MINISTER FOR THE ENVIRONMENT AND HERITAGE

Statement No. 000610

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

COMMERCIAL HISMELT PLANT, KWINANA

Proposal: The construction and operation of a commercial scale HIsmelt Process Plant at Kwinana. The Stage 1 plant will produce approximately 820,000 tonnes per year of pig iron. If the Stage 1 plant is found to be technically and commercially viable, a Stage 2 plant will be constructed to double production to approximately 1.6 million tonnes per year of pig iron.

The proposal is documented in schedule 1 of this statement.

Proponent: HIsmelt (Operations) Pty. Limited

Proponent Address: C/- HIsmelt Corporation Pty. Limited
PO Box 455
KWINANA WA 6966

Assessment Number: 1402

Report of the Environmental Protection Authority: Bulletin 1068

The proposal referred to above may be implemented subject to the following conditions and procedures:

Procedural conditions

1 Implementation and Changes

1-1 The proponent shall implement the proposal as documented in schedule 1 of this statement subject to the conditions of this statement.

Published on

18 NOV 2002

29th FLOOR, ALLENDALE SQUARE, 77 ST. GEORGE'S TERRACE, PERTH 6000 TELEPHONE: (08) 9220 5050 FACSIMILE: (08) 9221 4665/8
E-MAIL: judy-edwards@dpc.wa.gov.au

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 and Heritage 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 as documented in schedule 1 of this statement in any way that the Minister for the Environment and Heritage determines, on advice of the Environmental Protection Authority, is not substantial, the proponent may implement those changes upon receipt of written advice.

2 Proponent Commitments

2-1 The proponent shall implement the 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 the conditions in this statement.

3 Proponent Nomination and Contact Details

3-1 The proponent for the time being nominated by the Minister for the Environment and Heritage 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 and Heritage has exercised the Minister's power under section 38(7) of the Act to revoke the nomination of that proponent and nominate another person as the proponent for the proposal.

3-2 If the proponent wishes to relinquish the nomination, the proponent shall apply for the transfer of proponent and provide a letter with a copy of this statement endorsed by the proposed replacement proponent that the proposal will be carried out in accordance with this statement. Contact details and appropriate documentation on the capability of the proposed replacement proponent to carry out the proposal shall also be provided.

3-3 The nominated proponent shall notify the Department of Environmental Protection of any change of contact name and address within 60 days of such change.

4 Commencement and Time Limit of Approval

4-1 The proponent shall provide evidence to the Minister for the Environment and Heritage within five years of the date of this statement that the proposal has been substantially commenced or the approval granted in this statement shall lapse and be void.

Note: The Minister for the Environment and Heritage will determine any dispute as to whether the proposal has been substantially commenced.

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

The application shall demonstrate that:

- the environmental factors of the proposal have not changed significantly;
- new, significant, environmental issues have not arisen; and
- all relevant government authorities have been consulted.

Note: The Minister for the Environment and Heritage may consider the grant of an extension of the time limit of approval not exceeding five years for the substantial commencement of the proposal.

Environmental conditions

5 Compliance Audit and Performance Review

5-1 The proponent shall prepare an audit program in consultation with and submit compliance reports to the Department of Environmental Protection which address:

- the implementation of the proposal as defined in schedule 1 of this statement;
- evidence of compliance with the conditions and commitments; and
- the performance of the environmental management plans and programs.

Note: Under sections 48(1) and 47(2) of the *Environmental Protection Act 1986*, the Chief Executive Officer of the Department of Environmental Protection is empowered to audit the compliance of the proponent with the statement and should directly receive the compliance documentation, including environmental management plans, related to the conditions, procedures and commitments contained in this statement.

Usually, the Department of Environmental Protection prepares an audit table which can be utilised by the proponent, if required, to prepare an audit program to ensure that the proposal is implemented as required. The Chief Executive Officer is responsible for the preparation of written advice to the proponent, which is signed off by either the Minister or, under an endorsed condition clearance process, a delegate within the Environmental Protection Authority or the Department of Environmental Protection that the requirements have been met.

5-2 The proponent shall submit a performance review report every five years after the start of the operations phase to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority, which addresses:

1 the major environmental issues associated with the project; the targets for those issues; the methodologies used to achieve these; and the key indicators of environmental performance measured against those targets;

2 the level of progress in the achievement of sound environmental performance, including industry benchmarking, and the use of best available technology where practicable;

3 significant improvements gained in environmental management, including the use of external peer reviews;

4 stakeholder and community consultation about environmental performance and the outcomes of that consultation, including a report of any on-going concerns being expressed; and

5 the proposed environmental targets over the next five years, including improvements in technology and management processes.

6 Closure Plans

6-1 Prior to commissioning, the proponent shall prepare, and subsequently implement, a Preliminary Closure Plan, which provides the framework to ensure that the site is left in an environmentally acceptable condition to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

The Preliminary Closure Plan shall address:

(1) rationale for the siting and design of plant and infrastructure as relevant to environmental protection, and conceptual plans for the removal or, if appropriate, retention of plant and infrastructure;

(2) a conceptual rehabilitation plan for all disturbed areas and a description of a process to agree on the end land use(s) with all stakeholders;

(3) a conceptual plan for a care and maintenance phase; and

(4) management of noxious materials to avoid the creation of contaminated areas.

