



Works approval number W3088/2025/1

Works approval holder Australian Gold Reagents Pty Ltd
ACN 009 140 121

Registered business address Level 14, Tower 2 Brookfield Place
123 St Georges Terrace
PERTH WA 6000

DWER file number APP-0030704

Duration 04/03/2026 to 03/03/2029

Date of issue 04 March 2026

Premises details Australian Gold Reagents
Lot 20 Kwinana Beach Road
KWINANA BEACH WA 6167

Legal description -
Part of Lot 20 on Diagram 78086
Certificate of Title Volume 1918 Folio 222
As defined by the map and coordinates in Schedule 1

Prescribed premises category description (Schedule 1, <i>Environmental Protection Regulations 1987</i>)	Assessed production capacity
Category 31: Chemical manufacturing	210,000 tonnes per annual period

This works approval is granted to the works approval holder, subject to the attached conditions, on 04 March 2026, by:

MANAGER, HEAVY INDUSTRIES

an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

Works approval history

Date	Reference number	Summary of changes
04/03/2026	W3088/2025/1	Works approval granted

Interpretation

In this works approval:

- (a) the words 'including', 'includes' and 'include' in conditions mean "including but not limited to", and similar, as appropriate;
- (b) where any word or phrase is given a defined meaning, any other part of speech or other grammatical form of that word or phrase has a corresponding meaning;
- (c) where tables are used in a condition, each row in a table constitutes a separate condition;
- (d) any reference to an Australian or other standard, guideline, or code of practice in this works approval:
 - (i) if dated, refers to that particular version; and
 - (ii) if not dated, refers to the latest version and therefore may be subject to change over time;
- (e) unless specified otherwise, any reference to a section of an Act refers to that section of the EP Act; and
- (f) unless specified otherwise, all definitions are in accordance with the EP Act.

NOTE: This works approval requires specific conditions to be met but does not provide any implied authorisation for other emissions, discharges, or activities not specified in this works approval.

Works approval conditions

The works approval holder must ensure that the following conditions are complied with:

Construction phase

Infrastructure and equipment

1. The works approval holder must:
 - (a) construct and/or install the infrastructure and/or equipment;
 - (b) in accordance with the corresponding design and construction / installation requirements; and
 - (c) at the corresponding infrastructure location, as set out in Table 1.

Table 1: Design and construction / installation requirements

	Infrastructure	Design and construction / installation requirements	Infrastructure location
Sodium Cyanide Plant 2 (SCP2)			
1.	Modifications to gas mixing infrastructure	a) 3-stage HEPA air filter to be installed at the inlet to the air blowers for air-stream filtration; b) Natural gas filters and ammonia filters must be upgraded to provide capacity for the following expansion of flow: <ol style="list-style-type: none"> (i) Natural gas filter must have maximum flow rate of 6,500 Nm³/hr; and (ii) Ammonia filter must have maximum flow rate of 6,500 Nm³/hr; c) The auxiliary/ mixed gas filter to be replaced with a fully welded pipe spool rated for pressurised operation; and d) The casing on the air heater must be replaced to be rated for pressurised operation.	Schedule 1: Figure 2: General layout of Sodium Cyanide Manufacturing Facility.
2.	Modifications to steam drum	SCP2 steam drum must be elevated by 6 m on a new pre-assembled platform established on top of the existing steam drum platform.	
3.	Reactor modifications	a) Replacement of flanged reactor outlet pipework with welded pipe spool to minimise flanged connections; b) Installation of automatic ignitors; c) Re-routing of bursting disc discharge lines; d) Cyanide reactors must be rated for 30-50 kPa positive pressure; and e) Hydrogen cyanide (HCN) gas detectors to be installed in the vicinity of the reactors.	
4.	Modifications to absorption tower and associated infrastructure	a) Internal packing of the SCP2 absorption tower to be optimised to improve production capacity and mass transfer; b) Waste gas separator to be resized to match increased production capacity;	

