5. WAGERUP REFINERY UNIT 3 PROPOSAL DESCRIPTION

5.1 PROPOSAL OVERVIEW

The proposed expansion at Wagerup refinery involves the addition of a third production unit to the two units currently operating, which will almost double production capacity. The Proposal will replicate the existing Bayer process steps from bauxite grinding through to alumina calcination as detailed in section 4.1 and shown in Figure 6. The Proposal will require the addition of some new equipment, but significant production gains will also be achieved through upgrading existing equipment to increase capacity and efficiency. As alumina production increases so too will the requirement for raw materials, water and energy to process the bauxite ore. However, Alcoa intends to maximise efficient use of resources in line with Alcoa's Sustainability Principles (see Section 8.1).

The Proposal will enable the refinery to process an additional 9 Mt of bauxite per year, taking the total annual bauxite throughput at the Wagerup refinery to approximately 16 Mt per year. This will require an increased mining rate within the approved mining areas and as such will reduce the life of the mine. As discussed in Section 4.3.1, mining operations and associated environmental issues will continue to be managed through the existing approvals process and are therefore not included within the scope of this ERMP assessment.

The RDA is currently managed within the approved 30 year Long Term Residue Management Strategy (LTRMS). The increased alumina output from the expansion will increase the active drying area required from approximately 180 ha (current) to a total of 270 ha (proposed). A doubling of the active drying area is not required because improvements in residue management techniques will raise the deposition rate from 14,500 tonnes residue/ha/year ha/year to 16,500 tonnes residue/ha/year, thus limiting the increase in active drying area required.

The increased residue production will require the timing for the proposed construction of drying cells currently approved in the LTRMS to be brought forward. The residue management process is described in more detail in Section 5.2 and requires the strategy to be reviewed on a five-yearly basis with input from key stakeholders.

Alcoa has committed that the Proposal will meet world-class health guidelines and that there will be no increase in odour, dust or noise impacts on residents from the refinery or mine as a result of expansion. Environmental assessment of the Proposal includes a comprehensive and independently reviewed Health Risk Assessment.

5.1.1 Refinery Production Changes

The major components of the Proposal are outlined in this section. Table 2 presents a summary of the key characteristics of the expanded refinery compared with the current refinery.

Table 2: Key Characteristics of the Proposal

Characteristic	Units	Current Refinery	Expanded Refinery
Alumina Production	Mtpa	Approx 2.4	Approx 4.7
Refinery Operations		Continuous operation	Continuous operation
Bauxite Mine		Continuous operation	Continuous operation
Bauxite Mining Rate	Mtpa	9	16
Proposal Life	yrs	>60	>35
Capital Investment	A$	-	1.5 billion
Refinery Footprint	ha	183	183
Construction Period	months	-	27
Workforce (peak construction)	persons	-	>1,600
Workforce (operation) (Refinery + mine)	persons	900	1,050
Bauxite Residue	Mtpa	4.8	9.6
Noise		Regulation 17 application under the *Protection (Noise) Regulations 1997* is being considered by the Minister for Environment	No increase in noise impacts on surrounding residents
Particulates	tpa	60	65
Oxides of Nitrogen (NOx)	tpa	1005	1974
Sulphur Dioxide (SO_2)	tpa	70	113
Volatile Organic Compounds (VOCs) [1]	tpa	78	93
Greenhouse Gases	tpa	1,342,000	2,255,000 (cogeneration) 2,544,000 (boilers)
Greenhouse gas emission intensity	$kgCO_2$/t alumina	557	480 (cogeneration) 541 (boilers)
RAW MATERIALS			
Caustic Soda (dry)	tpa	141,000	282,000
Lime	tpa	110,000	200,000
Water	MLpa	4,800	9,600

Note[1] : Total VOCs is the sum of Acetone, Acetaldehyde, 2-butanone, Benzene, Toluene, Xylenes Acrolein, Ethylbenzene, Methylene Chloride, Styrene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene & Vinyl chloride

5.1.2 Refinery Modifications

The refinery expansion will be achieved primarily by adding a third unit and upgrading or replacing parts of the existing refinery to improve process efficiencies. Figure 2 presents an

aerial photograph of the refinery layout and shows the main modifications proposed for the refinery.

Detailed specifications for the Proposal have not been finalised, as engineering design work will consider the output of the key studies outlined in this report, with the aim of reducing environmental impacts.

The broad infrastructure requirements of the Proposal are separated into the following key areas of the refinery:

- Milling;
- Digestion
- Precipitation
- Calcination
- Power generation
- Conveyor; and
- Residue storage area.

Engineering design work for the expansion has commenced, but is in the preliminary stages. Based on the engineering design work to date, the Proposal is likely to include the following key equipment or modifications as detailed in Table 3 below. As the engineering design becomes more advanced further detailed information will become available and this would be included in future approvals processes, such as works approval.

Table 3: Main Equipment Components of the Proposal

Area	**Existing Refinery**	**Key New and upgraded equipment for the Expanded Refinery (based on preliminary engineering design)**
Milling	• 3 SAG mills	• Increased milling capacity
Ore stockpiles	• Stockpile reclaimer and conveyor • 2 stockpiles plus one emergency	• New reclaimer and conveyors • New dust suppression and cleaning system for conveyor
Slurry storage	• 4 slurry tanks	• New slurry tanks
Digestion	• Digester banks and flash vessels • vapour condenser	• Increased digestion capacity • New and upgraded pumps
Evaporation	• Evaporation units • Heat interchange units	• New evaporation units • New heat interchanger
Lime (place where)	• 1 lime silo	• Upgrade lime storage facilities and associated equipment
Clarification	• Sand removal units	• New filter presses

Area	Existing Refinery	Key New and upgraded equipment for the Expanded Refinery (based on preliminary engineering design)
	• Washers, thickeners • Filter tanks and presses	• New and upgraded washer facilities • New cyclone system
Residue Area	• Approximately 180 ha required for drying and storing residue	• New sand separation • Additional 80 to 100ha residue drying area • Upgrade RDA sprinkler system
Precipitation	• Precipitators and seed filters • Thickeners and liquor tanks • Cooling towers and cyclone clusters	• New precipitators and seed filters • New thickeners and liquor tanks • Additional cooling capacity • New cyclone clusters
Oxalate Removal	• Decommissioned Oxalate kiln	• Oxalate kilns with RTO (regenerative thermal oxidiser)
Liquor Burning	• Liquor Burner	• Install a RTO.
Calciners	• Four calciner units • 100 m multiflue for calciners 1, 2, 3	• Two new calciners with single multiflue • No.4 calciner to new multiflue
Alumina storage	• Two alumina storage bins and alumina conveyors	• Additional alumina storage • Upgrade or additional conveyor
Powerhouse	• Turbo-alternators and boilers • Gas turbine with steam generator	• New boilers or cogeneration units
Port facilities	• Alumina Storage and handling facilities • Caustic storage	• Upgraded alumina handling facilities
Water supply	• Licenced surface water sources.	• Increased surface water supply

5.1.3 Equipment/process modifications

5.1.3.1 Bauxite Milling

The refinery expansion will include the addition of new milling capacity installed in series with the existing three SAG mills. Bauxite storage may also be increased through the installation of a new bin. The mills are required to grind the bauxite ore to particles of less than 1.5 mm, producing sufficient surface area for the ore to react with the process liquor.

Mill availability will be increased to 95% and mill product pumps will be upgraded. The new mill(s) will have contact heaters to heat the slurry from the mill discharge, and the contact heaters in the existing mills will be upgraded.

Additional slurry storage capacity will be added to the desilication plant to maintain the current holding time for slurry. Vapour emissions will be reduced by 75% through the use of sealed units.

5.1.3.2 Digestion

The two existing digestion units will be upgraded, and an additional unit will be added to carry the increased flow of slurry. The additional unit will consist of additional flash vessels, blow off tanks, heaters, and associated pumps and pipelines. All units will increase the use of indirect slurry heating and reduce the use of direct slurry heating. A new vapour condenser will be installed to minimise emissions of VOCs from the new digester unit.

New evaporation units will be required in addition to the existing seven to provide the increased refinery evaporation.

5.1.3.3 Clarification

The existing clarification process will be upgraded. The additional sand load will be processed via a series of cyclone clusters to supplement the existing rake trains. The mud thickeners and washers will all be upgraded to process the additional load, and one new hi-rate washer will be added. The existing filter presses will be replaced by, or supplemented with new "state-of-the-art" presses.

The mud washers, which recover caustic before the mud is sent to the residue area, will be upgraded by modifying feed wells and piping. New cyclone clusters will be installed, along with feed tanks and pumps, and deaeration tanks.

In the mud thickening process, new feed wells, additional cyclone clusters, feed tanks and pumps will be required, along with additional deaeration tanks. Pumps and piping will also be upgraded.

Mud and sand removal facilities will be upgraded by adding new residue tanks and new cyclone clusters.

The lime storage facilities will be upgraded, with a risk analysis on lime silo requirements and reliability conducted.

5.1.3.4 Precipitation

The upgrade of the precipitation area will involve additional precipitation vessels and associated pumps and piping. Additional thickeners, tanks and cyclones will also be required. The existing hydrate filtration systems will be upgraded or replaced, and additional filtration equipment will be installed. Additional seed filters will be installed on top of the precipitator tanks, and additional coolers will be installed with the new unit.

5.1.3.5 Calcination

There are currently four calciners installed at the Wagerup refinery. Units 1, 2 and 3 have a 100 metre multiflue, whilst calciner 4 has a 49 metre stack. Two additional calciner units will be installed (Units 5 and 6). These units and calciner 4 will be serviced by a second 100metre multiflue and the current calciner four stack removed. Dust emissions from these calciners during normal operation will be controlled by electrostatic precipitators (ESPs) and are expected to be less than 15 mg/m^3 representing improved dust control performance. Calciner 4 will be further upgraded to allow the destruction of low volume vent emissions.

Additional conveyors and a new alumina storage bin, that will allow more rail wagons to be loaded simultaneously, will be installed.

The caustic unloading facility will be upgraded by the addition of improved unloading stations.

5.1.3.6 Impurity removal

The existing Oxalate Removal Plant will be upgraded by converting an existing mud washer to oxalate duty, converting existing mud filters to oxalate duty, and by installing a new drum filter. A new oxalate kiln will be constructed, and the existing kiln will be recommissioned. Both kilns will have a Regenerative Thermal Oxidiser (RTO) installed to control emissions to negligible levels.

The replacement of the liquor burner Catalytic Thermal Oxidiser (CTO) with a RTO will further reduce liquor burner emissions despite higher throughputs.

5.2 BAUXITE RESIDUE AREA

The expansion of the Wagerup refinery will increase production of bauxite residue and therefore require the construction of new drying areas currently approved in the LTRMS to be brought forward. Construction of drying areas within the 30 year plan is an ongoing process,

with work on RDA7 completed during the 2004/5 summer period and construction of RDA8 and a new fresh water detention pond planned for the 2005/6 summer period.

A summary of the changes to the residue area during the expansion include:

- Increased production of bauxite residue;
- Expansion of the existing drying area by 80 Ha;
- Conversion of part of the wet lake to dry a storage area
- Earlier construction of residue areas approved in the LTRMS;
- Additional residue transport lines;
- Construction of a Sand Separation facility consisting of new cyclones and associated equipment to manage increased residue production.

The potential for increased dust emissions will be managed through installing an upgraded sprinkler system on all new RDAs. Existing sprinkler systems will be replaced with the new upgraded system on a staged approach, when operationally feasible.

5.2.1 Long Term Surrounding Land Requirements

The long term (>30yrs) operation of the Wagerup refinery is likely to require an expansion of the residue area beyond the existing boundary identified in the LTRMS. Consultation to date on the LTRMS has focused any expansion of the residue area to be in a westerly direction, to:

- preserve the agricultural land to the north and north east of the existing residue areas;
- maintain a minimum 2 km distance between the residue operations and the residences to the north and north east.

Any changes to the existing management and planning for bauxite residue would be undertaken through the LTRMS. Details on the LTRMS process is detailed in section 4.3.1.

5.3 SERVICES AND UTILITIES

5.3.1 Raw Materials and Product Transportation

5.3.1.1 Overland conveyor

Overland conveyors will continue to transport bauxite ore from the Willowdale mine to the refinery. The first conveyor, fed by the existing crushing station at Orion, will not change, however the second existing overland conveyor will be upgraded and extended to a new crushing station at Larego, with a total length of approximately 14km. This conveyor will be upgraded from a 915mm wide belt to 1,050mm wide belt and the speed increased from 5.5m/sec to approximately 5.9m/sec.

The existing subsidiary tail drive for this second conveyor will be relocated from Arundel to Bancell, where it will be located together with the existing main drive station. In addition, a new drive station will be constructed discharge point in the refinery's bauxite stockpile handling area

5.3.1.2 Rail Transport

Alumina will continue to be transported to Bunbury Port by rail. The railway is owned and operated by Australian Rail Group (ARG). To service the Pinjarra and Wagerup operations an increase in rail transport capacity is required. Assuming ARG implement their current revised schedule of four alumina and two caustic train service by mid 2005 (refer section 4.4.1) the increased alumina transport will be managed through increasing the length of the mid 2005 trains from about 28 to 32 wagons to three alumina trains of 46 wagons and one alumina train of 34 wagons.

Caustic shipments from Bunbury Port to Wagerup would increase from around 300,000 tpa to approximately 480,000 tpa, increasing the length of the mid 2005 caustic trains from 10 wagons to approximately 14 wagons. The average number of caustic trains would remain at the mid 2005 level of two per day.

The proposed changes in rail transport associated with the refinery expansion are based on discussions with the operator of the South West Main Line. However these rail movements may change, with other users wanting to access the rail, changing train schedules, and capacity constraints due to the rail line being a single narrow gauge track with a number of crossing loops. Discussions will continue with the railway operator to establish how the Proposal requirements will be handled by the South West Main line.

It is proposed to upgrade the caustic and alumina loading and unloading facilities at the Wagerup refinery and the Bunbury port. To improve train turnaround times, investigations into a new rail loop, upgraded airslide and conveyor systems are underway, which will also assist to minimise dust and noise emissions.

5.3.1.3 Road Transport

Road transport will be required for the Proposal for continued freight of process inputs, transport of construction materials and transport of the construction and operations workforce.

During construction, it is expected that construction materials will be mainly provided from the Perth metropolitan area or Bunbury via the South West Highway. Alcoa has a procurement strategy in place to source from local suppliers where appropriate. Alternative routes that avoid towns along the South West Highway will be considered for heavy haulage vehicles in consultation with the relevant authorities (refer Section 8.8).

