Government of Western Australia
Department of Water and Environmental Regulation

Works Approval

Works approval number	W6661/2022/1
Works approval holder	EcoGraf Limited
ACN	117 330 757
Registered business address	18 Richardson Street WEST PERTH WA 6005
DWER file number	DER2022/000049
Duration	20/09/2022 to 19/09/2025
Date of issue	20/09/2022
Premises details	Corner of Zirconia Drive and Alumina Road EAST ROCKINGHAM WA 6168 Legal description Lots 1 and 2 on Deposited Plan 404186 As defined by the premises maps attached in Schedule 1

Prescribed premises category description **(Schedule 1, *Environmental Protection Regulations 1987*)**	**Assessed design capacity**
Category 33: Chemical Manufacturing	11,000 tonnes per annum

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

Chris Malley
Digitally signed by Chris Malley
Date: 2022.09.20 15:05:18 +08'00'

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

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 condition

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
1.	2 x trains of mills and cyclones	Mill output must be directed to cyclones. Fines from cyclone must be directed fines baghouses. Must be located inside a building with “Anticon” style insulation between steel purlins and steel roof sheeting and automatic closing doors.	Figure 3 in Schedule 1
2.	4 x fines baghouse stacks	Each stack must be fitted with monitoring equipment connected to an alarm to detect dust spikes.	A1 to A4 in Schedule 1 figure 2
3.	Baghouses	All baghouses within the sizing and spheronizing trains and the rotary kiln must be: • capable of minimising particulate emissions to less than 25 mg/m3 (STP dry) during normal operating conditions; • fitted with devices to ensure bags are routinely kept clean, and; • fitted with devices to indicate the pressure differential clearly and accurately across filters.	Schedule 1 figures 2 and 3
4.	NaOH bake kiln	Exhaust from kiln must be directed to alkaline scrubber.	Item 16 in Schedule 1 figure 3
5.	Alkaline scrubber for kiln and acid wash tank	Must be variable throat venturi followed by a packed bed scrubber. Must have scrubber capture efficiency for H_2S of at least 94%. Wastewater must be directed to onsite storage, for mixing, treatment and discharge to Water Corporation sewer.	

	Infrastructure	Design and construction / installation requirements	Infrastructure location
6.	NaOH Bake Kiln Stack	must be fitted with a sampling port that complies with the requirements of AS 4323.1 to allow stack testing.	A7 in Schedule 1 figure 2
7.	Quench tank	Emissions to air must be directed to alkaline scrubber. Wastewater must be directed to onsite storage, for mixing, treatment and discharge to Water Corporation sewer.	Item 17 in Schedule 1 Figure 3
8.	Acid wash tank	Emissions to air must be directed to alkaline scrubber. Wastewater must be directed to onsite storage, for mixing, treatment and discharge to Water Corporation sewer.	
9.	Off gas alkaline scrubber for Dryer and quench tank	Must be eductor venturi scrubber followed by a packed bed scrubber. Wastewater must be directed to onsite storage, for mixing, treatment and discharge to Water Corporation sewer.	Item 24 in Schedule 1 figure 3
10	2 x water baths	Wastewater must be directed to onsite storage, for mixing, treatment and discharge to Water Corporation sewer.	Item 17 in Schedule 1 Figure 3
11	NaOH leach bath	Wastewater must be directed to onsite storage, for mixing, treatment and discharge to Water Corporation sewer.	
12	Rotary Dryer exhaust baghouse.	Must be fitted with pressure differential device to detect blockages and holes.	A5 in Schedule 1 figure 2
13	Rotary dryer exhaust stack	must be fitted with a sampling port that complies with the requirements of AS 4323.1 to allow stack testing.	A5 in Schedule 1 figure 2

Compliance reporting

2. The works approval holder must within 30 calendar days of the 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.

Environmental commissioning phase

Environmental commissioning requirements

4. The works approval holder may only commence environmental commissioning of the infrastructure listed in condition 5 once the Environmental Compliance Report has been submitted in accordance with condition 2 of this works approval.

5. Any environmental commissioning activities undertaken for an item of infrastructure specified in Table 2 may only be carried out:

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

(b) for a period not exceeding 90 calendar days in aggregate.

