MINISTER FOR THE ENVIRONMENT;
LABOUR RELATIONS

Statement No.

000561

STATEMENT THAT A PROPOSAL MAY BE IMPLEMENTED (PURSUANT TO THE PROVISIONS OF THE ENVIRONMENTAL PROTECTION ACT 1986)

WASTE-TO-ENERGY & -WATER PLANT, LOT 15 MASON ROAD, KWINANA

Proposal: The construction and operation of a Waste-to-Energy and -Water Plant at Lot 15 Mason Road, Kwinana.

The plant will combust up to 1.45 million tonnes per annum of municipal solid and other waste in twelve ultra high temperature combustors installed in parallel trains. Heat from the combustion process is used to produce steam and drive turbines which generate electricity. Waste heat from this process is further used in desalination units to produce potable water. Plasma enhanced melters process flyash and some hazardous wastes into glass products.

The proposal is documented in schedule 1 of this statement.

Proponent: Global Olivine Western Australia

Proponent Address: 2/72 Marine Terrace, FREMANTLE WA 6160

Assessment Number: 1289

Report of the Environmental Protection Authority: Bulletin 1004

The proposal to which the above report of the Environmental Protection Authority relates may be implemented subject to the following environmental conditions and procedures:

Procedures

1 Implementation

1-1 Subject to these conditions and procedures, the proponent shall implement the proposal as documented in schedule 1 of this statement.

Published on

24 JAN 2001

29th FLOOR, ALLENDALE SQUARE, 77 ST. GEORGE'S TERRACE, PERTH 6000 TELEPHONE: (08) 9421 7777 FACSIMILE: (08) 9221 4665

1-2 Where the proponent seeks to change any aspect of the proposal as documented in schedule 1 of this statement in any way that the Minister for the Environment determines, on advice of the Environmental Protection Authority, is substantial, the proponent shall refer the matter to the Environmental Protection Authority.

1-3 Where the proponent seeks to change any aspect of the proposal, including technological aspects, as documented in schedule 1 of this statement in any way that the Minister for the Environment determines, on advice of the Environmental Protection Authority, is not substantial, those changes may be effected.

2 Proponent Commitments

2-1 The proponent shall implement the consolidated environmental management commitments documented in schedule 2 of this statement.

2-2 The proponent shall implement subsequent environmental management commitments which the proponent makes as part of the fulfilment of conditions and procedures in this statement.

3 Proponent

3-1 The proponent for the time being nominated by the Minister for the Environment under section 38(6) or (7) of the Environmental Protection Act 1986 is responsible for the implementation of the proposal until such time as the Minister for the Environment has exercised the Minister's power under section 38(7) of the Act to revoke the nomination of that proponent and nominate another person in respect of the proposal.

3-2 Any request for the exercise of that power of the Minister referred to in condition 3-1 shall be accompanied by a copy of this statement endorsed with an undertaking by the proposed replacement proponent to carry out the proposal in accordance with the conditions and procedures set out in the statement.

3-3 The proponent shall notify the Department of Environmental Protection of any change of proponent contact name and address within 30 days of such change.

4 Commencement

4-1 The proponent shall provide evidence to the Minister for the Environment within five years of the date of this statement that the proposal has been substantially commenced.

4-2 Where the proposal has not been substantially commenced within five years of the date of this statement, the approval to implement the proposal as granted in this statement shall lapse and be void. The Minister for the Environment will determine any question as to whether the proposal has been substantially commenced.

4-3 The proponent shall make application to the Minister for the Environment for any extension of approval for the substantial commencement of the proposal beyond five years from the date of this statement at least six months prior to the expiration of the five year period referred to in conditions 4-1 and 4-2.

4-4 Where the proponent demonstrates to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority that the environmental parameters of the proposal have not changed significantly, then the Minister may grant an extension not exceeding five years for the substantial commencement of the proposal.

5 Compliance Auditing

5-1 The proponent shall submit periodic Compliance Reports, in accordance with an audit program prepared in consultation between the proponent and the Department of Environmental Protection.

5-2 Unless otherwise specified, the Chief Executive Officer of the Department of Environmental Protection is responsible for assessing compliance with the conditions, procedures and commitments contained in this statement and for issuing formal, written advice that the requirements have been met.

5-3 Where compliance with any condition, procedure or commitment is in dispute, the matter will be determined by the Minister for the Environment.

Environmental Conditions

6 Environmental Management System

6-1 In order to manage the environmental impacts of the project, and to fulfil the requirements of the conditions and procedures in this statement, prior to ground-disturbing activity, the proponent shall demonstrate to the requirements of the Environmental Protection Authority on advice of the Department of Environmental Protection that there is in place an environmental management system which includes the following elements:

1 An environmental policy and corporate commitment to it;

2 Mechanisms and processes to ensure:

(1) planning to meet environmental requirements;

(2) implementation and operation of actions to meet environmental requirements;

(3) measurement and evaluation of environmental performance; and

3 Review and improvement of environmental outcomes.

6-2 The proponent shall implement the environmental management system referred to in condition 6-1.