The Proposal will increase employment at the Wagerup refinery, both during the construction phase and post construction. The construction workforce is expected to peak at more than 1,600 personnel, in addition to the 650 personnel that currently work at the refinery. There is therefore, on average, the potential for an estimated 400 additional passenger vehicles travelling to and from the refinery on a daily basis during construction. During the peak period of construction this number could increase to approximately 800 additional passenger vehicles travelling to and from the refinery on a daily basis.

To minimise this impact, Alcoa will consider strategies such as using buses to transport personnel from key pick up points in Mandurah, Bunbury and locally (Section 8.8). The number of additional permanent operational personnel is expected to be approximately 150.

Implementation of the Proposal will result in an estimated increase of road freight vehicles to a total of 280 vehicles per week (one-way) as outlined below.

Table 4: Freight Transport requirements for the Proposal

	Proposal Freight Transport requirements
Lime trucks	11 daily
Tray trucks	9 daily
Semi-trailers	2 daily
Couriers	5 daily
Weekly deliveries	13
Mining	78 weekly
Total weekly (one-way)	**280**
Total weekly (two-way)	**560**

Alcoa will consult with the Shire authorities and the local community about traffic movement management. Additional vehicle movements on completion of the Proposal, as a proportion of freight traffic along the South West Highway, are expected to be quite small (approximately 12% of freight and less than 1.5% of all traffic) (Section 8.8). Of the additional freight vehicles required, it is expected that the majority will use the South West Highway route through the Waroona townsite. However, alternative routes are being considered and the Proponent will ensure that, where possible, heavy vehicle traffic through the town of Waroona is minimised.

5.3.1.4 Bunbury Port Operations

Alcoa's Bunbury port facilities consist of:

- An alumina train unloading facility connected to three alumina storage bins via enclosed conveyors;
- A caustic train loading facility;

- A caustic unloading facility on the dock connected to a caustic storage tank via an above ground pipeline;
- A caustic truck loading facility;
- A series of enclosed conveyors connecting the three alumina storage bins with a dock mounted alumina ship loader; and
- Office and maintenance facilities.

The capacity of the alumina train unloading facility will need to increase, possibly through modifying some existing equipment and installing additional conveyors in the existing enclosed conveyor structure. The train unloading and alumina conveying dust collection systems will be reviewed and upgraded, if required, to ensure dust emissions are minimised. It is unlikely that any additional storage capacity will be required, however this is subject to further investigation.

There is no requirement to increase the capacity of the ship loading system, as there will be no increase in alumina shipped from the Alcoa berth. The increase in alumina at the Alcoa berth will be more than offset by the reduction in Worsley Alumina Pty Ltd material passing through the berth. Worsley Alumina Pty Ltd is commissioning a ship loader at an adjacent berth, which will be operational prior to the commissioning of the Proposal, if approved. It is estimated that there will be around 50 additional ships per annum required as a result of the Proposal.

Alcoa and Worsley jointly ship caustic and Worsley is installing a caustic unloading facility at the Bunbury Port. Therefore no changes will be required to Alcoa's existing caustic unloading facility. The existing rail caustic loading facility is considered adequate, however this is subject to further investigation with Worsley and the rail provider as it is a shared facility.

There are several elements of the Proposal which will have potential environmental impacts for the Bunbury Port;

- dust emissions from Alcoa operations at the Port (Section 8.3.12);
- noise impacts from Alcoa's ship loading facility Alcoa Port operations (Section 8.4.6);
- noise from railway associated with Alcoa's port operations (Section 8.4.6).

Consultation in regard to dust and noise emissions at Bunbury Port has been ongoing and will continue beyond the ERMP phase (see Section 6.3).

5.3.2 Energy Requirements

The Wagerup refinery is recognised as one of the most technologically advanced and energy efficient alumina refineries, when compared with international benchmarks. The Proposal will result in the installation of current best practice energy efficient processes. These will include the seed filtration process, and enhanced causticisation that will improve the efficiency of the refinery liquor stream. There will be an overall increase in energy consumption at the refinery, however with improved energy efficiency, energy consumption per tonne of alumina produced will decrease.

Currently two options are being considered to meet the additional energy requirement for the Proposal. Either two additional boilers and two turbine alternators will be constructed in the existing powerhouse, or two additional turbine alternators will be constructed in the existing powerhouse and a new Cogeneration facility will be developed by a third party. The potential impacts of both facilities on air quality have been modelled and assessed in the Health Risk Assessment (refer section 8.3.10).

If the Cogeneration option is selected, it is proposed to have two 140 MW-capacity gas turbine generators and two heat-recovery steam generators (HRSG). Heat from the exhaust gases of each gas turbine will be used in the HRSG units to produce up to 430 tph of high-pressure steam for use in the Powerhouse. The Cogeneration option is expected to:

- have high thermal conversion efficiencies resulting in more efficient use of natural gas resources;
- lower intensity of greenhouse gas emissions than other fossil fuel-based power generation;
- lower intensity of GHG emissions for alumina ; and
- improved efficiency of steam generation and minimised steam demand through improved utilisation of process steam.

The installation of two Natural Gas fired boilers would allow the refinery to operate independently of a third party supplying high pressure steam, and to progress with the Proposal independently of the electricity market timing.

The Wagerup Cogeneration plant would produce about 2,100 GWh of electricity per annum, with any energy surplus to the Wagerup refinery's requirements sold to the South West Interconnected System (SWIS)

5.3.3 Water Supply

The refinery's current total water requirement is 9,460 MLpa (Table 1 – refer Section 4.4.3) of which 4,800MLpa is obtained from licenced surface water sources. The Proposal has a

total water requirement of 14,900 MLpa and will require approximately 1,100MLpa in an average rainfall year or 4,800 MLpa in a dry year, from external water sources. The refinery's surface water requirements will vary each year depending on annual rainfall. A summary of the water balance for the Proposal is presented in Table 5 (Case A - average rainfall year) and Table 6 (Case B - low rainfall year).

Table 5: Refinery Water Consumption & Supply - CASE A
Average Rainfall/Runoff conditions

Refinery Water Consumption	**Future Refinery (4.7 Mtpa) (MLpa)**
Evaporation Losses from Fresh Water Surfaces	2,000
Evaporation Losses from Liquor Surfaces	1,300
Moisture lost with Stored Residue	4,500
Cooling Evaporation from Liquor Ponds	900
Vapour losses from in- plant processes & vessels (including cooling towers)	2,700
Residue Dust Control Sprinklers	3,500
Total Consumed	**14,900**
Refinery Water Supply	
Moisture with Bauxite & Reagents	1,890
Rainfall collected in Fresh Water Reservoirs	1,000
Rainfall Runoff from Plant Area	270
Rainfall Runoff & Drainage from Residue & Liquor Pond Areas	3,330
Surface Water Sources (Licence) - Nth & Sth Yalup Br (1,600 MLpa) - Black Tom Br (2,500 MLpa) - Harvey R Main Drain (4,400 MLpa)	 1,200 1,500 4,300
Groundwater	300
Additional Sources (as identified in Appendix A)	**1,110**
Total Supplied	**14,900**

Case B below summarises refinery consumption and supply during dry rainfall and runoff years, based upon 2001 which was the lowest rainfall (and runoff) year in 25 years of records for the Wagerup locality.

Table 6: Refinery Water Consumption and Supply - CASE B
Dry Rainfall/Runoff conditions (Based on driest year on record - 2001)

Refinery Water Consumption	**Future Refinery (4.7 Mtpa)** **(MLpa)**
Evaporation Losses from Fresh Water Surfaces	2,000
Evaporation Losses from Liquor Surfaces	1,300
Moisture lost with Stored Residue	4,500
Cooling Evaporation from Liquor Ponds	900
Vapour losses from in- plant processes & vessels (including cooling towers)	2,700
Residue Dust Control Sprinklers	3,500
Total Consumed	**14,900**
Refinery Water Supply	
Moisture with Bauxite & Reagents	1,890
Rainfall collected in Fresh Water Reservoirs	680
Rainfall Runoff from Plant Area	180
Rainfall Runoff & Drainage from Residue & Liquor Pond Areas	1,980
Surface Water Sources (Licence) - Nth & Sth Yalup Br (1,600 MLpa) - Black Tom Br (2,500 MLpa) - Harvey R Main Drain (4,400 MLpa)	 200 800 4,400
Groundwater (600 MLpa)	300
Additional Sources (as identified in Appendix A)	**4,770**
Total Supplied	**14,900**

Water Supply Options

Alcoa commissioned an analysis of the water supply options and water conservation opportunities, which were identified through a process of consultation with key stakeholders including Alcoa staff, local community representatives, Harvey Water, Water and Rivers Commission (DoE) and Agriculture WA. Detail of this analysis is presented in Appendix A.

Based on these studies, the preferred future water supply options for the Proposal are:

- Harvey River Main Drain
- Other Local Drains
- Transfer of Part of Alcoa Farmlands Irrigation Water Entitlement
- Irrigation System Efficiency Water

Both the Harvey River Main Drain and irrigation system efficiency options will be further examined before a final option is selected. Analysis by the Centre of Excellence in Natural Resource Management (CENRM) (2005) suggests that a further 28 GLpa of water should be available from the Harvey Main Drain source, which is well above Alcoa's additional water requirement of around 4.8 GLpa. Further information on the water supply options is provided in Section 8.5 and Appendix A.

5.4 CONSTRUCTION AND OPERATIONAL WORKFORCE

Throughout construction of the Proposal an average of 500 additional personnel will be required annually with a peak of approximately 1600 workers. The expanded refinery, when operating would require an additional 150 full time personnel in addition to the 650 employees currently working at the Wagerup refinery.

6. COMMUNITY INVOLVEMENT

Alcoa would like to thank all those who participated in the Unit Three community involvement process for their dedication and commitment. A range of community members gave generously of their time and energy to participate in the process, during which an enormous amount of information was exchanged. It began with discussions with the Wagerup Community Consultative Network (CNN), which led to the Open Forum, attended by over 120 people. The Forum created five working groups which collectively met on over 50 occasions in the preparation of this ERMP; a generous commitment to say the least.

This has been a comprehensive and intensive involvement process and its success has been due to the willingness of people to participate constructively and freely. I believe that the Unit Three project, this ERMP and Alcoa's ongoing relationship with the local community have benefited from this process, particularly the input of such a wide range of interested people, especially those from the townships surrounding the Wagerup refinery. The involvement process that occurred enabled a group of people from varying interests and with differing concerns to discuss these and receive information to answer their questions.

Finally, prior to describing the community involvement framework in detail, particularly the five subject-specific working groups it is important to emphasise that the community-based working groups undertook a consultation role, not an endorsement role. While working group members reviewed various technical reports and provided comment from their own perspective, they were not asked or expected to endorse, approve or "sign-off" on these reports or any component of the ERMP prepared by the proponent. Therefore, unless otherwise indicated, the publication of the various reports contributing to this ERMP does not represent their endorsement by working group members or other groups participating in the ERMP stakeholder engagement process.

Thank you
Bill Knight, Wagerup Refinery Manager

6.1 INTRODUCTION

Alcoa has a long history of community involvement and in recent years has evolved its approach to match changing community expectations.

Current involvement mechanisms include a Community Consultation Network (CCN), the Wagerup Tripartite Group, community meetings, local council deputations, presentations, mail-outs, environmental reports, annual reviews and newsletters. Informal engagement through one-on-one discussions with neighbours, involvement in community led committees,

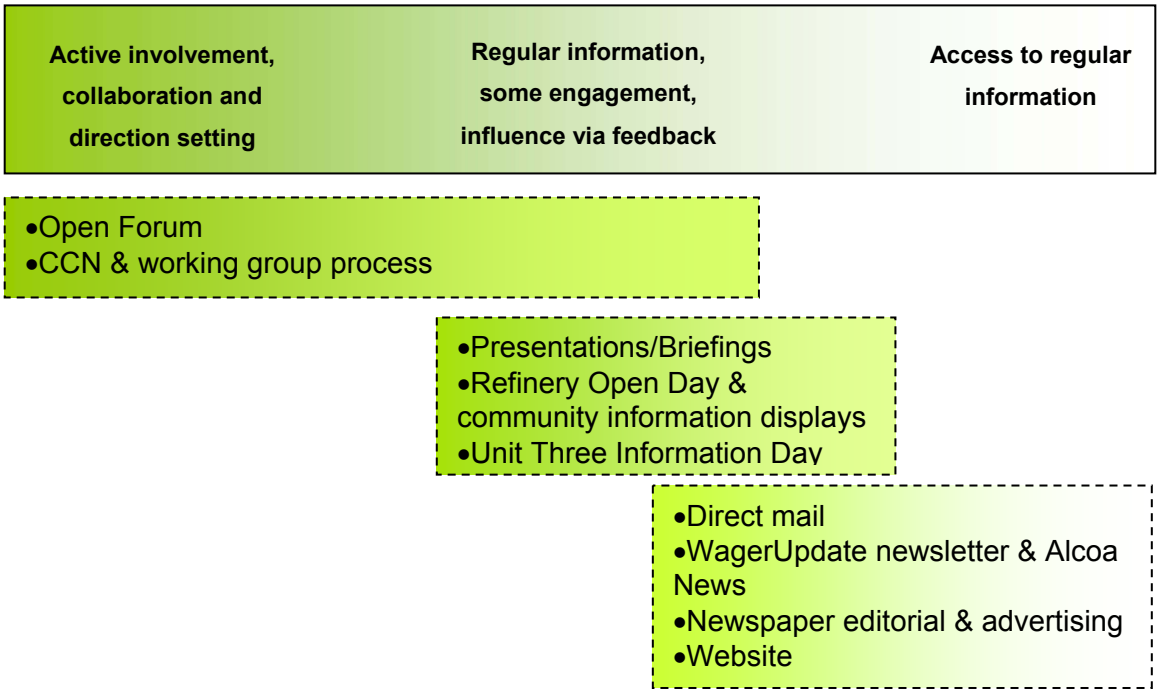
initiatives and forums, as well as community partnerships also provide important means of gaining community feedback and participation.

Alcoa recognised that the significance of the Proposal, coupled with its sometimes controversial history with local communities, would require a comprehensive consultation and information program aimed at meeting the varying needs of broad range of stakeholders.

It is well recognised that different stakeholder groups, and individuals, have differing involvement needs, some people want to be actively involved, others will provide occasional feedback and many may simply want to be kept informed of progress.

The involvement strategy developed by Alcoa sought to meet the needs of each category of stakeholders using a range of tools summarised in Figure 11 and described in this section.

Figure 11: Stakeholder Involvement Needs



In addition to providing a range of communication tools to meet stakeholder needs, Alcoa aimed to achieve a high 'level' of community involvement, particularly for those stakeholders seeking active involvement.

The level of community involvement achieved through the involvement process, based on the Spectrum of Community Involvement described by the DoE, ranged from informing to empowering.

6.2 COMMUNICATION AND INVOLVEMENT TOOLS

Each of the main communication tools used to inform and involve stakeholders in relation to the Unit Three proposal is described below.

