Statement No.

MINISTER FOR THE ENVIRONMENT 000646

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

PINJARRA REFINERY EFFICIENCY UPGRADE
PINJARRA

Proposal: The construction and operation of an upgraded seed filtration facility and associated plant in order to increase the alumina production at the Pinjarra Refinery, South West Highway, Pinjarra to approximately 4.2 million tonnes per annum, as documented in schedule 1 of this statement.

Proponent: Alcoa World Alumina Australia

Proponent Address: Pinjarra Refinery
PO Box 172
PINJARRA WA 6208

Assessment Number: 1498

Report of the Environmental Protection Authority: Bulletin 1122

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

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.

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.

Published on

3 MAR 2004

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 determines, on advice of the Environmental Protection Authority, is not substantial, the proponent may implement those changes upon receipt of the approval of the Minister for the Environment.

2 Proponent Commitments

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

3 Proponent Nomination and Contact Details

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 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 substantially commence the proposal within five years of the date of this statement or the approval granted in this statement shall lapse and be void.

Note: The Minister for the Environment 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, prior to the expiration of the five-year period referred to in condition 4-1.

The application shall demonstrate that:

1. the environmental factors of the proposal have not changed significantly;

2. new, significant, environmental issues have not arisen; and

3. all relevant government authorities have been consulted.

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

5 Compliance Audit and Performance Review

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

1. the status of implementation of the proposal as defined in schedule 1 of this statement;

2. evidence of compliance with the conditions and commitments; and

3. 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.

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 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.

5-3 The proponent may submit a report prepared by an auditor approved by the Department of Environmental Protection under the "Compliance Auditor Accreditation Scheme" to the Chief Executive Office of the Department of Environmental Protection on each condition/commitment of this statement which requires the preparation of a management plan, programme, strategy or system, stating that the requirements of each condition/commitment have been fulfilled within the timeframe stated within each condition/commitment.

Note: Alternatively, the proponent shall submit appropriate documentation directly to the Department of Environmental Protection to determine whether the requirements of the conditions and commitments have been met.

6 Air Quality and Emissions Source Monitoring

6-1 Prior to commissioning of the processing plant, the proponent shall prepare an Air Quality Management Plan, for monitoring and management of point source emissions, area source emissions and ambient air quality to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

This plan shall address the following:

Point source emissions

1 details of air pollution control equipment;

2 a description of air pollution control equipment emission monitoring to be undertaken during construction, commissioning, and operation of the plant, including, where practicable and appropriate, continuous monitoring;

3 a list of chemical species to be monitored with a particular focus on NOx, arsenic and mercury;

4 monitoring locations, sampling frequency, sampling methods, analytical test methods and quality assurance/quality control procedures;

5 a contingency plan for unplanned and planned shut-down of the pollution control equipment;

Area source emissions

6 details of methods, quality assurance/quality control procedures and sampling frequency for monitoring particulate emissions (including ultrafine particles), metals emissions from the Residue Disposal Area and stockpile area as recommended in the expert peer review of the Air Quality Data and Air Dispersion Modelling reports. This work shall also include an assessment of cumulative particulate emissions taking into account background levels and levels from other refinery sources.

Ambient air quality

7 details of sampling locations, methods (including continuous monitoring or campaign monitoring using continuous techniques) and quality assurance/quality control procedures; and

8 receptor locations with a particular focus on locations to the north of the refinery identified within the Health Risk Assessment (HRA) as having the highest potential risk.

This plan shall:

(a) be developed in consultation with the community and stakeholders;

(b) include an expert peer review; and

(c) allow for adaptive management with regular reviews and updating.

6-2 The proponent shall implement the Air Quality Management Plan required by condition 6-1 to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

6-3 The proponent shall make the Air Quality Management Plan required by condition 6-1 publicly available to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

Note: In the preparation of advice to the Minister for the Environment, the Environmental Protection Authority expects that the advice of the following agencies will be obtained:

- Department of Environmental Protection (Air Quality Management Branch); and
- Department of Health.

7 Emissions Reduction Program

7-1 Prior to commissioning, the proponent shall develop an Emissions Reduction Program to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

This program shall address:

1. emissions likely to increase as a result of the upgrade;

2. mercury, arsenic and NO_X; and

3. practicable methods of reducing formaldehyde emissions from the refinery.