7 Desalination Plant

7-1 Prior to construction of the Desalination Plant, the proponent shall demonstrate that the discharges from the Desalination Plant to Cockburn Sound of the following parameters are acceptable:

1 heat;
2 saline water;
3 heavy metals; and
4 anti-scalant,

to the requirements of the Environmental Protection Authority on advice of the Department of Environmental Protection.

8 Ocean Outfall

8-1 In the event that port development in the vicinity of James Point is likely to take place, the proponent shall refer their plans for the modified ocean outfall from the Desalination Plant referred to in condition 7-1 to the Environmental Protection Authority.

9 Decommissioning Plans

9-1 At least six months prior to the anticipated date of decommissioning, or at a time agreed with the Department of Environmental Protection, the proponent shall prepare a Final Decommissioning Plan designed to ensure that the site is left in a suitable condition, with no liability to the State, to the requirements of the Environmental Protection Authority on advice of the Department of Environmental Protection.

The Final Decommissioning Plan shall address:

1 removal or, if appropriate, retention of plant and infrastructure;

2 rehabilitation of all disturbed areas to a standard suitable for the agreed new land use(s); and

3 identification of contaminated areas, including provision of evidence of notification to relevant statutory authorities.

9-2 The proponent shall implement the Final Decommissioning Plan required by condition 9-1 until such time as the Minister for the Environment determines that decommissioning is complete.

9-3 The proponent shall make the Final Decommissioning Plan required by condition 9-1 publicly available, to the requirements of the Environmental Protection Authority.

10 Performance Review

10-1 Each six years following the commencement of construction, the proponent shall submit a Performance Review Report to the Department of Environmental Protection:

- to document the outcomes, beneficial or otherwise;
- to review the success of goals, objectives and targets; and
- to evaluate the environmental performance over the six years;

relevant to the following:

1 environmental objectives reported on in Environmental Protection Authority Bulletin 1004;

2 proponent's consolidated environmental management commitments documented in schedule 2 of this statement and those arising from the fulfilment of conditions and procedures in this statement;

3 environmental management system environmental performance targets;

4 environmental management programs and plans; and/or

5 environmental performance indicators;

to the requirements of the Environmental Protection Authority on advice of the Department of Environmental Protection.

Note: The Environmental Protection Authority may recommend changes and actions to the Minister for the Environment following consideration of the Performance Review Report.

Note

1 The proponent is required to apply for a Works Approval and Licence for this project under the provisions of Part V of the Environmental Protection Act.

CHERYL EDWARDES (Mrs) MLA
MINISTER FOR THE ENVIRONMENT

24 JAN 2001

Schedule 1

The Proposal (1289)

The proposal is for the construction and operation of a Waste-to-Energy and -Water Plant on part Lot 15, Mason Road, Kwinana. The plant will combust up to 1.45 million tonnes per annum of municipal solid and other waste.

The plant consists of four main components:

- up to twelve ultra high temperature combustors, each with an associated boiler and air pollution control equipment;
- up to five steam driven turbo alternators;
- up to eight desalination units; and
- up to four plasma enhanced melters.

The plant also has facilities for producing compost, concrete and glass products, as well as infrastructure, such as internal roads, truck wash, weighbridge and dangerous goods store.

The main characteristics of the proposal are summarised in the Table 1 below. They provide an outline of the proposal and should not be viewed as restricting improvements in environmental outcomes.

