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Elan Energy Matrix - Tyre Resource Recovery Facility

Response to Submissions on Public
Environmental Review

Prepared for
Elan Energy Matrix Pty Ltd
by Strategen

April 2017



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Environmental Review

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1. Introduction

Elan Energy Matrix Pty Ltd (Elan), the Proponent, proposes to develop a Tyre Resource Recovery Facility (TRRF, the Proposal) within Lot 60, 9 Fargo Way, Welshpool in the City of Canning. The Proposal involves processing of shredded end of life (EOL) tyres using an indirect fired Thermal Conversion Unit (TCU) to produce char, steel wire, oil and process gas.

The Proposal was referred to the Environmental Protection Authority (EPA) on 7 July 2016 under s 38 of the EP Act, and the EPA determined that the Proposal required assessment at the level of Public Environmental Review (PER) with a four week public comment period.

The public review period for the proposal commenced on 20 February 2017 for a period of four weeks, ending on 21 March 2017.

1.1 Purpose and scope of this document

This document has been developed to address comments received during the public review period on the PER for the Proposal.

1.2 Response to submissions

A total of three submissions were received, one from DER and two from the public. The key issues raised in the submissions include:

- uncertainty about the pyrolysis gas production
- reliability of the technology
- risk of fire hazards
- concerns about human health.

The response to submissions is provided in Table 1, Table 2 and Table 3.

Table 1: The proposal - General comments

No.	Submitter	Submission and/or issue	Response
1	Private submitter 1	<p>The plant has potential to be a fire hazard due to the storage of large quantities of tyres, gas, oil and char. The PER document does not provide information on the quantity of combustible liquids and solids that would be kept on site, how they would be stored, and any fire management systems that would be in place.</p> <p>This type of proposal should not be located near residences unless there are strong assurances that there would not be risk of explosions.</p> <p>The submitter contends that there is nothing in the PER document to address the above concerns.</p>	<p>The storage of EOL tyres will be managed to ensure low fire risk. Tyres will also be processed in a just-in-time basis to minimise on-site storage of whole tyres. Licence conditions for tyre storage companies have been developed by DEC (now DER) and Department of Fire and Emergency Services (DFES) based on the NSW Fire Brigades "Guidelines for Bulk Storage of Rubber Tyres" Policy No. 2, version 2. Storage of tyres will be undertaken and regulated in accordance with relevant requirements.</p> <p>Significant quantities of chemicals, liquid fuels or solvents will not be stored and liquid hydrocarbon and chemical wastes will not be produced at the Proposal site. A 100 000 litre oil storage tank is to be installed in a bunded area to hold up to one week of oil production from the TRRF. The TRRF will operate in accordance with the <i>Dangerous Goods Safety Act 2004</i> and Regulations for the manufacture and storage of Dangerous Goods.</p> <p>The Proponent will comply with the standards for hydrocarbon/chemical storage based on the requirements of a Dangerous Goods Storage Licence and relevant DMP legislation and Codes of Practice.</p>
2	Private submitter 2	<p>There is not enough information provided in the PER document in relation to the thermal oxidation unit, which is an important equipment for the proposal. There are many different kinds of thermal oxidation units, and the submitter requests further information to provide assurance about the performance of the unit.</p>	<p>The plant will utilise proven technologies from well-established suppliers.</p> <p>The Thermal Oxidiser comprises a high efficiency staged air cyclonic system that optimises the mixing of residual process gas and combustion air, to maintain excess air conditions which maximise the combustion efficiency of residual process gases. In particular, this type of thermal oxidiser is designed to provide temperature and residence time conditions which meet industry best practice and regulatory requirements for high efficiency oxidation of residual process gases. The combustion conditions will be continuously monitored, with burner and combustion air rates adjusted as required to maintain efficient combustion.</p> <p>Demonstration scale tests of EOL tyre thermal processing were carried out at an established test plant, which included key process elements of the TRRF, including the thermal oxidiser.</p>

Table 2: Air Quality

Item	Submitter	Submission and/or issue	Response
3	Department of Environment Regulation	The final PER document contains further information on the mass balance that forms the basis for the estimation of air emissions for the proposal. The technical assumptions of the report remain valid and no further technical information is required to support the conclusions in the PER document.	Noted. No response required.
4	Public submitter 1	<p>The PER states that the rate of pyrolysis gas production is 140 kilograms per hour (kg/h), but with a peak rate of 880 kg/h.</p> <p>1. Clarify whether the proposal uses a batch process, i.e. it starts producing smaller quantities of gas at the start, produces significant quantities of gas, then reduces as the process ends.</p> <p>2. Clarify whether the peak rate gas production is used for the air quality study. If a lower rate is used, predictions should be multiplied by $880/140 = 6$.</p> <p>3. Will this site operate in known safety and pollution factors?</p>	<p>The rate of process gas production stated in Table 6 of the PER is approximately 1320 kg/hr.</p> <p>The proposed TRRF will operate on a continuous basis, in that EOL tyre shred will be continuously fed into the TCU and oil, char and wire continuously produced during operations. The intention is to operate the facility continuously from nominal 6 am Monday to nominal 6 pm on Friday of each week. Three scenarios will prevail for the operation of the Proposal – normal operations, start-up and shutdown. Process gas evolution increases as the TCU temperature increases after start-up, reaching a constant rate during normal operations. The process gas evolution rapidly declines and ultimately ceases as the TCU temperature decreases after shutdown is initiated.</p> <p>The emissions impact assessment has considered emissions from normal operations, since these represent the greatest potential environmental risk for the Proposal. The physical and chemical processes in play during start-up and shutdown operations provide considerably lower risks. Details of the operating scenarios are provided in Section 6.5.1 of the PER.</p> <p>The TRRF design and operating practices as consistent with industry best practice, and will operate in compliance with all regulatory requirements for air emissions. A full process design HAZOP study will be carried out prior to fabrication and an operating HAZOP study carried out prior to commissioning to ensure acceptable risk outcomes for the project.</p>

Table 3: Human health

Item	Submitter	Submission and/or issue	Response
5	Public submitter 2	The submitter is opposed to the proposal due to the potential health impact on the surrounding areas.	<p>Emissions characteristics for the Proposal were derived from a mass balance (i.e. accounting for material entering and leaving the process) and emissions testing from a trial plant. The emissions data obtained from the mass balance and test plant trials were then used in dispersion modelling to assess the potential direct and cumulative impacts at sensitive receptors located about 600m east of the Proposal site. Worst-case impacts were presented in the PER to ensure that the assessment of emissions was highly conservative.</p> <p>The results of the modelling were compared against ambient air quality guidelines and standards, including the Ambient Air Quality NEPM, DER, World Health Organisation and the Department of Health.</p> <p>Dispersion modelling shows emissions are well below the relevant air quality criteria for the maximum predicted ground level concentrations at the nearest sensitive receptors. Emissions from the Proposal combined with background concentrations (i.e. cumulative emissions) at sensitive receptors are also well below respective air quality criteria.</p> <p>Based on the detailed assessment undertaken, the Proposal will not result in unacceptable air quality impacts on the environment, nearest sensitive receptors or adjacent industrial premises.</p>