6-2 At least six months prior to the anticipated date of closure, or at a time agreed with the Environmental Protection Authority, the proponent shall prepare a Final Closure Plan designed to ensure that the site is left in an environmentally acceptable condition to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

The Final Closure Plan shall address:

(1) removal or, if appropriate, retention of plant and infrastructure in consultation with relevant stakeholders;

(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 and proposed management measures to relevant statutory authorities.

6-3 The proponent shall implement the Final Closure Plan required by condition 6-2 until such time as the Minister for the Environment and Heritage determines, on advice of the Environmental Protection Authority, that the proponent's closure responsibilities are complete.

6-4 The proponent shall make the Final Closure Plan required by condition 6-2 publicly available, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

7 Greenhouse Gas Emissions

7-1 Prior to commencement of construction of the processing plant, the proponent shall prepare a Greenhouse Gas Emissions Management Plan to:

- ensure that "greenhouse gas" emissions from the project are adequately addressed and best available efficient technologies are used to minimise total net "greenhouse gas" emissions and/or "greenhouse gas" emissions per unit of product; and

- mitigate "greenhouse gas" emissions in accordance with the Framework Convention on Climate Change 1992, and consistent with the National Greenhouse Strategy;

to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

This Plan shall include:

(1) calculation of the "greenhouse gas" emissions associated with the proposal, as indicated in "Minimising Greenhouse Gas Emissions, Guidance for the Assessment of Environmental Factors, No. 12" published by the Environmental Protection Authority;

(2) specific measures to minimise the total net "greenhouse gas" emissions and/or the "greenhouse gas" emissions per unit of product associated with the proposal;

(3) monitoring of "greenhouse gas" emissions;

(4) estimation of the "greenhouse gas" efficiency of the project (per unit of product and/or other agreed performance indicators) and comparison with the efficiencies of other comparable projects producing a similar product;

(5) analysis of the extent to which the proposal meets the requirements of the National Greenhouse Strategy using a combination of:

- "no regrets" measures;
- "beyond no regrets" measures;
- land use change or forestry offsets; and
- international flexibility mechanisms.

(6) a target set by the proponent for the reduction of total net "greenhouse gas" emissions and/or "greenhouse gas" emissions per unit of product over time, and annual reporting of progress made in achieving this target.

Note: In part 5 above, the following definitions apply:

(1) "no regrets" measures are those that can be implemented by a proponent which are effectively cost-neutral and provide the proponent with returns in savings which offset the initial capital expenditure that may be incurred; and

(2) "beyond no regrets" measures are those that can be implemented by a proponent which involve some additional cost that is not expected to be recovered.

7-2 The proponent shall implement the Greenhouse Gas Emissions Management Plan required by condition 7-1 to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

7-3 The proponent shall make the Greenhouse Gas Emissions Management Plan required by condition 7-1 publicly available, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

8 Dust

8-1 In the event that dust monitoring undertaken as part of the Dust Management Plan prepared in accordance with commitment 14 indicates that fugitive dust is being emitted from any of the iron ore, coal, dolomite, and slag stockpiles in excess of the established criteria, or is found to be unreasonably interfering with the health, welfare, convenience, comfort or amenity of any person in any premises, the proponent shall investigate options, including enclosure, and subsequently implement additional dust control measures as soon as practicable to prevent further fugitive dust emissions, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

9 Air Emissions

9-1 In the event that monitoring undertaken in accordance with commitments 9, 10, and 11 indicates that dioxins and/or furans are present and/or that heavy metals, volatile organic compounds (VOCs), polyaromatic hydrocarbons (PAHs), or other persistent organic pollutants (POPs) are being detected at or above the Trigger Levels from the plant, the proponent shall investigate and implement additional control measures to

prevent further emissions, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

9-2 In the event that emissions referred to in condition 9-1 are measured above the Licence Limits, the proponent shall cease plant operations until investigations and/or plant modifications are undertaken to demonstrate that emissions from the plant will be within the Licence Limits, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

10 Waste Management

10-1 Prior to commissioning, the proponent shall construct an additional process wastewater storage facility within the boundary of the Commercial HIsmelt plant with sufficient capacity to accommodate the influx of additional water from extreme rainfall events of magnitude greater than a 1-in-10-year rainfall event of 72 hours duration, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

Note: In the preparation of advice to the Minister, regarding the design, construction and actual storage volume of the additional process wastewater storage facility, the Environmental Protection Authority will obtain the advice of the Department of Environmental Protection and the Water and Rivers Commission.

11 Water Supply

11-1 The proponent shall design the HIsmelt plant such that it can readily source water from the Kwinana Wastewater Recycling Plant, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

11-2 The proponent shall source water for the HIsmelt plant from the Water Corporation's Kwinana Wastewater Recycling Plant as soon as the latter is operational, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

Procedures

1 Where a condition states "to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority", the Chief Executive Officer of the Department of Environmental Protection will obtain that advice for the preparation of written advice to the proponent.

