Review of Conditions for the Manufacture and Transport of Sodium Cyanide, Change to Environmental Conditions

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Australian Gold Reagents Pty Ltd

Section 46 Report and recommendations of the Environmental Protection Authority

Environmental Protection Authority
Perth, Western Australia
Bulletin 1132
May 2004

Environmental Impact Assessment Process Timelines

Date	Progress stages	Time (weeks)
24/11/2003	**Level of Assessment set (following any appeals upheld)**	**-**
2/2/2004	**Proponent Document Released for Public Comment**	**10 weeks**
1/3/2004	**Public Comment Period Closed**	**4 weeks**
15/3/2004	**Final Proponent response to the issues raised**	**2 weeks**
10/5/2004	**EPA report to the Minister for the Environment**	**8 weeks**

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Summary and recommendations

Australian Gold Reagents Pty Ltd (AGR) proposes a review of its Ministerial conditions relating to the manufacture, storage and transport of sodium cyanide in order to clarify their intent, remove obsolete or confusing aspects, update standard conditions and consolidate the relevant conditions into one Statement.

Section 46(3) of the *Environmental Protection Act 1986* requires the EPA to report to the Minister for the Environment on whether or not the proposed changes to conditions and procedures should be allowed. In addition, the EPA may make recommendations as it sees fit.

This report provides the EPA's advice and recommendations to the Minister for the conditions and procedures relevant to the proposal.

Conclusion

The EPA has considered the proposal by AGR entitled "Review of Conditions for the Manufacture and Transport of Sodium Cyanide" and has concluded that the proposed amendments to the Ministerial conditions will not compromise the EPA's objectives for the relevant environmental factors.

AGR is not proposing a change to any of its manufacturing, storage or transport operations. The review was essentially an administrative function focusing on the removal of Ministerial conditions and commitments that are now considered to be obsolete or manageable under other legislation. The EPA considers that most of AGR's conditions and commitments that specifically relate to public safety can be removed since this aspect of the operation is managed under legislation administered by the Department of Industry and Resources (DoIR). The EPA also considers that certain conditions and commitments relating to AGR's discharges to the environment are adequately covered under Part V of the EP Act and therefore need not be retained. The DoIR and the Department of Environment (DoE) were involved in the review and have no objection to the recommended draft consolidated Ministerial Statement (Appendix 4).

Recommendations

The EPA submits the following recommendations to the Minister for the Environment:

1. That the Minister notes that this report is pursuant to Section 46(3) of *the Environmental Protection Act 1986* and thus is limited to consideration of proposed changes to the original conditions.
2. The Minister notes that the proposed change is to simplify the Ministerial conditions by, clarifying their intent, removing obsolete or confusing aspects, updating standard conditions and consolidating the conditions into the one Statement.
3. The EPA recommends that the Minister considers the report on the relevant environmental factors as set out in Section 3.
4. That the Minister notes that the EPA has concluded that the modified proposal can be managed to meet the EPA's objectives, and thus not impose an unacceptable impact on the environment provided there is satisfactory implementation by the proponent of the amended conditions, including the proponent's commitments, as set out in Section 4.
5. The Minister imposes the amended conditions, commitments and procedures recommended in Appendix 4 of this report.

Conditions

The EPA recommends that the following conditions, which are set out in detail in Appendix 4, be imposed if the proposal by AGR is approved for implementation:

The existing Environmental Conditions applied to the project (Ministerial Statement 006**,** published on 15 October 1987: Ministerial Statement 073, published on 24 August 1989: Ministerial Statement 099, published on 1 June 1990: Ministerial Statement 129, published on 15 March 1991: Ministerial Statement 347, published on 17 March 1994: Ministerial Statement 384, published on 12 May: Ministerial Statement 579, published on 6 December 2001: Ministerial Statement 602, published on 2 August 2002), be modified (as shown in Appendix 4) in order to simplify the Ministerial conditions by, clarifying their intent, removing obsolete or confusing aspects, updating standard conditions and consolidating the conditions into the one Statement.

Contents

1. Introduction and background

The Minister for the Environment has requested the Environmental Protection Authority (EPA) to consider and provide advice under Section 46(3) of the *Environmental Protection Act 1986* (EP Act) on AGR's proposal to review and consolidate its Ministerial conditions that relate to the manufacture, storage and transport of sodium cyanide.

AGR is a joint venture between CSBP Limited (CSBP) and Coogee Chemicals Pty Ltd which was formed to manufacture and market sodium cyanide. AGR's facility is located at CSBP's fertiliser and chemicals complex in Kwinana (Figures 1 and 2). AGR's operations include two liquid sodium cyanide plants and a downstream solid sodium cyanide processing plant. The liquid sodium cyanide plants produce sodium cyanide as a 30% (by weight) solution. The plants have a combined production capacity of 50,000 tonnes per annum (tpa) of pure (100%) sodium cyanide, with the potential to expand to 70,000 tpa (35,000 tpa per plant). The solid sodium cyanide processing plant is capable of producing 25,000 tpa of solid sodium cyanide briquettes from liquid sodium cyanide.