This program shall:

(a) be developed in consultation with the community and stakeholders;

(b) include an expert peer review; and

(c) allow for adaptive management with regular reviews and updating.

7-2 The proponent shall implement the Emissions Reduction Program required by condition 7-1 to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

7-3 The proponent shall make the Emissions Reduction Program required by condition 7-1 publicly available to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

8 Model Validation

8-1 The proponent shall commence work as soon as practicable prior to commissioning, to validate/refine the air dispersion model predictions for the upgraded plant using actual ambient air quality and emissions source monitoring data, with particular attention to modelling and monitoring of scarp locations, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

8-2 Within six months following commissioning of the upgraded plant, the proponent shall further validate/revise the air quality predictions and the Health Risk Assessment carried out for the Environmental Protection Statement using actual emissions source monitoring data of the upgraded refinery, including area source data from the Residue Disposal Area, and ambient air quality monitoring data, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

8-3 Immediately following the validation required by condition 8-2, the proponent shall commission an expert peer review of the Air Dispersion Model and the Health Risk Assessment validation, and shall involve the community and stakeholders in the review process to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

8-4 In the event that the validation of the air quality predictions, including the Air Dispersion Model, and the Health Risk Assessment referred to in conditions 8-1 and 8-2 indicate a significant increase in risk, taking into account the advice of the Department of Health and findings of the expert peer review, the proponent shall immediately investigate and implement measures to reduce the risk, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

Note: In the preparation of advice to the Minister for the Environment, the Environmental Protection Authority expects that the advice of the following agencies will be obtained:

- Department of Environmental Protection (Air Quality Management Branch); and
- Department of Health.

9 Greenhouse Gas Emissions

9-1 Prior to commissioning, the proponent shall prepare a Greenhouse Gas Emissions Management Plan to:

- ensure that through the use of best practice, the total net "greenhouse gas" emissions and/or "greenhouse gas" emissions per unit of product from the project are minimised; and

- manage "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 on advice of the Environmental Protection Authority.

This Plan shall include:

1. calculation of the "greenhouse gas" emissions associated with the proposal, as advised by the Environmental Protection Authority;

   Note: The current requirements of the Environmental Protection Authority are set out in: *Minimising Greenhouse Gas Emissions, Guidance for the Assessment of Environmental Factors, No. 12* published by the Environmental Protection Authority (October 2002). This document may be updated or replaced from time to time.

2. 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, both within Australia and overseas;

3. actions for the monitoring and annual reporting of "greenhouse gas" emissions and emission reduction strategies;

4. a target set by the proponent for the reduction of total net "greenhouse gas" emissions and/or "greenhouse gas" emissions per unit of product and as a percentage of total emissions over time, and annual reporting of progress made in achieving this target. Consideration should be given to a contribution from renewable energy sources such as solar, wind or hydro or conversion to cleaner energy sources (fuel swapping); and

5. consideration by the proponent of entry (whether on a project-specific basis, company-wide arrangement or within an industrial grouping, as appropriate) into the Commonwealth Government's "Greenhouse Challenge" voluntary cooperative agreement program. Components of the agreement program include:

    1. an inventory of emissions;
    2. opportunities for abating "greenhouse gas" emissions in the organisation;
    3. a "greenhouse gas" mitigation action plan;
    4. regular monitoring and reporting of performance; and
    5. independent performance verification.

9-2 The proponent shall implement the Greenhouse Gas Emissions Management Plan required by condition 9-1, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

9-3 Prior to commissioning, the proponent shall make the Greenhouse Gas Emissions Management Plan required by condition 9-1 publicly available, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

Procedures

1 Where a condition states "to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority", the Environmental Protection Authority will provide that advice to the Department of Environmental Protection for the preparation of written notice to the proponent.

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

3 Where a condition lists advisory bodies, it is expected that the proponent will obtain the advice of those listed as part of its compliance reporting to the Department of Environmental Protection.

Notes

1 The Minister for the Environment 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*.

3 Within this statement, to "have in place" means to "prepare, implement and maintain for the duration of the proposal".

4 Compliance and performance reporting will endeavour to be in accord with the timing requirements of the *Alumina Refinery (Pinjarra) Agreement Act 2002*.