2 The Environmental Protection Authority may seek advice from other agencies, as required, in order to provide its advice to the Chief Executive Officer of the Department of Environmental Protection.

Notes

1 The Minister for the Environment and Heritage will determine any dispute between the proponent and the Environmental Protection Authority or the Department of Environmental Protection over the fulfilment of the requirements of the conditions.

2 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 1986*.

Dr Judy Edwards MLA
MINISTER FOR THE ENVIRONMENT AND HERITAGE

18 NOV 2002

Schedule 1

The Proposal (Assessment No. 1402)

The proposal is to construct and operate a commercial scale HIsmelt Process Plant at Kwinana to produce pig iron. The plant will be located at the site currently occupied by the existing HIsmelt Research and Development Facility within the northern portion of the Kwinana Industrial Area, 40 kilometres south of Perth (Figures 1, 2, and 3).

The Stage 1 plant will initially produce around 820,000 tonnes per annum of pig iron. If the Stage 1 plant is found to be technically and commercially viable, the proponent proposes to install an additional iron-making plant (the Stage 2 plant) to double production to around 1.64 million tonnes per annum of pig iron.

The HIsmelt process is a direct smelting technology for the production of liquid iron (hot metal) using iron ore fines or any other appropriate ferrous feed material. The smelting will be undertaken in a molten iron bath using coal as the reductant and energy source.

The principal raw materials required for the process are iron ore fines, coal and fluxes (lime and dolomite). The proposal will utilise the reserves of Western Australia's iron ore fines which are currently not suitable for blast furnace feed due to their high phosphorus content. Iron ore will be shipped to Kwinana from Dampier and railed from Koolyanobbing (see Figure 1). Coal will be shipped from the east coast to Kwinana.

Pig iron produced in the plant will be shipped for use in steel mills either within Australia or overseas. The unloading and loading of raw materials and product will be undertaken at the Fremantle Port Authority's Kwinana Bulk Terminal Berth No. 2 (see Figure 3).

The major components of the proposal comprise:

- Stage 1 and Stage 2 process plants;
- Transport of materials and products;
- Power generation;
- Water supply and treatment;
- Air separation (oxygen and nitrogen) units; and
- Waste disposal.

The main characteristics of the proposal are summarised in Table 1 below.

Table 1 - Key Proposal Characteristics

ELEMENT	DESCRIPTION	
	Stage 1	**Stages 1 and 2**
Project Location	Leath Road, Kwinana Industrial Area.	
Life of Project (yrs)	20+	20+
Project Components	• Process Plants. • Transport of Materials and Product. • Water Supply. • External Electrical Supply. • Natural Gas Supply.	
Plant Components	• Raw Material Delivery and Storage. • Raw Material Reclamation and Preparation. • Ore Preheater. • Smelt Reduction Vessel. • Offgas System. • Flue Gas Desulphurisation System. • Pig Iron and Slag Production. • Power Generation Facility. • Air Separation Unit (Oxygen and Nitrogen Plant). • Water Supply Facilities and Circuits. • Effluent Treatment Facility. • Stormwater and Wastewater Collection Facilities. • Electrical Power Supply Facilities. • Natural Gas Supply Facilities. • Administration Facilities. • Plant Access Roads and Car Parking.	
Plant Operating Hours (per day)	24	
Operating Hours (per year)	7660 – 8760	
Pig Iron Production (ktpa)	820	1640
Slag Production (ktpa)	225	450
Gypsum Production (ktpa)	11.1	22.2
Iron Ore Fines (ktpa, by ship)	650	1300
Iron Ore Fines (ktpa, by Rail)	650	1300
Imported Coal (ktpa wet)	560	1120
Lime (ktpa)	70	140
Dolomite (ktpa)	70	140
Lime Kiln Dust (ktpa)	6	12
Natural Gas (TJ/a)	1480	2960
Iron Ore Stockpiles (kt)	56 and 10	56 and 10
Coal Stockpile (kt)	57	57
Dolomite Stockpile (kt)	35-50	35-50
Pig Iron Stockpile (kt)	60	60
Slag Stockpile (kt)	0-100	0-100
Air Separation Unit - Oxygen Production (tpd) - Nitrogen Production (tpd)	880 800	1760 1600
Greenhouse Gas Emissions (tonnes of CO_2/tonne of hot metal)	1.86	1.86
Greenhouse Gas Emissions (Mtpa CO_2 gross)	1.5	3
SO_X Emissions - normal operations g/sec (tpa)	9 (250)	18 (500)
NO_X Emissions g/sec (tpa)	21.8 (603)	43.6 (1206)
Particulate Emissions g/sec (tpa),	2.3 (64)	4.6 (128)
Water Usage kL/hr (GL/a)	405 (3.2)	810 (6.4)
Water Source	Kwinana Wastewater Recycling Plant	
Construction Period (months)	20 – 24	20-24
Power Generation – Number of Turbines	1	2
Power Generation (MW)	20	40

Table 1 - Key Proposal Characteristics (Continued)