	Infrastructure	Design and construction / installation requirements	Infrastructure location
Sodium Cyanide Plant 2 (SCP2)			
		c) Caustic feed pump capacity increased to meet expansion case flow; and d) Existing exchanger on the caustic preheater to be replaced with a new larger exchanger to accommodate increased flow.	
5.	Upgrades to main blower system	a) The existing air boost fan on SCP2 must be replaced with two new pressurised blowers with capacity of up to 17,000 Nm ³ /hr each when operating in tandem, providing a combined air flow of 34,000 Nm ³ /hr; b) Air intake to be located 12 m above ground level; c) Inlet silencers to be installed on blower inlet; d) Installed with discharge silencers; and e) Installed with acoustic enclosures.	
6.	5,453m ³ liquid cyanide storage tank (TK-04)	a) To be located within a sealed concrete bunded hardstand; b) Tanks to be fitted with level transmitters and/or overflow switches; c) Have a dedicated sump and pump suitable for managing spills and rainwater; and d) Designed and installed in accordance with AS 4452 - 1997.	Schedule 1: Figure 2: General layout of Sodium Cyanide Manufacturing Facility.
7.	Start-up stacks	An absorber by-pass line must be installed to enable incineration of start-up gases from SCP1 and SCP2 rather than direct venting to atmosphere.	Schedule 1: Figure 4: Emissions to air discharge locations.
8.	Waste gas stack	SCP2 waste gas stack must be raised by at least 6 m and remain compliant with American Petroleum Institute (API) standard 521 (Pressure-Relieving and Depressurizing Systems).	Schedule 1: Figure 4: Emissions to air discharge locations.
9.	New John Zink Incinerator (TO3)	a) Emissions shall be discharged to atmosphere via a stack that is at least 31.7 m high ¹ ; b) The waste gas flow rate capacity must be 60,000Nm ³ /hr; c) Must be designed and installed to achieve the NO _x , NH ₃ and HCN emission rates specified in Table 4 at the stack discharge point. d) Equipped with the following: <ul style="list-style-type: none"> (i) low NO_x burner(s); (ii) selective non-catalytic reduction technology; (iii) three-stage combustion technology that includes a reduction zone, quench zone and re-oxidisation 	Schedule 1: Figure 2: General layout of Sodium Cyanide Manufacturing Facility.

	Infrastructure	Design and construction / installation requirements	Infrastructure location
Sodium Cyanide Plant 2 (SCP2)			
		zone; and (iv) a knock-out drum must be installed upstream of the burner for the removal of liquids from the waste gas feed system; e) The stack must be fitted with monitoring ports that meet the requirements of AS 4323.1; f) A continuous emissions monitoring system shall be installed on the stack that: (i) monitors NO _x (as NO ₂); and (ii) adheres to the design, installation and performance testing requirements of the CEMS Code; and g) Designed and installed with suitable controls to ensure that potentially contaminated stormwater or process water is contained for re-use, appropriate treatment or disposal.	

Note 1: Height of stack is measured from ground level.

Compliance reporting

2. The works approval holder must within 60 calendar days of an item of infrastructure or equipment required by condition 1 being constructed and/or installed:
 - (a) undertake an audit of their compliance with the requirements of condition 1; and
 - (b) prepare and submit to the CEO an Environmental Compliance Report on that compliance.
3. The Environmental Compliance Report required by condition 2, must include as a minimum the following:
 - (a) certification by a suitably qualified engineer that the items of infrastructure or component(s) thereof, as specified in condition 1, have been constructed in accordance with the relevant requirements specified in condition 1;
 - (b) as constructed plans and a detailed site plan for each item of infrastructure or component of infrastructure specified in condition 1; and
 - (c) be signed by a person authorised to represent the works approval holder and contains the printed name and position of that person.

Specified actions

4. The works approval holder must, within 12 months of the granting of the works approval, prepare and submit to the CEO, an improvement plan for the minimisation of impacts to air quality from operations at the premises. The plan must include:
 - (a) Detail on minimisation measures implemented, and/or planned to be implemented at the premises following the commitments made during the

- assessment undertaken by the Environmental Protection Authority for the premises expansion proposal¹;
- (b) Outcomes of an investigation conducted into the potential development of a monitoring campaign for the detection of impacts downwind of the premises. This investigation should:
- (i) consider the design of a suitable monitoring campaign, including relevant downwind receptors, methodologies and contaminants, taking into account advice from relevant regulatory bodies²;
 - (ii) include an evaluation of the potential implementation of such a monitoring campaign based on the design and advice under part (i) of this condition; and
 - (iii) include contaminant trigger levels, appropriate mitigation and response measures, monitoring duration and frequency, if a monitoring campaign is determined to be necessary.
- (c) Proposed dates for implementation for any minimisation measures yet to be implemented.