Table 1 - Key Proposal Characteristics

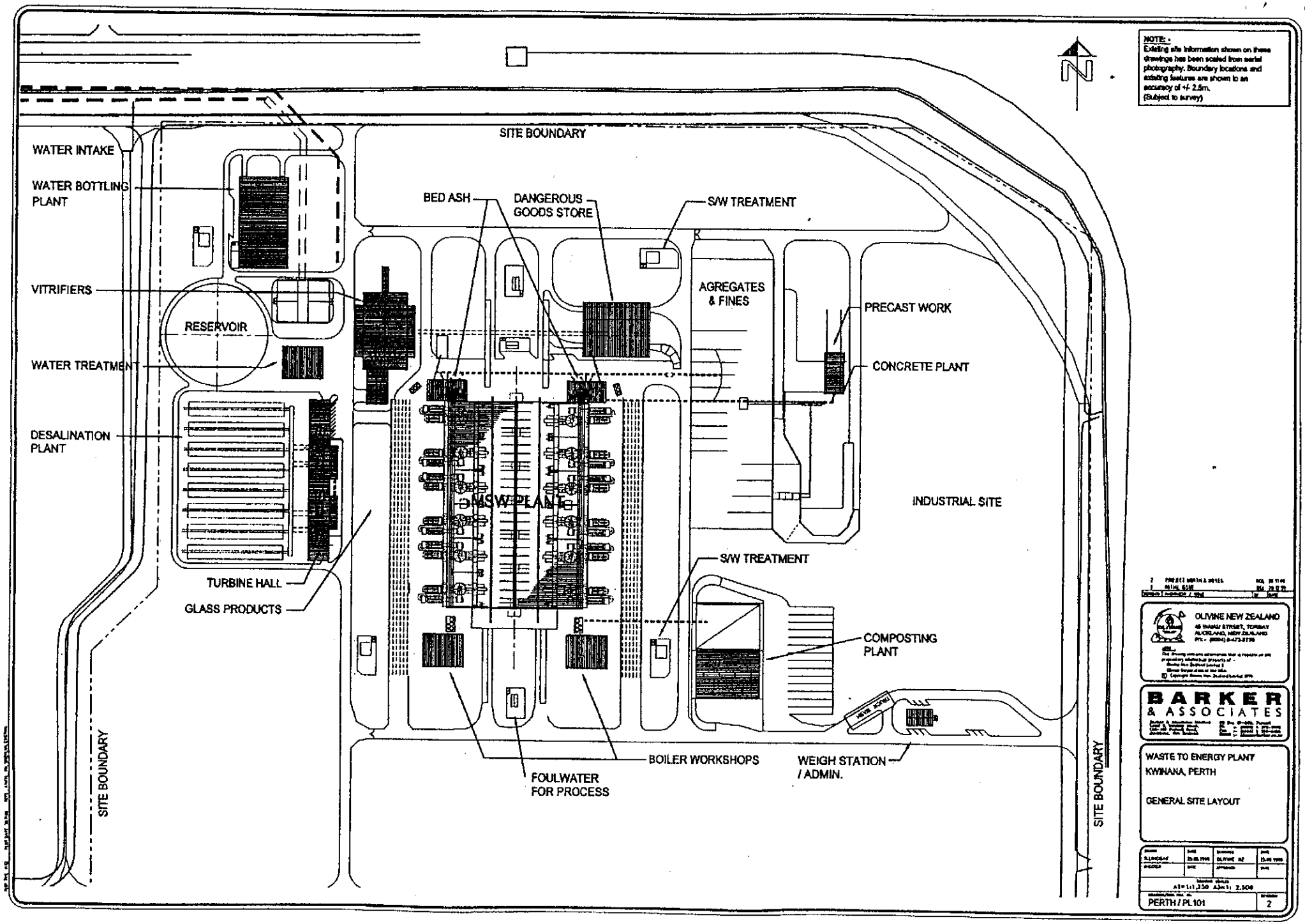
ELEMENT	DESCRIPTION
Waste to Energy Building	Roof Area – approximately 17,200 square metres. Total floor area (upper-basement and upper-level)– approximately 31,200 square metres. Fully enclosed and tightly sealed. Constructed on a large concrete pad with internal drainage system. Storage – approximately 6 days waste storage: Direct truck access to upper basement and upper level. 2 stacks approximately 70 metres in height, each discharging treated flue gases from 6 Ultra High Temperature Combustors
Up to 12 Ultra High Temperature Combustors	Processing an average of 1.2 million tonnes of municipal solid waste and maximum of 1.45 million tonnes of municipal solid waste per annum. Constructed in two plants (6 units per plant) within the Waste-to-Energy building. Producing approximately: • 220,000 – 260,000 tonne of bed ash aggregate and ferrous and non ferrous metal clinker per annum; • 35,000 tonne of bed fines per annum; • 24,000 tonne of fly ash per annum. Each UHTC will be fitted with the following air emission controls (or equipment of equivalent performance): • High Temperature Gas Scrubbing. • Low Temperature Gas Scrubbing. • Selective Non-Catalytic Reduction. • Activated Carbon Injection. • Fabric Filter. Each UHTC will be fitted with plant and monitoring controls to ensure optimum combustion temperature and residence time and emissions monitoring.
Boilers	One water tube conventional boiler for each UHTC. Two spare boilers to be stored on-site in boiler workshops.