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

	Site infrastructure and equipment	Environmental commissioning and time limited operations requirement	Infrastructure location
1.	2 x trains of mills and cyclones	Mill output must be directed to cyclones. Fines from cyclone must be directed fines baghouses	Figure 3 in Schedule 1
2.	4 x fines baghouse stacks	An alarm system is maintained and operational to detect dust spike, while the emission source is operating.	A1 to A4 in Schedule 1 figure 2
3.	Fines bagging plant	Must be maintained free of spilled material.	Item 11 in Schedule 1 Figure 3
4.	NaOH bake kiln	Exhaust from kiln must be directed to alkaline scrubber	Item 16 in Schedule 1 figure 3
5.	Alkaline scrubber for kiln and acid wash tank	pH must be maintained according to manufacturer's instructions. Wastewater must be recycled or directed to onsite storage, for mixing, treatment and discharge to Water Corporation sewer	
6.	Quench tank	Emissions to air must be directed to the alkaline scrubber Wastewater must be directed to onsite storage, for mixing, treatment and discharge to Water Corporation sewer	Item 17 in Schedule 1 Figure 3
7.	Acid wash tank	Emissions to air must be directed to alkaline scrubber Wastewater must be directed to onsite storage, for mixing, treatment and discharge to Water Corporation sewer	
8.	Off gas alkaline scrubber for Dryer and	pH must be maintained according to manufacturer's instructions.	Item 24 in Schedule 1 figure 3

	Site infrastructure and equipment	Environmental commissioning and time limited operations requirement	Infrastructure location
	quench tank	Wastewater must be recycled or directed to onsite storage, for mixing, treatment and discharge to Water Corporation sewer	
9.	2 x water baths	Wastewater must be directed to onsite storage, for mixing, treatment and discharge to Water Corporation sewer	Item 17 in Schedule 1 Figure 3
10.	NaOH leach bath	Wastewater must be directed to onsite storage, for mixing, treatment and discharge to Water Corporation sewer	
11.	Rotary dryer exhaust baghouse.	Must be fitted with a working air pressure differential device for detection of blockages and holes.	A5 in Schedule 1 figure 2
12.	Bagging plant	Must be maintained free of spilled material.	Item 20 on Schedule 1 Figure 3

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

Emission	Discharge point	Discharge point location
PM_{10}, $PM_{2.5}$	Baghouse emission points on micronizing and spheronising building	Emission points A1 to A4 in Schedule 1 Figure 2.
Rotary Dryer Exhaust via baghouse PM_{10}, $PM_{2.5}$	Flash dryer exhaust stack	Emission point A5 in Schedule 1 Figure 2
Combustion gases including NOx from boiler	Boiler Stack	Emission point A6 in Schedule 1 Figure 2
Emissions from NaOH bake kiln via alkaline scrubber. H_2S, SO_2, NOx, CO	NaOH bake kiln off gas stack	Emission point A7 in Schedule 1 Figure 2

Monitoring during environmental commissioning

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

Table 4: Emissions and discharge monitoring during environmental commissioning

Discharge point	Parameter	Frequency	Averaging Period (minutes)	Unit	Method
A7: Emissions from NaOH bake kiln via alkaline scrubber.	H_2S	**Environmental commissioning:** Two separate sampling events during the environmental commissioning phase with at least one sample event within the first two weeks after commencing environmental commissioning. **Time limited operations**: One sampling event during time limited operations	10	mg/m^3 and g/s	USEPA Method 11 or USEPA Method 15
	SO_2		30		USEPA Method 6 or 6c
	NOx		30		USEPA Method 7E
	CO		As per method		USEPA Method 10
A5: Rotary dryer exhaust	PM_{10} $PM_{2.5}$	**Environmental commissioning**: At least one sampling event within the first two weeks after commencing environmental commissioning.	As per method		USEPA Method 201A

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

Environmental commissioning report

9. The works approval holder must submit to the CEO an Environmental Commissioning Report within 30 calendar days of completing environmental commissioning.

10. The works approval holder must ensure the Environmental Commissioning Report required by condition 9 of this works approval includes the following:

(a) a summary of the environmental commissioning activities undertaken, including timeframes and amount of graphite processed;

(b) the point-source emissions monitoring and ambient monitoring results recorded in accordance with conditions 7;

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

(d) 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

11. The works approval holder may only commence time limited operations infrastructure identified in condition 1 where the Environmental Commissioning Report as required by condition 9 has been submitted by the works approval holder.