Environmental commissioning phase

Environmental commissioning plan

5. The works approval holder must, at least 3 months prior to the commencement of environmental commissioning of the John Zink incinerator (TO3) specified in condition 1, provide to the CEO an environmental commissioning plan.
6. The plan required by condition 5 must include, but not be limited to:
- (a) the stages, processes and expected timeframes for the environmental commissioning of the John Zink incinerator;
 - (b) start-up and shutdown procedures and how emissions will be managed during start-up and shutdown;
 - (c) how accidents and malfunctions will be managed;
 - (d) procedures for monitoring and managing emissions and discharges during environmental commissioning, including but not limited to:
 - (i) details of parameters and methods to be included in any monitoring programs as well as the frequency of monitoring those parameters;
 - (ii) targets and or/trigger levels for each parameter; and
 - (iii) contingency actions to be implemented if target and/or trigger levels are exceeded; and
 - (e) the timeframes and procedures for the performance testing of the installed CEMS in accordance with the CEMS Code.

Environmental commissioning requirements

7. The works approval holder may only commence environmental commissioning of the John Zink incinerator (TO3) specified in condition 1 once the reports required by condition 2 and condition 5 have both been submitted by the works approval holder.

¹ Sodium Cyanide Plants (Liquid and Solid) at Kwinana and Transport of Sodium Cyanide by Road and Rail from Kwinana – Australian Gold Reagents Pty Ltd, Environmental Protection Authority Report 1725, June 2022

² Including the Department of Health and Department of Water and Environmental Regulation

8. The works approval holder must conduct environmental commissioning in accordance with the most recent version of the plan submitted in accordance with condition 5.
9. The works approval holder must notify the CEO:
 - (a) at least 7 days prior to, the commencement date of environmental commissioning; and
 - (b) within 7 days after, the completion date of environmental commissioning.

Environmental commissioning – CEMS

10. The works approval holder must, within 60 calendar days of completing successful calibration and verification of the CEMS installed in accordance with condition 1, submit to the CEO a CEMS Calibration Report.
11. The report required by condition 10 must include, but not be limited to:
 - (a) details of the CEMS system specifications and location, as determined prior to the initial operation of TO3 in accordance with Phase I and II of the CEMS Code;
 - (b) the Quality Assurance plan, as required under section 2 of the CEMS Code; and
 - (c) details of the successful calibration and verification of the installed CEMS system, as commenced within 500 operational hours of TO3 in accordance with Phase III of the CEMS Code.

Environmental commissioning - Reporting

12. The works approval holder must, within 60 calendar days of the completion of environmental commissioning of the John Zink incinerator (TO3) specified in condition 1, submit to the CEO an Environmental Commissioning Report
13. The report required by condition 12 must include, but not be limited to:
 - (a) a summary of environmental commissioning activities undertaken, including timeframes;
 - (b) results of any monitoring undertaken during commissioning including copies of any third party reports;
 - (c) details of the ongoing calibration and verification of the installed CEMS system (excluding the initial calibration report required by condition 10), as conducted during the commissioning period in accordance with Phase IV of the CEMS Code including copies of any third-party reports generated from quality assurance testing conducted on CEMS;
 - (d) a summary of any complaints received and recorded in accordance with condition 29;
 - (e) a summary of the environmental performance of all plant and equipment as installed, which as a minimum includes a comparison of any monitoring results against the specifications listed in Table 1;
 - (f) a review of the plant's performance against the design specifications; and
 - (g) where they have not been met, measures proposed to meet the design specification, together with timeframes for implementing the proposed measures.