Liquid sodium cyanide is transported in specially designed portable containers (isotainers) to WA mine sites by rail or along approved road routes. The solid sodium cyanide briquettes are packaged in Intermediate Bulk Containers (IBCs) and placed in sea containers (seatainers) or isotainers and transported to the Port of Fremantle, WA Goldfields or interstate.

AGR committed to undertake a review of its Ministerial conditions in a previous assessment (Transport of Solid Sodium Cyanide, Change to Environmental Conditions - Bulletin 1047).

Further details of the proposal are presented in Section 2 of this Report. Section 3 discusses environmental factors relevant to the proposal. The Conditions and procedures to which the proposal should be subject, if the Minister determines that it may be implemented, are set out in Section 4. Section 5 presents the EPA's conclusions and Section 6, the EPA's Recommendations.

A list of people and organisations that made submissions is included in Appendix 1 and References are listed in Appendix 2. The most relevant Environmental Condition Statements are presented in Appendix 3 (Ministerial Statement No. 579, published on 6 December 2001 and Ministerial Statement No. 602, published on 2 August 2002). The recommended conditions and procedures and proponent's commitments are provided in Appendix 4.

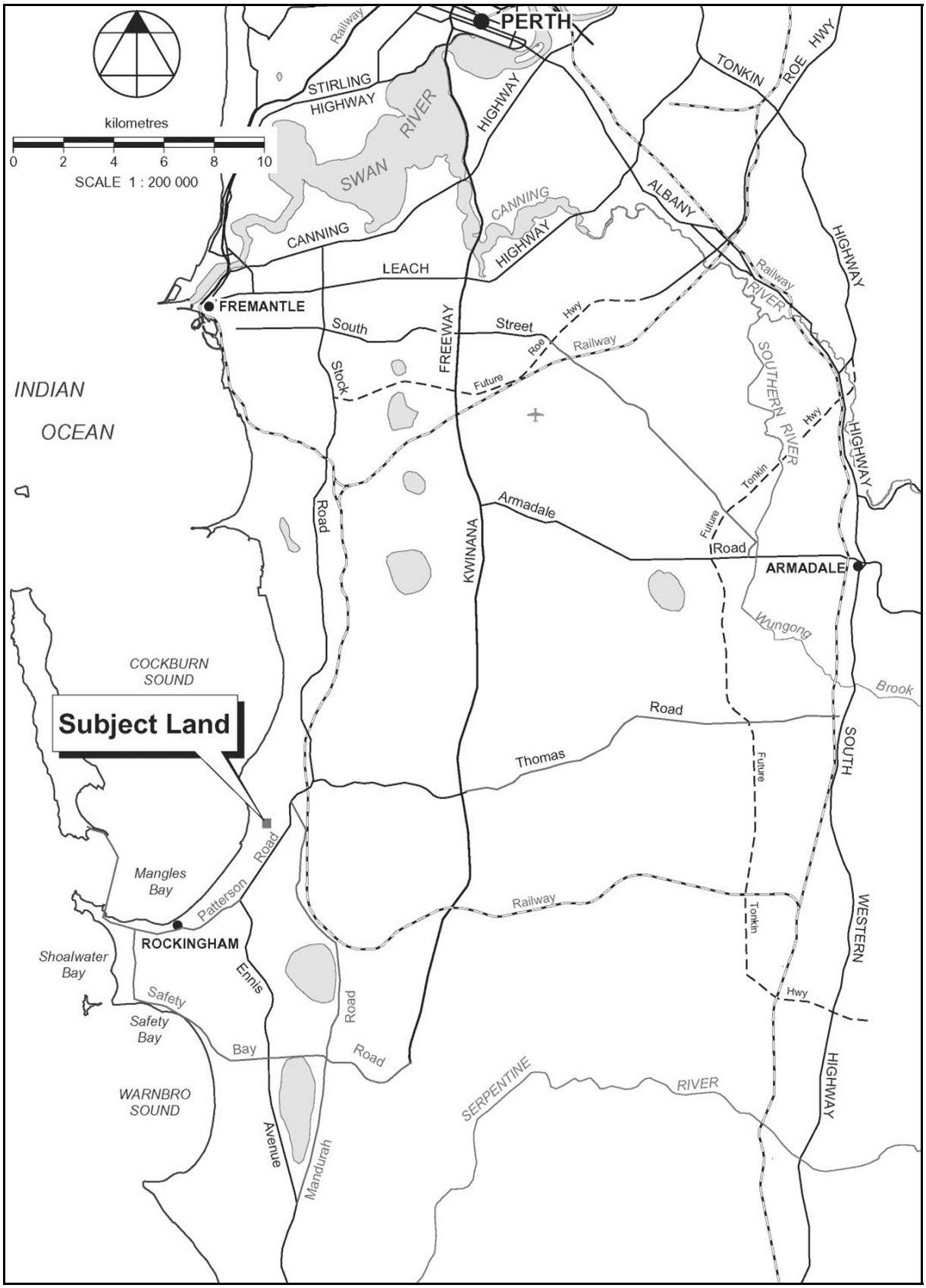

Figure 1: Location of AGR's Facility (Source: ATA Environmental, 2003)

