Government of Western Australia
Department of Water and Environmental Regulation

Works Approval

Works approval number	W6701/2022/1
Works approval holder	Tronox Management Pty Ltd
ACN	009 343 364
Registered business address	Lot 22 Mason Road, KWINANA BEACH, WA 6167
DWER file number	DER2022/000181
Duration	20/09/2022 to 19/09/2025
Date of issue	20/09/2022
Premises details	Tronox Kwinana Pigment Plant Lot 22 Mason Road, KWINANA BEACH, WA 6167 Legal description - Lot 22 on Plan 88339 As defined by the premises map in Schedule 1

Prescribed premises category description (Schedule 1, *Environmental Protection Regulations 1987*)	**Assessed throughput capacity**
Category 31: Chemical manufacturing	153,000 tonnes per annum

This works approval is granted to the works approval holder, subject to the attached conditions, 20/09/2022, by:

Chris Malley
Digitally signed by Chris Malley
Date: 2022.09.20 11:52:42 +08'00'

MANAGER, PROCESS INDUSTRIES
REGULATORY SERVICES
an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

Works approval history

Date	Reference number	Summary of changes
20/09/2022	W6701/2022/1	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
Stage 1			
1.	1 x baghouse	(a) Must be fitted with a bag filter with a minimum design performance of 25 mg/Nm^3. (b) Exhaust fan must be fitted with a maximum sound power level of 75 dB at 1 metre from the casing. (c) Baghouse is fitted with alarms to identify when non normal operating conditions occur including broken bags.	As shown in Schedule 1, Figure 2 as S3044
2.	1 x stack	(a) S3044 (x) stack must be 21 meters above ground level. (b) Stack must be fitted with a port to AS4323.1 to allow for periodic sampling.	As shown in Schedule 1 Figure 2 as S3044 (x)
Stage 2			
3.	1 x baghouse	(d) Must be fitted with a bag filter with a minimum design performance of 25 mg/Nm^3. (e) Exhaust fan must be fitted with a maximum sound power level of 75 dB at 1 metre from the casing. (c) Baghouse is fitted with alarms to identify when non normal operating conditions occur including broken bags.	As shown in Schedule 1, Figure 2 as S3047
4.	1 x stack	(d) S3047 stack must be 11 meters above ground level. (e) Stacks must be fitted with a port to AS4323.1 to allow for periodic sampling.	As shown in Schedule 1 Figure 2 as S3047

Compliance reporting

2. The works approval holder must within 30 calendar days of all items within each stage 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 for that stage; and

(b) prepare and submit to the CEO an Environmental Compliance Report on that compliance for that stage.

3. The Environmental Compliance Reports required by condition 2, must include as a minimum the following:

(a) certification that the items of infrastructure or components(s) thereof, as specified in condition 1 for that stage, have been constructed in accordance with the relevant requirements specified in condition 1;

(b) as constructed plans and a detailed site plan for items of infrastructure or component of infrastructure specified in condition 1 for that stage; and

(c) be signed by a person authorised to represent the works approval holder and contains the printed name and position of that person.

Environmental commissioning phase

Environmental commissioning infrastructure requirements

4. The works approval holder may only commence environmental commissioning of the infrastructure identified in condition 1 once the Environmental Compliance Report has been submitted for infrastructure for that stage in accordance with Condition 3.

5. Any environmental commissioning activities undertaken of infrastructure of each stage specified in Table 2 may only be carried out:

(a) in accordance with the corresponding commissioning requirements; and

(b) for the corresponding authorised commissioning duration.

Table 2: Infrastructure and equipment requirements for environmental commissioning and time limited operations.