6.2.1 Open Space Forum

A public forum where approximately 120 participants identified and explored the issues and opportunities associated with the proposal.		
Target Audience:	Neighbours	Government representatives
	Employees	Industry stakeholders
	Interest groups	Suppliers
Level of Involvement:	Informing, consulting, involving, empowering	

The intensive community engagement program began with discussions with the Wagerup CCN on how best to involve the community in the environmental assessment process.

The CCN was established in 2000 to be the primary consultation forum for Wagerup. Its open membership includes Waroona, Hamel and Yarloop community representatives, Waroona and Harvey Shire representatives and other interested stakeholders. Any interested person may attend CCN meetings. The group meets monthly to discuss refinery and community issues, with meeting minutes published in the local paper.

The group indicated that community involvement should be invited via some form of community meeting convened on a weekend. This feedback led to an independently facilitated Open Forum, held on the weekend of 11-12 September 2004.

A mail-out to over 3,000 householders in the local district and other stakeholders invited interested people to participate and address the question, "Expansion of the Wagerup Refinery: What are the issues and opportunities?"

The forum used Open Space meeting facilitation which is a methodology suited to situations where there is a real issue of concern, a diversity of interests and stakeholders, a complexity of elements, a presence of passion/conflict, the decision time is limited, public input is desired and communication needs to improve. It allows attendees to set the agenda and move freely between a range of discussions. A recognised expert in this field was invited to facilitate the weekend.

Over 120 people attended the weekend forum and a report of their proceedings was collated and distributed on the final day of the forum (see Appendix B). One outcome of the forum

was the identification of key topics for further discussion. This assisted in the formation of the working groups.

For example, one such group was the land management group, which self-formed at the weekend and proactively sought Alcoa's ongoing involvement in discussions on land management issues. The group began meeting immediately after the weekend, independent of the facilitated process offered by Alcoa.

6.2.2 Wagerup CCN & Working Group process

The Open Space forum led to the formation of the project's key involvement mechanism, the five topic-based working groups. This framework allowed independently facilitated working groups to focus on more detailed aspects of the Proposal while the CCN undertook a role to monitor the integrity of the overall consultation process (refer Figure 12).

During the ERMP engagement program, the working groups met regularly (approximately every fortnight), with meeting intensity increasing in the lead-up to the submission of the ERMP. A total of 58 meetings were held with each group meeting at least 10 times between October 2004 and April 2005, prior to the submission of the ERMP.

Target Audience:	Neighbours	Local residents
	Employees	Government representatives
	Interest groups	Suppliers
Level of Involvement:	Informing, consulting, involving, collaborating	

Five independently facilitated working groups were established in mid-October to examine and comment on the detailed content of Alcoa's proposal to expand the Wagerup refinery and to address the ongoing issues and opportunities identified at the Open Forum.

A mail-out after the Open Forum offered interested members of the community an opportunity to nominate themselves or others for membership of the working groups. 48 individuals nominated, including community members from Waroona, Hamel, Yarloop, Cookernup and Harvey, Shire of Waroona and Harvey officers and councillors and State government department representatives.

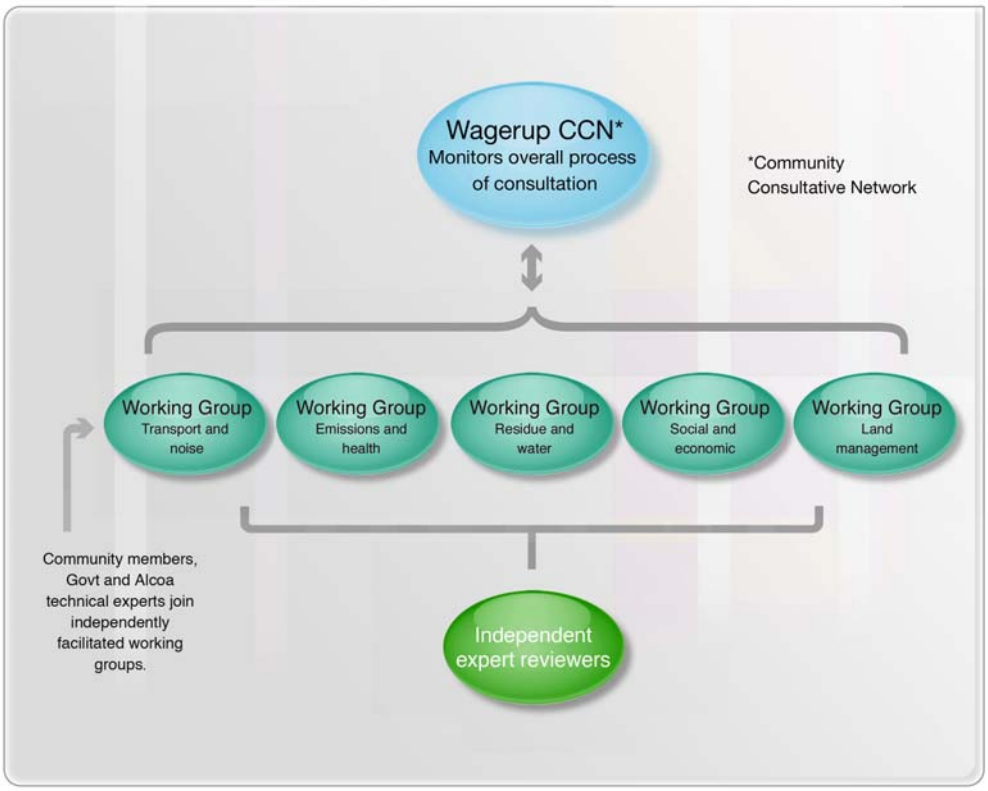
The working groups included people with a substantial history with Alcoa and individuals joining in consultation with Alcoa for the first time.

Those who nominated were invited to an initial meeting of each group at which those present self selected the membership of the group following the principle of a majority of community

members. Alcoa and relevant government representatives were also selected. Those individuals unable to attend the first meeting, but wishing to participate in the process were represented by one of the facilitators during the self selection process.

The groups established were: Emissions & Health; Transport & Noise; Residue & Water; Social & Economic; and Land Management (refer Figure 12).

Figure 12: CCN and Working Group component of the community involvement framework



This approach was an evolution of the Stakeholder Reference Group (SRG) approach applied previously at Alcoa sites, including for the recent Pinjarra Refinery Efficiency Upgrade. The use of multiple, topic specific working groups allowed concurrent examination of issues, rather than one group needing to cover all topics. This provided increased opportunities for:

- working group members to focus on discussions relevant to their area/s of interest;
- working groups to examine a level of detail greater than what would have been practical with only one key consultation group;
- working group members to gain substantial knowledge about a particular topics of interests; and
- more detailed and focussed examination of issues in a set, limited timeframe.

The terms of reference of the working groups, which was agreed in the first meeting of each group, is contained in Appendix C.

The key elements of the working group process are described below:

CCN involvement

During the consultation for the ERMP, the CCN monitored the integrity of the consultation process to help ensure fairness, transparency, openness and inclusiveness. To enable this, working group reports were shared with the CCN at its monthly meetings, with a representative from each working group in attendance on most occasions to answer questions focussed on the engagement process. While the CCN is chaired by a community member, the independent facilitator led discussions relevant to the Proposal during CCN meetings for consistency of process.

Facilitation

Co-facilitation was recommended as the best methodology of meeting facilitation given the historical experience concerning the matters of discussion, the volume of information that needed to be exchanged, and the number and intensity of meetings planned. The co-facilitators worked as a team and were present for almost all meetings, with only occasional exceptions due only to lack of availability.

The use of co-facilitation ensured that the information needs of participants were met while also enabling ongoing monitoring and evaluation to ensure individual working group members participation needs were being met. The process involved regular debrief between co-facilitators and participants, within and after meetings, to assist the process to be continually responsive to the needs and feedback of working group members.

The co-facilitators were charged with ensuring that the consultation was fair, transparent and inclusive, while managing information flow within the identified project timeline. Their observations from working group meetings were a basis for advice to Alcoa representatives on how to provide information to working groups in a way that best met their needs. For example, presentations that were too long, poorly structured or provided too much detail were avoided.

Content

Each of the five working groups considered key aspects (including technical investigations) of the project relevant to their subject area and had an opportunity to provide feedback on how opportunities could be optimised and issues or concerns managed.

As part of this process the members reviewed specific initiatives including reports and environmental modelling used in the development of the ERMP. Questions and suggestions from working group members often challenged and directed studies and information provided in the ERMP. For example, members of the Water & Residue Working Group suggested water supply options for investigation by Alcoa that had not previously been identified.

To help familiarise working group members with Alcoa's operations they were offered a tour of the refinery and provided with a process overview document at the start of the process. A glossary of terms was also provided, which helped familiarise members with a variety of technical terms frequently used in the environmental assessment process.

Alcoa proposed an initial list of items for discussion during the consultation process, based on the technical investigations contributing to the ERMP. However, the process was open and flexible, enabling topics raised by the community to be considered and to allow for changes in timing of the preparation of key reports.

At the beginning of each meeting, following the noting of actions, the agenda for the meeting was agreed by the group. In most cases, key discussion topics were agreed at the previous meeting, but the process allowed any participant to raise a new item of discussion.

Given the limited time for the engagement in the lead up to the submission of the ERMP, some topics raised for discussion not relevant to the ERMP were 'parked' for discussion post-ERMP. How these will be approached in future discussions and the issue will be discussed at the workshop planned for working group and CCN members post ERMP submission.

In addition to the handouts and presentations made during the meetings, a library of other reports and documents of possible interest was also generated. Members were welcome to take information from the library to read and return. Alcoa answered questions and provided copies of documents to members on request. This recognised that a large number of reports were already available that may be of interest to members and relevant to the topics being discussed, examples include previous air quality monitoring studies and bauxite residue reports.

Full meeting reports that provide the details of the working group meetings including information covered are included in Appendix D.

Specialist input and expert review

Where relevant, Alcoa and specialist consultants were invited to attend meetings as observers to present specialist information. For example, CSIRO representatives attended the Health & Emissions Working Group to present information on the refinery modelling the organisation was commissioned to undertake for the ERMP.

In addition, the working groups were able to select an expert to independently review key reports for the ERMP. This process, in effect, allowed for a 'second opinion' on work commissioned by Alcoa for the ERMP.

To facilitate the process, Alcoa generated a list of three to four independent specialists in particular subject areas. Working group members were provided with the biographies of those identified and then the facilitators guided a process for working group members to select an independent expert reviewer.

Expert reviewer comments or findings were forwarded to consultants promptly so that the findings of the reviews could be considered by the consultants undertaking the original study and, where relevant, refinement of to the technical work could be made.

Broader community involvement

To enable broader community involvement in the process, meeting dates and locations were published in the Harvey Reporter along with the meeting outcomes.

The meeting advertisements invited community involvement. They highlighted that community members were welcome to attend any of the working group the meetings as observers and in this capacity could address the meeting through the facilitators.

Reporting & communication

An independent meeting reporter was present for all meetings. Meeting reports were generated on the basis of outcomes, issues or actions from the group. The reports also included process outcomes, including details of presentations made and major discussion topics (this was introduced midway through the consultation based on participant feedback), observer's present and future meeting dates and actions.

At the end of each meeting, the meeting reporter read out the report at which time participants could clarify or add to the notes made. Once the group was happy with a report, it was printed out and a participants' register circulated for signing to mark that each participant endorsed the meeting notes. During the course of the meetings, participants were encouraged to raise items they wanted reported as issues or outcomes.

The engagement was supported by communications aimed at keeping the broader community informed of progress. Transcripts of the outcomes of each working group meeting were published regularly in the Harvey-Leschenault Reporter and full meeting reports of each working group were published on the Alcoa website at www.alcoa.com/wagerup3. Full meeting reports were also made available in hard copy in files located at the Waroona Shire, library and telecentre; Yarloop library; and Harvey Shire, library and telecentre.

To supplement this, a compilation of the meeting outcomes was published in a newsletter distributed in December 2004. The newsletter was mailed to a broad range of stakeholders and made available in local communities. A second newsletter will be published with the Working Groups' Final Outcomes in April.

The details of the meetings for each working group are contained in Appendix D (table of meeting, handouts, issues, outcomes and actions). The final outcomes generated by each working group and Alcoa response are contained in section 6.4.

Alcoa input

The Alcoa team included a specialist representative on each working group. These people were active members of the working groups who contributed to discussions, delivered information, helped identify specialists to address the groups and assisted in the formation of group outcomes.

Alcoa members were supported by the consultation team leader and the Wagerup Unit Three project leader, both of whom were present for most working group meetings as observers. Alcoa technical specialists were also made available for working group meetings when specific technical studies were due for discussion or when working groups required further technical information or explanation.

6.2.3 Presentations and Briefings

Tailor-made briefings were provided to a range of stakeholders when the project was announced and during preparation of the ERMP.

Target Audience:	Employees	Government representatives
	Interest groups	Industry Stakeholders
	Media	
Level of Involvement:	Informing	

The Wagerup Refinery Manager and project representatives met with a range of stakeholders including employees, the Shire of Waroona, Shire of Harvey, City of Bunbury, City of Mandurah, Peel and South West Development Commissions, Peel Area Consultative Committee, the Murray Districts Business Association, Peel Chamber of Commerce, State and Federal politicians, the Peel Economic Development Unit, the CCN and relevant State government departments within the planning, environment, health and industry sectors and certain peak industry groups. Formal presentations made to stakeholder groups included:

The environmental assessment process;

- An overview of the Proposal;
- Diagrams showing structural changes to the Wagerup refinery as a result of the Proposal;
- An overview of Wagerup's current and potential position in the global market
- Alcoa's economic contribution to the local community and the State;
- Benefits of the Proposal;
- Community involvement and the process of stakeholder engagement, and;
- A stakeholder and approvals implementation schedule.

Employee Briefings

A series of briefing sessions were held at both the Wagerup Refinery and the Willowdale mine site to inform employees about the Proposal. These were held over a period of five weeks on rostered Utility Days (regular days set aside for training, briefings, reviews etc) to maximise the potential for employees from all shifts to attend. In total more than 250 employees attended presentations.

Government Agency Briefings

Meetings were held with key government agencies to provide briefings on the Proposal with opportunity for comment and input. Where appropriate this was conducted with both locally-based and Perth-based departments. In many instances these government agencies were briefed on more than one occasion and the Departments of Environment; Health; and Industry Resources were represented on relevant working groups.

Government agencies and politicians were also invited to tour the Wagerup refinery. The visit included a description of current operations and viewing of the areas within the refinery where new equipment would be installed as part of the Proposal.

Bunbury Port

Alcoa representatives attended meetings of the Bunbury Port consultation group on two occasions to discuss relevant aspects of the proposed expansion. In particular, information was provided on structural modifications to Alcoa's facility at the port and the impact of these changes on noise emissions from the facility. Please refer to section 7 and 8 for information on Bunbury Port.

