Government of Western Australia
Department of Water and Environmental Regulation

Works Approval

Works approval number	W6556/2021/1
Works approval holder	Elan Energy Matrix Pty Ltd
ACN	611 714 580
Registered business address	Level 15, 125 St George's Tce PERTH WA 6000
DWER file number	DER2021/000332
Duration	17/09/2021 to 16/09/2026
Date of issue	17/09/2021
Date of amendment	11/09/2024
Premises details	Elan Energy Management 9 Fargo Way, WELSHPOOL WA 6986 Legal description – Lot 60 on Deposited Plan 13025 Certificate of Title Volume 1549 Folio 111 As defined by the Premise map, Figure 1 in Schedule 1

Prescribed premises category description (Schedule 1, ***Environmental Protection Regulations 1987***)	**Assessed production capacity**
Category 37 – Char manufacturing	60 tonnes per day

This works approval is granted to the works approval holder, subject to the attached conditions, on 11 September 2024 by:

Amine Fisher

Digitally signed by Amine Fisher
Date: 2024.09.11 14:07:45 +08'00'

MANAGER, PROCESS INDUSTRIES

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

Works approval history

Date	Reference number	Summary of changes
30/04/2018	W6113/2017/1	Works approval granted, expired 29/04/2021.
17/09/2021	W6556/2021/1	Replacement new works approval granted
11/09/2024	W6556/2021/1	Amendment to extend the expiry date by two years due to delays

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 the infrastructure and/or equipment;

(b) in accordance with the corresponding design and construction / installation requirements; and

(c) at the corresponding infrastructure location; and as set out in Table 1.

Table 1: Design and construction / installation requirements

	Infrastructure	Design and construction / installation requirements	Infrastructure location
1.	Tyre shred feed bin	To have a cover to prevent rainwater entering the bin.	Shown in Schedule 1, Figure 2 as 1
2.	Thermal conversion unit (TCU)	• TCU is fuelled by natural gas. • Heat tube must be able to withstand temperatures of 900ºC.	Shown in Schedule 1, Figure 2 as 2
3.	Oil condenser train	Must allow all non-condensed process gases from the oil condenser train to be treated by the thermal oxidiser.	Shown in Schedule 1, Figure 2 as 3
4.	Oil storage tanks	• Maximum capacity of 150,000 L • Fitted with secondary containment system capable of holding 110% of the maximum capacity of the combined oil storage tanks. • The tanks must be fitted with a high level and high-high level alarms.	Shown in Schedule 1, Figure 2 as 4
5.	Thermal oxidiser unit	• Thermal oxidiser is fuelled by natural gas. • Fitted with a temperature control mechanism to ensure that all process gases treated in the thermal oxidiser are exposed to a temperature of at least 850°C for at least two seconds.	Shown in Schedule 1, Figure 2 as 5
6.	Char handling and bagging	To be designed and constructed such that during operation no char dust will be emitted beyond the premises boundary.	Shown in Schedule 1, Figure 2 as 6
7.	Metal recovery and processing	To be designed and constructed such that during operation no metal dust will be emitted beyond the premises boundary.	Shown in Schedule 1, Figure 2 as 7
8.	Main Stack	• To be at least 15 metres high above ground. • To be fitted with stack sampling ports that comply with AS4323.1. • To be at least 3m above the roofline.	Shown in Schedule 1, Figure 2 as 8

Compliance reporting

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

Commencement and duration

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

Environmental commissioning – infrastructure requirements

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 requirements; and

(b) for the corresponding authorised commissioning duration.

Table 2: Infrastructure requirements

Site infrastructure and equipment	Requirement	Authorised commissioning duration	Infrastructure location
Tyre shred feed bin	Covered to prevent rainwater entering the bin.	For a period not exceeding 90 calendar days in aggregate	Shown in Schedule 1, Figure 2 as 1
Thermal conversion unit (TCU)	• Combustion gases from the TCU burners must be discharged to atmosphere via the Main Stack. • Burners for the heating of the TCU must only be fuelled by natural gas. • Process gases from the TCU must be captured and directed to the oil condenser train. • Feed rate of the TCU must not be greater than 60 tonnes per day.		Shown in Schedule 1, Figure 2 as 2

