# Application for Individual Licence Exemption: Electricity (Generation) Licence

**Kwinana WTE Project Co Pty Ltd**

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**LIST OF ABBREVIATIONS**

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|---|---|
| DER | Department of Environment Regulation |
| EP | Environmental Protection Act 1986 |
| ERA | Economic Regulation Authority |
| GHG | Greenhouse Gas |
| KIA | Kwinana Industrial Area |
| MSW | Municipal Solid Waste |
| MW | Megawatt |
| PER | Public Environmental Review |
| SWIS | South West Interconnected System |
| t/yr | tonnes per year |
| WARR | Waste Avoidance and Resource Recovery |
| WtE | Waste to Energy |

# 1 Introduction

In accordance with the Economic Regulation Authority's licence application guidelines (ERA, *Licence Application Guidelines and Form, Electricity, Gas and Water Licences, April 2014*), Phoenix Energy Australia Pty Ltd (acting on behalf of the Applicant, Kwinana WTE Project Co Pty Ltd (ACN 165 661 263)) is applying for an individual licence exemption (Electricity (Generation) Licence exemption) under the *Electricity Industry Act 2004*, for the proposed Kwinana Waste to Energy (WtE) Project.

# 2 Generator Project Description

The Kwinana WtE project will be a critical component of WA's long-term waste management infrastructure. The facility will utilise the tried and proven, market leading Martin GmbH reverse acting (R-type) grate combustion technology to process up to 400,000 t/yr of residual Municipal Solid Waste (MSW) into clean, base load renewable electricity. The process will recover energy in the form of electricity and employ Best Available Techniques to ensure that any emissions to the atmosphere comply with European emission limits. In addition, the project is seeking to demonstrate the processing of solid residues from the combustion process into bricks and pavers in an on-site Brick Plant, and/or sold for use as alternative construction materials. This combination of process technologies will not only deliver one of the cleanest forms of base load electricity, but it also seeks to divert 100% of the feedstock (MSW) away from landfill disposal. This will simultaneously reduce WA's reliance on both fired base load electricity generation from fossil fuel sources, and landfill disposal. Because of the significance of the project to Western Australia, it has been endorsed by the State Government as a Level 2 project under the State's Lead Agency Framework, managed by the Department of State Development (DSD).

While this proposal is the first of its kind in Australia, it will join the ranks of hundreds of similar scale or larger WtE facilities using the same tried and proven combustion technology, which has been in commercial operation in most major cities around the globe for decades.

### 2.1.1 The Applicant

The proponent for the proposal and the Applicant for the exemption is Kwinana WtE Project Co Pty Ltd (ACN 165 661 263). Kwinana WTE Project Co Pty Ltd is a special purpose vehicle (SPV), which is currently 100% owned by Phoenix Energy Australia Pty Ltd.

Phoenix Energy has developed relationships with tier-one engineering, legal, commercial and plant operations and maintenance service providers, as summarised below. Phoenix Energy draws on any or all of these partners during the project development process. Table 1 provides a summary of some of our key project development and delivery partners.

**Table 1 Kwinana WtE Project Development and Delivery Partners**

| Consortium Member Name | Description |
|---|---|
| Mitsubishi Heavy Industries Environmental & Chemical Engineering Co., Ltd. (MHIEC) | Mass combustion technology provider and regional cooperation partner for the Martin GmbH reverse acting (R-type) stoker grate furnace system, and EPC contractor |
| Covanta Energy Corporation (Covanta) | A global WtE plant owner and Operations & Maintenance (O&M) service provider. Covanta currently own or operate 44 WtE facilities across the US, Europe and Asia |

# 3 Basis for Individual Exemption

In accordance with the ERA's *Licence Application Guidelines and Form, Electricity, Gas and Water Licences, April 2014*), potential applicants who do not strictly meet the requirements for a class exemption can apply to the Public Utilities Office for an individual licence exemption under the *Electricity Industry Act 2004*.

