



### **Who is Toxfree?**

Tox Free Solutions Limited (Toxfree) is a leading Australian environmental, waste management and industrial service provider. Toxfree’s core values, “safe.reliable.sustainable”, underpin a commitment to offer customers the safest, most reliable and sustainable waste management solutions.

Toxfree operates 57 facilities nationally, employing a team of over 1100 employees. Toxfree has a portfolio of treatment technologies and technical expertise to enable cost effective remediation and treatment of a broad range of solid, liquid, industrial and hazardous waste.

Toxfree has been part of the Karratha community for 11 years and employs 120 people from the Pilbara region. Toxfree provide recycling collection services in Karratha and the Government recycling rebates are being collected and donated to the Royal Flying Doctor Service, a worthy organisation. Toxfree are also in partnership with Rio Tinto providing the Recycling Warriors School education program.

### **Where is the Toxfree Karratha facility?**



The facility is located on the Tom Price Road, approximately 12km south of Karratha.

### *How does Toxfree's Karratha facility currently process waste?*

The facility accepts liquid and solid waste from regional industries. Liquid waste is treated using waste water treatment, evaporation, chemical fixation and solidification, volume reduction and reuse/recycling. In addition, wastes are consolidated and transported offsite to alternative waste facilities in Perth and interstate.

The facility operates under Department of Environment Regulation (DER) Licencing and regulations.

### *What is a waste to energy facility?*

Waste to energy facilities convert waste into useful energy in the form of electricity or heat and may involve a number of existing technologies. By converting waste into useful resources these technologies are considered to be an example of resource recovery. They contribute to sustainable environmental outcomes by reducing the volume of waste requiring disposal to landfills and by converting some hazardous materials into useful resources or harmless products.

### *What is thermal treatment?*

Thermal treatment involves treating wastes with high temperatures to enable separation of contaminants, in order to remove them from a solid mix, or, alternatively, to destroy the waste and release the energy contained in the compound.

There are a number of types of thermal treatment options, depending on how the waste is exposed to heat and under which atmospheric conditions: there are direct and indirect thermal treatment solutions as well as volatilisation (evaporation), combustion, gasification and pyrolysis.

### *What is Toxfree proposing to do in Karratha?*

Toxfree is proposing to install two types of thermal treatment facilities at Karratha which are detailed below. These units will have the capacity to manage 24,000 tonnes of waste per year, allowing for future growth in local industries such as oil and gas and mining.

The new infrastructure will include a laboratory to undertake screening and assessment of incoming waste, a thermal desorption unit, a high temperature thermal destruction unit and an electricity generator or power unit.

The units will be equipped with programmable logic controllers (PLCs) and continuous emissions monitoring systems (CEMS). This will continuously monitor and control of the operation to ensure it is conducted safely and efficiently.

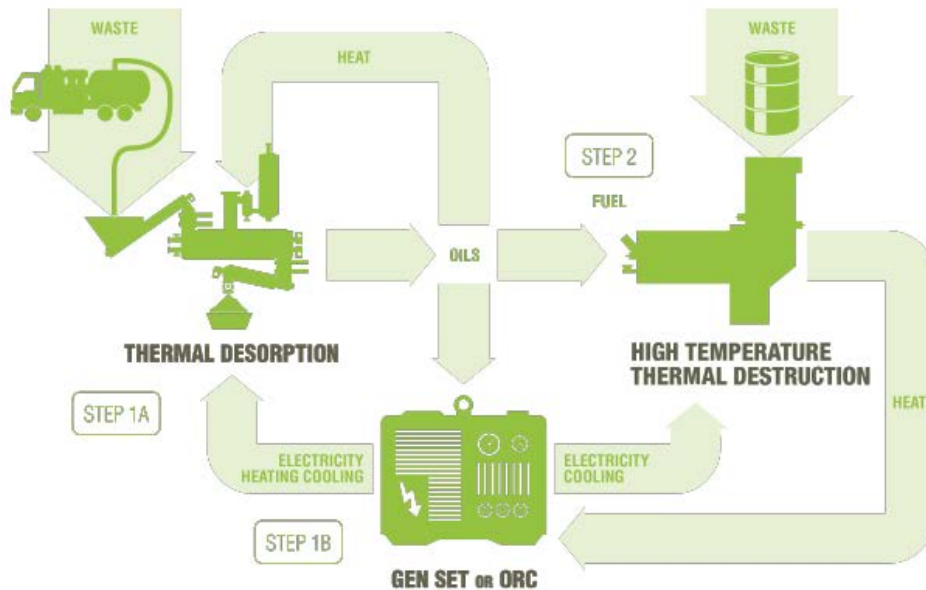
### *What is a Thermal Desorption Unit (TDU)?*

**Thermal desorption** is an environmental remediation technology that uses heat to increase the volatility (ability to evaporate) of contaminants so that they can be separated from a solid waste. The unit proposed by Toxfree will be designed and engineered for the treatment of hydrocarbon contaminated wastes such as drill cuttings, muds and soils. The waste is directly heated. Hydrocarbons and water are evaporated from the solid and cooled to a liquid for collection. The soil, hydrocarbon and water are then laboratory tested and assessed for reuse. The recovered liquid hydrocarbons can be used to generate energy.