Judy Edwards

Dr Judy Edwards MLA
MINISTER FOR THE ENVIRONMENT

3 MAR 2004

Schedule 1

The Proposal (Assessment No. 1498)

The proposal is to upgrade the Pinjarra Alumina Refinery located on the South West Highway, Pinjarra, and involves an upgrading of the seed filtration facility to improve its efficiency in order to increase the alumina production by approximately 17% to approximately 4.2 million tonnes per annum. This will require an increase in the bauxite mining rate at Alcoa's Huntly bauxite mine and additional bauxite grinding, slurry storage and calcination facilities. The key characteristics of the proposal are shown in Table 1. The location and regional setting of the Pinjarra refinery are shown in Figures 1 and 2 (attached).

Table 1 - Key Proposal Characteristics

Characteristic	Units	Current Refinery	Upgraded Refinery
Alumina Production	Mtpa	3.5 (+ 0.1 Mtpa continuous improvement in alumina production)	4.2
Refinery Operations		Continuous operation	Continuous operation
Bauxite Mining Rate	Mtpa	20.6	22.6
Project Life	years	>50	>45
Refinery Footprint	ha	250	250
Construction Period	years	-	2
PLANT			
SAG mill		6	7
Bauxite storage bin		6	7
Slurry storage tank		7	8
Digestion area pumps and piping			Increased capacity
Digestion area vents			Capture vent emissions and send to an RTO
Digestion area evaporators		7	8
Mud thickeners		9	Evenly distribute flow across existing thickeners
Mud washers		5 units of 5 total of 25	Convert two existing mud washer units to single washer unit with larger capacity (i.e. 2 units of 5, to 1 unit of 6)
Causticisation			Install new tanks, pumps and piping for the causticisation process
Seed filtration		-	Install a new seed filtration facility
Precipitation vessels		120	No addition
Calciners		6	Install a seventh calciner, and upgrade the ESPs on 3 existing calciners.
Oxalate kiln			Upgrade capacity Install a new wet scrubber and RTO

Characteristic	Units	Current Refinery	Upgraded Refinery
REFINERY INPUTS			
Bauxite	Mtpa	13	15
Caustic Soda	tpa	210,000	245,000
Lime	tpa	176,000	195,000
Water	MLpa	6,130	7400
REFINERY OUTPUTS			
Atmospheric Emissions	tpa		
Particulates (from stacks)		190	140
NO_x		1,120	640
CO		815	815
VOCs		180	162
Greenhouse Gases			
Net CO_2 – Refinery with Alinta Cogeneration Project	tpa	2,045,000 (2)	2,347,000 (2)
	tCO_2/t alumina	583 (2)	564 (2)
Bauxite Residue	Mtpa	6.41	7.73

Notes:

(1) Data presented for Current and Upgraded refinery does not include inputs or outputs from the Alinta Cogeneration Project, although they have been considered in the context of cumulative air quality impacts upon nearby residences.

(2) Includes Pinjarra refinery energy savings associated with the Alinta Cogeneration Project Stages I and II.

Abbreviations:

CO_2	= carbon dioxide
ESP	= electrostatic precipitator
ha	= hectares
MLpa	= million litres per annum
Mtpa	= million tonnes per annum
NO_X	= oxides of nitrogen
RTO	= Regenerative Thermal Oxidiser (thermally destroys VOCs and other combustible components)
SAG	= semi autogenous grinding
tpa	= tonnes per annum
tCO_2/t alumina	= tonnes carbon dioxide per tonne of alumina
VOCs	= volatile organic compounds
>	= greater than