Site infrastructure and equipment	Requirement	Authorised commissioning duration	Infrastructure location
Oil condenser train	Non-condensed and residual process gases from the oil condenser train must be treated by the thermal oxidiser.		Shown in Schedule 1, Figure 2 as 3
Oil storage tanks	• Maintain all high level alarm systems. • Secondary containment systems are maintained with a storage capacity of 110% of the maximum capacity of the combined tanks.		Shown in Schedule 1, Figure 2 as 4
Thermal oxidiser unit	• The thermal oxidiser unit must be operating at a temperature of at least 850^{o}C prior to the commencement of shredded tyres being feed to the thermal conversion unit. • Residual process gases from the oil condenser unit must be treated inside the thermal oxidiser unit at a temperature of at least 850°C and a minimum residence time of two seconds.		Shown in Schedule 1, Figure 2 as 5
Char handling and bagging	No char dust will be emitted beyond the premises boundary while operational.		Shown in Schedule 1, Figure 2 as 6
Metal recovery and processing	No metal dust will be emitted beyond the premises boundary while operational.		Shown in Schedule 1, Figure 2 as 7
Main Stack	Discharge gas emissions from the thermal conversion unit and thermal oxidiser unit only.		Shown in Schedule 1, Figure 2 as 8

Environmental commissioning – authorised discharge points for emissions

6. During environmental commissioning, the works approval holder must ensure that the emissions listed in Table 3 are discharged only from the corresponding discharge point and only at the corresponding discharge point location specified in Table 3.

Table 3: Authorised emission and discharge points

Emission	Discharge point	Discharge point height magl	Discharge point location
NOx, CO, SO_2, metals, HCL, HF, total particulate matter, VOCs, dioxins and furans	Main stack	15	Shown in Schedule 1, Figure 2 as 8

Environmental commissioning – monitoring

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

Table 4: Air emissions monitoring

Discharge point	Monitoring location	Parameter	Frequency	Time period of testing	Unit*	Method
Main stack	Shown in Schedule 1, Figure 2 as 8	NOx	Environmental commissioning period – One sampling event during the environmental commissioning period. Time limited operations period – One sampling event during the time limited operations period.	Stack test	mg/m^3 and g/s	USEPA Method 7E
		CO				USEPA Method 10
		SO_2				USEPA Method 6C
		Antimony, arsenic, beryllium, cadmium, chromium, lead, manganese, mercury, nickel, silica and zinc				USEPA Method 29
		HCL				USEPA Method 26A
		HF				USEPA Method 26A
		PM_{10}				USEPA Method 5
		VOCs, toulene, benzene, hexane and Pentene				USEPA Method 18
		Dioxins and furans			ng TEQ/m^3 g TEQ/s	USEPA Method 23

*Units for concentration to be reported at STP dry.

8. The works approval holder must monitor the process during environmental commissioning in accordance with Table 5.

Table 5: Process monitoring

Monitoring location	Parameter	Unit	Frequency	Time period of testing	Method
Thermal Oxidiser Unit, Shown in Schedule 1, Figure 2 as 5	Temperature	Celsius	Continuous	Continuous	In process monitoring [(a)]
	Volumetric flow rate	m^3/s			In process monitoring [(b)]

Note: (a) Temperatures to be monitored using at least one thermocouple installed at the discharge end of the thermal oxidiser unit combustion chamber.
(b) Combustion air flow is to be determined from the combustion air fan variable speed drive frequency, which is continuously monitored by the process operating system

9. The works approval holder must calibrate the thermal oxidiser unit temperature monitor each calendar month during the environmental commissioning period.

Environmental commissioning report

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 of infrastructure specified in Table 2.

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

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

(b) the monitoring results recorded in accordance with conditions 7 and 8;

(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 manufacturers 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 for items infrastructure identified in condition 1, where the Environmental Commissioning Report as required by condition 10 has been submitted by the works approval holder.

13. The works approval holder may conduct time limited operations for all items of infrastructure specified in condition 5:

(a) for a period not exceeding 180 calendar days from the day the works approval holder meets the requirements of condition 10 and 11; or

(b) until such time as a licence for the infrastructure in condition 5 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

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

Time limited operations – authorised discharge points

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

Time limited operations – monitoring

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

17. The works approval holder must monitor the process during time limited operations in accordance with Table 5

18. The works approval holder must calibrate the thermal oxidiser unit temperature monitor each calendar month during the time limited operations period.

Time limited operations report

19. 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 7 calendar days before the expiration date of the works approval, whichever is the sooner.

20. The works approval holder must ensure the report required by condition 19 includes the following:

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

(b) the monitoring results for the time limited operations period recorded in accordance with conditions 16 and 17;

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

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

Records and reporting (general)

21. 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.

22. 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 of this works approval;

(c) monitoring programmes undertaken in accordance with conditions 7, 8, 16 and 17; and

(d) complaints received under condition 21.