Time limited operations phase

Time limited operations - Commencement and duration

14. The works approval holder may only commence time limited operations for the John Zink incinerator (TO3) specified in condition 1 where the CEMS Calibration Report and Environmental Commissioning Report for that item of infrastructure as required by conditions 10 and 12 have been submitted by the works approval holder.
15. The works approval holder may conduct time limited operations for the John Zink incinerator (TO3) specified in condition 1:
 - (a) for a period not exceeding 360 calendar days from the day the works approval holder meets the requirements of conditions 10 and 12 for that item of infrastructure; or
 - (b) until such time as a licence for that item of infrastructure is granted in accordance with Part V of the *Environmental Protection Act 1986*, if one is granted before the end of the period specified in condition 15(a).

Time limited operations - Infrastructure and equipment

16. During time limited operations, the works approval holder must ensure that the premises infrastructure and equipment listed in Table 2 and located at the corresponding infrastructure location is maintained and operated in accordance with the corresponding operational requirement set out in Table 2.

Table 2: Infrastructure and equipment requirements during time limited operations

	Site infrastructure and equipment	Operational requirement	Infrastructure location
1.	Sodium Cyanide Plants (SCP1 and SCP2)	(a) No more than two incinerators may be operated at any one time. (b) During any shut-down of SCP1 and SCP2, the works approval holder must only discharge process gaseous waste through: <ol style="list-style-type: none"> (i) an operating incinerator stack; or (ii) where that is not possible, discharge through the associated shutdown stack as depicted in Schedule 1: Figure 4. (c) Effluent, wastewater and environmental hazardous materials to be managed as per the requirements of Licence L6110/1990/13.	Schedule 1: Figure 2 and Figure 4

Time limited operations – Emissions to air

17. During time limited operations, the works approval holder must ensure, subject to condition 16, that the emission(s) specified in Table 3 are discharged only from the corresponding discharge point(s) and only at the corresponding discharge point location(s).

Table 3: Authorised emission points to air

Emission	Emission point	Minimum stack height (m)	Maximum stack internal diameter (m)	Emission point location
NO _x (as NO ₂) NH ₃ HCN	TO3 John Zink incinerator stack	31.7	1.4	Schedule 1: Figure 4: Emissions to air discharge locations.

18. During time limited operations, the works approval holder must ensure that emissions from the discharge point listed in Table 4 for the corresponding parameter do not exceed the corresponding limit when monitored in accordance with condition 22.

Table 4: Emission limits

Discharge point	Emission	Limit (g/s)
TO3 John Zink incinerator stack	NO _x (as NO ₂) equal to more than 95% operating time over the previous 12 months	10
	NO _x (as NO ₂) equal to or less than 5% operating time over the previous 12 months	24
	HCN	0.5

Time limited operations - Monitoring

19. The works approval holder must ensure that all continuous monitoring equipment used to comply with condition of this works approval is maintained so as to provide valid data for:
- greater than 90% of the measurement intervals in every calendar month when plant is operating, and
 - greater than 95% of the measurement intervals over any 12 consecutive calendar months month when plant is operating.
20. The works approval holder must ensure that all continuous monitoring equipment used to comply with condition(s) of this works approval is operated and calibrated in accordance with the manufacturers specifications and the CEMS Code.
21. The works approval holder must, where the requirements for calibration cannot be practicably met, or a discrepancy exists in the interpretation of the requirements, bring these issues to the attention of the CEO accompanied with a report comprising details of any modifications to the methods.
22. During time limited operations, the works approval holder must monitor emissions:
- from each discharge point;
 - at the corresponding monitoring location;
 - for the corresponding parameter;
 - at the corresponding frequency;
 - for the corresponding averaging period;
 - in the corresponding unit; and
 - using the corresponding method,
- as set out in Table 5.

Table 5: Monitoring of emissions to air

Discharge point	Parameter	Frequency	Averaging period	Unit ^{1, 2}	Target	Method
TO3 Stack	NO _x (as NO ₂)	Continuous	60 minutes	g/s mg/m ³	N/A	CEMS (CEMS Code)
	NH ₃	Quarterly			1.2 g/s	CTM-027 ³
	HCN				0.42 g/s	OTM-029 ³

Note 1: All units are referenced to STP dry.

Note 2: Concentration units for all gases are referenced to 7% O₂.

Note 3: Or equivalent US EPA or NATA accredited testing method.