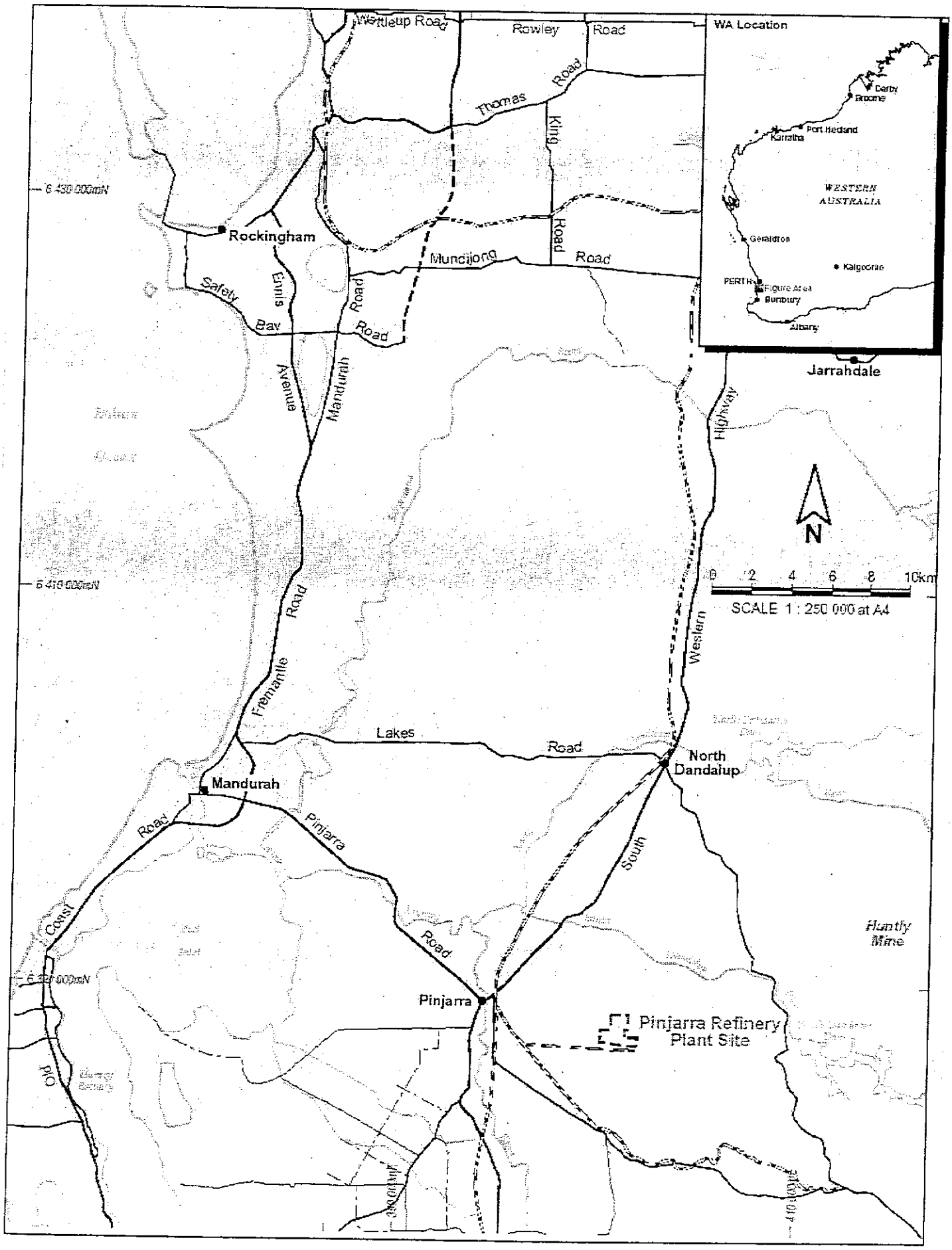

Figure 1: Location of the Pinjarrra Refinery efficiency upgrade (Source: Environ, 2003a).