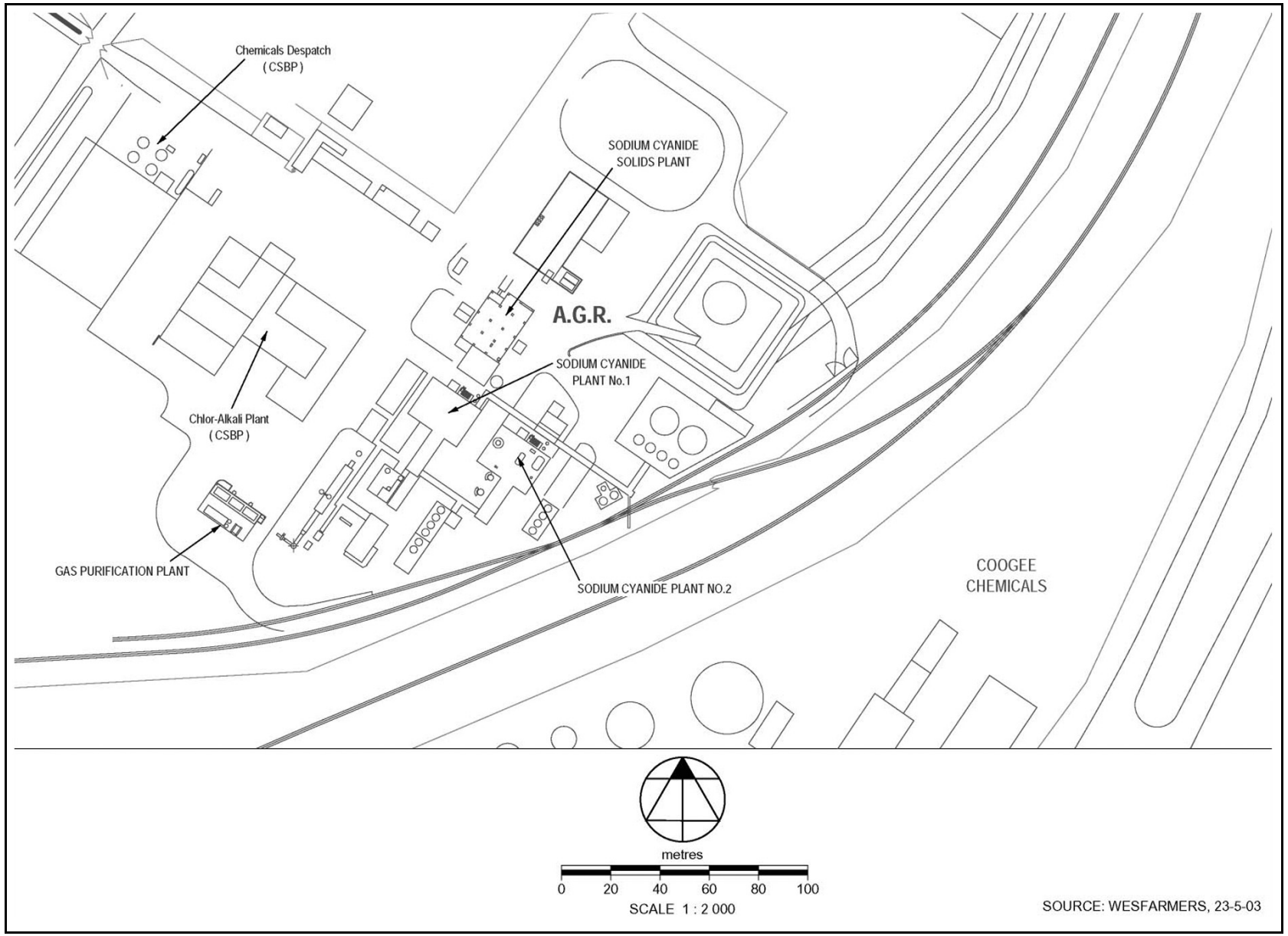

Figure 2: Site Plan of AGR's Facility (Source: ATA Environmental, 2003)

2. The proposal

AGR proposes a review and consolidation of its Ministerial conditions under the EP Act for the manufacture, storage and transport of sodium cyanide. The purpose of the review is to simplify the Ministerial conditions by clarifying their intent, removing obsolete or confusing aspects, updating standard conditions and consolidating the conditions into the one Statement. The details are described in AGR's Section 46 document *Review and Consolidation of Environmental Commitments for Australian Gold Reagents Pty Ltd Sodium Cyanide Manufacture and Transport* (ATA Environmental, 2003). The proponent is not proposing a change to its operations as part of this review.

AGR's sodium cyanide manufacturing and transport operations has been the subject of numerous proposals and changes of proposal since the initial assessment in 1987. The following Ministerial Statements have been issued:

Statement 006: published on 15 October 1987 – Proposed 15,000 tpa sodium cyanide plant and transport of sodium cyanide by rail (see Bulletin 284).

Statement 073: published on 24 August 1989 – Sodium cyanide plant extensions (duplication of existing plant to permit total production of 30,000 tpa) (see Bulletin 387).

Statement 099: published on 1 June 1990 – Sodium cyanide plant extension to 40,000 tpa (debottlenecking) (see Bulletin 427). This statement supersedes statements 6 and 73.