23. The books specified under condition 22 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
AS4323.1	Australian Standards AS 4323.1-1995, Stationary source emissions – selection of sampling positions – Australian Government
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
Combustion gases	means the waste gases from the Thermal Conversion Unit burners.
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 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).
HCL	Hydrochloric acid
HF	Hydrogen fluoride
m^3/s	meters cubed per second
magl	metres above ground level
metals	refers to the following metals: Antimony, Arsenic, Beryllium, Cadmium, Chromium, Lead, Manganese, Mercury, Nickel, Silica and Zinc.
monthly period	means a one-month period commencing from first of a month until day (X-1) of the immediately following month. *e.g. "means a one-month period commencing from the seventh day of a month until the sixth day of the immediately following month."*
NOx	Nitric oxides
PM_{10}	Particulate matter less than 10 micrometres.
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.
Process gases	means all the gases created within the pyrolysis chamber of the Thermal Conversion Unit and explicitly excluding the combustion gases from the burners.
qualified engineer	means a person who holds a tertiary academic qualification in engineering and has a minimum of three years of experience working in civil and/or structural engineering or the inspection of tanks, vessels or other containment infrastructure.
SO_2	Sulphur dioxide
STP dry	means Standard Temperature and Pressure on a dry bases, reported at 0°C and 101.325kPa.
TEQ	refers to Toxic Equivalency Factors as stated in the 2005 World Health Organization Re-evaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds.

Term	Definition
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.
total particulate matter	refers to extremely small solid particles and liquid droplets suspended in air including nitrates, sulfates, organic chemicals, metals, soil or dust particles, and allergens.
USEPA	refers to the United States Environmental Protection Agency.
VOCs	volatile organic carbons
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).

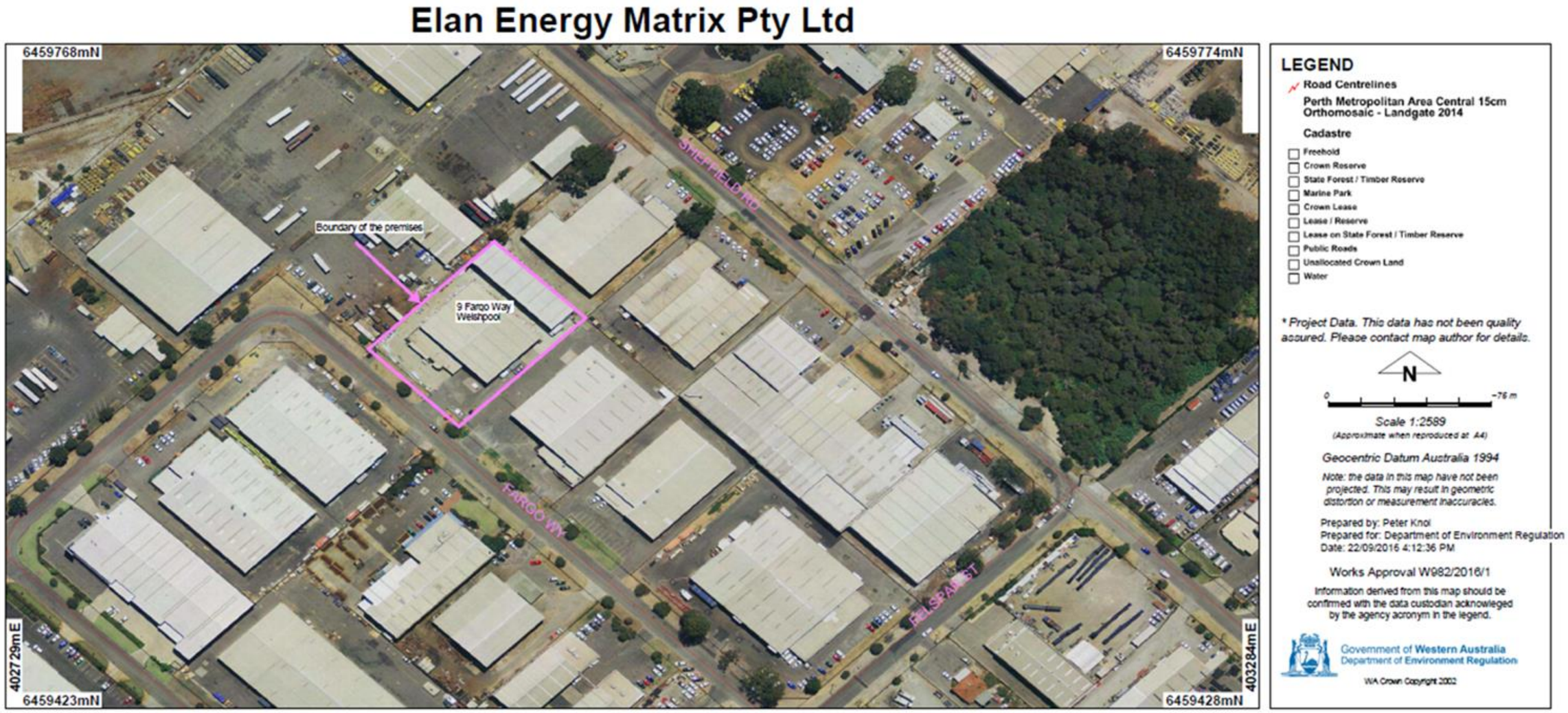

Figure 1: Map of the boundary of the prescribed premises

Site Plan

The site plan is shown in Figure 2.