Stage	Site infrastructure and equipment	Environmental commissioning and time limited operational requirement	Authorised duration	Infrastructure location
Stage 1	S3044 baghouse	(a) Must vent all gaseous emissions through the stacks. (b) Baghouses must be operated and maintained to manufacturers specifications. (c) Baghouse filters must be checked and replaced as per manufactures specifications. (d) Baghouses must be continuously	Environmental Commissioning Not to exceed 90 calendar days in aggregate for each stage.	As shown in Schedule 1, Figure 2 as S3044 S3047

Stage	Site infrastructure and equipment	Environmental commissioning and time limited operational requirement	Authorised duration	Infrastructure location
Stage 2	S3047 baghouse	monitored by the plant control system. (e) Baghouse alarms must be kept in working condition. (f) Baghouse alarms must be investigated as soon as practicable, and feed reduced or ceased upon becoming aware of any baghouse damage or malfunction such as a broken bag.	Time limited operations. Not to exceed a period of 180 calendar days in aggregate for each stage.	
Stage 1	S3044 (x) stack	(a) Stacks are maintained to receive all gaseous emission from the baghouses. (b) All ports on stacks must be maintained to allow for periodic sampling.		As shown in Schedule 1, Figure 2 as S3044 (x) and S3047
Stage 2	S3047 stack			

Environmental commissioning – authorised discharge and emissions

6. During environmental commissioning, the works approval holder must ensure 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 discharge points during environmental commissioning and time limited operations.

	Emission	Discharge point	Discharge point height (magl)	Discharge point location
1	NO_X, SO_2, CO and PM	Stack for S3044 (x)	21.0	As shown in Schedule 1, Figure 2 as S3044 'x'
2	PM	Stack for S3047	11.0	As shown in Schedule 1, Figure 2 as S3047

Environmental commissioning - monitoring

7. The works approval holder must monitor air emissions during environmental commissioning in accordance with Table 4.

Table 4: Emissions and discharge monitoring

Discharge point as shown in Schedule 1 Figure 2	Parameter[1]	Frequency	Averaging period	Unit[2]	Sampling and analysis method[2,3,4]
Stack for S3044 (x)	Volumetric flow rate	Environmental commissioning Two sample	1 hour	m^3/s	USEPA Method 2
	Velocity			m/s	

Discharge point as shown in Schedule 1 Figure 2	Parameter[1]	Frequency	Averaging period	Unit[2]	Sampling and analysis method[2,3,4]
	Temperature	events with one within the first month of environmental commissioning and a second prior to the end of the environmental commissioning period.		^{o}C	
	Moisture			m^3	USEPA Method 4
	O_2			g/s and mg/m^3	USEPA Method 3A
	NOx				USEPA Method 7D or 7E
	SO_2				USEPA Method 6C
	CO				USEPA Method 10
	PM			mg/m^3	USEPA Method 17
Stack for S3047	Volumetric flow rate			m^3/s	USEPA Method 2
	Velocity			m/s	
	Temperature			^{o}C	
	Moisture			m^3	USEPA Method 4
	PM			mg/m^3	USEPA Method 17

Note [1]: all units are referenced to STP dry
Note [2]: Concentrations for all gases are referenced to 15% O_2
Note [3]: Monitoring shall be undertaken to reflect normal operating conditions.
Note [4]: Where any USEPA method refers to USEPA Method 1 for the sampling plane, this must be read as a referral to AS4323.1

8. The works approval holder must ensure all sampling and analysis undertaken pursuant to condition 7 are undertaken by a holder of NATA accreditation for the relevant methods of sampling and analysis.

9. The works approval holder must record the results of all monitoring activity required by condition 7.

Environmental commissioning reporting

10. The works approval holder must submit to the CEO an Environmental Commissioning Report within 30 calendar days of the completion date of environmental commissioning for each stage specified in condition 4 and 5.

11. The works approval holder must ensure the Environmental Commissioning Report for each stage required by condition 10 of this works approval includes the following:

(a) a summary of the environmental commissioning activities undertaken, including timeframes and performance of the scour bead system;

(b) results of all monitoring undertaken as required by condition 7 including assessment on any cumulative gas or particulate emission increases from the pigment plant;

(c) a summary of the environmental performance of each infrastructure installed;

(d) a review of the works approval holder's performance and compliance against the conditions of this works approval; and

(e) where they have not been met, measures proposed to meet the manufacturer's design specifications and the conditions of this works approval, together with timeframes for implementing the proposed measures.