ELEMENT	DESCRIPTION
Up to 5 Turbo Generators	780 GigaWatt hours per annum average. Three turbines each with 35 MegaWatt capacity Two turbines each with 17 MegaWatt capacity Housed within a separate, enclosed turbine hall.
Up to 4 Plasma Enhanced Melters	Processing approximately 100,000 tonnes per annum. Housed within a separate, enclosed building. Processing the following products into glass: • Bed ash fines (up to approximately 94 tonne/day). • Fly ash (approximately 68 tonne/day). • Boiler ash. • Hazardous wastes, excluding radioactive substances and explosives. Each Plasma Enhanced Melter will be fitted with the following: • Baghouse • Water Scrubber • Activated carbon filter • LO-CAT Scrubber Off-gas fuel vented to UHTCs after scrubbing and removal of by-products.
Glass Products Plant	Approximately 88,000 tonnes/annum average
Water Desalination Plant	Producing up to approximately 30 million tonnes per annum average from up to 8 units. Including: • Water Treatment Plant • Water Reservoir • Water Bottling Plant
Cooling water inlet and discharge	Intake approximately 4.2 cubic meters per second. Water discharge (summer) – approximately 3.34 cubic metres per second. Water discharge (winter) – approximately 1.42 cubic metres per second.
Compost Plant	Processing up to approximately 56,000 tonnes green waste per annum and producing 30,000 tonnes compost per annum. Housed within a separate, enclosed building. Vented to UHTCs.
Concrete Plant	Proprietary packaged unit or similar. Approximately 80,000 cubic metres per annum. Fitted with specification extraction hoods and bag filters.
Concrete Products Plant	For moulding of concrete products including olivine panels.
Bed Ash Aggregate Screening Plant	Approximately 220,000 – 260,000 tonnes per annum Housed within a separate, enclosed building 24hr ash storage Ventilated to UHTCs Ash transfer point fitted with fabric filter.
Dangerous Goods Store	To store all hazardous wastes for vitrification and dangerous goods used on-site.
Ancillary Works	Stormwater drainage designed to separate clean and contaminated water; Internal roads; Truck wash; Truck weighbridge; Main site office.

Figure

Figure 1 - Plant layout (attached)

Figure 1. Plant layout



Schedule 2

Proponent's Consolidated Environmental Management Commitments

19 January 2001

WASTE-TO-ENERGY & -WATER PLANT, LOT 15 MASON ROAD, KWINANA (Assessment No. 1289)

GLOBAL OLIVINE WESTERN AUSTRALIA

NO	TOPIC	ACTION	OBJECTIVES	TIMING	ADVICE
1.	Community involvement in Environmental Management	The proponent will take steps to ensure that the public remain directly informed of the effects of their operations on the environment. One of the key steps will be to convene a community reference group (to include a Councillor and Council officer of the Town of Kwinana), through which the community can raise issues directly with the proponent and the proponent can pass information directly to the community.	To ensure the public are informed regarding the operations and that the public can raise issues directly with the proponent.	Prior to construction	
2.	Marine Water Quality	Undertake model validation exercise using results of field survey characterising Western Power and/or BP plumes.	Validate results of modelling.	Prior to construction	
3.	Marine Water Quality	Prepare risk assessment and associated contingency plan for the possibility of contamination of the cooling water with hazardous substances.	Develop understanding of risk of contamination of cooling water and appropriate contingency plan	Prior to construction	
4.	Marine Water Quality	Undertake field survey to determine dilution and extent of the proponent's plume.	Demonstrate extent of influence of the proponent's plume and confirm validity of model.	Commissioning	
5.	Marine Water Quality	Undertake testing of effluent to establish toxicity levels using principles outlined in the Australian and New Zealand guidelines for fresh and marine water quality. If toxicity levels are unacceptable prepare a contingency plan to prevent impact on marine organisms.	Confirm assumption of low toxicity	Commissioning	
6.	Marine Water Quality	Undertake screening analysis of the effluent and any site runoff under a representative range of conditions.	Accurately characterise the quality of the water leaving the site and confirm that effluent meets design assumptions.	Six monthly (post-commissioning)	
7.	Marine Water Quality	There will be a detailed assessment of the effects of a combined BP/ Global Olivine Western Australia discharge if the situation arises that the discharges are to be combined.	Ensure the impact of a combined Global Olivine Western Australia/BP discharge will be acceptable.	Prior to combined discharge Works Approval —if required.	
8.	Marine Water Quality	There will be a detailed assessment of the effects of the Stage 2 James Point Pty Ltd harbour configuration on the proponent's discharge if the harbour is approved for construction.	Ensure the impact of the James Point Stage 2 development on the proponent's discharge will be acceptable.	Prior to combined discharge Works Approval —if required.	
9.	Marine Water Quality	Meet agreed quality objectives set for Cockburn Sound in the Environmental Protection Policy for the Sound.	To maintain the current levels of safety of the waters of Cockburn Sound for swimming or harvesting of seafood.	Report annually	