Stakeholder Specific Briefings

Face-to-face meetings were held with representatives from local government authorities and various stakeholder groups during the preparation of this ERMP.

Personal meetings were held with the President and Chief Executive Officer of the Shires of Harvey and Waroona, the Mayor and the CEO of the City of Mandurah, Members of the Legislative Assembly for the Shire of Murray-Wellington, the President of the Legislative Council and the Greens Party. Briefings were also given to full council meetings for both the Shire of Harvey and Shire of Waroona.

Media briefings

Personal briefings were also given to local media (journalists and news program producers) in Harvey, Mandurah and Bunbury, as well as some key media in Perth. These briefings, which were repeated as information became available, were to ensure that media were kept informed about the scope of the project and involvement process, had access to current and accurate information and could contact Alcoa staff to ask questions at any time. A tour of Wagerup refinery was offered to local and State media attending the State Cabinet meeting in Harvey in August 2005 and an open invitation extended to all journalists to arrange personalised tours at their convenience.

6.2.4 Refinery Open Day and Community Information Displays

Over 1,000 people attended a Wagerup refinery Open Day during October 2004, which provided displays and demonstrations of many aspects of refinery and mine site operations, at current production levels and if the Proposal is implemented. This included guided tours of both the refinery and mine site.

Target Audience:	Neighbours	Government representative
	Employees	Industry Stakeholders
	Interest groups	Suppliers
	Broader public	
Level of Involvement:	Informing, consulting	

An Open Day was held at the Wagerup refinery on 10 October 2004 from 10am until 3pm to provide further information on the Proposal.

The event was widely advertised and letters were sent to key stakeholders including refinery neighbours, Shire of Harvey and Waroona community committees, local and metropolitan government agencies and local Members of Parliament.

An Alcoa attended display was also present at the Harvey and Waroona Shows in October and November, 2004. This provided additional opportunity for people from the broader region to consider key aspects of the proposal. Hundreds of people, some from Kwinana, Harvey, Waroona, Mandurah and Bunbury attended the fairs and viewed the display. A similar display with more current information was also present at the Harvey Harvest Fair and Waroona Autumn Fair in mid-March and early April 2005.

The displays provided information on the expansion, the proposed changes to the refinery infrastructure, the environmental approval process, mine site rehabilitation, current environmental issues and proposals to minimise potential impacts, current environmental technical modelling and monitoring techniques used. Staff from Alcoa's project team staff were on hand to answer questions and receive feedback. Contact sheets recorded community comments or issues raised.

Future displays are planned over coming months at the Wagerup refinery, Willowdale mine and within the towns of Waroona and Harvey. Displays are also featured at the Wagerup refinery and at Willowdale mine.

6.2.5 Broad Information Activities

Activities to provide information to the wider community included:

Newspaper editorial and advertising

Two series of advertisements in the local newspaper (over 17 weeks) to inform local communities about the expansion plans and the potential economic, social, benefits, the environmental studies being undertaken and how Alcoa would meet its public health and environmental undertakings.

In addition, a series of new releases were submitted to the local paper, providing information for a wide range of local community members.

WagerUPdate & Alcoa News

A monthly newsletter produced provided to a wide range of stakeholders via a mail drop to 3,500 local households and direct mail to 350 key stakeholders. An example WagerUpdate 7 is shown in Appendix E.

The bi-monthly internal newsletter Alcoa News also provided regular information on the project to the Alcoa employees in Western Australia.

Web site (www.alcoa.com/wagerup3)

A dedicated Wagerup Unit Three website containing the proceedings of all working group meetings and various aspects of project development. This is updated regularly.

Direct mail

Personalised letters were sent to members of the local community and employees during various stages of the project including its announcement and invitation to the Open Space Forum.

The involvement and communication activities have provided information about the project to a broad range of stakeholders via a range of channels including mail outs, presentations, advertising and newsletters and direct stakeholder participation.

6.3 FUTURE INVOLVEMENT

Alcoa has committed to continuing its communication and involvement activities beyond the submission of the ERMP. Stakeholders will continue to be informed of project developments via a range of communication channels including those adopted to date.

Additionally, Alcoa will continue to engage with the community using a framework designed to meet the needs of both the company and community members. It is intended that this will be determined at a workshop in May to bring together the community members engaged in the working group process to date.

An Information Day to provide an opportunity for a broad range of community members to meet face-to-face with Alcoa representatives to ask questions about topics of interest is among the communications to be carried out once the ERMP has been published. Another Refinery Open Day is planned to be held at Wagerup later in 2005.

6.4 FINAL OUTCOMES OF THE WORKING GROUPS

The following sections list the final outcomes from each Working Group's deliberations. These outcomes were developed by an iterative process of generation and review by members, during the final few meetings of each group. This process was facilitated by review of the topics, issues and outcomes of all meetings which led to the identification and framing of final outcomes. Sign-off of the groups' final outcomes occurred with those members present at the last meeting. A response from Alcoa to each outcome is provided, as well as identification of the section of the ERMP which deals with the topic. The words used in the outcomes are those of the working group members.

6.4.1 Emissions and Health Working Group Final Outcomes

We participated in this Working Group as individual community members rather than as community representatives.

- We considered the following topics:
- Wagerup refinery emissions – current state of knowledge
- Current health concerns in the community
- Meteorological and dispersion modelling for Wagerup Three (using TAPM – The Air Pollution Model)
- Expert review of TAPM
- Emissions reductions from previous engineering works at Wagerup
- Proposed emissions control for the expanded refinery
- Health Risk Assessment
    - Review of compound selection
    - Draft contours for current refinery and expanded scenarios (cogeneration and boilers).
- Removal of organic matter from bauxite
- Wagerup Action Plan recommendations
- Odour modelling

We acknowledge the useful dialogue and cooperative approach amongst members individually and with Alcoa personnel.

Due to the highly technical nature of the material, the Group referred much of the information supplied for expert comment and peer review.

We provide the following outcomes to Alcoa for consideration in the ERMP:

Working Group Final Outcomes	**Alcoa Response**
We note Alcoa's positive response to our request for a health survey and request that the scope of the survey be included in the ERMP. We ask that this be conducted by the Department of Health or an independent body with results to be overseen by the Department of Health. This survey should go ahead independent of the expansion.	Alcoa has committed to a local community health survey, should the project proceed, the scope of which has been included in this ERMP as requested (see section 8.3.11). Alcoa will advise the Department of Health of the Working Group's request regarding the implementation of the survey once the ERMP has been submitted. Alcoa notes the Working Group's request for the survey to go ahead independent of the expansion, however, Alcoa considers a main benefit of the survey is establishing a baseline prior to the expansion, if it is approved.
We request that the scope of the survey include: a. Quantifying health impacts within the community, including Multiple Chemical Sensitivity; b. Determining how much of the impact can be attributed to the Wagerup Refinery c. Defining the boundary around the Refinery that is unaffected (pre-expansion) and determining impact post-expansion. Some members requested that the survey be expanded to include people who have left the area so that long term health can be monitored and a register implemented.	The proposal for the health survey is included in section 8.3.11. The following addresses the points raised by the working group: a) The scope of the survey would include gathering data on the prevalence of chronic health conditions and several common symptoms including those often ascribed to multiple chemical sensitivity. Comparisons would then be made with State data. b) The proposed methodology is designed to detect associations between the likelihood of chronic health conditions and several factors including geographic location, health enhancing behaviours, health risk factors, socioeconomic status, psychological distress and demographic variables. The proposed methodology is also designed to detect associations between the likelihood of individual symptoms and the factors listed above.

Working Group Final Outcomes	**Alcoa Response**
	c) The methodology is designed to determine whether chronic health conditions or symptoms are associated with geographic location. People from Yarloop and nearby townships would be interviewed. It is possible that the influence of geographic location may differ among the townships. This might provide some indication of refinery influence, although would not be able to establish cause and effect. The survey would be intended to reflect the current situation and form a baseline for comparison following expansion. It is Alcoa's view that the inclusion of people who have left the area would not aid in these assessments.
Some members stated that the results of the health survey should be available prior to any approval for expansion. Some other members were sympathetic with this view but did not believe that the timeframe would be practical. These members also recognised health surveys to date have been of limited value in establishing a causal link.	Alcoa has committed to undertaking a health survey. It is Alcoa's belief that a comprehensive and useful survey could not be conducted in the timeframe available for assessment of this project, which is based on the project timeline which is aimed at meeting market demand for alumina in 2007/08.
A member raised the possibility of a number of pollution sources within the perched water table of the surrounding area that could be affecting the community. This member requests an environmental investigation be undertaken that could include a geochemical and water sampling program and refers this matter to the Department of	Alcoa is appreciative of the community member's efforts to research this possible scenario and Alcoa draws the Department of Environment's attention to this suggestion as part of this ERMP.

Working Group Final Outcomes	**Alcoa Response**
Environment.	
The Group accepted there have been overall reductions in emissions through engineering solutions since 1997.	There has been ongoing work to reduce emissions at Wagerup and Alcoa is committed to achieving further reductions where reasonably possible. The Proposal will enable some further reductions.
We request that the ERMP contain proposals that will result in a reduction in emissions impacts from already-identified process sources showing that Alcoa will be able to meet the commitment of 'no increase in noise, odour and dust impacts as a result of the expansion'. Some members have concern about the potential for Alcoa not meeting the commitment. Alcoa expressed it wants to be accountable to its commitment.	Alcoa is committed to meeting its objectives of no increase in noise, dust and odour impacts. Section 8 and the management plans outlines strategies to achieve this.
We are concerned that some people are affected by exposure to chemicals at levels that are less than the recommended safe levels. We request the HRA consultant to make some comment on levels of exposure and the range of chemicals that may affect sensitive people.	Alcoa notes the concern of the members of the Working Group and passed this information to the HRA consultant. Please refer to the full text of the HRA Appendix F which, as a result of the working group request, provides commentary on this issue.
A member of the Group investigated the feasibility of removal of organics from bauxite prior to entering Refinery processes and we accept that no further reduction in organics from components of the bauxite is practical and economical at this stage.	Removal of organics is has been a key research area for Alcoa. Alcoa appreciates the additional work of the community member who undertook this investigation. We believe this was been of benefit to other members of the Working Group.
We are concerned about the synergistic effects of chemical compounds. We understand that this is not assessed as part of the HRA and we believe this warrants further investigation. We note that the Department of Health is responding to this	Alcoa notes the concern of the members of the Working Group and passed this information to the HRA consultant. Please refer to the HRA in Appendix F where the issue is addressed.

Working Group Final Outcomes	**Alcoa Response**
issue from the report of the Standing Committee Inquiry. We request that the HRA consultant comment specifically on the issue of Multiple Chemical Sensitivity (MCS) and the synergistic effects of chemical compounds in the Health Risk Assessment (HRA). We acknowledge that he can give an opinion in terms of expertise and the information that is available to him, and that this would not be part of the assessment itself.	Alcoa will advise the Department of Health of the Group's interest in this area when the ERMP is submitted.
A member raised a concern that only 27 out of 261 compounds have been included in the HRA, and they have been selected on the basis of their most likely health impact. We request that the HRA consultant consider whether this list is appropriate.	Alcoa notes the concern of the member of the Working Group and passed this information to the HRA consultant. Please refer to the Air Quality Summary report substance selection report and HRA for further information - Appendix G and Appendix F respectively
We have studied the CSIRO Meteorological and Dispersion Modelling Using TAPM for Wagerup – Phase 1: Meteorology, Phase 2: Dispersion and Phase 3B: HRA (Health Risk Assessment) Concentration Modelling – Expanded Refinery Scenario, which encompass the emissions modelling for the refinery base and expansion cases. Presentations were given by CSIRO, the designers of TAPM (The Air Pollution Model) to the Working Group. These reports were submitted to expert review on our behalf and referred back to CSIRO, who made changes to the original drafts.	Please refer to sections 7.9 and 8.3 for further information on the CSIRO air quality reports.
We refer the air emissions expert review to Alcoa and request that all the matters raised by the expert reviewer be fully addressed, with particular focus on the following two recommendations, which: • "Strongly recommends the maximum exposed location outside Alcoa lease	Alcoa will work with the Department of Environment to determine appropriate actions to address the issues raised in the expert reviews. It is unlikely these will be complete before submission of the ERMP, however Alcoa

Working Group Final Outcomes	**Alcoa Response**
boundary is also presented and the change in impacts for the expansion assessed at this location". • "For the current operation of the refinery impacts in Yarloop, the modelling may have underestimated both short and long term maximum impacts, as data assimilation is not included. We recommend that such modelling be done with data assimilation". We note that the expert reviewer indicates that the question previous posed in the draft report 'is the model predicting the right answer for the right reason?' remains unanswered, suggesting that further verification of the model is required.	will inform the members of the Working Group of the outcomes, which can be fully addressed before a decision is made on the Proposal.
We request that CSIRO and the expert reviewer of the TAPM model comment in the ERMP on the effect and usefulness of the near-completed weather station on the Scarp on the air emissions modelling.	Alcoa recognises that more meteorological data will assist in further verification of the modelling. Please refer to Appendix G (Air Quality Summary Document) for details of the verification that has been taken to date. Alcoa has submitted this request to CSIRO and the expert reviewer and will provide the outcomes to the Working Group members.
Some members are disappointed that the imposed timeframe to contribute final outcomes to the ERMP has not enabled us to consider all the important information we need to assess, in particular the full HRA report and expert review of the HRA. We decided to meet again after the ERMP is submitted, but before its public release, to review these key documents. We request to receive hard copies and electronic	Alcoa recognises that the timeframe in place for the preparation of the ERMP and community input to the process have been challenging. Alcoa believes this Working Group process is one of the most comprehensive undertaken for a major project of this nature in Western Australia. Alcoa believes the process has allowed consultation over far more detailed components than would

Working Group Final Outcomes	**Alcoa Response**
copies of the relevant documents one week prior to our next meeting. We understand that any new outcomes generated by these discussions may be lodged to the EPA as a public submission by the Group during the 10-week public comment period.Ha	occur with a single consultation group. We acknowledge the dedication of the Working Group members who considered extensive technical information and are committed to ongoing consultation.
Some members believe there is a need and an opportunity to continue to meet to address health and emissions issues that this Group was originally set up to consider.	Alcoa will continue to consult and work with interested community members to develop an appropriate framework to consider items of community interest.
Some members of this Group believe that the Wagerup expansion should not proceed until the current outstanding emissions and health issues associated with Wagerup are resolved.	Alcoa acknowledges the concern of some members of the Working Group in this area. However, Alcoa believes the detailed studies undertaken as part of this ERMP, including the HRA, confirms that the Proposal can occur without causing health impacts.