12. The works approval holder may conduct time limited operations for an item of infrastructure specified in Table 2:

(a) for a period not exceeding 180 calendar days from the day the works approval holder meets the requirements of condition 9; 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 12(a).

13. 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.

14. The licence holder must ensure that during time limited operations, the emissions specified in Table 3, are discharged only from the corresponding discharge point and only at the corresponding discharge point location.

Monitoring during time limited operations

15. The works approval holder must monitor emissions to air during time limited operations in accordance with Table 4.

Time limited operations compliance reporting

16. The works approval holder must submit to the CEO a report on the time limited operations within 30 calendar days of the completion date of time limited operations or 30 calendar days before the expiration date of the works approval, whichever is the sooner.

17. The works approval holder must ensure the report required by condition 16 includes the following:

(a) a summary of the time limited operations, including timeframes and amount of graphite processed;

(b) a summary of monitoring parameter results obtained during time limited operations under condition 15.

(c) a review of performance and compliance against the conditions of the works approval and the Environmental Commissioning Report; and

(d) where the manufacturer's design specifications and the conditions of this works approval have not been met, what measures will the works approval holder take to meet them, and what timeframes will be required to implement those measures.

Records and reporting (general)

18. 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.

19. 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 13;

(c) complaints received under condition 18.

20. The books specified under condition 19 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 5 have the meanings defined.

Table 5: Definitions

Term	Definition
AS 4323.1	means the most recent version and relevant parts of the Australian Standard AS 4323.1 Stationary source emissions – selection of sampling positions
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
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.
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).
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.
STP dry	means standard temperature and pressure (0°C and 101.325 kilopascals) dry
Suitably qualified engineer	means a person who holds a tertiary academic qualification in engineering and has a minimum 5 years of experience working in their area of expertise
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	United States (of America) Environmental Protection Agency
USEPA Method 6	means USEPA Method 6 Determination Of Sulfur Dioxide Emissions From Stationary Sources
USEPA Method 7E	means USEPA Method 7E Determination of Nitrogen Oxides Emissions from Stationary Sources (Instrumental Analyzer Procedure)

Term	Definition
USEPA Method 10	means USEPA Method 10 Determination of Carbon Monoxide Emissions from Stationary Sources
USEPA Method 11	means USEPA Method 11 Determination Of Hydrogen Sulfide Content Of Fuel Gas Streams In Petroleum Refineries
USEPA Method 15	Means USEPA Method 15 Determination of hydrogen sulfide, Carbonyl Sulfide, and Carbon Disulfide Emissions form 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.