Statement 129: published on 15 March 1991 – Section 46 Amendment to alter Condition 5 of statement 99 (approved change to condition 5 to allow debottlenecking of existing stage 1 plant to 20,000 tpa) (see Bulletin 450).

Statement 347: published on 17 March 1994 – Section 46 Amendment to alter conditions 1 and 5 of statement 99 (amendment to debottleneck each plant to 35,000 tpa when duplicate plant complete) (see Bulletin 727).

Statement 384: published on 12 May 1995 – Section 46 Amendment to replace the transportation requirements of previous statements (this statement replaced all previous conditions and commitments which relate to the transport of sodium cyanide, replacing rail only option to a preferred rail option) (see Bulletin 772).

Statement 579: published on 6 December 2001 – Section 46 Amendment for the addition of downstream solids plant to existing AGR liquid sodium cyanide plants at Kwinana (see Bulletin 1028).

Statement 602: published on 2 August 2002 – Section 46 Amendment to transport solid sodium cyanide from AGR's operations at Kwinana to the Fremantle Port (see Bulletin 1047).

Summary Information on Previous Proposals

The following summary of the previous proposals relating to AGR's operations gives an overview of the changes to its operations over the past 15 years. More detailed information can be obtained in the relevant environmental review documents and EPA bulletins.

Bulletin 274 (April 1987)

AGR proposed to construct and operate a 15,000 tpa sodium cyanide plant at Kwinana, and transport the sodium cyanide as a 30% solution by road to the gold mines in Western Australia.

The EPA concluded that the individual risk levels were within its existing published guidelines and therefore the risk associated with the sodium cyanide plant was acceptable to the EPA. However, the EPA recommended that the proposal as put forward in the Public Environmental Review (PER) (Kinhill Stearns, 1986) not be approved on the grounds that transportation by road of sodium cyanide in solution through a defined area of concern (within 50 km of the Perth GPO as well as designated surface and groundwater catchment areas) was environmentally unacceptable. The EPA made a number of recommendations should the Government decide that the project should proceed.

Bulletin 284 (July 1987)

AGR submitted a detailed Notice of Intent (Kinhill, 1987) which proposed to transport sodium cyanide solution in tank containers (iso-tainers) by rail from the proposed plant site at Kwinana to rail terminals near the customer's mine sites. At the rail terminals the iso-tainers would be lifted onto road vehicles for delivery to the mine sites.

The EPA concluded that it was environmentally acceptable to transport sodium cyanide solution by rail through the defined area of concern, to rail terminals that are as close as practicable to the intended markets, subject to the implementation of the proponent's commitments and the recommendations made in Bulletin 284.

Bulletin 387 (May 1989)

AGR proposed to increase the production of sodium cyanide from 15,000 tpa to 30,000 tpa by constructing a duplicate sodium cyanide solution plant on its site at Kwinana.

The EPA concluded that the proposal as described in the PER (Cremer & Warner, 1988) was environmentally acceptable subject to its recommendations in Bulletin 387 and the proponent's management commitments. The EPA made a number of recommendations with respect to risk management, including safety reviews during the life of the plant, maintenance of process equipment, instrumentation and alarm systems, revision of site emergency plans, revision of previous construction and operational stage management plans and the installation of remotely operated fast action safety valves in the ammonia pipeline.

Bulletin 427 (February 1990)

AGR proposed to increase the capacity of its existing sodium cyanide solution plant at Kwinana from 15,000 tpa to 40,000 tpa. The expansion was to be achieved by doubling the number of reactors and optimising the capacity of major plant items by removing engineering obstacles.

The EPA concluded that the proposal to debottleneck the existing sodium cyanide plant and previously approved duplicate plant, from a total capacity of 30,000 tpa of sodium cyanide to 40,000 tpa, was environmentally acceptable and recommended that the proposal could proceed subject to the same conditions set for the previous assessment (Statement 073).

Bulletin 450 (November 1990)

The Minister for the Environment requested the EPA to inquire into and report on a Change to Condition 5 of Ministerial Statement No. 099 which relates to the timing of the debottlenecking of the existing plant (stage 1) and the approved, but as yet unbuilt, duplicate sodium cyanide plant (stage 2).

The EPA's view was that it was environmentally acceptable to debottleneck stage 1 of AGR's sodium cyanide plant, without further constraint associated with the key emergency response provisions of the Kwinana Integrated Emergency Management System being in place.

Bulletin 727 (December 1993)

AGR requested changes to Condition 1 and 5 of Ministerial Statement 129. Condition 1 restricted the original plant and the approved "unbuilt" duplicate plant from each producing more than 20,000 tpa of sodium cyanide. The proponent proposed to debottleneck both plants so that each plant can produce up to 35,000 tpa. The second change related to Condition 5 which restricted the duplicate plant from being debottlenecked until the key emergency response provisions of the Kwinana Integrated Emergency Management System were in place.

The EPA considered debottlenecking both the original and duplicate (unbuilt) sodium cyanide plants to increase the capacity of each plant up to 35,000 tpa to be environmentally acceptable. The ammonia feed pipe, the main generator of risk, was to be re-engineered in a manner which would lower the overall individual and cumulative risk. The EPA considered that the coordination of emergency response was an issue for Government and not individual industries and therefore recommended that Condition 5 be deleted. The EPA also recommended that the standard implementation and compliance auditing conditions be included in the conditions for the proposal.