NO	TOPIC	ACTION	OBJECTIVES	TIMING	ADVICE
10.	Marine Water Quality	The chemistry of the cooling water discharge and detailed estimates of the quantity and concentration to be discharged to Cockburn Sound and its likely effects will be supplied in the Operations Environmental Management Plan. The Environmental Management Plan will include a program for management of the discharge to ensure that the level of impact is acceptable.	To ensure that the level of impact from the discharge is acceptable.	Prior to construction	
11.	Marine Sediment Quality	Undertake base level sediment quality monitoring in vicinity of the proposed discharge structure.	To establish the existing base level sediment quality.	Prior to construction	
12.	Marine Sediment Quality	Undertake periodic surveys of sediment quality in vicinity of discharge.	To establish the level of impact on sediment quality.	Annually during the first five years of operation and annually thereafter if required.	
13.	Marine Sediment Quality	Undertake investigation and/or remedial management action if sediment quality exceeds trigger levels as the result of the plant discharge.	To investigate and remediate any adverse effect on sediment quality.	Within 3 months of trigger levels being exceeded	
14.	Marine Fauna Protection	Build screened intake structure such that intake velocities will result in minimal entrainment of pelagic fish.	To minimise impacts on marine fauna.	Prior to operation	Fisheries WA
15.	Marine Fauna Protection	Undertake study following commissioning to ensure that intake velocities meet the design criteria.	To minimise impacts on marine fauna.	Within six months of commissioning	Fisheries WA
16.	Marine Fauna Protection	In the event that velocities exceed design criteria, develop and implement a contingency plan to the satisfaction of the DEP	To minimise impacts on marine fauna.	Within 1 year following commissioning	Fisheries WA
17.	Marine Fauna Protection	In the event that the proponent utilises the existing BP intake, a study will be undertaken to determine the velocities at the screen. If it is found that these velocities are likely to result in unacceptable impacts on marine fauna, a suitable solution will be devised. This may include modifying the existing screens or installing new screens on the intake.	To minimise impacts on marine fauna.	Prior to use of the existing BP intake	Fisheries WA
18.	Emissions control	Investigate and establish the lowest practical level of reliably achievable oxides of nitrogen emissions	Provide a basis for review of emission limits Demonstrate and achieve lowest practical emissions	1 year after commissioning	
19.	Emissions control	Investigate and establish the lowest practical level of reliably achievable sulphur dioxide emissions	Provide a basis for review of emission limits Demonstrate and achieve lowest practical emissions	1 year after commissioning	

NO	TOPIC	ACTION	OBJECTIVES	TIMING	ADVICE
20.	Emissions Control	Demonstrate compliance with appropriate emission limits (see Table 2, EPA Bulletin 1004) on each pair of combustors prior to commissioning the remaining combustors.	Demonstrate compliance with emission limits.	Commissioning	
21.	Dust/Odour	All wastes received in enclosed buildings, with air extracted to Ultra High Temperature Combustors.	Ensure absence of release of dusts, odours or other airborne contaminants from wastes	During operations	
22.	Dust control	Prepare, and agree dust management plan for plant construction. This shall include a watering regime program if dust emissions are likely to be of concern.	Avoid dust nuisances during construction.	Plan agreed before start of construction	
23.	Dust control	Implement dust management plan for plant construction.	Avoid dust nuisances during construction and operation.	During construction	
24.	Dust control	All ash processing in enclosed buildings with air extracted to Ultra High Temperature Combustors	Avoid dust emissions	During operation	
25.	Dust control	Lime/limestone/cement vents fitted with bag filters. Retrofit reception hoppers if fugitive dust proves to be a problem.	Minimised dust emissions during transfers	During operations and construction	
26.	Emissions monitoring	Undertake continuous monitoring of emission gas flow, oxygen, temperature, opacity, particulates, carbon monoxide, sulphur dioxide, oxides of nitrogen and hydrogen chloride on the stacks	Demonstrate control of emissions from the plant	During operation	Monthly summaries to DEP
27.	Emissions monitoring	Undertake analyses of composite samples of baghouse filter cake	Provide demonstration of low emissions of heavy metals from the plant Provide an alert and basis for trace-back of sources of increased heavy metal inputs to plant in wastes	Weekly for first year of operation and thereafter if required.	
28.	Emissions monitoring	Undertake emissions testing on Ultra High Temperature Combustor units for particulates, hydrogen fluoride, mercury and other heavy metals, and dioxins.	Demonstrate compliance with emissions limits	Quarterly during the first year of commissioning each unit	
29.	Emissions monitoring	Undertake on-going emissions testing on Ultra High Temperature Combustors units for particulates, hydrogen fluoride, mercury, polychlorinated biphenyls, polyaromatic hydrocarbons and other heavy metals, and dioxins.	Demonstrate compliance with emissions limits	Twice annually	
30.	Environmental monitoring	Monitor rainfall contaminants at plant site	Determine wet deposition rates, as demonstration of low impacts from plant at more distant sites	1 year before commissioning and 2 years after commissioning	
31.	Environmental monitoring	Determine total suspended particulates and metal concentrations in ambient air at Hope Valley	Confirm/modify estimates of existing levels of metals in ambient air, used in health risk assessment.	1 year before commissioning and 2 years after commissioning	