ELEMENT	DESCRIPTION	
Emergency Power Supply (Standby from the grid) (MW)	10	10
Plant Area (ha)	21.1	36
Solid Waste (ktpa)	6-10	12-20
Process Effluent (Plant expected to be in water balance).	0	0
No. of Truck Movements (per day)	73	146
No. of Ore Train Movements (per week)	10	20
Ship Movements (per year)	30 - 50	60 - 100
Workforce Numbers	65	125
Construction Noise	Comply with *Environmental Protection Noise Regulations, 1997.*	
Operational Noise at Residential Areas.	At least 5dB(A) below the assigned noise levels at residential areas.	
Operational Noise – Boundary dB(A)	65	65
Road Noise Increase in L_{Aeq} dB(A)	0.0	0.0
Rail Noise Increase in L_{Aeq} dB(A)	0.1	0.2
Noise – Shipping Operations	At least 5dB(A) below the assigned noise levels at residential areas.	
Risk at Plant Boundary	Less than fifty in one million per year.	
Risk at Residential Area	Less than one in one million per year.	

Figures (attached)

Figure 1 - Regional location
Figure 2 - Location plan
Figure 3 - Conceptual site layout.

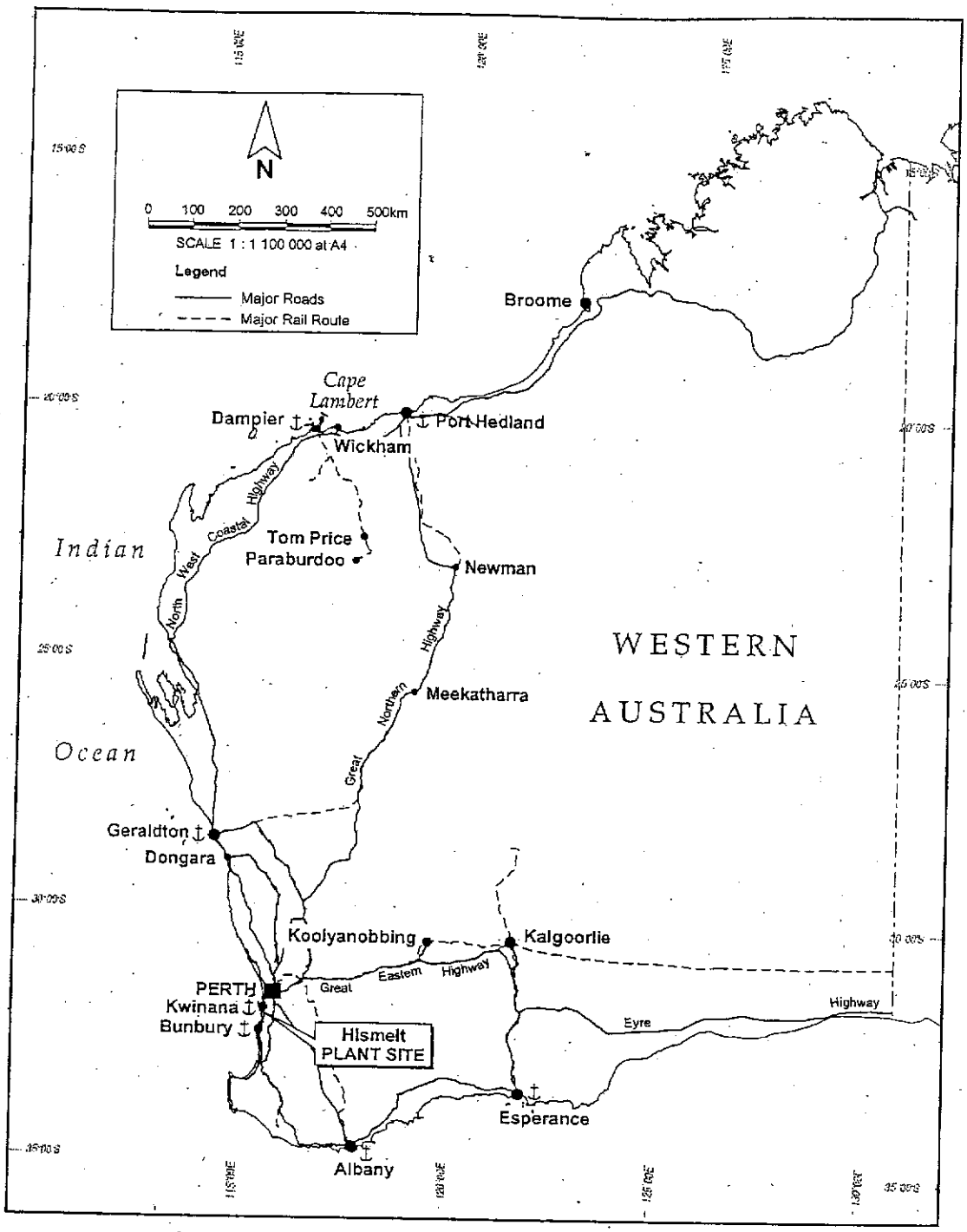

Figure 1: *Regional location (Source: Figure 1.1 from Corporate Environmental Consultancy Pty Ltd, 2002a)*