Time limited operations phase

Commencement and duration

12. The works approval holder may only commence time limited operations of infrastructure for a stage identified in condition 1, where the Environmental Commissioning Report for that stage as required by condition 10 has been submitted by the works approval holder.

13. The works approval holder may conduct time limited operations for each stage of the infrastructure specified in condition 1:

(a) for a period not exceeding 180 calendar days from the day the works approval holder meets the requirements of condition 10; 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 13(a).

Time limited operations infrastructure requirements

14. 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 requirement set out in Table 2.

Time limited operations – authorised emission points and limits

15. During time limited operations, the works approval holder must ensure that the emissions specified in Table 3 are discharged only from the corresponding discharge point(s) and only from the corresponding discharge point location(s).

Records and reporting (general)

16. 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 conditions 5 and 14;

(c) monitoring programmes undertaken in accordance with condition 7.

17. The books specified under condition 18 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 have the meanings defined.

Table 5: Definitions

Term	Definition
ACN	Australian Company Number
AS4323.1	the Australian Standard AS 4323.1 Stationary Source Emissions Method 1 : Selection of sampling positions
averaging period	means the time over which a recorded monitoring result is obtained
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 *Environmental Protection Act 1986* Locked Bag 10 Joondalup DC WA 6919 info@dwer.wa.gov.au
CO	carbon monoxide
Department	means the department established under section 35 of the *Public Sector Management Act 1994* 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 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	*Environmental Protection Act 1986* (WA).
EP Regulations	*Environmental Protection Regulations 1987* (WA).
NATA	National Association of Testing Authorities, Australia
NATA accredited	in relation to the analysis of a sample that laboratory is NATA accredited for the specified analysis at the time of analysis
normal operating conditions	means any operation of a particular process (including abatement equipment) excluding start-up, shutdown and upset conditions, in relation to stack sampling or monitoring.
NOx	oxides of nitrogen, calculated as the sum of nitric oxide and nitrogen dioxide and expressed as nitrogen dioxide
PM	particulate matter
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.

Term	Definition
prescribed premises	has the same meaning given to that term under the EP Act.
SO_2	Sulphur dioxide
STD dry	means standard temperature and pressure (0°Celius and 101.325 kilopascals respectively), dry
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.
USEPA Method 2	refers to the United States Environmental Protection Agency's Method 2: Determination of Stack Gas Velocity and Volumetric Flow Rate (Type S Pitot Tube)
USEPA Method 3a	refers to the United States Environmental Protection Agency's Method 3A: Determination of oxygen and carbon dioxide concentrations in emissions from stationary sources.
USEPA Method 4	refers to the United States Environmental Protection Agency's Method 4: Determination of moisture content in stack gases.
USEPA Method 6C	refers to the United States Environmental Protection Agency's Method 6C8: Determination of Sulfur Dioxide emissions from Stationary Sources.
USEPA Method 7D	refers to the United States Environmental Protection Agency's Method 7D: Determination of nitrogen oxide emissions from stationary sources - Alkaline-permanganate/ion chromatographic method
USEPA Method 7E	refers to the United States Environmental Protection Agency's Method 7E: Determination of Nitrogen Oxide emissions from stationary sources.
USEPA Method 10	refers to the United States Environmental Protection Agency's Method 10: Determination of Carbon Monoxide Emissions from Stationary Sources
USEPA Method 17	refers to the United States Environmental Protection Agency's Method 17: Determination of particulate matter emission from stationary sources
USEPA Method 201A	refers to the United States Environmental Protection Agency's Method 201A: Determination of PM_{10} and $PM_{2.5}$ emissions from stationary sources.
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.
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 outlined in pink in the map below (Figure 1).