### *What is a high temperature thermal destruction unit?*

**High temperature thermal destruction** is a thermal treatment method for waste which involves direct combustion. Direct combustion is the most commonly used technology for converting fuel to heat and/or electrical energy. Waste is burnt in excess oxygen (from air) to produce heat or release energy contained in the fuel. Excess oxygen/air means there is more air available than necessary for the combustion process.

Similar plants are operational on the Australian East coast.



*Infographic of the thermal desorption and destruction process.*

### **What type of wastes are being converted?**

Toxfree is proposing to process wastes produced, primarily by the resource sector in the Pilbara. Wastes to be treated by the waste to energy facility may include drilling muds, oily sludges, solvents, dewatered mud and oily adsorbents and filters. The distilled oils and recovered drilling fluids that are separated during this treatment, which cannot be re-used, will then be used as fuel in the high temperature thermal destruction plant to create energy.

### **What will the energy be utilised for?**

The residual waste from the thermal desorption unit is in ash form. This ash will be moistened to minimise dust and will be reused as a treatment for other types of waste. The waste from the thermal destruction unit is also an ash, which has potential for reuse. The energy will be used to power the Waste to Energy Facility and some of the other supporting site services.

### **What are the environmental benefits?**

Waste to energy facilities are considered by the US Environmental Protection Agency to be an energy source with one of the lowest environmental impacts. The technology will be designed to meet stringent European standards. When compared to the emissions from landfills, waste to energy emissions are less harmful to the atmosphere with these controls.

The environmental benefits include:

- Generating energy, for on-site use, equivalent to powering 1800 Households.
- Treating Pilbara waste in the Pilbara.
- Reducing road transport by 300,000km per year.
- Reducing greenhouse gases at landfill through diversion and recycling opportunities.
- Reducing greenhouse gas emissions from road transport of waste to Perth and interstate facilities by 400 tonnes of carbon dioxide equivalent per year.
- Extending the life of existing landfill.
- Increasing recycling and reuse of waste streams accepted at the facility.

In addition the proposal has Regional benefits including:

- Creating 30 local employment opportunities and expanding the indigenous traineeship program.
- Reducing local vehicle movements by 200 trucks per year.

***Are there any risks to local residents from waste to energy facilities?***

A number of studies to understand the potential air emissions, environmental and health impacts are currently being undertaken. The approach for the studies has been discussed with WA Environmental Protection Authority (EPA).

The results of these studies will inform the EPA and DER approval process.

***Will you explain the results of the studies to the community?***

Toxfree will publish a summary of the results from all the studies. Toxfree will also be pleased to meet with stakeholders who may want to access more information about the studies after they are completed.

***Does thermal destruction create a lost opportunity for re-use and recycling of waste?***

Toxfree’s proposal intends to elevate materials up the waste hierarchy from landfill to either reuse, recycling or energy recovery. The first apparatus to be installed will be the thermal desorption unit which enables reuse or recycling of hydrocarbons and potentially remediates soils to the point where they can also be recycled.



Where thermal desorption is not feasible, suitable materials would be subjected to high temperature thermal destruction which provides the opportunity to recover energy.

***Are there any residual wastes from the facility?***

All the residual wastes have been identified as having useful properties, to enable them to be used reused or recycled.

***Will monitoring be undertaken during the operation of the facility?***

The waste to energy facility will have a continuous emissions monitoring (CEMs) system to ensure the plant operates safely and efficiently. In addition, periodic stack testing will be completed.

***How can I find out more information on this proposal or provide feedback?***

Toxfree believes waste to energy is an environmentally sound and safe option for the treatment of industrial and resource wastes generated in the Pilbara. Additional information will be provided to our stakeholders throughout the project.

Toxfree is looking forward to keeping the community fully informed of the development and is keen to hear and address all feedback. An overview of all comments received will be provided to the EPA and DER in our approvals submission. We look forward to talking to you about this opportunity.

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