This request for an exemption from the requirement to hold an Electricity (Generation) Licence is premised on the fact that the gross generation capacity[1] of the works (after construction is completed) will be limited to an estimated 34 MW, of which less than 30 MW will be available for export to the SWIS (due to the patristic load required to generate at this level). This gross generation capacity limit is imposed by the approved plant design capacity, which is based on a consideration of: (a) the amount of municipal solid waste available under current waste supply agreements, and (b) the environmental approval for the project, which has been assessed at a maximum waste intake of 400,000 t/yr.

It is intended that the Applicant (Kwinana WTE Project Co Pty Ltd) will apply for an Electricity (Retail) Licence during the construction phase.

In order to demonstrate that this exemption request would not be contrary to the public interest, Phoenix Energy (with the support of its project development consortium partners) has prepared the following assessment for consideration by the Public Utilities Office, in relation to the Kwinana WtE Project.

## 3.1 Public Interest Assessment

### 3.1.1 Environmental considerations

The primary purpose of the Kwinana WtE Project is to avoid the long term storage of municipal solid waste in landfills where there are environmental legacy issues of fugitive methane emissions to atmosphere (methane is a potent greenhouse gas), potential for ground water contamination, ineffective resource recovery and the locking up of land areas from other more productive usage. Instead, combustion of this waste facilitates the immediate recovery of energy (as steam and electricity), which offsets the burning of fossil fuels, and the recovery of other resources, such as recyclable metals. This is consistent with the waste hierarchy, as presented in Part 1, Section 5 of the *Waste Avoidance and Resource Recovery (WARR) Act 2007*, which establishes that the recovery of energy from waste is classified as ***resource recovery***[2] and is therefore considered to be a higher order outcome than disposal.

Due to the significant portion of biomass (food waste, garden waste, contaminated paper & cardboard and natural textiles) in MSW, the combustion of MSW to generated electricity is recognised as eligible renewable electricity generation by the *Renewable Energy (Electricity) Act 2000*. Due to the constant nature of waste generation (waste is collected weekly, throughout the year), the steady production of electricity provides base load support for other forms of intermittent renewable energy.

Waste to energy is recognised internationally as a means of reducing lifecycle Greenhouse Gas (GHG) emissions due to the following offsets:

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[1] ***generation capacity***, in relation to generating works under construction, means the total generation capacity in megawatts that the generating works will have after construction is completed. (page 1, *Electricity Industry Exemption Order 2005*)

[2] resource recovery (including reuse, reprocessing, recycling and energy recovery) (page 5, Part 1, s. 5, *Waste Avoidance and Resource Recovery Act 2007)*

- Avoided fugitive methane (landfill gas) emissions, which arise even where landfill gas capture systems are in place,
- Avoided GHG emissions associated with the avoidance of the equivalent amount of base load energy generation from fossil fuel fired energy generation (relating to either steam or electricity generation or combined heat and power generation),
- Avoided GHG emissions associated with the recovery of recyclable ferrous and non-ferrous metals, which are readily recovered from the ash residue from the combustion process,
- Potential avoided GHG emissions associated with the reuse of ash residues from the combustion process for the creation of alternative construction products, as an alternative to quarried materials sourced from distant quarries and/or as an alternative to conventional brick manufacture, and
- Avoided GHG emissions associated with transporting waste long distances to landfill for disposal.

The Project has undertaken a full Public Environmental Review (PER) and has recently received approval by the Minister for Environment under Part IV of the Environmental Protection Act 1986 (Statement 1016, 3 September 2015).

### 3.1.2 Social welfare and equity considerations, including community service obligations

The following considerations relate to social welfare and equity, including community service.

The project will provide:

- Increased awareness and uptake of renewable energy,
- Reduced electricity prices in the long term due to cost competitiveness with traditional fossil fuelled generation,
- Alternative fuel for electricity production in times of gas supply curtailments,
- Reduced and predictable long-term waste disposal costs for local communities,
- Reduced land footprint occupied by landfill, and compared to other forms of renewable energy,
- An extension of the useful life of existing landfills, and in doing so defer both the need for new putrescible landfills and the significant capital expenditure required for such replacement landfills,
- Ongoing education of school children and the broader community on responsible waste management following the principles of Reduce, Reuse, Recycle.