NO	TOPIC	ACTION	OBJECTIVES	TIMING	ADVICE
32.	Environmental monitoring	Determine polychlorinated biphenyls, polyaromatic hydrocarbons and dioxin concentrations in ambient air at Hope Valley. This will also include the testing of a representative milk sample for dioxin and PCBs.	Confirm/modify estimates of existing levels and significance of contribution from plant emissions from the health risk assessment	1 year before commissioning and 2 years after commissioning	
33.	Environmental monitoring	Provide oxides of nitrogen monitor for Abercrombie Road monitoring site	Assess existing oxides of nitrogen and nitrogen dioxide concentrations at site close to predicted maximum concentration increments from the plant emissions.	Within 3 months following confirmation of project proceeding	
34.	Emission Control Equipment	Obtain an independent audit of the final engineering design. Revise the design if deficiencies in the plant and/or air pollution control equipment are identified.	To ensure that the final plant design will achieve environmental performance levels described in the PER.	Prior to construction	
35.	Vitrifiers	Provide confirmation from the suppliers that the vitrification units will achieve design specifications. If specifications can't be met, prepare a contingency plan to ensure no environmental impacts.	To verify that the vitrification units will operate as described in the PER document.	Prior to construction	
36.	Sulphur Product Recovery Equipment	Confirm that the LO-CAT sulphur removal system is able to achieve design specifications. If specifications cannot be met, prepare a contingency plan to ensure no environmental impacts.	To ensure that a minimum of 50% of sulphur is removed during the flyash vitrification process before gas is returned to the Ultra High Temperature Combustors.	Prior to construction	
37.	Control and Automation Systems	Provide a review of the control and automation systems including: - Control of routine and emergency start-up and shut-down sequences - Monitoring of sub-system performance - Provision for alarms and interlocks.	To verify that all systems are designed to cover sub-system performance and emergency situations	Prior to construction	
38.	Health Risk	Provide a follow-up health risk assessment based on actual monitoring data. The follow-up health risk assessment will cover dioxins, heavy metals and other contaminants as agreed with the DEP.	To ensure that there is no health risk to the local community	Within 12 months of the plant reaching a processing capacity of 600,000 tonnes of MSW per year	
39.	Local Air Quality	Investigate options in conjunction with surrounding industries to minimise the total emissions to the Kwinana airshed.	Improve local air quality.	Operation	
40.	Odour	Undertake full survey of potential odour sources and discharges	Confirm adequacy of ventilation design	Within six months following commissioning	

NO	TOPIC	ACTION	OBJECTIVES	TIMING	ADVICE
41.	Greenhouse emissions	Enter into a Greenhouse Challenge Agreement with Australian Greenhouse Office.	Formalise assessment and reporting of greenhouse gas emissions performance of project.	Within six months following commissioning	Australian Greenhouse Office.
42.	Greenhouse emissions	Estimate greenhouse gas emissions and report annually	Provision of data for national emissions inventory	Annually	Australian Greenhouse Office.
43.	Greenhouse emissions	Investigate means of determining fossil carbon dioxide emissions from the waste-to-energy and -water plant	Improve assessment of greenhouse gas emissions	Within 2 years following project commissioning	Australian Greenhouse Office.
44.	Greenhouse emissions	Determine levels of nitrous oxide emissions from the waste-to-energy and -water plant	Improve assessment of greenhouse gas emissions	Within 1.5 years following project commissioning	Australian Greenhouse Office.
45.	Greenhouse emissions	Investigate means of reducing nitrous oxide emissions, if significant	Minimise greenhouse gas emissions	Within 2 years following project commissioning	Australian Greenhouse Office.
46.	Greenhouse emissions	Undertake Life Cycle Analysis for management of waste paper in Western Australia	Establish optimum environmental management for this resource	Within 2 years following project commissioning	Australian Greenhouse Office.
47.	Waste reuse	Prepare and agree environmental management plan to demonstrate acceptability of vitrifier glass and bed ash aggregate material. Include contingency plan for disposal of off spec material.	Establish acceptability of vitrifier glass and bed ash aggregate material.	Pre-commissioning	
48.	Waste reuse	Undertake routine testing of bottom ash aggregate	In-house product quality control, including expected low levels of leachable heavy metals.	Ongoing, with summaries within 1 month following commissioning of aggregate production, then annually	
49.	Waste reuse	Undertake leaching trials of vitrifier glass	Demonstrate the expected very low levels of leachable heavy metals and dioxin, as a basis for suitability for potential uses	Within 1 month following commissioning of vitrifiers	
50.	Waste reuse	Undertake dioxin testing of aggregate	Demonstrate low or negligible level of dioxins in the product	Within 1 month following commissioning of aggregate production	
51.	Waste Strategy	To undertake discussions with the EPA and the Waste Management Division of the DEP regarding the Western Australia waste management strategy prior to plant expansion beyond 8 UHTCs.	To assess the effect of the project in achieving the objectives of the Western Australia Waste Management Strategy.	Once the plant capacity reaches 800,000 tonnes per annum (8 Ultra High Temperature Combustors).	EPA and DEP