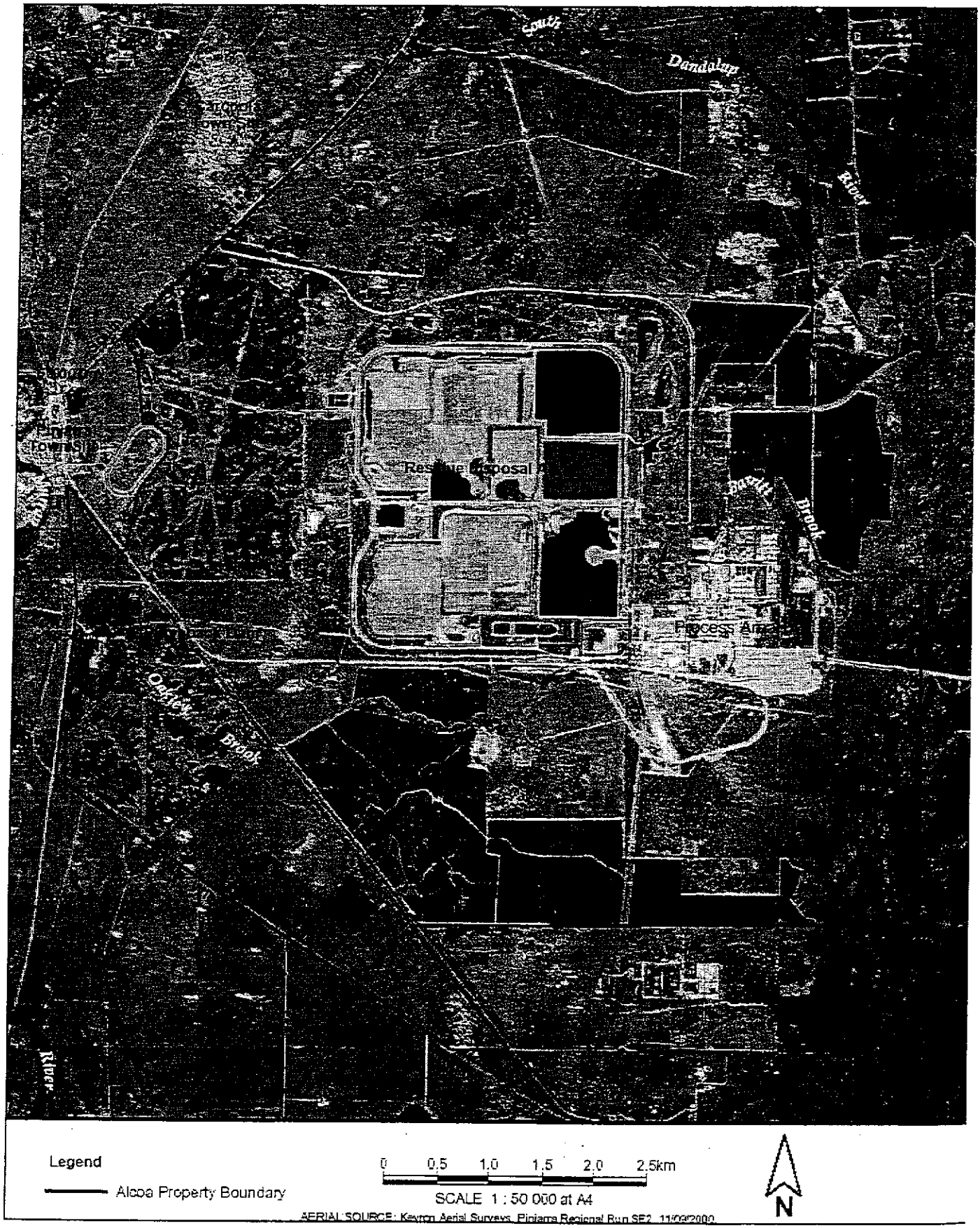

Figure 2: Aerial Photograph of the Pinjarra Refinery and adjacent residential areas (Source: Environ, 2003a)

Schedule 2

Proponent's Environmental Management Commitments

February 2004

PINJARRA REFINERY EFFICIENCY UPGRADE, PINJARRA

(Assessment No. 1498)

Alcoa World Alumina Australia

Proponent's Environmental Management Commitments – February 2004

Pinjarra Refinery Efficiency Upgrade (Assessment No. 1498)

Note: The term "commitment" as used in this schedule includes the entire row of the table and its six separate parts as follows:

- a commitment number;
- a commitment topic;
- the objective of the commitment;
- the 'action' to be undertaken by the proponent;
- the timing requirements of the commitment; and
- the body/agency to provide technical advice to the Department of Environmental Protection.

No.	Topic	Objective	Action	Timing	Advice
1	Air emissions	To minimise emissions to air.	Install air pollution control equipment designed to achieve: 1) a reduction of approximately 10% in VOC emissions; 2) a reduction of approximately 25% in particulate emissions from the calciners; 3) a reduction of over 90% in CO emissions from the Oxalate kiln; and 4) an offset of the increase in general refinery NO_X emissions by installing low-NO_X burners in the power station.	Prior to commissioning.	
2	Air emissions	To minimise fugitive dust emissions from the Residue Disposal Area.	Have in place and make publicly available a Dust Management System for the Residue Disposal Area which includes: 1) an upgrade of the existing sprinkler system; and 2) a review of operational controls.	Prior to commissioning of the Efficiency Upgrade, and during operation.	DEP (Air Quality Monitoring Branch)