Bulletin 772 (March 1995)

AGR sought an amendment to the Ministerial Conditions, to transport sodium cyanide (30% solution) by road from Kwinana to mine sites when necessary as detailed in the PER (Brian O'Brien, 1994). AGR stated that rail was the preferred transport option and road transport was only to be used when necessary.

The EPA considered that the proponent had adequately addressed the issues associated with the transport of sodium cyanide solution along the proposed road routes and that the proposal was acceptable on environmental grounds. The EPA considered that the proponent had established an acceptable sodium cyanide solution handling and transport management system based on best industry practices. The EPA recommended that the proponent should consult with relevant government authorities to ensure that all specific requirements are fulfilled in the transport and emergency response procedures before commencing to transport sodium cyanide solution along the proposed road routes.

Bulletin 1028 (September 2001)

AGR submitted a proposal (ATA Environmental, 2001) to construct a downstream processing plant capable of producing 25,000 tpa of solid sodium cyanide for export overseas, interstate or to remote sites within Western Australia.

The EPA considered that the proponent had demonstrated that the addition of the solid sodium cyanide plant to AGR's existing operation could be managed in an environmentally acceptable manner subject to amending Ministerial Statement 347 to incorporate the proponent's supplementary commitments.

Bulletin 1047 (April 2002)

AGR submitted a proposal (AGR, 2002) to transport solid sodium cyanide from its operations at Kwinana to the North Fremantle Port Wharf for export. AGR also proposed to transport solid sodium cyanide on established transport routes for liquid sodium cyanide.

The EPA concluded that the proposal by AGR could be managed to meet the EPA's objectives for public and environmental risk. The EPA was satisfied with AGR's commitments to:

- Update its Transport Management Plan;

- Review the Fremantle Port's Marine Safety and Environmental Management Plan;
- Audit the stevedores operations; and
- Verify control measures and assumptions identified in the risk assessment (Det Norske Veritas, 2001).

The EPA also considered the transportation of solid sodium cyanide on routes approved for liquid sodium cyanide to be acceptable since DoIR (formerly Department of Mineral and Petroleum Resources) had no objections and advised that it considered the risk to the community to be no greater than that posed by the transport of liquid sodium cyanide.

AGR's Operations

The key characteristics of AGR's operations are tabled below and include two liquid sodium cyanide plants, a solid sodium cyanide plant and the road and rail transport of sodium cyanide. Additional information is provided in Section 1 of the proponent's Section 46 Environmental Review Document (ATA Environmental, 2003)

Table 1: Key Characteristics of AGR's sodium cyanide operations

Characteristic	Description
General	
Location	Kwinana Beach Road – Kwinana South east corner of the CSBP site and west of Coogee Chemicals – Kwinana Industrial Area.
Disturbance Areas	
Plant areas	Approx 4 hectares
Total area disturbed	4.3 hectares
Liquid Sodium Cyanide Plants	
Plant 1 Commissioned	1988
Plant 2 Commissioned	1998
Plant facilities (x2)	Gas reactor, cooler, absorber, distillation column, and incinerator.
Process Description	• Natural gas, air and ammonia are mixed in the correct ratio; • The mixed gases enter a high temperature reactor where hydrogen cyanide is produced using a catalyst; • Caustic soda is then used to absorb the hydrogen cyanide gas in an absorption tower to produce a 30% sodium cyanide solution; • The gas leaving the absorption tower is burnt in a continuously operating incinerator.
Production Capacity (Plants 1 & 2 combined)	Capacity to produce a combined total of 70,000 tpa sodium cyanide (expressed as 100% sodium cyanide) as a 30% solution
Inputs (nominal)	• 2,200 TJ per year natural gas • 40,000 t per year ammonia • 60,000 dmt per year caustic soda • 24,500 MWhr electricity
Outputs (nominal)	• 14,500 t of steam • 60,000 MWhr electricity
Storage – liquid sodium cyanide	• steel tanks with total capacity of 5,500 m^3 (2,000 t of 100% sodium cyanide) on site. • Up to 140 t in ISO-tainers in transit
Gaseous Emissions	• Tail gases from the incinerator; • Discharge gases from the start-up blower; and • Discharge gases from the shut down stack
Liquid Effluent Discharges	Up to 16 m^3/hr cooling tower blowdown Stormwater