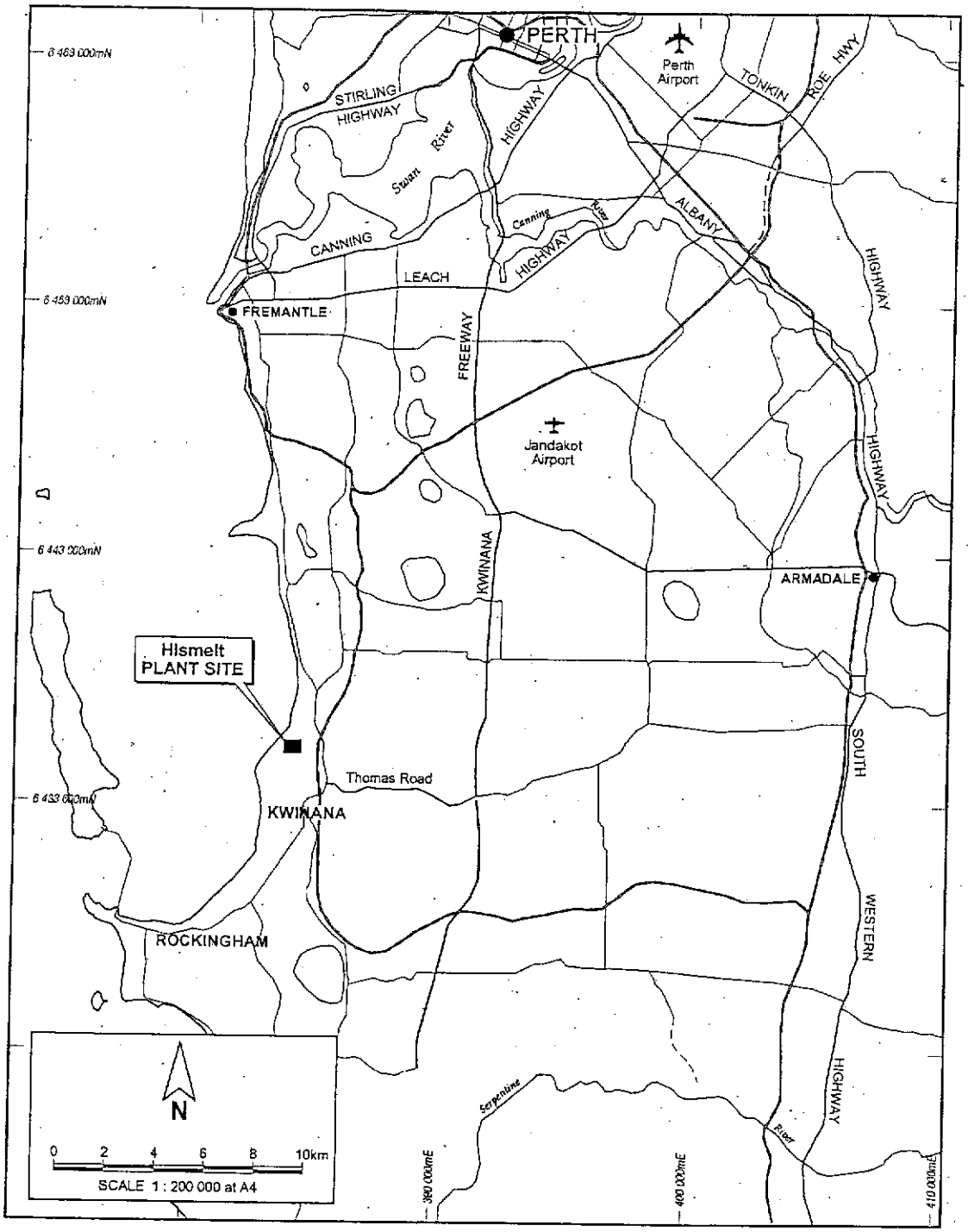

Figure 2: *Location plan (Source: Figure 1.2 from Corporate Environmental Consultancy Pty Ltd, 2002a)*