Time limited operations - Reporting

- 23.** The works approval holder must submit to the CEO a report on time limited operations within 60 calendar days of the completion date of time limited operations or 60 days before the expiration date of the works approval, whichever is sooner.
- 24.** The works approval holder must ensure the report required by condition 23 of this works approval includes the following:
- a summary of time limited operation activities undertaken;
 - the results of monitoring recorded in accordance with condition 22 including copies of any third party reports;
 - details of the ongoing calibration and verification of the installed CEMS system, as conducted during time limited operations in accordance with the CEMS Code including copies of any third-party reports generated from quality assurance testing conducted on CEMS;
 - the date that the existing Maxitherm incinerator and start-up stacks shown in Schedule 1: Figure 4 were, or are planned to be, decommissioned;
 - a summary of any complaints received and recorded in accordance with condition 29;
 - a summary of the environmental performance of all plant and equipment as installed, which as a minimum includes a comparison of any monitoring results against the specifications listed in Table 1, Table 4 and Table 5;
 - a review of the plant's performance against the design specifications; and
 - where they have not been met, measures proposed to meet the design specification, together with timeframes for implementing the proposed measures.

Time limited operations - Noise validation

- 25.** Within 90 days of decommissioning the Maxitherm incinerator, the works approval holder must retain the services of a person qualified and experienced in the area of environmental noise assessment and who by their qualifications and experience is eligible to hold membership of the Australian Acoustical Society or the Australian Association of Acoustical Consultants to:
- carry out noise monitoring to investigate the nature and extent of the as-built noise emissions from the premises;
 - prepare noise modelling to predict the nature and extent of the as-built noise emissions from the premises;

- (c) assess compliance of the predicted noise emissions from the premises, against the relevant assigned levels specified in the *Environmental Protection (Noise) Regulations 1997*; and
 - (d) compile and submit to the works approval holder a report in accordance with condition 25.
- 26.** A report prepared pursuant to condition 25(d) is to include:
- (a) a description of the methods used for monitoring and modelling noise emissions from the premises;
 - (b) details and the results of the monitoring and modelling undertaken pursuant to conditions 25(a) and 25(b);
 - (c) details and results of the assessment of the noise emissions from the premises, against the relevant assigned levels in the *Environmental Protection (Noise) Regulations 1997* undertaken pursuant to condition 25(c); and
 - (d) an assessment of noise levels against the previous noise assessment.
- 27.** The works approval holder must submit to the CEO the report prepared pursuant to condition 26(d) within 30 days of receiving it.
- 28.** Where an assessment pursuant to condition 25(c) indicates that noise emissions do not comply with the relevant assigned levels in the *Environmental Protection (Noise) Regulations 1997*, the works approval holder must,
- (a) prepare for the CEO a plan to ensure the undertaking of the prescribed activities will not lead to any contravention of the *Environmental Protection (Noise) Regulations 1997*; and
 - (b) provide copy of the plan prepared pursuant to condition 28(a) within 30 days of its preparation.

Records and reporting (general)

- 29.** The works approval holder must record the following information in relation to complaints received by the works approval holder (whether received directly from a complainant or forwarded to them by the Department or another party) about any alleged emissions from the premises:
- (a) the name and contact details of the complainant, (if provided);
 - (b) the time and date of the complaint;
 - (c) the complete details of the complaint and any other concerns or other issues raised; and
 - (d) the complete details and dates of any action taken by the works approval holder to investigate or respond to any complaint.
- 30.** The works approval holder must maintain accurate and auditable books including the following records, information, reports, and data required by this works approval:
- (a) the works conducted in accordance with condition 1;
 - (b) any maintenance of infrastructure that is performed in the course of complying with condition 16;
 - (c) monitoring programmes undertaken in accordance with condition 22; and
 - (d) complaints received under condition 29.

- 31.** The books specified under condition 30 must:
- (a) be legible;
 - (b) if amended, be amended in such a way that the original version(s) and any subsequent amendments remain legible and are capable of retrieval;
 - (c) be retained by the works approval holder for the duration of the works approval;
and
 - (d) be available to be produced to an inspector or the CEO as required.

Definitions

In this works approval, the terms in Table 6 have the meanings defined.