Characteristic	Description
Solid Sodium Cyanide Plant	
Plant Commissioned	2002
Plant Facilities	Two batch evaporators, vacuum pump incorporating a scrubber, condensate tank, slurry tank, centrifuge, spin flash dryer incorporating scrubber system, powder hopper and compacting machine.
Process Description	• The solids plant receives a continuous feed of sodium cyanide solution produced at the liquid sodium cyanide plants which will be directed to one of two batch evaporation units. • Following concentration by evaporation, the sodium cyanide crystals is centrifuged, dried and compressed into briquettes. • The briquettes are then packaged and transported.
Production Capacity	Nominal 25,000 tpa
Inputs	30% sodium cyanide solution
Outputs	Briquettes containing >97% sodium cyanide.
Storage	Area designed to store a maximum of 3,000 t solid sodium cyanide. Solid sodium cyanide will be stored in IBCs packed into sea containers or a warehouse. Small quantities may be stored in ISO-tainers (equipped to allow injection of water to dissolve the sodium cyanide at the mine site).
Gaseous Emissions	Ammonia, hydrogen cyanide and sodium cyanide.
Liquid Effluent Discharges	• 10 m^3/hour wastewater, containing up to 12 kg/day of nitrogen. • All liquid effluent is treated and then pumped to CSBP's effluent pond.
Transport	
Liquid Sodium Cyanide	By road and rail. *The Dangerous Goods (Transport) (Road and Rail) Regulations 1999*, Australian Dangerous Goods Code and recommendations of the Department of Industry and Resources Guidance Note T117 "Recommendations for Route Selection for the Transport of Dangerous Goods in the Perth Metropolitan Area" are adhered to at all times for transport and packaging.
Solid Sodium Cyanide	The *Dangerous Goods (Transport) (Road and Rail) Regulations 1999*, Australian Dangerous Goods Code and recommendations of the Department of Industry and Resources Guidance Note T117 "Recommendations for Route Selection for the Transport of Dangerous Goods in the Perth Metropolitan Area" are adhered to at all times for transport and packaging.

Key:
dmt – dry metric tonne
kg/day – kilograms per day
m^3 – cubic metres
m^3/hr – cubic metres per hour
MWhr – megawatt hours
t - tonnes
Tj – terajoules
tpa – tonnes per annum

Consultation

AGR consulted with DoIR, DoE and a range of other stakeholders, including the Fire and Emergency Services Authority of Western Australia, Kwinana Local Emergency Management Committee, Kwinana Industries Public Safety Liaison Group, Australian Western Railroad, Fremantle Port Authority, Town of Kwinana and AGR's industrial neighbours, during the review of their environmental commitments. AGR also convened a public information meeting in October 2003 which was attended by approximately 30 people

including industrial and residential neighbours and representatives from state and local government departments.

The EPA released the proponent's Section 46 document (ATA Environmental, 2003) for a 4-week public review period on 2 February 2004. Two public submissions were received, but there were no specific objections to the proposal. The City of Fremantle requested to be consulted during the review of the options to transport solid sodium cyanide from Kwinana to the Fremantle Port. A member of the public supported the review and raised a number of issues that relate to AGR's licence under Part V of the EP Act.

3. Relevant environmental factors

Section 46(3) of the *Environmental Protection Act 1986* requires the EPA to report to the Minister for the Environment on whether or not the proposed changes to conditions or procedures should be allowed. In addition, the EPA may make recommendations as it sees fit.

The EPA considered the following environmental factors in its previous assessments of AGR's sodium cyanide operations:

- Off-site individual risk;
- Public health and safety;
- Ecological risk;
- Emergency Response Management;
- Wastewater discharge to Cockburn Sound;
- Emissions to air; and
- Noise.

The above environmental factors were not revisited as part of this review since AGR is not proposing a change to any of its manufacturing, storage or transport operations. The review is essentially an administrative function focusing on the removal of Ministerial conditions and commitments that are now considered to be obsolete or manageable under other legislation. The draft recommended consolidated Ministerial Statement following the review is shown in Appendix 4. The most relevant Ministerial Statements are presented in Appendix 3. The complete set of Ministerial Statements are presented in the proponent's Section 46 document (ATA Environmental, 2003).

Representatives from DoIR and DoE were involved in the review of AGR's conditions. DoIR provided advice on aspects of AGR's manufacturing and transport operations which are covered under its legislation. The proposed changes to the Ministerial conditions relate to most of the above environmental factors, but are best addressed under the headings of "Public Health and Safety" and "Plant Discharges" i.e. wastewater discharge to Cockburn Sound and emissions to air.

Review of Ministerial Conditions

1. Public Health and Safety

AGR's Ministerial conditions relating to the manufacture, storage and transport of sodium cyanide were initially set prior to:

- the declaration by the National Occupational Health and Safety Commission of the *Control of Major Hazard Facilities National Standard* in 1996; and
- the *Dangerous Goods (Transport) Act 1998* and the *Dangerous Goods (Transport) (Road and Rail) Regulations 1999.*

Sodium Cyanide Manufacturing Facility

AGR's sodium cyanide facility is a Major Hazard Facility and therefore regulated under the *Explosives and Dangerous Goods Act 1961* and the *Explosives and Dangerous Goods (Dangerous Goods Handling and Storage) Regulations 1992* which are administered by DoIR. AGR is also required to develop a Safety Report that meets the requirements of the *National Standard for the Control of Major Hazard Facilities [NOHSC:1014(2002)]* to the satisfaction of the Chief Inspector of Explosives and Dangerous Goods. The sodium cyanide facility (two liquid sodium cyanide plants and a solid sodium cyanide processing plant) meets the EPA's off-site individual risk criteria (EPA, 2001).