6.4.2 Land Management Working Group Final Outcomes

We note that members of this Group are individuals working towards a solution for the community. We acknowledge that this Working Group is made up of different people seeking different outcomes, and we are not going to be able to address the diverse issues of all individuals. The end of the ERMP process is not the end of the role of the Land Management Working Group.

Working Group Final Outcomes	**Alcoa Response**
We believe that if Alcoa fails to meet its commitment "not to increase in noise, odour and dust impacts" then the Land Management Group would expect to revisit Alcoa's land management policy.	Alcoa is committed to meeting its objective to not increase noise, odour and dust impacts. The air quality management (section 8.3) and Noise management (section 8.4) components of this ERMP demonstrate how the proposal will meet these commitments. Alcoa supports continuing community involvement in relation to land management.
We believe that if increased emissions from an expanded refinery cause an increase in community impacts, then the Land Management Working Group would expect to revisit Alcoa's land management policy.	Please see the above response.
We will continue to examine issues associated with Alcoa's land purchase policy, including valuation methods used to determine market value until we have reached resolution. We will also examine issues affecting property owners outside Area A and B.	Alcoa supports community involvement in developing the land management strategy and will continue to be involved in the examination of these issues.
We agreed that the Baseline Valuations Study should be continued and be broadened to include broad acre and small farms.	Alcoa supports continuing the baseline study and the inclusion of broad acre and small farms. We have worked with members of the community to select the

Working Group Final Outcomes	**Alcoa Response**
	consultant to undertake this work.
We endorse Alcoa's commitment to continue negotiating on a case-by-case basis with property owners outside Areas A and B who believe they are impacted by Alcoa.	Noted.
The Group notes that as a result of discussions Alcoa extended its commitment to property owners in Area B.	Please refer to section 7.12 for further information about Alcoa's land management policy.
Some members of the Group were concerned about a question raised by an observer as to what processes are in place to ensure that decisions made in this Group have broad community support and how can community members provide feedback to the Group on its proposals to Alcoa.	Alcoa supports the need to keep the wider community informed about the deliberations of any community consultation or involvement program. Outcomes from the Land Management Working Group have been published in the Harvey Reporter and on the Alcoa website. Interested members of the community are welcome to attend Working Group meetings. Alcoa will work with the Working Group to develop additional communications if deemed necessary.
A member of this Group expressed the view that if Alcoa were not here then the concerns raised within this and other Working Groups would be redundant.	Alcoa notes this view.
We expect Alcoa to honour its expressed long-term commitment to see the towns of Yarloop & Hamel prosper.	Alcoa believes in the future of Yarloop and Hamel. Each are unique communities with qualities that make them attractive places to live. People have invested, and continue to invest in these communities and want to enjoy the lifestyle Yarloop and Hamel can bring. Our focus is on making sure that Alcoa's presence helps both communities grow and prosper, that we are a good neighbour, and that we are a supportive and responsible member of the community.

6.4.3 Noise and Transport Working Group Final Outcomes

In considering community concerns raised at the Open Space Forum and information on the proposed expansion provided by Alcoa, this Transport and Noise Working Group has discussed issues relating to transport and noise impacts linked to the proposed expansion. We recognise that some of the issues were outside the scope of the ERMP but were considered by the Group because of their importance to the local community. The following points outline the final outcomes of these discussions.

Working Group Final Outcomes - Noise	**Alcoa Response**
We believe that where it is reasonable and practicable, Alcoa should attempt to reduce noise levels further and not just maintain existing noise levels, as specified in Alcoa's commitment of 'no increase in noise impacts' for the proposed expansion.	Alcoa acknowledges the importance of this issue and is committed to noise reductions where reasonable and practicable. As part of this project, the company reviewed the feasibility of a further 4dB (A) overall reduction in the vicinity of the refinery. Based on an assessment of technical feasibility, cost and benefit, Alcoa believes further noise reduction is not reasonable or practicable. Please refer to section 7.14 for further information. .
A Working Group member suggested that it is reasonable and practicable for Alcoa to spend the estimated $21m to achieve a 4dB reduction for the current Refinery. The member believes this will avoid the need for a Regulation 17 variation. The member also believes that even if a Regulation 17 variation is successful, Alcoa should aim to come into compliance with the levels nominated in the Environmental Protection Noise Regulations (1997) by 2010.	Alcoa does not believe that the Wagerup refinery can come into full compliance with the Environmental Protection (Noise) Regulations, 1997. To achieve full compliance with the Regulations a 12 dB (A) reduction is required. Alcoa's believes this is impractical from a technical feasibility perspective; the technology does not exist to deliver this outcome and still have a practical, operable refinery. Assessment has indicated that achieving a 4 dB (A) reduction is not reasonable or practicable.

Working Group Final Outcomes - Noise	**Alcoa Response**
	Please refer to section 7.14 for further information.
We acknowledge that Alcoa is trialling alternative noise monitoring technologies and request it continues to investigate alternative technologies appropriate to the Wagerup surrounds, to provide the most meaningful data. We understand that noise monitoring is being reviewed in consultation with the Tripartite Group. We received a draft version of the Noise Management Plan, which outlines the process from design through to construction, commissioning and operations for achieving project noise emission criteria. We understand and have an expectation that the ERMP will include it in its final form.	As part of its ongoing noise management plan Alcoa has committed to investigate alternative monitoring technologies, where appropriate and relevant to the refinery. Most recently this has included a trial of directional noise monitoring technology, the results of which have been shared with the Tripartite Group. This work will continue, consistent with the intent of the working group request. Please refer to section 10 (Noise Management Plan – ongoing monitoring) for further information.
In our deliberations we've queried the accuracy and limitations of the existing Wagerup noise model. We sent information on the model set-up and the model validation process undertaken to date to an acoustics expert for peer-review. We expect that the expert review will be addressed in the relevant section of the ERMP. Some members request the ERMP specifically address verification of the data that has been collected and used in the modelling process, to confirm the accuracy of the noise model. We recognise that the initial modelling has been undertaken early in the design phase and this has been advantageous as it set a framework for detailed design. The	The expert review the working group refers to specifically focused on revisions C and D of the Noise Model Development Report and the Noise Strategy document respectively. Alcoa and the noise consultants considered the suggestions made by the reviewer and modified the report content accordingly. While not overtly identified, where relevant the suggestions made by the reviewer have been addressed in subsequent revisions of the Noise Model Development Report (Appendix H) and the Noise Strategy document (refer to Appendix I). Alcoa believes that the model inputs used for the ERMP noise modelling are accurate as they have been reviewed by the Department of Environment and by SVT acoustic consultants (commissioned by DoE in 2002) as part of the Regulation 17 application.

Working Group Final Outcomes - Noise	**Alcoa Response**
modelling and peer review process has given the majority of members confidence that the initial work regarding noise management for the Wagerup 3 expansion is reasonable. We understand that the noise model will be reviewed as detailed design progresses. We believe this is important.	While these reviews did not specifically involve the re-measurement of source inputs, far field validation data confirmed that the model is operating to a +/- 3 dB (A) accuracy. This is considered to be within the normal range of accuracy for acoustic models. Further, as part of the expert review, information on the model validation process was provided to the expert reviewer. This compared field measurements to model predictions. On the basis of this document, the expert reviewer concluded that "the noise model is appropriate and . . . validation of the model appears to support this." Please refer to section 7.14 for further information. Please refer to Appendix J for the expert review document and Appendix H for the Noise Model Development Report. As part of the ongoing Noise Management Plan Alcoa will revise and review the acoustic model for the Wagerup expansion proposal during the detailed design, construction, commissioning and operational phases. Please refer to section 10 for the Noise Management Plan.
We recognise that there are areas in the vicinity of the Refinery where the Refinery is in compliance with the Environmental Noise Regulations, but the noise experienced could be a nuisance to some.	Noted.

Working Group Final Outcomes - Noise	**Alcoa Response**
We request the Mining Management Program Liaison Group (MMPLG) consult with neighbours and the broader community about the potential impacts, including noise and transport, from the proposed Larego minesite.	Alcoa is committed to working with the community on the proposed plans for Willowdale mine in relation to the Proposal. Informative displays are planned for various community events throughout the year and information sessions will be provided to interested community members. Willowdale mine neighbours are being consulted on the proposed expansion plans through visits, phone calls and information mail-outs. Neighbours are being encouraged to discuss any questions or concerns they may have relating to the proposed changes with mining representatives. Alcoa also intends to consult the local shires of Waroona and Harvey for their feedback on the proposed plans. An invitation was recently extended to the members of the Working Groups to tour the Willowdale mine. Five members toured the Willowdale mine and discussed the associated plans for the Larego mining region with positive feedback received from the attending members. Free public tours of the Willowdale mine and Wagerup refinery will commence in April. It is hoped that the positive results experienced at the Huntly mine and Pinjarra refinery through public tours providing information and education will assist in further addressing these concerns.
A member of the Group raised particular concerns about whether Alcoa's current blasting management practices are adequate to minimise the impacts on surrounding residents.	Alcoa recognises the requirements of the Environmental Protection (Noise) Regulations (1997) and has established a noise management procedure for mining operations in the vicinity of noise sensitive premises.

Working Group Final Outcomes - Noise	**Alcoa Response**
	The Blast Acoustic Modelling (BAM) system continues to form the basis for predicting noise impacts from cap-rock blasting at the mine. The predictive BAM model is used to assess whether conditions will allow a blast within the noise limit. Blast noise levels are monitored in potentially sensitive locations using hand-held monitors. The main blast is preceded by a pilot-shot and if adverse noise levels are recorded the blast is postponed. Alcoa applies internal noise limits, which are lower than regulatory standards, of 115dB for every blast. Monitoring of Willowdale blasts has shown that the 115 dB internal target was not exceeded for the 87 blasts during 2004 and the 20 blasts year to date in 2005 and by definition no blast exceeded the legal limits. Efforts are continuing to find viable methods to continue to reduce the impact of blasting on neighbours.
Transport	
We believe there is community concern about the South West Highway and its ability to handle current and future traffic, and associated issues of general amenity and safety, capacity and congestion through towns. The Government's commitment to upgrade the Highway should be implemented as a matter of priority.	Alcoa will advise government of this request when the ERMP is submitted.
We request that Alcoa always consider community concerns when dealing with rail transport issues.	Although rail transport is controlled and operated by others, Alcoa is conscious of the concerns of some community members regarding rail transport and has considered these through the consultation process for the ERMP and in relevant decision making for the proposed expansion.

Working Group Final Outcomes - Noise	**Alcoa Response**
We support in principle the Government's intention to transfer freight from road to rail, but it must address community concerns in relation to current and future rail impacts, both environmental and social.	Alcoa will advise government of this request when the ERMP is submitted.
A number of rail noise and associated issues were raised in the Open Space Forum and these important issues have been deliberated in this group. We worked with Alcoa to identify the potential increased rail traffic as a result of the expansion at Wagerup and we requested and reviewed a train noise study to ascertain the noise levels of trains in Yarloop. We also met with representatives from the Australian Railroad Group to discuss the following issues: • Relocating the rail line, • Location of lay by areas, • Rail crossing noise ('clickety clack'), • Rail gradient, • Train horn noise, • Train scheduling opportunities to minimise impacts, • Having longer trains vs more trains, • Choice of locomotives (selection of old vs new locomotives), • Bigger wagons or changing wagons and • Maintenance issues. We recognise most of these issues are outside the scope of the ERMP and therefore we draw these matters to the attention of the Department of Environment for referral to the appropriate government authority for further investigation. We remain concerned about the impacts from current and future rail traffic on the South West	Alcoa is aware of community concern about issues surrounding rail traffic on the South West main line. This was an important issue raised at the Open Forum held in October 2004. Alcoa is committed to working with the rail transport providers and relevant government departments on this issue and wherever practical will encourage improvements via the rail transport providers Rail traffic and rail noise are discussed in sections 7.14 and 8.4 respectively. Alcoa draws DoE's attention to this issue raised during the ERMP consultation.

Working Group Final Outcomes - Noise	**Alcoa Response**
main line, resulting from Alcoa and other operations.	
We request that Alcoa prepare a Traffic Management Plan that covers the construction phase to minimise impact on the community, including consideration of alternate transport routes for heavy vehicles to bypass towns. The Plan should be monitored and reviewed as necessary.	Agreed. A traffic management plan will be developed and managed in conjunction with the relevant stakeholders should the project proceed. It is anticipated that a suitably skilled person will be appointed as Transport Coordinator to manage this process.
We request Alcoa ensure that the estimated road traffic projections related to the proposal are as accurate as possible. Any assumptions behind these projections and the categories they relate to must be clearly presented in the ERMP, to enable the potential impacts to be determined and understood.	Alcoa acknowledges this request. Road traffic projections detailed in section 7.17 and 8.8 are based on current knowledge and previous experience with expansion projects
We request that Alcoa measure traffic movements before, during and after construction, then assess the significance of these numbers (in particular of heavy loads) and adjust the Traffic Management Plan as necessary. We expect that the traffic numbers and any revised plan will be passed on to the relevant local authorities, particularly the local police and the Shires.	Alcoa recognises the importance of traffic management to local communities and in response to this request will monitor traffic entering the refinery via the main access road before, during and after construction. Data gathered from this process will be used as an input to traffic management at the refinery and be shared with the relevant authorities.

6.4.4 Social and Economic Working Group Final Outcomes

We acknowledge the main purpose for convening this Working Group was to collaboratively examine and develop opportunities, initiatives and strategies that relate to the socio-economic outcomes of the ERMP. We note that social and economic factors do not feature heavily in the ERMP and recognise there is potential for this Group to continue past the ERMP process.

At the first meeting we set ourselves the following objectives:

- To provide a process to bring people together to foster community pride and participation.
- To give local people hope through priority in employment and training opportunities.
- To provide a process to identify and implement facilities and service delivery in our communities to meet current and future needs.
- To identify the need and put forward ideas and options for improved social outcomes, including for residents who are impacted by Alcoa's operations.
- To increase participation, especially by the youth and mature-aged, in identifying social and economic options for the region.
- To promote economic activities for long-term sustainability that are not reliant on Alcoa.
- To identify and promote skill-building opportunities for the region (community, industry and government).
- To identify needs and options, and develop a strategy for improved education opportunities in the region, with Wagerup Three as a possible catalyst.

The Social and Economic Working Group outcomes for the ERMP have been developed from within this Group. While they may have some shortcomings, these outcomes have been prepared to the best of our ability in the time available.