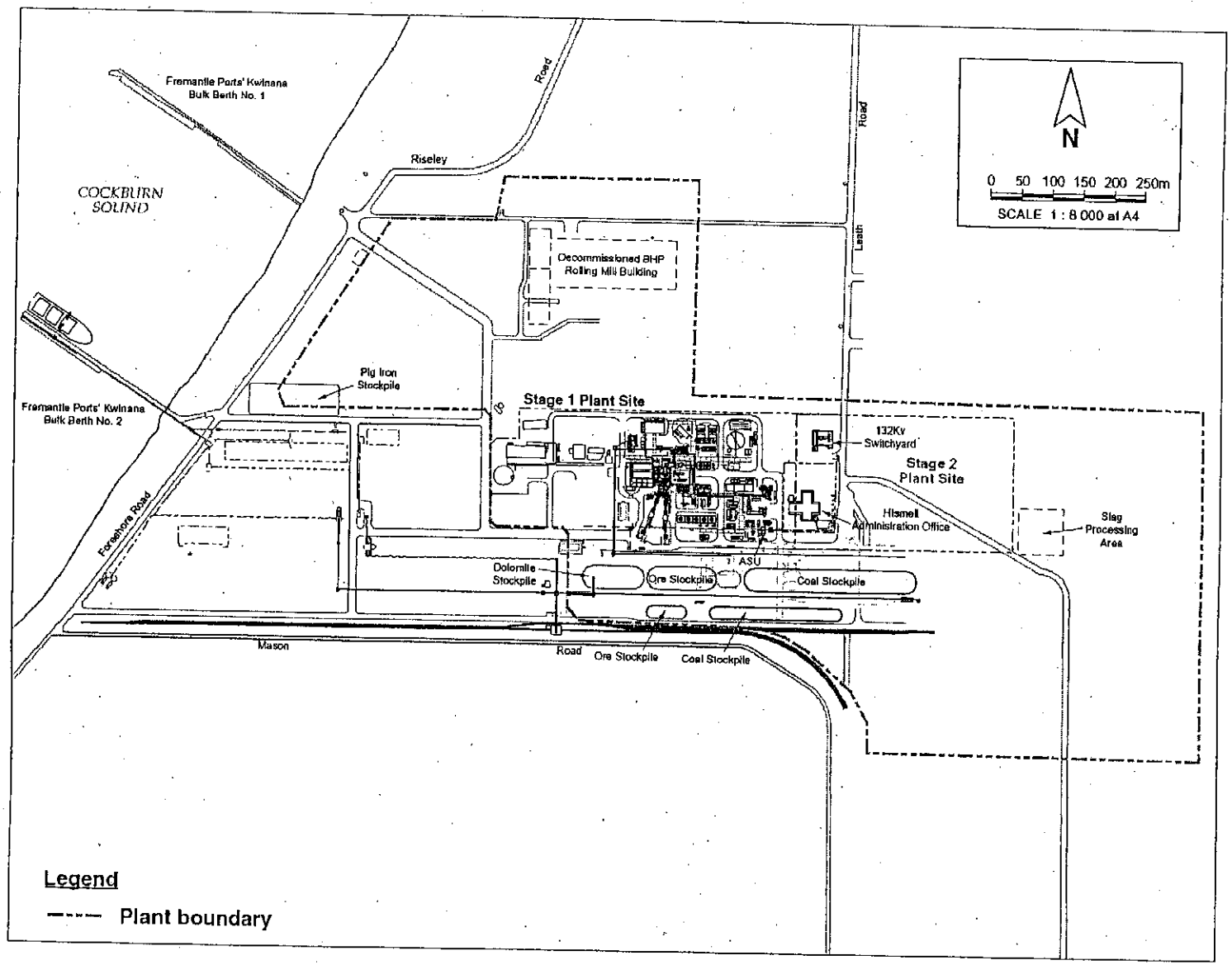

Figure 3: Conceptual site layout (Source: Figure 4.2 from Corporate Environmental Consultancy Pty Ltd, 2002a)

Schedule 2

Proponent's Environmental Management Commitments

November 2002

Commercial HIsmelt Plant Kwinana

(Assessment No. 1402)

HIsmelt (Operations) Pty. Limited

Schedule 2

Commercial Hismelt Plant, Kwinana
Proponent's Consolidated Environmental Management Commitments (Assessment No. 1402)

Number	Topic	Environmental Objective	Action	Timing	Advice
1	**General Environmental Management**	To ensure that any potential environmental impacts associated with the construction and operations of the Project are minimised or ameliorated.	Prepare an Environmental Management Plan (EMP) for the site, which will include Management Plans for the following: • Construction. • Atmospheric Emissions. • Greenhouse Gases. • Dust. • Noise. • Surface Water. • Groundwater. • Hazardous Materials. • Solid Waste. • Wastewaters. • Transport of Materials. • Decommissioning and Closure. • Safety. Make the above Management Plans available on the proponent's web site and at the DEP and local libraries.	Construction EMP - Prior to construction. Prior to commissioning.	
2	**General Environmental Management**	To ensure that any potential environmental impacts associated with the operations of the Plant are managed and minimised.	Prepare an Environmental Management System (EMS) for the operations of the Plant. The EMS will include elements such as: • Identification of issues. • Management measures. • Training and communication. • Key performance indicators. • Measuring and corrective actions. • Record management. • Programme of review. • Means for continual improvement. • Policy. • Emergency preparedness and response. Implement the EMS.	Prior to commissioning. During commissioning and operation.	

Proponent's Consolidated Commitments (Assessment No. 1402) [Continued]

Number	Topic	Environmental Objective	Action	Timing	Advice
3	**Construction**	To ensure that appropriate environmental management measures are incorporated in the construction phase of the Project.	Prepare a Construction EMP for the Project, which will include specific management for: • Contractors. • Incident reporting. • Dust. • Noise. • Waste Disposal. • Groundwater. • Stormwater runoff. • Erosion. • Transport. • Safety. Implement the Construction EMP.	Prior to construction. During construction.	
4	**Atmospheric Emissions**	To ensure that gaseous and particulate emissions, from the Plant do not cause ambient ground level concentrations to exceed appropriate criteria, including the Kwinana Environmental Protection Policy (EPP) and the National Environmental Protection Measure (NEPM) standard for Air Quality.	Prepare an Atmospheric Emissions Plan which will include the specific management, monitoring, reporting requirements and measures to be undertaken if exceedances occur, for the following parameters: • Sulphur dioxide. • Particulates. • Nitrogen oxides. • Carbon monoxide. • Dioxins and Furans. • Heavy metals. • Volatile organic compounds. • Polyaromatic hydrocarbons. • Persistent organic pollutants. • Odour. Implement the Atmospheric Emissions Plan.	Prior to commissioning. During operations.	DOH
5	**Sulphur Dioxide**	To ensure that emissions of SO_2 from the Plant are managed and monitored so that they are below the maximum permissible levels.	• Incorporate a Flue Gas Desulphurisation System in the Plant design that is considered Best Available Technology at the time of Plant design; • Install a continuous monitoring instrument to measure SO_2 emissions in the gas stream exiting the main stack of the Plant; and • Report monitoring data for SO_2 to the DEP on a monthly basis, and annually as part of the National Pollutant Inventory (NPI).	Prior to commissioning and during operation.	