Table 6: Definitions

Term	Definition
annual period	a 12 month period commencing from 1 January until 31 December each year.
API	American Petroleum Institute
AS 4323.1	means Australian Standard AS 4323.1 <i>Stationary source emissions: selection of sampling positions</i> .
AS/NZS 4452	Means the Australian and New Zealand standard AS/ZNS 4452 <i>Storage and handling of toxic substances</i>
books	has the same meaning given to that term under the EP Act.
CEO	means Chief Executive Officer. CEO for the purposes of notification means: Director General Department administering the <i>Environmental Protection Act 1986</i> Locked Bag 10 Joondalup DC WA 6919 info@dwer.wa.gov.au
CEMS	Continuous emissions monitoring system
CEMS Code	means the <i>Continuous Emission Monitoring System (CEMS) Code for Stationary Source Air Emissions</i> , March 2016, Department of Environment Regulation, Perth WA, as amended from time to time
CTM-027	Means the Conditional Test Method <i>CTM-027 – Determination of ammonia emissions in stationary sources</i>
Department	means the department established under section 35 of the <i>Public Sector Management Act 1994</i> and designated as responsible for the administration of Part V Division 3 of the EP Act.
discharge	has the same meaning given to that term under the EP Act.
emission	has the same meaning given to that term under the EP Act.
environmental commissioning	means the sequence of activities to be undertaken to test equipment integrity and operation, or to determine the environmental performance, of equipment and infrastructure to establish or test a steady state operation and confirm design specifications.
Environmental Commissioning Report	means a report on any commissioning activities that have taken place and a demonstration that they have concluded, with focus on emissions and discharges, waste containment, and other

Term	Definition
	environmental factors.
Environmental Compliance Report	means a report to satisfy the CEO that the conditioned infrastructure and/or equipment has been constructed and/or installed in accordance with the works approval.
EP Act	<i>Environmental Protection Act 1986 (WA).</i>
EP Regulations	<i>Environmental Protection Regulations 1987 (WA).</i>
g/s	grams per second
HCN	Hydrogen cyanide
Licence L6110/1990/13	means licence L6110/1990/13, issued under Part V of the EP Act to Australian Gold Reagents Pty Ltd
m	metres
NATA	means the National Association of Testing Authorities, Australia
NATA accredited	means in relation to the analysis of a sample that the laboratory is NATA accredited for the specified analysis at the time of the analysis
NH ₃	ammonia
Nm ³ /hr	normal cubic metres per hour
NO ₂	Nitrogen dioxide
NO _x	Oxides of nitrogen
OTM-029	Means the Other Test Method <i>OTM-029 Sampling and analysis of hydrogen cyanide emissions from stationary sources</i>
premises	the premises to which this licence applies, as specified at the front of this licence and as shown on the premises map (Figure 1) in Schedule 1 to this works approval.
prescribed premises	has the same meaning given to that term under the EP Act.
previous noise assessment	means the noise assessment conducted by SLR Consulting Australia in 2024 and documented in the following report: <i>SLR Consulting Australia 2024, Sodium Cyanide Expansion Project, Noise Impact Assessment, Australian Gold Reagents Kwinana Beach Road, Kwinana WA 6166 (Report 675.072268.00004-R01)</i>
quarterly	means the 4 inclusive periods from, 1 July to 30 September, 1 October to 31 December and in the following year, 1 January to 31 March, 1 April to 30 June.
SCP	Sodium Cyanide Plant 1
SCP2	Sodium Cyanide Plant 2

Term	Definition
suitable qualified engineer	<p>means a person who:</p> <ul style="list-style-type: none"> (a) holds a tertiary academic qualification in civil or mechanical engineering; (b) has a minimum of five years' experience working in the area / field of civil/mechanical engineering; and (c) is employed by an independent third party external to the Works Approval Holder's business.
time limited operations	refers to the operation of the infrastructure and equipment identified under this works approval that is authorised for that purpose, subject to the relevant conditions.
US EPA	means United States (of America) Environmental Protection Agency
waste	has the same meaning given to that term under the EP Act.
works approval	refers to this document, which evidences the grant of the works approval by the CEO under section 54 of the EP Act, subject to the conditions.
works approval holder	refers to the occupier of the premises being the person to whom this works approval has been granted, as specified at the front of this works approval.