NO	TOPIC	ACTION	OBJECTIVES	TIMING	ADVICE
52.	Construction Noise	All equipment used during construction will comply with the sound power levels used in the noise modelling. If the equipment is markedly different from that used in the modelling, the model will be re-run and the noise impacts reassessed.	To minimise the impact of noise from construction of nearby residents	Construction	
53.	Operation Noise	Remodel the final design to demonstrate compliance.	To ensure compliance with assigned noise levels.	Prior to construction	
54.	Operation Noise	All equipment will comply with the sound power levels used in the noise modelling. If manufacturer's equipment varies significantly, the noise model will be re-run and reassessed.	Noise levels of plant operation will not 'significantly contribute' to the assigned noise level as per the Environmental Protection (Noise) Regulations 1997.	Prior to construction	
55.	Operation Noise	Upon completion of construction, noise levels of equipment will be measured and checked for agreement with manufacturer's data and compliance with the model/Regulations	Noise levels of plant operation will not 'significantly contribute' to the assigned noise level as per the Environmental Protection (Noise) Regulations 1997.	Operation	
56.	Groundwater and soil contamination	1. Prepare contaminated soil and groundwater management EMP which includes: 1. Results of additional site investigations and monitoring; 2. Assessment to determine any human health and/or ecological risk; 3. Proposed management of contamination and remediation plan (if warranted); 4. Proposed validation and on-going monitoring	To meet EPA objectives for the site.	Prior to construction	WRC
57.	Groundwater and soil contamination	Implement the approved contaminated soil and ground water EMP	To meet EPA objectives for the site.	During Construction	WRC
58.	Groundwater and soil contamination	The plant will be designed, constructed and operated so as to maintain or improve the existing soil and groundwater quality.	To ensure that construction and operation of the plant does not result in further contamination of the site and site meets DEP criteria for relevant land use.	Prior to construction and during the operations phase.	
59.	Groundwater contamination	The proponent will design and implement a groundwater quality monitoring programme to the satisfaction of the DEP.	To provide sufficient information to determine whether the plant has any adverse impacts on groundwater quality.	Prior to construction and during the operations phase.	

NO	TOPIC	ACTION	OBJECTIVES	TIMING	ADVICE
60.	Groundwater contamination	In the event that the monitoring shows that the plant has had an adverse impact on groundwater quality, the proponent will design and implement a groundwater remediation plan to the satisfaction of the DEP.	To manage groundwater quality in a manner consistent with EPA objectives.	If monitoring shows that the plant has adversely impacted groundwater quality.	
61.	Accidental releases of hazardous and non-hazardous substances and leachate associated with any of these	Develop a hazardous and non-hazardous substance management plan which includes: 1. Location, size and elevations 2. Plans for mechanical, structural, drainage, electrical, ventilation, fire-fighting system, signs 3. Other specifications 4. Prepare and implement the approved Emergency Plan and Health and Safety Plan. 5. Establish site operating procedures (SOP) for activities involving hazardous and non-hazardous substances and wastes. 6. Establish technical training program for staff and contractors in SOP, hazardous substances, emergency response, heath and safety. 7. Establish and implement monitoring and reporting policies and procedures.	To ensure that the beneficial uses of groundwater can be maintained consistent with the draft WA Guidelines for Fresh and Marine Waters (EPA, 1993)	Complete detailed design of storage facilities and make application for dangerous goods licence and obtain approval from DME prior to commencement of any storage. Complete Emergency Plan before facility operation begins. Test Emergency Plan. Complete Health and Safety Plan, implement during construction phase, and begin training staff. Complete SOP before facility commissioning and test SOP within 6 months of commissioning. Train permanent staff within 6 months of facility commissioning. Implement monitoring and reporting procedures at commissioning and test within 6 months of commissioning.	WRC; Chief Inspector of Explosives & Dangerous Goods or designate; representatives of emergency response agencies; and Worksafe Western Australia.
62.	Accidental releases of hazardous and non-hazardous substances and leachate associated with any of these	Implement the hazardous and non-hazardous substance management plan	To ensure that the beneficial uses of groundwater can be maintained consistent with the draft WA Guidelines for Fresh and Marine Waters (EPA, 1993)	Commissioning	
63.	Plant Operation	Ensure that an appropriately qualified engineer is present on-site at all times. The engineer should hold Americian Society of Engineers Certification of Resource Recovery Facility Operators (QRO-1) or an equivalent internationally recognised qualification.	To ensure that the plant operation is supervised by appropriately qualified personnel.	Operation	