Transport and Storage of Sodium Cyanide

Sodium cyanide is a class 6.1 Dangerous Goods. The transport and storage of dangerous goods is under the control of the Chief Inspector of Explosives and Dangerous Goods and regulated under the *Dangerous Goods (Transport) Act 1998* and the *Dangerous Goods (Transport) (Road and Rail) Regulations 1999*. AGR's Transport Management Plan (TMP) (CSBP, 2002) contains detailed information and procedures, including emergency procedures, for the management and transport of sodium cyanide.

1. Rail Transport

In 1995, AGR obtained EPA approval to transport liquid sodium cyanide by road from Kwinana when an efficient rail service was not available (EPA, 1995). The proponent requested approval to road transport liquid sodium cyanide under the following circumstances (Brian O'Brien, 1994):

- Temporary interruption of rail service;
- Termination of scheduled rail services; or
- Where gold mines cannot be serviced economically and/or efficiently by rail from Kwinana.

Rail is currently the normal transport option for the transport of sodium cyanide to Kalgoorlie, although road transport is used in the event of a rail outage (CSBP, 2002). AGR is currently the only company that transports liquid sodium cyanide in Western Australia.

2. Road Transport

Route selection for the road transport of dangerous goods is under the control of the Chief Inspector of Explosives and Dangerous Goods. The approved routes for the road transport of AGR's liquid sodium cyanide are outlined in the TMP (CSBP, 2002) and are consistent with DoIR's Guidance Note T117: "Recommendations for Route Selection for the Transport of Dangerous Goods in the Metropolitan Area". AGR has committed to liaise with local government authorities, relevant government departments, state emergency authorities and the local advisory committees before transport commences along new approved transport routes, in order to address local and specific issues, including setting up emergency plans and training programs. AGR has also committed to review the TMP every two years.

Solid sodium cyanide is transported by road or rail to mine sites throughout Western Australia by AGR and its competitors. AGR has short term approval under the EP Act to road transport solid sodium cyanide from Kwinana to Fremantle Port, subject to future rail improvements. AGR is required to review the transport options for this route in the near future (condition 6).

Assessment

The Major Hazards Technical Services Branch of DoIR reviewed AGR's Section 46 document (ATA Environmental, 2003) and has no objections to the removal of Ministerial conditions that relate to the storage and transport of sodium cyanide and emergency planning and preparedness, since its legislation specifically covers these areas. DoIR also advised that it has no objections to the removal of conditions that relate to plant safety since this is broadly addressed within AGR's Safety Report and/or the relevant Australian Standards. However, DoIR requested a Ministerial condition under the EP Act requiring AGR to develop and operate in accordance with AGR's Safety Report (see condition 9). DoIR expects that the enforcement issue will be addressed with the proclamation of the New Dangerous Goods Safety Bill which is currently before the Western Australian Parliament.

The EPA considers that matters specifically related to plant safety, the safe transport and storage of sodium cyanide and emergency planning and preparedness is more appropriately managed under DoIR's legislation and should not be partially duplicated in Ministerial conditions under Part IV of the EP Act. However, the EPA recommends, on advice from DoIR, that a condition be included that requires AGR to develop and operate in accordance with its Safety Report.

The EPA recommends that the Ministerial condition that requires AGR to use rail as the preferred transport option for liquid sodium cyanide be retained since this is not a requirement under any other legislation. The EPA notes that AGR has short term approval under the EP Act to road transport solid sodium cyanide from Kwinana to Fremantle Port, subject to future rail improvements. The EPA recommends that no other limitations (under Part IV of EP Act) be placed on AGR in relation to the transport of solid sodium cyanide since it is adequately controlled by legislation administered by DoIR.

2. Plant Discharges

AGR is required to meet licence limits for the gaseous discharge of total cyanide, ammonia and oxides of nitrogen from the incinerator stacks in each liquid sodium cyanide plant. Emission limits are also set for ammonia and total cyanide from the solids plant stack.

The wastewater from AGR's holding tank discharges to CSBP's tertiary containment system and the combined effluent is then discharged to Cockburn Sound. AGR's wastewater is

required to meet licence limits for cyanide and pH only. CSBP's effluent discharge, which includes AGR's contribution, has to meet licence limits for other parameters.

Assessment

The EPA recommends the removal of Ministerial conditions that relate to gaseous emissions from the sodium cyanide plants since the emissions are regulated under Part V of the EP Act. The EPA recommends that AGR's commitment to meet specific limits for cyanide, copper and nitrogen in its wastewater discharge be retained given that this effluent does not discharge directly to the environment and licence limits have not been set on the effluent for nitrogen and copper. The DoE reviewed AGR's report (ATA Environmental, 2003) and advised that it has no objections to the proposed changes to the conditions and commitments.

4. Conditions and commitments

Section 46(3) of the *Environmental Protection Act 1986* requires the EPA to report to the Minister for the Environment on whether or not the proposed changes to conditions or procedures should be allowed. In addition, the EPA may make recommendations as it sees fit.

In developing recommended conditions for each project, the EPA's preferred course of action is to have the proponent provide an array of commitments to ameliorate the impacts of the proposal on the environment. The EPA acknowledges the proponent's intent of the commitments, however the recommended draft conditions in this case supersede the requirement for any additional commitments.