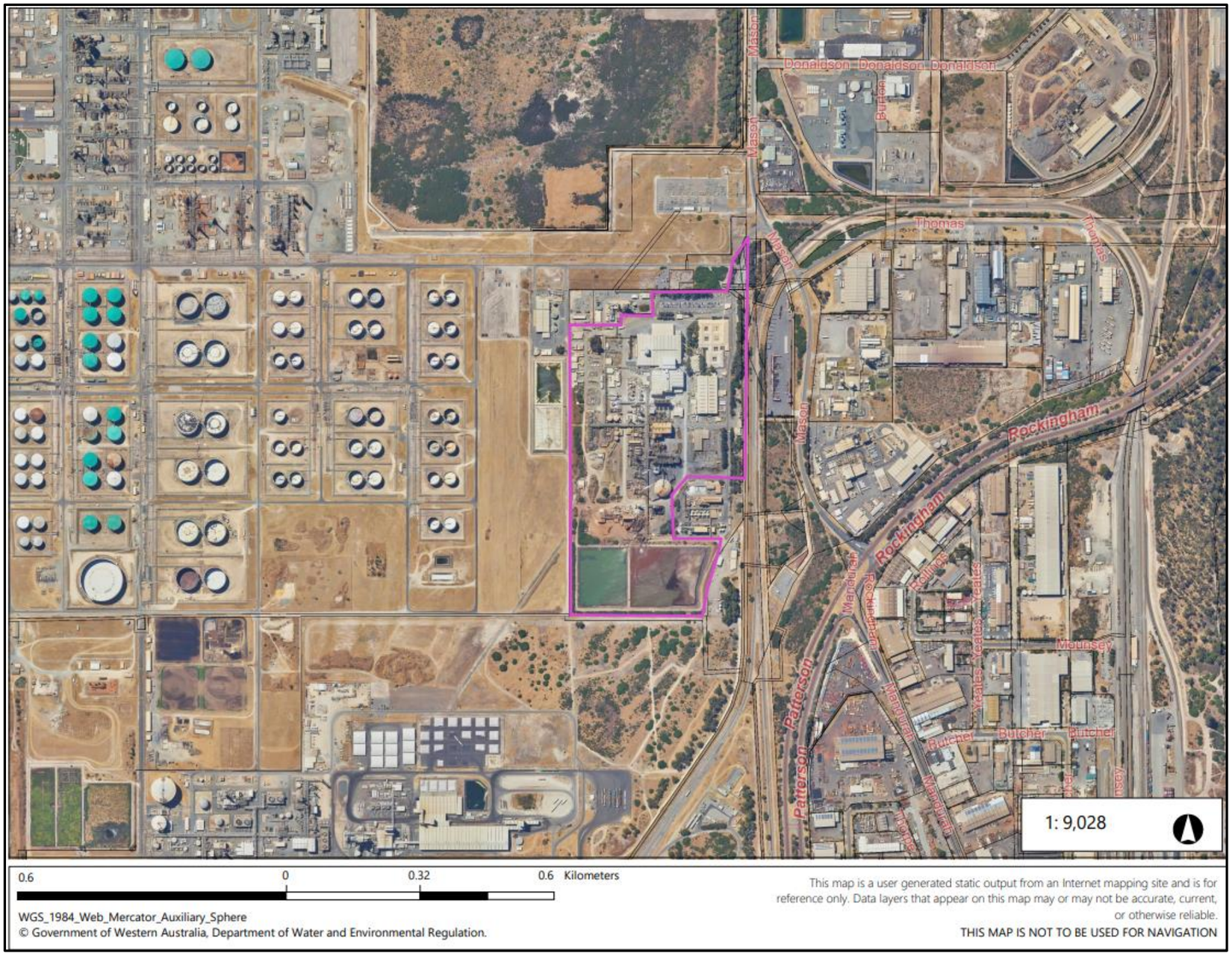

Figure 1: Map of the boundary of the prescribed premises

Premises Layout

The layout of the scour system within the prescribed premises is shown in the map below (Figure 2).

Figure 2: Layout of the prescribed premises