3	Residue disposal	To achieve adequate long-term residue management.	1) Revise the Long-term Residue Management Plan in consultation with local stakeholders. 2) Review options for residue volume reduction, alternatives for disposal, dust management, monitoring and impacts on visual amenity and associated land use.	Within 12 months following commissioning.	
4	Noise	To comply with the requirements of the *Environmental Protection (Noise) Regulations 1997.*	Prepare a Noise Management Plan which includes: 1) monitoring at the nearest receptor locations to the north and south of the refinery; and 2) noise controls to be incorporated in the Efficiency Upgrade design.	Prior to construction	DEP (Noise Section)
5	Noise	To comply with the requirements of the *Environmental Protection (Noise) Regulations 1997.*	Implement the Noise Management Plan.	During construction and operation.	DEP (Noise Section)
6	Water supply	To protect water resources.	Have in place a Water Use Minimisation System which includes: 1) current water conservation initiatives; 2) identification of opportunities and targets for continuous improvement by means of operational change, use of best practicable technology and maximisation of water reuse/recycling; and 3) Annual reporting to the DEP of progress and developments.	Prior to commissioning.	WRC

7	Water supply	To protect water resources.	Have in place an Alternative Water Supply Plan in order to optimise alternative water sources for the refinery and reduce usage of surface and groundwater resources. The plan will: 1) Set objectives and targets for alternative water supplies; and 2) Evaluate options and develop long-term plans for alternative water supply sources for the refinery.	Within 12 months following commissioning.	WRC

Abbreviations:

DEP	Department of Environmental Protection	CO	carbon monoxide	VOCs	volatile organic compounds
EPA	Environmental Protection Authority	NO_x	Nitrogen oxides	WRC	Water and Rivers Commission

Attachment 1 to Statement 646

Change to Proposal

Proposal: Pinjarra Refinery Efficiency Upgrade

Proponent: Alcoa World Alumina Australia

Change: Amendment Key Proposal Characteristics

Relevant component of previously approved Key Proposal Characteristics:

Characteristics	Units	Current Refinery	Upgraded Refinery
REFINERY OUTPUTS			
Atmospheric Emissions NO_x	tpa	1120	640

Relevant component of changed Key Proposal Characteristics:

Characteristics	Units	Current Refinery	Upgraded Refinery
REFINERY OUTPUTS			
Atmospheric Emissions NO_x	tpa	1120	780

Abbreviations:
NO_x = oxides of nitrogen
tpa = tonnes per annum

Approved under delegation from Minister for the Environment:

Approval Date: 1.7.08

Attachment 2 to Ministerial Statement 646

Change to proposal approved under section 45C of the *Environmental Protection Act 1986*

This Attachment replaces Schedule 1 and Attachment 1 of Ministerial Statement 646

Proposal: Pinjarra Refinery Efficiency Upgrade

Proponent: Alcoa of Australia Limited

Changes:

- Increase in production, bauxite residue generation, emissions of NO_x, CO and greenhouse gases;
- Update description of the proposal including the 'Development Envelope';
- Correction of a unit error; and
- Removal of elements that are not key proposal characteristics relevant to the environment, managed under other legislation, completed, or not relevant to the proposal.

Table 1: Summary of the Proposal

Proposal Title	Pinjarra Refinery Efficiency Upgrade, Pinjarra
Short Description	The proposal is to upgrade the Pinjarra Refinery located on the South West Highway, Pinjarra, and involves an increase in the alumina production rate. This will require an increase in the bauxite mining rate at Alcoa's Huntly bauxite mine and additional bauxite grinding, slurry storage and calcination facilities.