### 3.1.3 Economic and regional development factors, including employment and investment growth

The project will provide the following economic benefits:

- $380 million investment in capital for the engineering, construction and commissioning of the project, which will be located in the south west of WA,
- 500-1000 jobs during the detailed design, construction and commissioning period,
- ~40 direct, ongoing operational jobs,
- Potential for additional indirect maintenance and operations support jobs associated with local trades and traders, providing goods and services to the Facility and its workforce,
- Educational and traineeship opportunities,

- Potential synergies with other large manufacturers in the Kwinana Industrial Area (KIA), in relation to energy, potential reuse of ash residue for the manufacture of construction products, as an alternative to quarried materials,
- Tourism opportunities, since the Facility will be a showcase for Waste to Energy to the eastern states, and
- Strengthening of ties with key Asian markets, through the provision of technology into WA.

### 3.1.4 The interests of customers generally or of a class of customers

The customers will be large scale industrial customers located within the KIA and elsewhere, with any excess available to the balancing market for general consumption within the SWIS. This project will provide an alternate supplier of electricity and a source of renewable electricity not currently available in that area.

### 3.1.5 The interests of any licensee, or applicant for a licence, in respect of the area or areas to which the order, if made, would apply

There are several other electrical generators already in the KIA. This project will be relatively minor in output in comparison with the existing installed capacity and is not considered a significant impact on existing licensees or new applicants for a licence.

Other generators in the area already have exemptions from holding a Generation licence due to either generating below the 30 MW threshold, or a significant proportion of the electricity generated being for onsite consumption.

### 3.1.6 The importance of competition in electricity, gas or water supply markets

Although this generator will be relatively small in comparison to the existing market, it will introduce a new form of competition in terms of renewable base load capacity with an alternate (renewable) fuel source.

### 3.1.7 The policy objectives of government in relation to the supply of electricity, gas or water services including that which is not limited to providing safe reliable services

- The operation will have no bearing on the safety and reliability of the power system as it will be located within the centre of a large number of other generators and large consumers.
- Operation will be in accordance with the Technical Rules and Wholesale Market Rules.
- It supports government policy of increasing the uptake of renewable energy.
- It diminishes the need for government subsidies to increase the uptake of renewable energy
- It improves market efficiency by facilitating the production of electricity via an alternate low cost fuel.

The project meets the following aspects against each of the Objectives of the Wholesale Electricity Market (WEM):

The objectives of the market are —

*(a) to promote the economically efficient, safe and reliable production and supply of electricity and electricity related services in the South West interconnected system;*

The project will deliver reliable base load renewable electricity at a cost comparable to fossil fuel generation.

*(b) to encourage competition among generators and retailers in the South West interconnected system, including by facilitating efficient entry of new competitors;*

This will be new generation technology (to this market) from a new competitor.

(c) *to avoid discrimination in that market against particular energy options and technologies, including sustainable energy options and technologies such as those that make use of renewable resources or that reduce overall greenhouse gas emissions;*

The project utilises sustainable methodology for the processing of municipal solid waste, considered to be a renewable resource, to reduce overall (lifecycle) greenhouse gas emissions.

(d) *to minimise the long-term cost of electricity supplied to customers from the South West interconnected system; and*

The cost of the electricity produced will be comparable to fossil fuels and is less than other forms of renewable energy.

(e) *to encourage the taking of measures to manage the amount of electricity used and when it is used.*

The project will be located in the Kwinana Industrial Area, where a number of other generators and large consumers are also located. This will ensure efficiency of utilisation of transmission systems.

The generation will be baseload. This will support the use of distributed generation (Solar PV) and wind power which are intermittent and consequently, may not be available when consumers need it.

### 3.1.8 Any other matters considered appropriate and relevant which may impact on the public interest

Because of the significance of the project to Western Australia, it has been endorsed by the State Government as a Level 2 project under the State's Lead Agency Framework, managed by the Department of State Development (DSD).