Working Group Final Outcomes	**Alcoa Response**
We encourage Alcoa to embrace and help develop new initiatives in community partnership that could be a best practice blueprint for all future developments. We suggest that Alcoa, community, Government and other interested parties engage in further productive discussion regarding the following: a. Seeking out and listening to social and business entrepreneurs, particularly in communities adjacent to the Refinery, with the aim of i. Active engagement with local community and business groups, such as Chambers of Commerce; and ii. Finding local solutions to local problems. b. Infrastructure projects in the communities immediately adjacent to the Refinery (eg., deep sewage, gas, health services, police, street lighting, welfare, education, communications i.e. broadband, tourism, recreation, road upgrades). We feel that the unique problems in Yarloop should be specifically addressed. We also request an urgent audit of all Government services in the Waroona and Harvey Shires. c. Improved health services in the communities surrounding the Refinery. d. Capturing the great opportunity for training and capacity building to meet current and future needs of the nation including, but not limited to, the mining industry. This should evolve into long-term sustainable industry for the region through, e.g. traineeships, apprenticeships and possible School of Mines. e. Community concern that banks are not accepting some local property assets as security for loans.	Alcoa will assist in development of new initiatives that will improve upon partnerships already in place. Alcoa is building on past learnings, particularly from those learnt during the community consultation for the Pinjarra Efficiency Upgrade and will be developing an internal learning package to help transfer these learnings through the organisation. Alcoa has recently produced a socio-economic document as a starting point for consultation which includes ideas for future partnerships, specifically about a new funding partnership for the region. This is a new initiative that is best practice. a. Alcoa has a long history of involvement in local community and business groups and is committed to continuing involvement where appropriate. The Waroona Community Marketing group, Waroona Community Centre and Yarloop Progress Group Inc are examples of organisations we have been or still are involved with. Alcoa is also a member of a local fabricators forum that is supporting regional fabrication businesses. b. Alcoa recognises that infrastructure and services are of key importance to the community and will continue to work in partnership with the relevant stakeholders on this issue. Funding provided by Alcoa through the Community Development Fund ($2 million), sponsorship & donation program and Alcoa Foundation has already provided support to a range of tourism, community development, education and technology initiatives. We are currently investigating ways to help introduce broadband to the area and this is discussed in the document referenced above. We will advise Government of this Outcome when the ERMP is submitted.

Working Group Final Outcomes	Alcoa Response
f. Some member's suggested relocation of Alcoa's head office to Yarloop as a demonstration of Alcoa's confidence and commitment to the community. This would be a great opportunity to revitalise the area.	c. We will advise Government of this Outcome when the ERMP is submitted. d. Alcoa's commitment to training and education is discussed below in detail in response to another Outcome from this Working Group. e. Alcoa will seek appointments to brief local banks on the Wagerup Unit Three project and its commitment to the local area once the ERMP is submitted. f. Alcoa is currently investigating the feasibility of relocating some functions of its head office from the Perth metropolitan area to a location in the Peel region. Among the options being considered were the three refineries, but a significant decision-making criteria was a community presence. Details will be available in early May 2005. Alcoa is committed to supporting Yarloop, through measures such as the $1.5 million development fund, through the investment of millions of dollars in reducing emissions from the Wagerup refinery, by extending the offer to purchase land from 'Area B', and has committed to not increase odour, noise or dust impacts from the refinery. Alcoa supports efforts that ensure a strong future for the region. The proposed new regional fund for support of sustainable projects and programs, and the idea of a learning and enterprise centre in the region, are both being put forward to be discussed in the region over the next few months. We hope the community will engage with us in discussing these ideas and together support Yarloop and the towns surrounding the Wagerup refinery.

Working Group Final Outcomes	**Alcoa Response**
The community members of the Group note the participation of government and Alcoa representatives on the Group has been useful and would like to see this support continue. We believe that this Group would have benefited from the participation of local government.	Alcoa is appreciative of the input and time dedicated by all participants during this process. Alcoa will highlight this outcome to government when the ERMP is submitted.
We recommend strong agreements be put in place between Alcoa, State Government and Local Government to ensure immediate and neighbouring communities gain some direct benefit from the income stream generated by the mining and processing activity conducted in their communities.	Alcoa's State Agreement Act (Alumina Refinery (Wagerup) Agreement and Acts 1978) contains requirements for it to support town development. Alcoa is seeking to work with State Government, local shires and members of the community in development of a new model of funding into the region, which is linked to production of the refinery. If agreed upon it will provide for long-term funding of sustainable projects into the region. The socio-economic document has additional information.
We believe there is a need to promote economic activities for long-term sustainability that are not reliant on Alcoa. We believe the increase in economic activity may reduce the high incidence of crime in the area.	Alcoa is supportive of sustainable business growth in the region, and will support ongoing economic development activities as being planned by some members of the Social & Economic Working Group. This support includes development of businesses that are not linked with Alcoa's operations.
We recognise there are social and economic opportunities the Wagerup expansion may provide to communities. Further, there are those opportunities that need to be considered regardless of any expansion. We would like to develop leadership in the wider community and within this Group. As this work evolves, we welcome participation from community members and local shire representatives.	Alcoa supports the ongoing activities being generated by members of this group that contribute to leadership development in this region. A recent initiative to reflect this is support for a South West Leadership Forum and Awards later this year. As part of its support for the Forum Alcoa will offer places to the Forum for some community members.
We believe that building and strengthening existing community organisations to contribute to local sustainability is important to consider alongside community development initiatives. We also consider it important that access to the appropriate support is available when requested by an organisation.	Alcoa has supported work commenced by ECU in 2002, and now under the direction of the Yarloop Learning and Drop-in Centre, aimed at building capacity of people and businesses in the areas to assist them to contribute to local sustainability initiatives. This is an example of Alcoa's commitment in this area. We will work with or support other initiatives that build capacity in the region.

Working Group Final Outcomes	**Alcoa Response**
We recognise the need to increase participation, especially by the youth and aged, in identifying social and economic options for the region. We also suggest Alcoa employ local youth, disadvantaged, and mature-age unemployed as well as people from culturally and linguistically diverse (CALD) backgrounds.	Alcoa recognises the need for workplace diversity to provide opportunities for youth and for mature-aged workers. We currently offer work placement and work experience positions for over 100 young high school students every year, including the Future Women of Industry Program and 'Work @9'. We have also developed accredited training and employment programs in the form of traineeships for: ⇒ the long term unemployed (Mining Traineeships) ⇒ indigenous people (Landcare and Heritage/Guiding Traineeships) ⇒ mature-aged people (Powerhouse Controller and Beef Cattle Production Traineeships) ⇒ School students (Metals and Engineering, Automotive and Clerical Administration school-based Traineeships). The Wagerup refinery has previously provided accredited training for people with disabilities. Its workforce comprises a range of people from diverse cultures and backgrounds. Alcoa will continue to strive for diversity in its workforce by offering employment and training opportunities to a wide cross section of the community.
We suggest the following education and training opportunities be addressed or assisted by Alcoa: • Improved understanding of the importance of regional needs for training and development; • Take into account the factors that are different for Wagerup (compared to Pinjarra), particularly the shortage of skills and capacity; • Consider increasing number of apprentices, particularly mature-age workers, if the refinery expansion goes ahead;	Alcoa agrees education and training opportunities - for youth, mature-aged workers, and for Alcoa's current employees - are very important. Alcoa has a history of involvement in business–education partnerships including WHEB (Waroona Harvey Education Business Partnership) and the Kwinana Industries Education Partnership. These partnerships assist in developing an understanding of regional training and development needs. We also stay connected to the training and development needs at a local, state and national level through our membership on community organisations such as

Working Group Final Outcomes	Alcoa Response
• Run improved programs for mature-age students who are interested in various tertiary study pathways; • Provide retraining for mature-age workers and recognise prior learning; • Enhancing and facilitating access to apprenticeship schemes is vital, particularly preferential treatment towards young people; • Improved connections between Alcoa and learning institutions; • Potential for a school of mines as part of the objective to 'promote long term economic sustainability', servicing this area and Australia.	Fairbridge WA and peak training organisations such as the WA State Training Board, Training Accreditation Council of WA, Chamber of Commerce and Industry's Education and Training Committee and WA Minerals Training Council. The involvement of Alcoa's managers in local chambers of commerce, service organisations, shire council committees and organisations such as the Peel Development Commission provide an important insight to the local community needs in this area. Alcoa is seeking to commence consultation on an idea around a learning and enterprise centre. The education and training opportunities listed in this Outcome will form the basis of detailed research and consultation into the Centre, initially through May – July 2005. Research and local consultation will result in better understanding of the educational and training needs of the local area, which will be an important decision-making tool for educational institutions the Department of Education, the community and Alcoa. The suggested 'School of Mines' Outcome can be discussed in the context of the education and training needs of the region, as above. Further information on this learning and enterprise Centre Idea can be found in Alcoa's socio-economic document. Alcoa is the largest private employer on apprentices in the Peel region. Alcoa continues to enhance and improve on its training and apprenticeship programs, particularly in recognition of the skills shortage which is affecting all of Western Australia. Facilitating access to upskilling and retraining for people in the region will be important for the ongoing sustainability of the region and something Alcoa is addressing as part of its $19million spend on programs every year.
A member suggests that, should the refinery expansion occur, Waroona District High School be upgraded to a Year 12 School to cater for extra children that may move	Alcoa will advise government of this request when the ERMP is submitted.

Working Group Final Outcomes	**Alcoa Response**
into the area. This upgrade should incorporate best practices in both core and vocational subjects that can be provided to students.	
During the course of the Working Group deliberations, a member wrote to the Minister for Environment asking "why the assessment for the Wagerup Refinery 3 expansion is only based on the potential for significant environmental impact but not on the significant impact on the people living in the surrounding communities" and did not receive a clear response. Some members feel that social impacts should be included in the scope of this and future ERMPs.	Alcoa notes the concerns of some Working Group members about the level examination of social impacts in the ERMP. Alcoa is aware that its operations have had an impact on the social structure of the local community in the past and has implemented projects such as the Edith Cowan University partnership and sponsorship of the Waroona Family and Youth Support Service as well as support for the Yarloop Primary School to help to address this. Alcoa will continue to work with the community to identify and implement projects to address social impacts. Please see section 7.15 and 8.17 for a discussion on the social aspects of the local area.
Some members of this Group strongly request that Alcoa enhance current reporting methods by incorporating Triple Bottom Line (environment, economic, social). In particular, these members believe that significant improvements can be made in the social component.	Alcoa's annual Sustainability Report incorporates best practice economic, environmental and social reporting, both quantitative and qualitative ways. The sustainability report content and format is reviewed each year. The 2004 report is currently in final stages of preparation. For the next review at the end of 2005, Triple Bottom Line reporting methods will be considered with particular emphasis on the social component. Please refer to section 8.1 more information about Alcoa's sustainability principles with particular focus on the Proposal.
A member of this Group believes continuous evaluation throughout this consultation	The use of co-facilitation of working group meetings ensured that the information

Working Group Final Outcomes	**Alcoa Response**
process would have added value to the process.	needs of participants were met while also enabling ongoing monitoring and evaluation to ensure individual working group member's participation needs were being met. The process involved regular debrief between co-facilitators and participants, within and after meetings, to assist the process to be continually responsive to the needs and feedback of working group members. Please refer to section 6.2 for more information on meeting facilitation.
The majority of Group members felt reassured by the outcomes of the Health Risk Assessment and able to plan for the future with more confidence. a. We believe that Alcoa should strive to continuously improve and remain at the forefront of current standards. b. A member of the Group also encouraged Alcoa to embrace Health Impact Assessment, which includes a Health Risk Assessment and a social assessment.	Alcoa is pleased that the Health Risk Assessment has provided reassurance to members of the Working Group. a. Alcoa has a policy of continuous improvement and aims to remain at the forefront of current standards. Alcoa believes that recent improvements to the Wagerup refinery mean it is the most environmentally advanced alumina refinery in the world. b. The scop of the ERMP included a Health Risk Assessment (HRA). It is Alcoa's understanding health impact assessment (HIA) is a methodology the government may consider for major projects in the future.
Qest Consulting presented the background, process and findings of the public safety risk assessment for the proposed Wagerup expansion. We heard that hazards are largely of a dangerous-chemicals nature or a process-hazard nature. We note that the Wagerup Refinery is not a major hazard facility by Australian standards, as Alcoa does not store these chemicals in large enough quantities to be classified as such. There are Government regulations in place that require Alcoa manage impacts on site. We advise Alcoa to work with the Local Emergency Management Advisory Committee (LEMAC) in management of public safety risk.	The Wagerup refinery health and safety manager is a member of Waroona LEMAC and Alcoa will continue to work with the group through this relationship. Public safety risk is discussed in section 8.9.

Working Group Final Outcomes	**Alcoa Response**
We recommend that the Local Emergency Management Advisory Committee (LEMAC) and the police services be made aware of Alcoa's expansion plans and the increased numbers of people in the area to address potential problems.	The Waroona Police have been involved in the proposed expansion through involvement on the Transport & Noise Working Group, where the impacts of additional traffic were discussed. Information presented to the Social & Economic Working Group about the increased workforce – construction and permanent – has also been provided to the Waroona Police. This information will be provided to the Yarloop Police and Shires of Harvey and Waroona.
We ask Alcoa to encourage their employees to become involved in emergency services. We believe voluntary emergency service personnel should be treated similarly to army reserves, in that they are not penalised for being involved in an emergency callout. We recognise this as a local issue with Alcoa and request a change in company policy, within reason, to allow employees to attend emergency training courses and callouts on company time.	Alcoa supports employee volunteerism in the community and recognises the contribution its employees make to the emergency services. This is actively promoted through the Alcoa Foundation that provides grants to the organisations to which employees who volunteer their time. In 2004, Alcoa employees contributed more than 70,000 volunteer hours to local community organisations. As part of this, more than 120 emergency services organisations received funding through the Alcoa Foundation. Alcoa's Special Leave Policy covers Reservist leave and has been applied to employees providing volunteer emergency services in the past. For example Wagerup employees were recently involved in the bush fire fighting effort in the Perth hills. Application of the policy for this purpose is at the discretion of the site manager and/or relevant supervisor who can determine whether or not employees can be released.
We note that hospital and emergency services in the region are in decline and not able to cope with current needs: a. We recommend to Government that emergency services be upgraded	Alcoa is aware of this issue as a user of hospital emergency services and through its past involvement in the Shire of Harvey Community Health Services Strategy Group. Alcoa will advise the Department of Health of this outcome when the ERMP is

Working Group Final Outcomes	Alcoa Response
prior to any expansion, to cater for the influx of people to the region during and after the expansion; b. We specifically request the Yarloop, Pinjarra and Harvey Hospital's be upgraded before the implementation of Wagerup Stage 3; and c. We request that the local Community Clinic at Yarloop hospital be re-opened.	submitted.
We understand there is a lack of support for people with mental health issues in the surrounding communities and this needs to be addressed immediately by State Government. a. We suggest that a crisis centre be included in hospital upgrades. b. We believe a specialised psychiatric ward should be available in the region, preferably Mandurah or Bunbury. While agreeing, one member would rather have the Mental Health ward located in Pinjarra, Yarloop or Harvey.	Alcoa financially supports the Family and Youth Support Service in Waroona in partnership with the Department for Community Development. This addresses a range of issues including people's ability to cope in the community. We recognise the community's concerns about this matter. We will advise the Department of Health of this outcome when the ERMP is submitted.
We recommend Alcoa, community and government work together to manage the issues associated with any construction and construction workforce. Some of the issues to be addressed include: • Construction impacts e.g. noise, traffic, reduced services such as police, health care; • Anti-social behaviour and crime potentially associated with the construction workforce; • Accommodation and potential impact of an influx of people; • Harnessing the increased economic activity; • Up-skilling and retraining of local labour, including mature-aged apprenticeships. • Impact of requirement of a large construction workforce on other regional industries.	Alcoa will be seeking to work with Government, community members and other relevant stakeholders to manage any issues associated with a construction workforce, and maximise benefits and opportunities that would arise from having additional people in the area, should the expansion proceed. To date, the Waroona police have received information on increased traffic and workforce to assist with planning. The Shires have been briefed on the increased workforce and where requested local businesses have been provided with relevant information to assist with planning. A series of briefings is planned to take place following submission of the ERMP which will provide additional information to relevant stakeholders.