Table 2: Authorised extent of physical and operational elements

Key Characteristics	**Unit**	**Description of proposal (Previously Authorised Extent of proposal)**	**Authorised Extent of proposal**
Alumina Production	Mtpa	4.2	**5**
Refinery Operation		Continuous operation	**Removed as not a key proposal characteristic relevant to the environment**
Bauxite Mining Rate	Mtpa	22.6	**Removed as regulated under the *Mining Act 1978***
Project Life	Years	>45	>45
Refinery Footprint	ha	250	**Area incorporated in the Development envelope**
Development Envelope	ha		**Development envelope of 3,241 ha indicated in Figure 1 and defined by coordinates in Table 4**
Construction Period	Years	2	**Removed as completed**
PLANT			
SAG mill		7	**Removed as not a key proposal characteristic relevant to the environment**
Bauxite storage bin		7	**Removed as not a key proposal characteristic relevant to the environment**
Slurry storage tank		8	**Removed as not a key proposal characteristic relevant to the environment**

Key Characteristics	**Unit**	**Description of proposal (Previously Authorised Extent of proposal)**	**Authorised Extent of proposal**
Digestion area pumps and piping		Increased Capacity	**Removed as not a key proposal characteristic relevant to the environment**
Digestion area vents		Capture vent emissions and send to an RTO	**Removed as not a key proposal characteristic relevant to the environment**
Digestion area evaporators		8	**Removed as not a key proposal characteristic relevant to the environment**
Mud thickeners		Evenly distribute flow across existing thickeners	**Removed as not a key proposal characteristic relevant to the environment**
Mud washers		Convert 2 existing mud washer units to single washer unit with larger capacity (i.e. 2 units of 5, to 1 unit of 6)	**Removed as not a key proposal characteristic relevant to the environment**
Causticisation		Install new tanks, pumps and piping for the causticisation process	**Removed as not a key proposal characteristic relevant to the environment**
Seed filtration		Install a new seed filtration facility	**Removed as not a key proposal characteristic relevant to the environment**
Precipitation vessels		No addition (remain at 120)	**Removed as not a key proposal characteristic relevant to the environment**
Calciners		Install a seventh calciner, and upgrade the ESPs on 3 existing calciners	**Removed as regulated under Part V of the *Environmental Protection Act* (1986).**
Oxalate kiln		Upgrade capacity Install a new wet scrubber and RTO	**Removed as regulated under Part V of the *Environmental Protection Act* (1986).**
REFINERY INPUTS			
Bauxite	Mtpa	15	**Removed as not a key proposal characteristic relevant to the environment**
Caustic Soda	tpa	245,000	**Removed as managed under the *Dangerous Goods Safety Act 2004* and Regulations (2007)**
Lime	tpa	195,000	**Removed as not a key proposal characteristic relevant to the environment**
Water	MLpa	7,400	**Removed as regulated under the *Rights in Water and Irrigation Act 1914***
REFINERY OUTPUTS **Atmospheric emissions**			
Particulates (from stacks)	tpa	140	140
NO_x		780	**860**
CO		815	**900**
VOCs		162	162

Key Characteristics	**Unit**	**Description of proposal (Previously Authorised Extent of proposal)**	**Authorised Extent of proposal**
Greenhouse Gases	tpa	2,347,000	**2,581,700**
Net CO_2 – Refinery with Alinta Cogeneration Project	**$kgCO_2/t$ alumina**	564	564
Bauxite Residue	Mtpa	7.73	**10**

Note: Text in **bold** in Tables 1 and 2 indicates changes to the proposal.

Table 3: Abbreviations

Abbreviation	Term
ha	hectare
Mtpa	million tonnes per annum
tpa	tonnes per annum
MLpa	million litres per annum
$kgCO_2/t$	kilograms carbon dioxide per tonne of alumina
NOx	oxides of nitrogen
CO	carbon monoxide
VOCs	volatile organic compounds

List of Replacement Figures – Figure 1 and 2 of Schedule 1 are deleted and replaced by the following:

Figure 1: Development Envelope for the Pinjarra Refinery

Table 4: Project Co-ordinates of the Development Envelope for the Pinjarra Refinery (attached)

[Signed 21 September 2015]

Dr Paul Vogel
CHAIRMAN
Environmental Protection Authority
under delegated authority

