Efficiency	Method of Monitoring Measures Effectiveness	Contingency Measures
1	Combustion between 09:00 and 15:00	N/A	N/A	N/A	N/A

### 7.6 Abnormal Releases and Emergency Responses

Unit Process	Description of Nature of Potential Abnormal Release (e.g. leakage, technology outage, etc.)	Pollutant(s) Released	Briefly Outline Emergency Procedures
Neutraliser	Failing of cooling water to the process resulting in the release of MMA and MMAN.	MMA	Alarm will activate. Confined areas have been installed with air supply, mutton cloth and tape to close off any entry points.
Lead furnace	Scrubber fail	Heavy metals	N/A

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## 7.6 Routine reporting and record-keeping

### ***Complaints register***

The licence holder must maintain a complaints register at its premises, and such register must be made available for inspections. The complaints register must include the following information of the complainant: name, physical address, telephone number, date and the time when the complaint was registered. The register should also provide space for noise, dust and offensive odours complaints.

Furthermore, the licence holder is to investigate and, monthly, report to the licencing authority in a summarised format on the total number of complaints logged. The complaints must be reported in the following format with each component indicated as may be necessary:

- (a) Source code / name;
- (b) Root cause analysis;
- (c) Calculation of impacts / emissions associated with incidents and dispersion modeling of pollutants, where applicable;
- (d) Measures implemented or to be implemented to prevent recurrence; and
- (e) Date by which measure will be implemented.

The City of Tshwane must also be provided with a copy of the complaints register. The record of a complaint must be kept for at least 5 (five) years after the complaint was made.

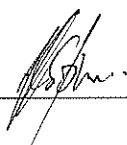
### ***Annual reporting***

The licence holder must complete and submit, to the City of Tshwane, an annual report. The report must include information for the year under review (i.e. annual year end of the company). The report must be submitted to the City of Tshwane not later than 60 (sixty) days after the end of each reporting period. The annual report must include, amongst others, the following items:

- (a) Pollutant emission trends;
- (b) Compliance audit report(s);
- (c) Major upgrade projects (i.e. abatement equipment or process equipment); and
- (d) Greenhouse gas emissions.

The holder of the licence must keep a copy of the annual report for a period of at least 5 (five) years.

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## 7.7 Investigations

The following investigations are required:

Investigation	Purpose	Completion Date
None		

## 8. Disposal of Waste and Effluent arising from Abatement Equipment Control Technology

The disposal of any waste and effluent arising from the abatement equipment control technology must comply with the relevant legislation and requirements of the relevant authorities.

Source Code / Name	Waste / Effluent Type	Hazardous Components Present	Method of Disposal
Lead Furnace	Solid waste	Lead	Melted down, cast as ingots and sold as lead (Recycled)

## 9. Penalties for Non-compliance with Licence Conditions or Requirements

Failure to comply with any of the licence and relevant statutory conditions and/or requirements is an offence, and licence holder, if convicted, will be subjected to those penalties as set out in section 52 of the AQA.

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