Proponent's Consolidated Commitments (Assessment No. 1402) [Continued]

Number	Topic	Environmental Objective	Action	Timing	Advice
6	**Particulates**	To manage and minimise the emissions of airborne particulates from the Plant, and to ensure that the ground level concentrations resulting from these emissions are below the relevant Environmental Protection Policy (EPP) and National Environmental Protection Measure (NEPM) standards.	• Incorporate scrubbers and bag filters which are considered Best Available Technology at the time of Plant design; • Measure particulate emissions from the Plant stacks on, as a minimum, a six-monthly basis; and • Report particulate monitoring data to the DEP on, as a minimum, a six-monthly basis.	Prior to commissioning and during operation.	
7	**Nitrogen Oxides**	To ensure that NO_X emissions from the Plant are minimised and that ground level concentrations resulting from these emissions comply with the NEPM standard in residential areas.	• Incorporate burners which are designed to keep NO_X emissions as low as reasonably practicable where process gas will be combusted, and low NO_X burners where natural gas will be combusted in the Plants; • Sample and analyse the gas stream exiting the main stack for NO_X emissions on, as a minimum, a six-monthly basis; and • Report monitoring data for NO_X emissions to the DEP on, as a minimum, a six-monthly basis, and annually as part of the NPI.	Prior to commissioning and during operation.	
8	**Carbon Monoxide**	To ensure that emissions of carbon monoxide from the Plant do not result in an exceedance of the NEPM standard in residential areas.	• Sample and analyse the gas stream exiting the main stack of the Plant for CO emissions on, as a minimum, a six-monthly basis; and • Report monitoring data for CO emissions to the DEP on, as a minimum, a six-monthly basis, and annually as part of the NPI.	During operation.	
9	**Dioxins and Furans**	To ensure that the off-gas handling system employed in the Plant does not allow dioxins and furans to be emitted.	• Sample and analyse the off-gas emissions, in accordance with an agreed standard based on international best practice, during commissioning and the subsequent operation to establish if there are any Dioxins or Furans present; • Provide monitoring results for Dioxins and Furans to the DEP as they are received; and • Review future monitoring of the off-gas emissions for Dioxins and Furans in conjunction with DEP as the results of the monitoring are being assessed.	During commissioning and operation.	
10	**Poly Aromatic Hydrocarbons (PAHs) and Volatile Organic Compounds (VOCs)**	To ensure that there are no significant concentrations of PAHs and VOCs emitted to the atmosphere in the off-gas from the Plant.	• Sample and analyse the off-gas emissions, in accordance with an agreed standard based on international best practice, during commissioning and the subsequent operation to establish if concentrations of PAHs and VOCs are at or above Trigger Levels; • Provide monitoring results for the PAHs and VOCs to the DEP as they are received; and • Review future monitoring of the off-gas emissions for PAHs and VOCs in conjunction with the DEP as the results of the monitoring are being assessed.	During commissioning and operation.	

Proponent's Consolidated Commitments (Assessment No. 1402) [Continued]

Number	Topic	Environmental Objective	Action	Timing	Advice
11	**Heavy metals**	To ensure that there are no significant concentrations of heavy metals emitted to the atmosphere from the Plant.	• Sample and analyse the off-gas emissions, in accordance with an agreed standard based on international best practice, during commissioning and the subsequent operation to establish if concentrations of heavy metals are at or above Trigger Levels; • Provide monitoring results for the heavy metals to the DEP; and • Review future monitoring of the off-gas emissions for heavy metals in conjunction with the DEP as the results of the monitoring are being assessed.	During commissioning and operation.	
12	**Odour**	To ensure that any odours emanating from the Project do not adversely affect the welfare and amenity of other land uses.	Implement measures to minimise the potential for odours to be produced or released to the environment.	During commissioning and operation.	
13	**Greenhouse**	To minimise greenhouse gas emissions per unit of product, and implement measures for greenhouse gas management.	• Continue to participate in the Australian Greenhouse Office Greenhouse Challenge Programme; • Participate in the research and development of new technologies that will result in a reduction of greenhouse emissions such as coal gasification and hydrogen production; and • Continue to investigate opportunities for offsetting the greenhouse gas emissions from the Project.	Ongoing.	
14	**Dust**	To minimise dust generation from Project operations, and to ensure that dust levels from the site are within the Kwinana EPP and NEPM standards and limits, meet the agreed criteria, and do not unreasonably interfere with the health, welfare, convenience, comfort or amenity of any person.	Prepare a Dust Management Plan, which will include: • measures for controlling dust emissions; • monitoring programme; • reporting requirements; and • remediation measures if exceedances of the criteria occur. Implement the Dust Management Plan.	Prior to commissioning. During operations.	DOH
15	**Noise**	To ensure that noise levels from the Project operations comply with the *Environmental Protection (Noise) Regulations, 1997.*	Prepare a Noise Management Plan, which will include: • noise attenuation measures; • surveys and monitoring; and • reporting. Implement the Noise Management Plan.	Prior to commissioning. During operations.	Kwinana Industries Council