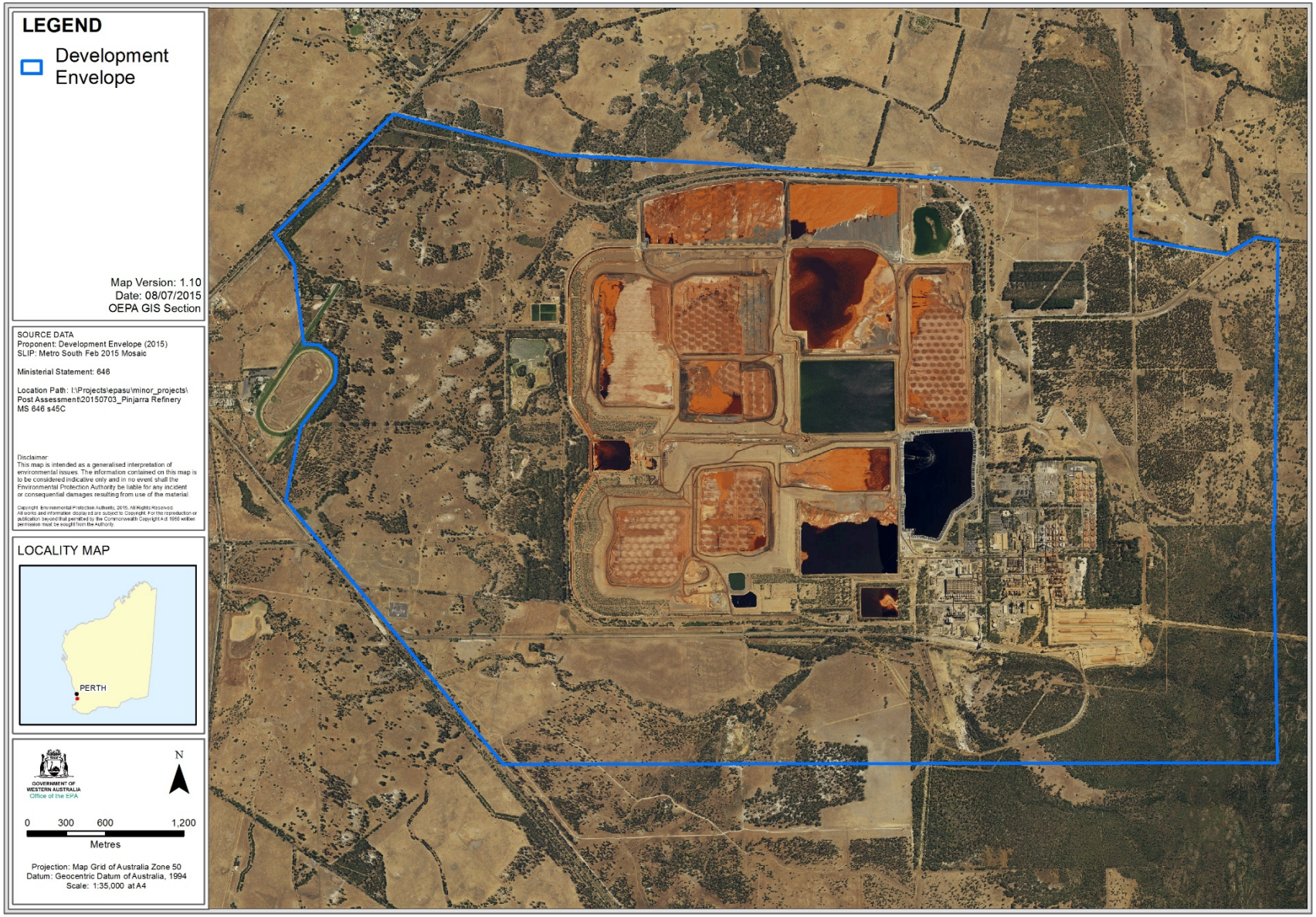

Figure 1: Development Envelope for the Pinjarra Refinery

Table 4: Project Coordinates of the Proposal Development Envelope for the Pinjarra Refinery

All coordinates are in metres, listed in Map Grid of Australia Zone 51 (MGA Zone 50), Geocentric Datum of Australia 1994 (GDA94).

Coord_No	Easting	Northing
1	403224	6390138
2	403198	6387952
3	403191	6387952
4	403222	6386117
5	397274	6386107
6	395604	6388136
7	395717	6388704
8	395982	6389053
9	395989	6389148
10	395989	6389229
11	395925	6389278
12	395859	6389331
13	395742	6389339
14	395688	6389759
15	395669	6389945
16	395607	6390050
17	395517	6390179
18	396433	6391109
19	397660	6390794
20	398973	6390723
21	399660	6390675
22	401030	6390594
23	402088	6390537
24	402101	6390149
25	402832	6390027
26	403058	6390158