END OF CONDITIONS

Schedule 1: Maps

Premises map

The boundary of the prescribed premises is shown in the map below (Figure 1).



Figure 1 Map of the boundary of the prescribed premises.



Figure 2: General layout of Sodium Cyanide Manufacturing Facility.

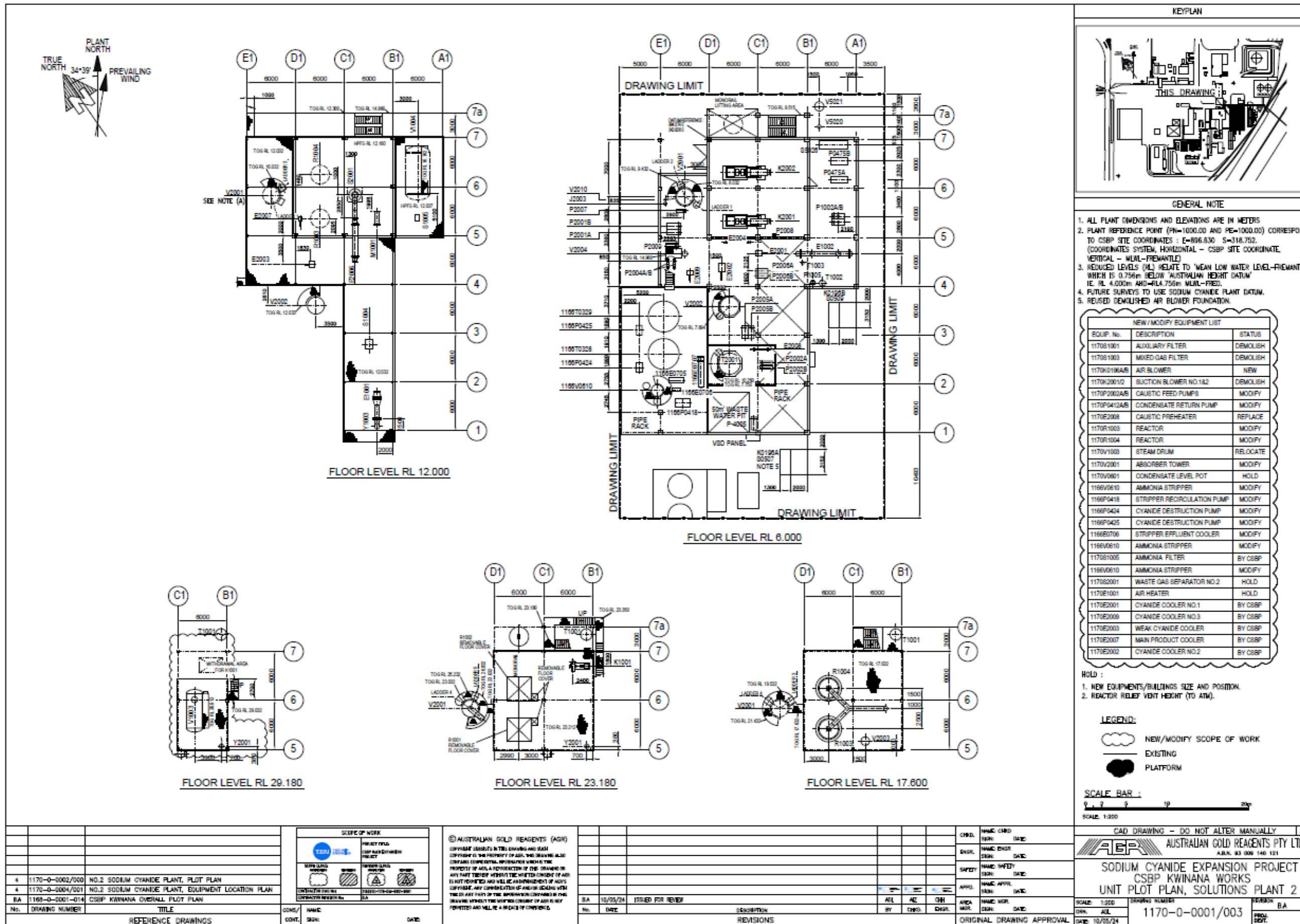




Figure 4: Emissions to air discharge locations.