Proponent's Consolidated Commitments (Assessment No. 1402) [Continued]

Number	Topic	Environmental Objective	Action	Timing	Advice
16	**Noise**	To ensure that the predicted noise level from the Plant is included in the cumulative noise study for the Kwinana industries.	Consult with the Kwinana Industries Council (KIC) on the findings of the regional noise survey. Provide results of the noise monitoring and modelling to the Kwinana Industries Council for inclusion in the Kwinana Noise model.	Prior to and during operations.	KIC
17	**Surface Water Runoff and Wash Waters**	To ensure that surface water runoff and washwaters are managed and do not impact on the environment.	Prepare a Surface Water Management Plan, which will include the management for both clean stormwater runoff and for potentially contaminated runoff and washwaters. Implement the Surface Water Management Plan.	Prior to commissioning.	
18	**Groundwater**	To ensure that groundwater beneath the site is not adversely impacted by the Project.	Prepare a Groundwater Management Plan, which will include: • procedures for the protection of groundwater; • details of the ongoing, and extended, groundwater monitoring programme undertaken on the site to identify any significant changes in the groundwater; and • procedures for reviewing the monitoring programme, and parameters monitored, in conjunction with the DEP. Implement the Groundwater Management Plan.	Prior to construction.	
19	**Hazardous Materials**	To ensure that the handling, storage and disposal of hazardous materials related to the Project does not result in impacts on the environment or people.	Prepare a Hazardous Materials Management Plan, which will include: • procedures for maintaining an inventory of hazardous materials; • storage and handling requirements; and • emergency response. Implement the Hazardous Materials Management Plan.	Prior to commissioning. During operations.	MPR
20	**Waste Management**	To minimise, re-use or recycle wastes where practicable and to ensure that any wastes requiring disposal are disposed in an environmentally acceptable and approved manner.	Prepare a Waste Management Plan based on the principles of Reduce, Recycle and Re-use. Implement the Waste Management Plan.	Prior to commissioning. During operation.	
21	**Process Wastewaters**	To ensure that there is no adverse impact on the environment from the storage and, if necessary, disposal of process wastewaters.	Prepare a Wastewater Management Plan, which will include the management, monitoring and reporting of process wastewaters. Implement the Wastewater Management Plan.	Prior to commissioning. During operation.	Water Corporation DOH

Proponent's Consolidated Commitments (Assessment No. 1402) [Continued]

Number	Topic	Environmental Objective	Action	Timing	Advice
22	**Sewage**	To ensure that an appropriate sewerage system is installed on site to minimise the potential for nutrients from the sewage to enter the environment.	Install appropriate Nutrient Retentive Sewerage Systems on the site.	During construction.	Department of Health / Town of Kwinana
23	**Site Contamination**	To ensure that any existing on-site contamination is managed, and that further contamination from Project operations is avoided.	Undertake a Stage II Site assessment to identify on-site contamination.	Prior to construction.	LandCorp /
24	**Community**	To ensure that the community is consulted during development, construction and operation of the Plant.	Continue to liaise with the community and other stakeholders during the development, construction and operation of the Plants.	During the development, construction and operation of the Plant.	
25	**Visual Amenity**	To minimise the impact of the Plant on visual amenity.	Establish screening vegetation around the Plant site to act as a site buffer.	During construction and operations.	
26	**Risk and Hazards**	To ensure that the Plant is designed, constructed and operated in a safe manner, and that the Project operations undertaken are non-hazardous.	• Undertake HAZOP studies as part of the design, construction and operation of the Plants which will be submitted to the MPR; • Prepare Site Safety Management Plans, as part of the Project Management Plan for the site, which will be submitted to the MPR; • Develop Emergency Response Procedures, which will include the establishment and maintenance of an Emergency Response Team. The Procedures will be provided to the Kwinana Industries Mutual Aid group; and • Ensure that the operator of the Air Separation Unit analyses for hydrocarbons and CO_2 at appropriate locations within the ASU.	Studies will be undertaken during the design, construction and operation of the Plant. Plans prepared prior to construction and commissioning. During Plant operations.	MPR

Abbreviations
ASU = Air Separation Unit
DEP = Department of Environmental Protection
DOH = Department of Health
EPP = Environmental Protection Policy
HAZOP = Hazard & Operability
MPR = Department of Mineral & Petroleum Resources.
NEPM = National Environmental Protection Measure.
NPI = National Pollutant Inventory.