Working Group Final Outcomes	**Alcoa Response**
• Industrial land for new businesses to move into the area and expansion of existing businesses.	Please see sections 8.8 and 8.17 for details of construction traffic and workforce.
We overviewed a range of accommodation options for the construction-related workforce and recognise there are more opportunities to be identified. We are keen to continue to develop business opportunities with both the private sector and community. We also note that in the current State Agreement Act, Alcoa is required to provide accommodation for its construction workforce.	Alcoa is also keen to assist the community in harnessing any opportunities which arise from construction workforce. In research undertaken, it is not anticipated additional accommodation will be required to house a peak construction workforce of approximately 1600.
We endorse Alcoa's Local Content and Local Procurement Policy, and encourage Alcoa and interested stakeholders to expand this across the Peel and South West regions. We recommend that: • Local procurement managers be placed in the region; • A local outlet for employment be established (i.e. like Murray House in Pinjarra); and • Local contractors should be given longer contracts so they have the chance to expand and plan for their growth.	The Local Content and Local Procurement Policy will continue to apply for the construction of Wagerup Unit Three and a procurement manager will oversee implementation of this policy. Alcoa acknowledges it is difficult for people in local towns to travel long distances to register their interest with employment agencies or contract employers not located in the vicinity. We will explore the idea of a new facility or utilising an existing facility to encourage local employment. Alcoa acknowledges that businesses are better able to plan if they have an understanding of Alcoa's requirements and the security of longer contracts. Where possible Alcoa will put in place longer contracts to meet this need, dependent on the nature of the commodity or service being provided, and the current and predicted market conditions.
We suggest that for future residential development in the region, there is a requirement upon the development for fully serviced lots.	Alcoa understands that the Pinjarra to Brunswick Sustainable Community Study includes a recommendation about local serviced residential land. This outcome will be provided to Government when the ERMP is submitted.
We suggest that for future business development in the region, there is a requirement	Alcoa is working with the Shire of Waroona about the possible use of Alcoa owned

Working Group Final Outcomes	**Alcoa Response**
upon fully serviced industrial land to be made available.	land for a light industrial area. Alcoa understands that the Pinjarra to Brunswick Sustainable Community Study includes a recommendation about local serviced industrial land. This outcome will be provided to Government when the ERMP is submitted.
We decided not to examine the visual amenity plan for the ERMP in detail, given the extensive agenda we have already set, and that Alcoa generally has a good record regarding visual screening and so believe this is being adequately addressed by the Company. We are relying on the Residue and Water Working Group to have fully investigated visual amenity of the Residue Drying Areas (RDAs).	The Water & Residue Working Group considered visual amenity for the residue areas and have generated a final outcomes on the topic (see section 6.4.5). Visual amenity is discussed in detail in section 7.18 and 8.15.
We acknowledge community concern about uncertainty of future land use (e.g. 'buffer') in the area surrounding Wagerup refinery. We recommend that this be clarified and communicated more effectively to the public. We are concerned that the following questions are still active in the community and request this be addressed immediately: a. Are the towns of Hamel and Yarloop going to be moved and if so where would they be moved to? b. With Wagerup 3, what is the life of the Refinery? c. If Wagerup 3 is a result of an increased need for alumina, is there a foreseeable need for 'Wagerup 4? d. Will recreation areas be closed as a result of mining expansion (i.e. access to the forest)? e. What happens to former recreation areas when mining is finished and how do people find out about this?	Alcoa has been discussing its land management plan with the Land Management Working Group. a. Alcoa believes in the future of Yarloop and Hamel. Both are unique communities with qualities that make them attractive places to live. People have invested, and continue to invest in these communities and want to enjoy the lifestyle Yarloop and Hamel can bring. Our focus is on making sure that Alcoa's presence helps both communities grow and prosper, that we are a good neighbour, and that we are a supportive and responsible member of the community. b. The life of the Wagerup refinery is based, in part, on known bauxite resources in the Darling Range, and on access to those resources. There are sufficient known bauxite reserves in the Darling Range to supply an expanded Wagerup

Working Group Final Outcomes	**Alcoa Response**
f. Does the State Industrial Buffer Policy have any impact on surrounding towns as a result of the current refinery and future expansion? These questions are important to communicate for common understanding.	refinery for at least the term of Alcoa's Mineral Lease 1SA, which provides Alcoa exclusive rights to mine bauxite within the lease until 2045. c. There is no foreseeable need for Wagerup Unit Four. d. Areas of forest surrounding the Larego crusher location and the associated mining envelope will have restricted access to ensure safe and effective operations. Consideration must also be given to dieback and water catchment management in relation to public access within certain areas of state forest. e. In consultation with CALM and the Water Corporation, previously closed tracks and forest roads in the Arundel mining region can be progressively reopened when the rehabilitation of adjacent mining areas is sufficiently established. Alcoa is currently investigating opening up to the public rehabilitated areas within the previous Arundel Mining Envelope. Local communities can be kept informed through information mail-outs and public notices. f. The State Government currently has two DRAFT buffer policy documents in circulation – one from the WA Planning Commission (Department of Planning and Infrastructure) and another from the Environmental Protection Authority. Questions concerning DRAFT State Industrial Buffer Policy will be referred to Government.
We acknowledge that the community is often unaware of key factual issues relating to the Refinery and operations (such as public safety risk, water use, train noise etc), and it would mutually benefit Alcoa and the community if a more effective communication strategy was developed. We believe Alcoa should continue to	Alcoa accepts this Outcome and also recognises that there is often a lack of understanding among community members about certain issues relating to the refinery. Alcoa appreciates the opportunity the Working Group and other consultation processes allow to provide accurate information to interested community

Working Group Final Outcomes	**Alcoa Response**
improve overall transparency and communication with the public.	members. A series of fact sheets will be produced for distribution in the community based on the key issues identified by the community members through the Working Group process. In addition, an Information Day is being planned for June 2005. This will provide information to the wider communities about issues which arose during the Working Group process.

6.4.5 Water and Residue Working Group Final Outcomes

We participated in this Working Group as community members rather than as community representatives. We noted that the meetings expressed a positive, constructive and creative attitude.

We acknowledge that expert advice was received, made freely available, with specific requests being comprehensively addressed. We thank Alcoa staff, external consultants, and our facilitators, Leigh and Bradley. Increased respect and understanding has developed amongst Group members through this process.

After considering and discussing the information provided, we generated the following outcomes:

Working Group Final Outcomes	**Alcoa Response**
We request that the assumptions, data and models provided by Alcoa relating to residue for the ERMP are reviewed independently.	Agreed. A number of key reports contained in the ERMP including the air quality modelling and Health Risk Assessment have been subject to independent expert review. Please refer to Sections 7.9 and 8.3 for discussion on the air quality modelling, Health Risk Assessment and independent reviews. Full reviews are contained in Appendix J, L and M. In addition, data inputs used in the modelling have been subject to internal and external review as part of this and previous processes. Finally, the environmental assessment process is a complete and independent review of the information provided in this document.

Working Group Final Outcomes	**Alcoa Response**
We request the complaints response and communication between Alcoa and community members be improved.	We acknowledge this is an important issue to members of the local community. Alcoa has a 24/7 complaints response service linked to a free 1800 number for local community members. When introduced this service was promoted through a letter to local residents accompanied by a fridge magnet with the contact details. The 1800 number is also regularly advertised in the Yarloop Yarning publication. The complaints response procedure is currently being reviewed and updated in response to community feedback including that from this Working Group. Communications regarding the Wagerup refinery have increased during the past 12 months with the introduction of the WagerUPdate and greater use of advertising and direct mail. Alcoa will continue to monitor and review its communications.
We also suggest that Alcoa further liaise with recent complainants about health effects in animals from surrounding farmlands and consider developing an ongoing process to deal with these more effectively.	This has been undertaken through written communications with the neighbour in question. Processes are in place to detail with complaints (including in relation to livestock) and are adapted as required on a case-by-case basis.
Residue-specific outcomes	
We have inspected the Residue Drying Areas (RDAs) and considered • Visual amenity; • Chemical composition and possible related impacts; • Construction of RDAs; • Dust and its suppression;	Alcoa is committed to broad community involvement. We will work with interested community members in the development of the Long Term Residue Management Strategy (LTRMS), identified with the community through an open and transparent process. For further information on the LTRMS, please see section 5.2

Working Group Final Outcomes	**Alcoa Response**
• Water sources; • Water usage and recycling/conservation; • Ground water contamination; • Rehabilitation; • Lowering of pH; • Radiation; • Alternative uses for residue; • Security of the RDAs; • Odour measurement and modelling; • Monitoring; • Diffuse source emissions modelling; • Aspects of the Health Risk Assessment We understand that there is an opportunity, and a desire on Alcoa's behalf, to continue a consultation process beyond the ERMP requirements to address broader issues of residue management. We understand that this includes the Long Term Residue Management Strategy (LTRMS). We request that Alcoa seeks a wide representation of people from the surrounding community.	
We understand Alcoa's plan for dealing with visual amenity for the Residue Drying Area (RDA) is based on the RDA 7 Visual Amenity Plan and the LTRMS. We	Alcoa supports increased wildlife corridor connections that are compatible with the natural landscape and integrated to other plans and activities including those of the

Working Group Final Outcomes	Alcoa Response
recommend there be an increase and improvement in wildlife corridor connections. We also identified that visual amenity planning is an ongoing process. In particular we identified that farmland management and ongoing visual amenity are issues to be further addressed in the Long Term Residue Management Strategy (LTRMS).	Alcoa Farmlands, residue operations and environmental group. To this end, a dedicated team is being formed to examine residue visual amenity from a long term perspective. Please see sections 7.18 and 8.15 for information about visual amenity.
We understand that as a result of Wagerup 3, the area of the RDA planned over the next 30 years will be opened within 8 years. Some members of the Group have serious concerns over the increased rate of residue disposal and the height that will result from stage 3 and specifically urge research into alternatives to residue storage. We request that the expansion of the RDA footprint and height, required for the production increase with Wagerup stage 3, be included in the ERMP. We understand that the LTRMS discussion will address these issues.	Residue re-use is a priority for Alcoa. We will continue research programs focussed on residue and the support provided to research organisations focussed on residue research. Key residue programs for 2005 include: • Carbonation to reduce pH • Opportunities for re-use of residue sand • Continued work on Alkaloam use and opportunities Diffuse source modelling for the Proposal has been based on the 30 year residue footprint and a stack height of 40 metres as outlined in the most recent LTRMS. Please refer to section 5.2. This footprint and the stack height were decided following extensive community consultation. Changes to the long-term footprint and stack height will be subject to community consultation in future long-term planning activities.
In response to a concern about asbestos risks, we heard that asbestoform fibres are not existent in bauxite ore and are therefore not a risk. We request that this material	A series of fact sheets will be produced for distribution in the community based on the key issues identified by the community members through the Working Group

Working Group Final Outcomes	**Alcoa Response**
be turned into a fact sheet for communication to the wider community.	process. In addition, an Information Day is being planned for June 2005 to provide information to the wider communities about issues raised during the Working Group process.
A member raised a concern about odour emissions from residue. We request Alcoa continue to research and monitor odour emissions at the RDAs and seek to reduce these in order to satisfy community concerns.	Odour emissions from the RDA have been included in the air quality assessment components of this ERMP (section 7.9 and 8.3). The RDA odour emission predictions have been combined with refinery point source odour emissions to give a combined odour output.
We request Alcoa to detail their oxalate management strategy in the ERMP and pursue alternative uses of oxalate.	Oxalate management is a priority area for Alcoa. The following summarises the oxalate management strategy that was shared with the Working Group, tripartite group and Wagerup CCN. Sodium oxalate is a by-product of the Bayer refining process. At Wagerup, it is currently stored in lined ponds in the residue area. As part of the Proposal, the oxalate kiln at Wagerup would be fitted with a regenerative thermal oxidiser (RTO) and recommissioned. It is also proposed that a second oxalate kiln, with an RTO, would be built. It is anticipated the RTO will achieve greater than 95% VOC destruction through the process of high temperature thermal oxidation, converting the VOCs to carbon dioxide and water.