NO	TOPIC	ACTION	OBJECTIVES	TIMING	ADVICE
64.	Water - Potentially contaminated stormwater from on-site sources	Develop a stormwater management plan which includes: 1. Separation of potentially contaminated and uncontaminated stormwater 2. Collection of contaminated stormwater while ensuring groundwater and surface water protection 3. Reticulation of stormwater to appropriate treatment and on-site disposal 4. Design of stormwater treatment and disposal devices 5. Develop stormwater management plan and forward for approval	To manage on site surface water to prevent discharge of contaminated water from site or to groundwater	Complete detailed design prior to construction Implement management plan during construction	WRC
65.	Water - Potentially contaminated stormwater from on-site sources	Implement the approved stormwater management plan, including at a minimum: 1. Procedures during construction 2. Site cleaning and housekeeping program 3. Spills management and clean-up procedures 4. Maintenance of stormwater collection, treatment and disposal devices 5. Monitoring of stormwater quality	To manage on-site surface water to prevent discharge of contaminated water from site or to groundwater	During construction	WRC
66.	Traffic – Road Transport	Liase with established industries in the Kwinana Industrial Area and schedule workforce start and stop times and product deliveries to avoid immediate morning and afternoon peak periods for the Mason Road, Patterson Road, Rockingham Road, Mandurah Road intersection.	To minimise the peak volume of traffic through the Mason Road intersection.	Commencement of construction.	Main Roads WA.
67.	Traffic – Plant Access	Develop an entry to the premises off Mason Road that affords appropriate safe sight distance and accommodates safe entry movement for over dimensional vehicles. Provide the entry with a left slip lane and develop it in accordance with the Town of Kwinana requirements.	Safe turning movements into and out of the plant site.	Commencement of construction.	Town of Kwinana.

NO	TOPIC	ACTION	OBJECTIVES	TIMING	ADVICE
68.	Risk Management	Undertake a risk management strategy recommended for the future stages of this project is outlined below. The intent of the proposed strategy is to ensure the plant design and operation minimises the risk to personnel, the facility and the environment. This includes: 1. Project Safety 2. Hazard Register 3. Design Reviews 4. HAZOP Studies 5. Dangerous Goods Licence 6. Safety Management System Risk assessment studies will be undertaken to identify and assess all significant hazards associated with the design, construction and operation of the waste-to-energy and -water plant.	The overall objectives in the management of hazardous industrial plant are: 1. To minimise the risk (i.e. individual, societal and environmental) associated with new developments. 2. To ensure that hazardous industry and land-use planning in the vicinity meet acceptable criteria for individual fatality risk and that separation distances are established in the planning process. 3. To ensure the plant continues to operate in such a manner that the emissions and risks are managed within the accepted criteria and licence conditions.	All project phases	
69.	Risk Management	Join the Kwinana Industries Mutual Aid Group.	To manage risk incidents in conjunction with surrounding industries.	Pre-operation	
70.	Risk Management	Contingency Plans will be developed for the following: - Failure of vitrifier off-gas treatment system - Assessment and adoption of alternative oxides of nitrogen emission control technology - Failure of critical integrated process.	To ensure contingencies are put in place prior to commissioning for critical design failures.	Pre-commissioning	
71.	Waste Receival	Accept municipal waste and hazardous waste only from the State of Western Australia.	To ensure hazardous waste is not transported from other States.	Operation	
72.	Vermin Control	Engage a professional pest control organisation to survey and report on vermin control options and implement vermin control.	To prevent vermin becoming a nuisance to neighbouring premises and prevent the spread of vermin-borne disease and prevent pesticides reaching the marine environment.	Annually	

ABBREVIATIONS:

DEP = Department of Environmental Protection
EMP = Environmental Management Plan
EPA = Environmental Protection Authority
MSW = Municipal Solid Waste
PCB = Poly Chlorinated Biphenyls
PER = Public Environmental Review
UHTC = Ultra High Temperature Combustor
WRC = Water & Rivers Commission