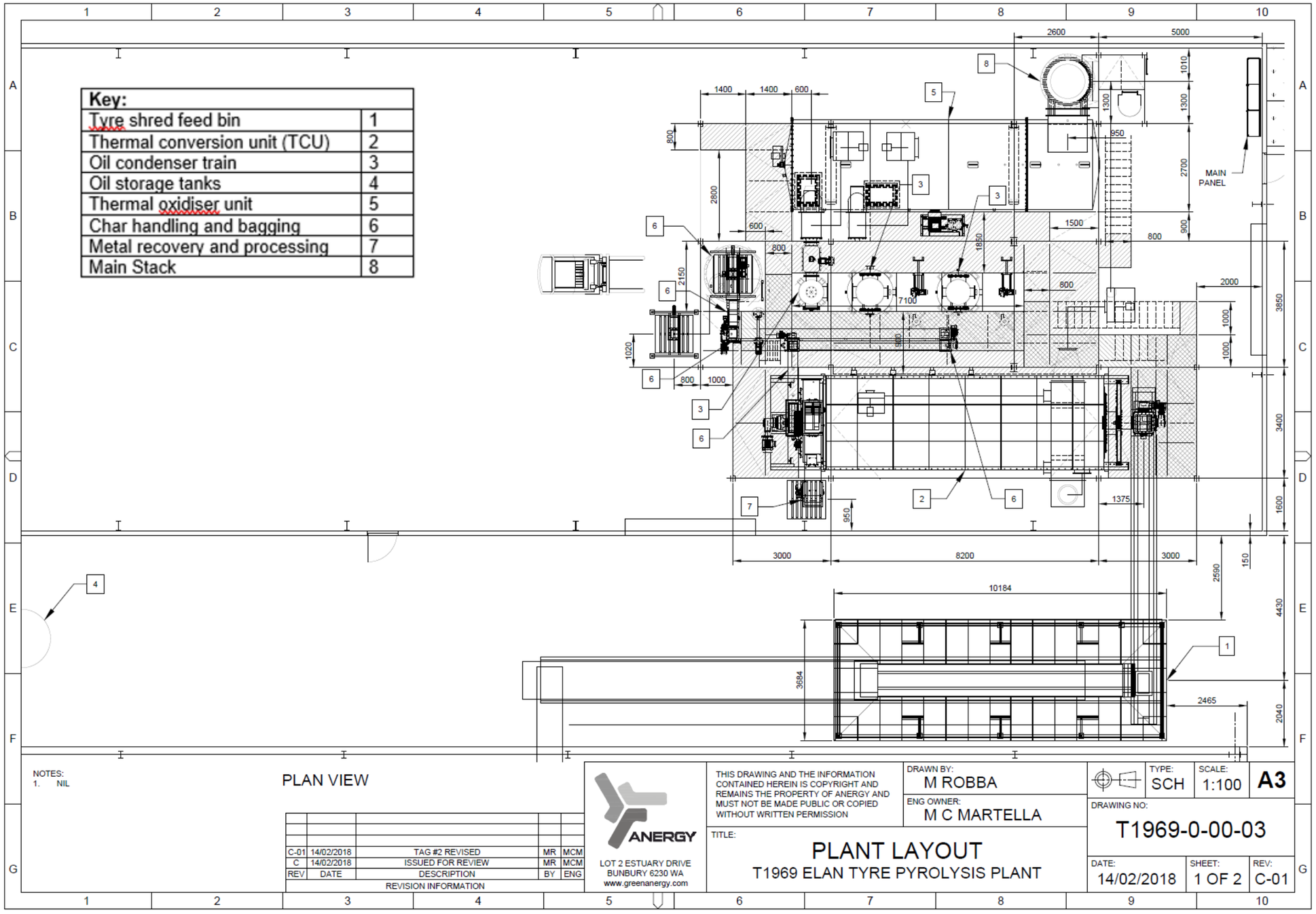

Figure 2: Site plan of the premises.