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

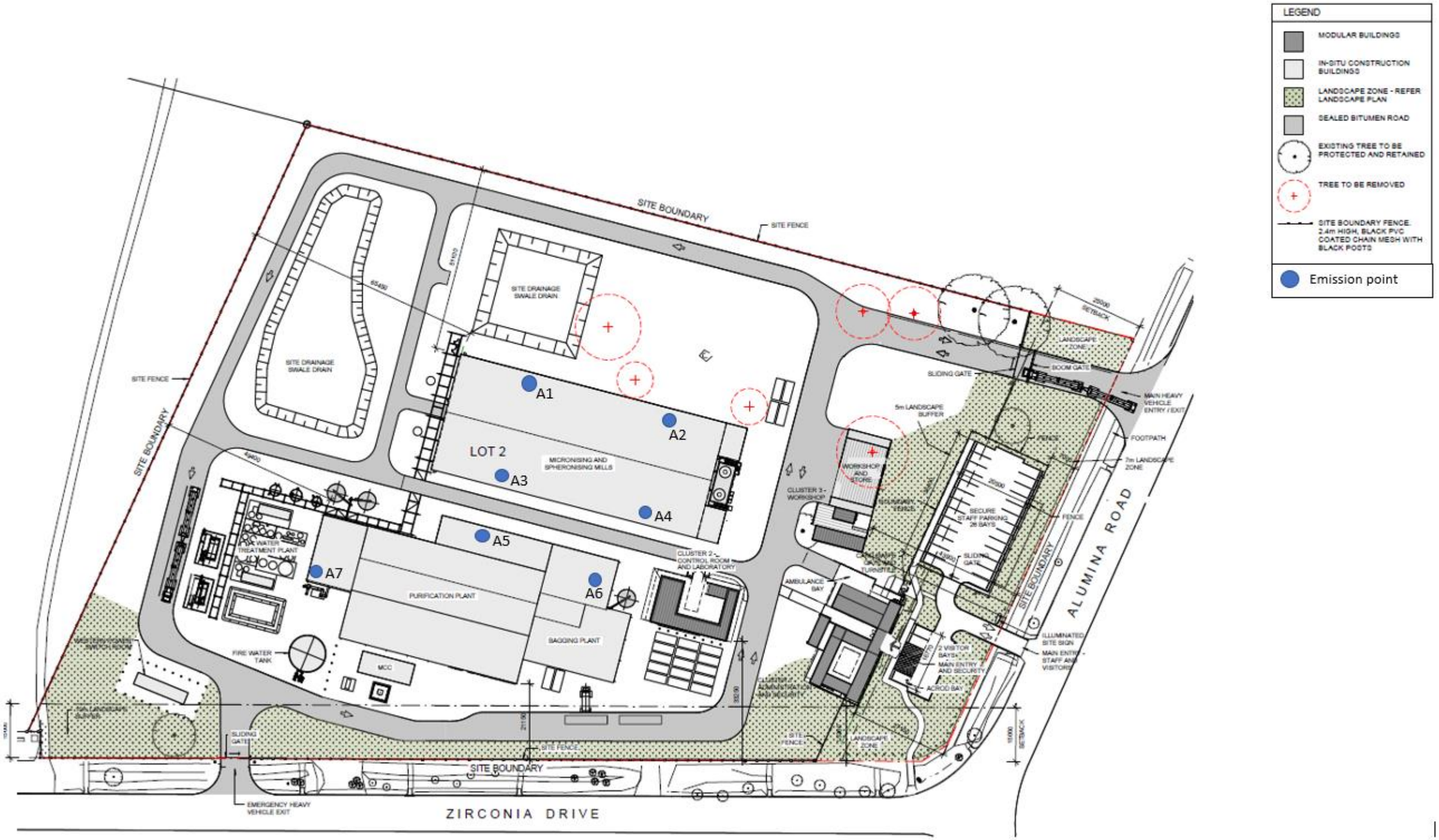


Figure 2: Proposed Layout

NORTH

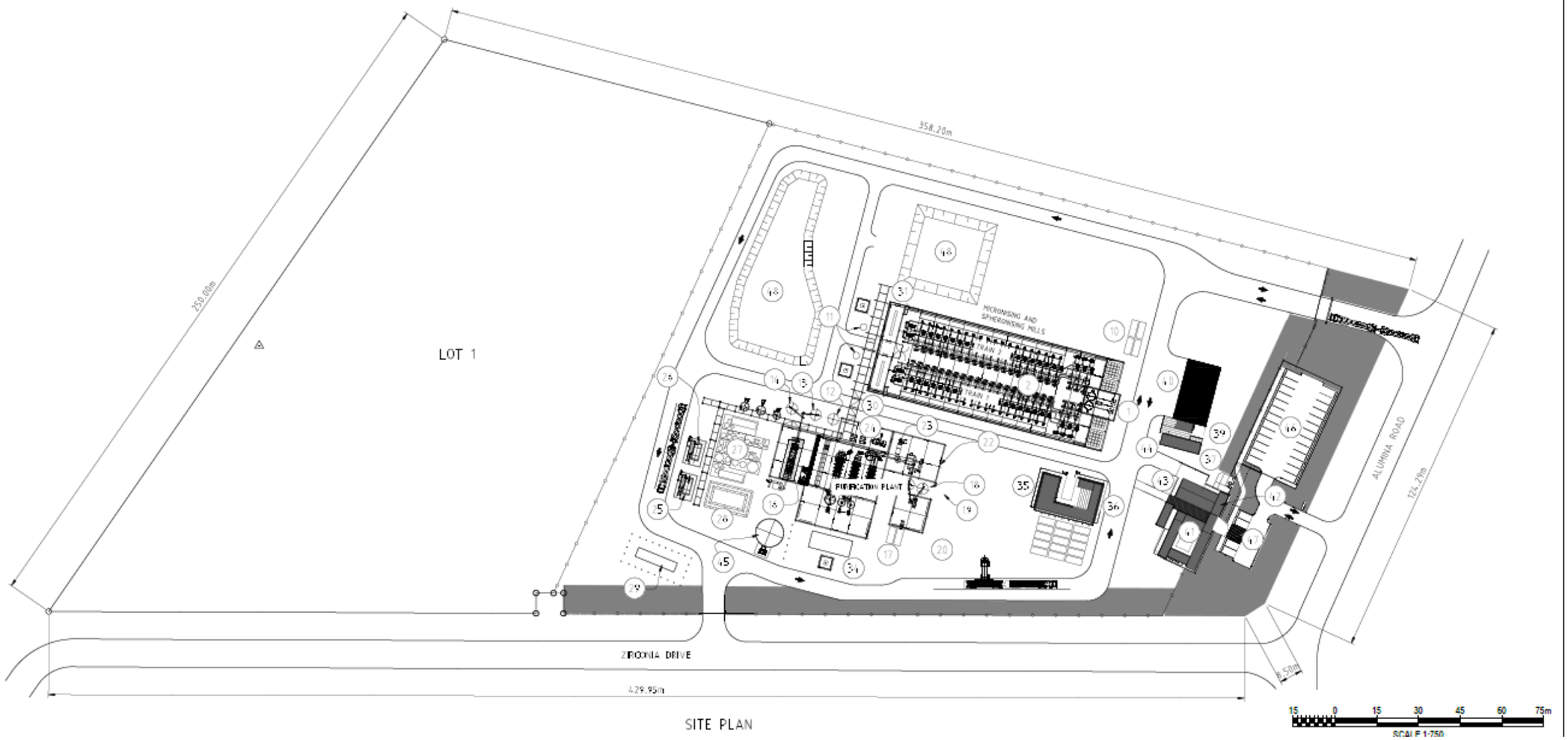
44977.640
229323.870
R.L 4.079m
DATUMN POINT

ITEM LIST	
ITEM	DESCRIPTION
1	MICRONISING FEED BIN & BAG SPLITTER TRAIN 1 & 2
2	MICRONISING AND SPHERONISING TRAINS 1 & 2
3	STAGE 2
4	STAGE 2
5	STAGE 2
6	STAGE 2
7	STAGE 2
8	STAGE 2
9	STAGE 2
10	FLAKE GRAPHITE BULK BAG UNLOADING
11	BY-PRODUCT 1 (SILOS 1 & 2)
12	OFF SPEC SILO

ITEM LIST	
ITEM	DESCRIPTION
13	SPG 10 SILO
14	SPG 16 SILO
15	CONTAINER PRODUCT BULK BAG LOADING
16	NaOH BAKE KILN
17	PURIFICATION BUILDING
18	PRODUCT SILO
19	FINES SILO
20	SPG BAGGING PLANT
21	STAGE 2
22	SPIRAL FLASH DRYER
23	STEAM BOILER
24	PLANT AIR COMPRESSORS, FILTERS, DRYERS & RECIEVERS

ITEM LIST	
ITEM	DESCRIPTION
25	SULPHURIC ACID ISO CONTAINER
26	CAUSTIC ISO CONTAINER
27	WATER TREATMENT PLANT
28	WASTE WATER PIT
29	WESTERN POWER 22kV SWITCH ROOM
30	MCC 01
31	MCC 02
32	STAGE 2
33	STAGE 2
34	MCC 03
35	CONTROL ROOM
36	ANALYTICAL & METALLURGICAL LABORATORY

ITEM LIST	
ITEM	DESCRIPTION
37	INDUCTION & TRAINING ROOM
38	STAGE 2
39	STORE & OFFICE
40	WORKSHOP & OFFICE
41	ADMINISTRATION OFFICE C/W M/F TOILETS
42	SECURITY OFFICE
43	FIRST AID ROOM & LUNCH ROOM
44	PLANT CHANGE ROOMS C/W ABLUTION & SHOWERS
45	FIRE WATER TANK
46	WORKERS CAR PARK
47	VISITORS CAR PARK
48	SITE DRAINAGE SWALE DRAIN



SITE PLAN