Working Group Final Outcomes	Alcoa Response
	Preliminary results from the Pinjarra refinery where the oxalate kiln, installed with an RTO, was recently recommissioned confirm that this is being achieved. Alcoa is also continuing research into alternative oxalate destruction technology. For the past five years, Alcoa, in conjunction with external experts, has been studying the microbiological and biochemical processes that occur in residue areas. A biological process for Total Organic Carbon (TOC) and oxalate removal utilising the benefits of Alcoa's residue carbonation process has been developed and is currently being trialed at Kwinana.
In response to a question raised about fluoride concentration in bauxite residue we heard that fluoride is present in the residue area but not at a significant level. We request that this material be turned into a fact sheet for communication to the wider community.	A series of fact sheets will be produced for distribution in the community based on the key issues identified by the community members through the Working Group process. In addition, an Information Day is being planned for June 2005 to provide information to the wider communities about issues raised during the Working Group process.
In response to our discussion of the residue dust prosecution case (2002), we noted some concerns about the potential reoccurrence of extreme weather events and the effects of massive dust movement on nearby residents, among whom there is concern about dust composition. In response, Alcoa provided its contingency plan to prepare for extreme weather conditions. We request that • A strategy is developed to evaluate, control and manage the impacts of localised weather events (i.e. whirly-whirly).	High speed, localised wind events such as whirly whirly's are difficult to predict as they are caused by random, short-term meteorological conditions that are not able to be forecast. Alcoa acknowledges that they generate dust that is often visible offsite, however dust monitoring indicates that offsite dust impacts from these occurrences are minimal. Alcoa believes that dust management strategies in place at the RDA including

Working Group Final Outcomes	Alcoa Response
• Learning from 2002 dust case, the community receive information about dust events from Alcoa first hand.	sprinklers, bank rehabilitation, mulching and use of dust suppressants on residue roads match current best practice and address these short-term scenarios. We will continue to consider new forecasting and dust management technology as it becomes available. Alcoa acknowledges the need for communications with its neighbours. The extent of communications are decided based on the nature of any event (dust or otherwise) at Wagerup. This may range from informing the Community Consultative Network (CCN) or Tripartite Group, to a press statement to the local paper or a personalised letter to residents in Yarloop and Hamel.
Some community members believe there should be an investigation by the state government to establish whether the fine paid to government can be returned to impacted community, possibly though a partnership between state, government, Alcoa and community.	Alcoa recognises the intent of the working group members in deciding this outcome. However, any change in this regard is a matter for Government to determine.
In response to a concern about insufficient community consultation around mining with regards to the proposed expansion, we request that a more effective forum for community consultation be established to address this need.	Alcoa will work closely with the community about the proposed plans for Willowdale mine in relation to the proposal. Informative displays are planned for various community events throughout the year and information sessions will be provided to interested community members. Willowdale mine neighbours are being consulted on the proposed expansion plans through visits, phone calls and information mail-outs. Neighbours are being encouraged to discuss any questions or concerns they may have relating to the

Working Group Final Outcomes	**Alcoa Response**
	proposed changes with mining representatives. Alcoa also intends to consult the local shires of Waroona and Harvey for their feedback on the proposed plans. An invitation was recently extended to the members of the Wagerup Unit Three Working Groups to tour the Willowdale mine. Five members toured the Willowdale mine and discussed the associated plans for the Larego mining region with positive feedback received from the attending members. Free public tours of the Willowdale mine and Wagerup refinery will commence in April. It is hoped that the positive results experienced at the Huntly mine and Pinjarra refinery through public tours providing information and education will assist in further addressing these concerns.
The community members are concerned about the lack of a process around community consultation for mining. We sought information in relation to Willowdale Mine and received advice from the MMPLG about the • Truck movements; • Use of water for dust control; and • Public notification of blasting. We then received further information from a community member on the following matters • Impacts of truck movements leaving the Willowdale minesite: • Notification of blasting and public access to blast site;	Please refer to response above.

Working Group Final Outcomes	**Alcoa Response**
• Insufficient minesite community consultation for Wagerup Unit Three; • Collection of noise data (dBA) data from the blast radius, as specified in the 1978 Environmental Review and Management Plan. We recognise that these issues are beyond the ERMP but emphasise that this needs immediate attention by Alcoa.	
We request that Alcoa's neighbours' current concerns regarding existing mining operations, that have been the subject of protracted discussions, be addressed immediately by the company. We suggest that an independent mediator may assist to resolve the issues.	Alcoa works one-on-one with neighbours who believe they are impacted by its mining operations. Independent mediators have been offered in the past to assist protracted discussions and this option remains available when it is considered appropriate by both Alcoa and the neighbour concerned.
We recommend that a comprehensive sampling program for dust monitoring at the residue operations be addressed in the ERMP.	The ERMP includes an outline of the dust monitoring program refer to section 7.9.
Some members recommend that roof cavity dust sampling be undertaken in Yarloop, Hamel and Wagerup, as part of the overall dust monitoring program for Wagerup.	Roof cavity dust monitoring has been considered in the past and Alcoa does not believe that undertaking a sampling program will add to the understanding of household air quality conditions in the local communities. Dust accumulating in roof cavities will have come from numerous sources, within and outside the house, many of which are far more likely to have resulted in dust accumulation in Yarloop houses. Therefore, Alcoa believes it is impractical to attempt to identify what contribution might be from Alcoa operations. Alcoa is also not aware of any accepted standard that could be used to compare with the results.

Working Group Final Outcomes	Alcoa Response
We believe that the location of two internal dust monitors relative to the height of the RDA should be reviewed to ensure that they continue to provide an effective early warning system.	The internal dust monitors are currently located in an elevated position on the RDA dyke wall to provide early dust detection. As dyke wall height is increased, the position and elevation of the monitors will be reviewed to ensure that appropriate coverage is achieved.
We believe Alcoa should continue to pursue carbonation of residue and we refer it to the LTRMS process. In particular, we request a study of Off-gas from carbonated residue from RDAs, including organo-mercury compounds; Composition of dust from carbonated residue; and The source of carbon dioxide for the process.	Alcoa recognises the potential benefits of residue carbonation and is committed to continuing research into carbonation as a priority. Full scale implementation is proceeding at Kwinana which will provide the basis for more detailed monitoring. The current proposal for Wagerup is to use flue gas from the powerhouse boilers and pilot testing for a scrubber system for capture of the CO2 is planned for Q3 2005. The research areas specified by the Working Group will be considered in the next update of the carbonation research plan.
We understand that the mercury extraction pilot project is underway, is looking promising, and could be introduced in 2 years. We would like the results to be addressed in the ERMP.	The ERMP includes modelling of mercury based on current best estimates for improved mercury capture. Alcoa will continue to look for improvement in this area.
The full HRA is not yet available, however we have seen the results of the contour modelling that indicate that Acute (short-term) Hazard Risk, Chronic (longer-term) Hazard risk and the Incremental Carcinogenic Risk for health, for the current and expanded refinery, meet world class health risk criteria. This information provided a comprehensive picture which increased our confidence in the available knowledge and understanding of health risk. Based on the information presented, we believe this will be reassuring to the community. We believe that the new information provided by HRA modelling may provide a useful contribution to discussions about the buffer and land management around	Alcoa regrets that the full text of the HRA was not available earlier in the involvement process. The full text of the HRA is included in this ERMP (Appendix F) as is the independent expert review of the HRA (Appendix M)

Working Group Final Outcomes	**Alcoa Response**
Alcoa's operations. We request that formal verification of the modelling and the HRA occur and the outcomes of that verification be made available to the community in some format.	
We suggested that the following additional compounds be included in the HRA, or request the reason for their omission be provided in the ERMP: • Composition and particulate size of uranium and thorium; • Aluminium and its related compounds; • Silica; • Oxalate and • Alkalinity of dust particles.	This information was passed to the HRA consultant whose response is included in the HRA text (Appendix F).
We support the ongoing research into dust lift-off, dust deposition and chemical composition of dust and request that it be extended to incorporate Wagerup-specific aspects. We suggest that the outcomes be closely incorporated into Alcoa's overall management program for residue and HRA modelling aspects. This material should be turned into a fact sheet for communication to the wider community.	Alcoa supports this recommendation. The outcomes of the WA Dust Study will be applied to Wagerup when they are available. The study will quantify physical and chemical properties of dust and allow this information to be used in any future modelling and HRA at Wagerup. A fact sheet is in preparation to explain the study to the wider community.
We noted dust control methods at the residue areas, which are • Watering with sprinklers at the newly recommended spacing; • Spreading woodchips; • Use of waste oil on roadways (natural decomposition of oil occurs); • Close meteorological monitoring with automatic sprinkler responses. • Other possible controls are	Alcoa agrees that dust control must remain a high priority and notes the results of the HRA and the ground level concentrations for dust and other substances resulting from the modelling (see section 8.3).

Working Group Final Outcomes	**Alcoa Response**
i. Brush fencing ii. Growing lucerne trees on banks (lucerne is alkaline resistant) iii. Increasing peripheral planting to dense status iv. Carbonation of residue which results in less dust (carbonation also allows natural biological activity below pH 10). Following a tour of the RDA by some members of the Group, those members returned with an increased degree of confidence about dust control. While we see that these techniques have been somewhat effective, we believe that dust control must remain a priority issue for Alcoa to manage in current and future operations. This belief is reinforced by the dust ground level concentrations and the acute hazard index risk contours predicted in the HRA.	
Following a question raised during our Residue Drying Area (RDA) tour about site access security, we received information about Wagerup's risk assessment approach and were satisfied with this response. We acknowledge that action has already been taken on a security issue identified by the Working Group, however we request ongoing monitoring occur.	Alcoa appreciates the community concern surrounding this matter and as highlighted, is improving security around the residue area perimeter. Ongoing monitoring of site access and security will also occur.
On a site tour, some members of the Group witnessed visible dust localised in the bauxite grinding area and this was due to a failure of dust suppression equipment, which has since been rectified. We recommend that improved dust control be evaluated and implemented for the bauxite stockpiles and in the bauxite grinding	A recent investigation was conducted at Wagerup to examine the cause of dust coming from the bauxite stockpiles and identify corrective actions. These include: - Road dust suppression trials - Update of procedure to ensure watering occurs between stockpiles and the

Working Group Final Outcomes	**Alcoa Response**
area.	conveyors when forecast wind is greater than 50 km/hour Make provisions for back-up to any truck/equipment failures preventing dust suppression in stockpile area The dust suppression system will be repositioned further upstream in the bauxite supply system to reduce dust produced at bauxite transfer points.
We recommend that the implementation of the Wagerup Action Plan (WAP) outcomes be incorporated in the ERMP.	The Wagerup Action Plan (WAP) addresses the Recommendations of the Wagerup Air Quality Review 2004. Several aspects of the WAP relate to atmospheric dispersion modelling, and have been incorporated into the modelling used in the ERMP (in particular Recommendations 16 and 17). See section 7.9 and8.3. The recommendation relating to the determination of emission rates form diffuse sources (Recommendation 7) has also been completed as part of the ERMP development. See section 7.9 and 8.3. The other recommendations relate to a range of issues including VOCs, dust, data integrity and new technology for measurement, in particular continuous monitoring and are being addressed on a planned basis, but are not yet complete. Implementation of the plan is incorporated in the Wagerup licence process and the

Working Group Final Outcomes	**Alcoa Response**
	progress against plan is being monitored by the Wagerup Tripartite Group.
We discussed possible alternative uses for residue and recognise that this is a long-term issue for residue management, and therefore did not cover in detail during this Working Group process. We refer this issue to the community group involved in the LTRMS, and in particular, the radiological council's review on the Bayer Process Radiological Evaluation Status Review (2004).	Alcoa will bring this to the attention of community members involved in long-term residue management planning once this process is established.
We would like to see Alcoa supplying sand from residue for road construction, in particular the 2007 Peel Deviation (Perth-Bunbury Highway).	Research into the use of sand for the construction of roads is ongoing. As part of this, testing to demonstrate a viable washing and separation process to produce a clean sand product for general purpose use is continuing through the Centre for Sustainable Resource Processing. A small wet magnetic separation plant has been set up by CSIRO and will be evaluated by mid 2005.
Water-specific outcomes	
We have examined water sourcing, usage and efficiency, quality and monitoring, recycling, geology, impacts and other measures and have come to the following outcomes:	
We received a comprehensive list of water supply options from various sources (including community suggestions) to satisfy the additional 4770 ML per annum maximum required for the expansion and considered the environmental, social and economic impacts of each. We request that Alcoa publish this list to the community.	A series of fact sheets will be produced for distribution in the community based on the key issues identified by the community members through the Working Group process. In addition, an Information Day is being planned for June 2005 to provide information to the wider communities about issues raised during the Working Group process.

Working Group Final Outcomes	**Alcoa Response**
The four short-listed water supply options for Wagerup Unit Three: • Harvey Main Drain – through increased harvesting of winter runoff; • Harvesting winter runoff from other agriculture drains in the area (i.e. South Samson drain, North Samson Drain, Waroona Main Drain); • Irrigation waters gained through efficiency measures; • Transfer a portion of the Alcoa farmlands Irrigation Water Entitlement. We recognise that Alcoa's preferred option is the Harvey Main Drain Pumpback, as it uses lower quality water that currently discharges to the estuary. In selecting the preferred option to satisfy their increased maximum water requirements of 4770 ML per annum, we request that Alcoa include consideration of • Future climatic change impact on water availability, • The water requirements of other users, • Ecological Water Requirements, • Use of water that is not valuable for some other use, • Water efficiency measures. We examined the use of saline water within the refinery process and heard that it was found to be unsuitable.	The parameters listed for consideration by the Working Group are discussed in section 8.5 of the ERMP.
We request that the ERMP confirm our understanding that none of the water supply options for the refinery will affect the drinking water supplies of Harvey, Yarloop and Waroona, as these have a different allocation from the Water and Rivers	The DoE representative verbally confirmed this assessment during the consultation process. However, the preferred water supply option will go through specific assessment as part of the Water & Rivers Commission licensing process, separate to

Working Group Final Outcomes	**Alcoa Response**
Commission.	this ERMP. A key part of this water licensing process is to ensure the licensed option will not impact on other high value uses, such as drinking water supply.
We recommend that Alcoa continue to pursue all water use efficiency options and opportunities including those both process and non-process related: • Vapour condensation recovery; • Non-evaporative cooling (e.g. Fin fan coolers and counter-current heat exchange); • Upgraded sprinkler and meteorological system; • Covers on water storage areas; • Alcoa farmlands On-Farm Irrigation Efficiency Water; • Harvey Water Off-farm Irrigation Efficiency Water; and • Supporting community efforts for efficient water use including education of employees.	Water use efficiency is a priority and will continue to be pursued. Please see section 8.5 for a discussion on water efficiency in relation to the proposal.
We request that Alcoa take all measures to prevent pollution or contamination of surface and ground water, and outline them in the ERMP.	The water quality management measures are summarised in section 8.6 and 8.7 of this ERMP.
We request that Alcoa prepare a fact sheet to distribute to the wider communities, about their water requirements and source options, and how this may affect other users.	A series of fact sheets will be produced for distribution in the community based on the key issues identified by the community members through the Working Group process. In addition, an Information Day is being planned for June 2005 to provide information to the wider communities about issues raised during the Working Group process.

Working Group Final Outcomes	**Alcoa Response**
We request the current water usage and increased water usage for mining be included in the ERMP.	Water usage for mining is managed through the MMPLG process. Please refer to section 4.3.1.
We request that Alcoa review the whole water quality monitoring program, including physical, chemical and biological parameters on site in the Environmental Review and Management Plan (ERMP), particularly freshwater sources at the refinery and downstream from Refinery.	Water quality monitoring undertaken for the Wagerup refinery includes requirements for the environmental licence and that proposed for other purposes. The water quality monitoring program associated with the ERMP assessment is provided in section 8.5.
We request a historical comparison between surface and groundwater quality, including physical, chemical and biological parameters, for the pre-refinery situation, present situation and expanded scenario, are included in the ERMP.	Refer to section 7.5
We request that Harvey Water and the Water Corporation endeavour to ensure that Drakesbrook and Waroona Dams have a minimum level at the end of summer to allow for maximum capacity at the end of winter.	Alcoa will advise Harvey Water and the Water Corporation of this request when the ERMP is submitted.