4.1 Recommended commitments

Australian Gold Reagents Pty Ltd has made changes to commitments to reflect discussions with the DoE which have been part of the assessment process. The proponent's commitments as set out in the Section 46 document (ATA Environmental, 2003) and subsequently modified, as shown in Appendix 4, should be made enforceable conditions.

4.2 Recommended conditions

Having considered the proponent's commitments and the information provided in this report, the EPA recommends that the conditions as presented in Appendix 4 be imposed if the proposed review by Australian Gold Reagents Pty Ltd is approved.

The existing Ministerial Conditions applied to the project (Ministerial Statement 006**,** published on 15 October 1987: Ministerial Statement 073, published on 24 August 1989: Ministerial Statement 099, published on 1 June 1990: Ministerial Statement 129, published on 15 March 1991: Ministerial Statement 347, published on 17 March 1994: Ministerial Statement 384, published on 12 May: Ministerial Statement 579, published on 6 December 2001: Ministerial Statement 602, published on 2 August 2002), be modified (as shown in Appendix 4) in order to simplify the Ministerial conditions by, clarifying their intent, removing obsolete or confusing aspects, updating standard conditions and consolidating the conditions into the one Statement.

5. Conclusions

The EPA has considered the proposal by AGR entitled "Review of Conditions for the Manufacture and Transport of Sodium Cyanide" and has concluded that the proposed amendments to the Ministerial conditions will not compromise the EPA's objectives for the relevant environmental factors.

AGR is not proposing a change to any of its manufacturing, storage or transport operations. The review was essentially an administrative function focusing on the removal of Ministerial conditions and commitments that are now considered to be obsolete or manageable under other legislation. The EPA considers that most of AGR's conditions and commitments that specifically relate to public safety can be removed since this aspect of the operation is managed under legislation administered by the Department of Industry and Resources (DoIR). The EPA also considers that certain conditions and commitments relating to AGR's discharges to the environment are adequately covered under Part V of the EP Act and therefore need not be retained. The DoIR and the Department of Environment (DoE) were involved in the review and have no objection to the recommended draft consolidated Ministerial Statement (Appendix 4).

6. Recommendations

The EPA submits the following recommendations to the Minister for the Environment:

1. That the Minister notes that this report is pursuant to Section 46(3) of *the Environmental Protection Act 1986* and thus is limited to consideration of proposed changes to the original conditions.
2. The Minister notes that the proposed change is to simplify the Ministerial conditions by clarifying their intent, removing obsolete or confusing aspects, updating standard conditions and consolidating the conditions into the one Statement.
3. The EPA recommends that the Minister considers the report on the relevant environmental factors as set out in Section 3.
4. That the Minister notes that the EPA has concluded that the modified proposal can be managed to meet the EPA's objectives, and thus not impose an unacceptable impact on the environment provided there is satisfactory implementation by the proponent of the amended conditions, including the proponent's commitments, as set out in Section 4.
5. The Minister imposes the amended conditions, commitments and procedures recommended in Appendix 4 of this report.

Appendix 1
List of Submitters

1. City of Fremantle
2. Mr O R Jones

Appendix 2
References

AGR, 2002. *Transport of Solid Sodium Cyanide from Kwinana to the Fremantle Port*. Perth, Western Australia.
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Appendix 3
Statement of Environmental Conditions of Approval No. 579 (6 December 2001)
Statement of Environmental Conditions of Approval No. 602 (2 August 2002)

Statement No.

MINISTER FOR THE ENVIRONMENT AND HERITAGE 000579

STATEMENT TO AMEND CONDITIONS APPLYING TO A PROPOSAL (PURSUANT TO THE PROVISIONS OF SECTION 46 OF THE ENVIRONMENTAL PROTECTION ACT 1986)

SODIUM CYANIDE (LIQUID) PLANT, EXPANSION TO 40 000 TPA (DEBOTTLENECKING), KWINANA
(Includes Downstream Solids Plant)

Proponent: Australian Gold Reagents Pty Ltd

Proponent Address: PO Box 345, Kwinana WA 6167

Assessment Number: 1390

Previous Assessment Numbers: 300, 300-1 and 846

Previous Statement Numbers: Statement No. 099 published on 1 June 1990,
Statement No. 129 published on 15 March 1991, and
Statement No. 347 published on 17 March 1994.

Report of the Environmental Protection Authority: Bulletin 1028

Previous Reports of the Environmental Protection Authority: Bulletins 427, 450 and 727

The implementation of this proposal to which the above reports of the Environmental Protection Authority relate is subject to the conditions and procedures contained in Ministerial Statements Nos. 099 (1 June 1990), 129 (15 March 1991) and 347 (17 March 1994), as amended by the following:

Condition 1A (Proponent Commitments) of Statement No. 347 is deleted and the following condition is inserted:

1A Proponent Commitments

The proponent has made a number of environmental management commitments in order to protect the environment.

Published on

- 6 DEC 2001

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E-MAIL: judy-edwards@dpc.wa.gov.au

In implementing the proposal, including the modifications to allow each plant to produce up to 35, 000 tpa, and to produce solid sodium cyanide, as reported on in Environmental Protection Authority Bulletins 727 and 1028, respectively, the proponent shall fulfil the commitments made on 28 March 1990 and those made on 12 November 2001. (Copies of both the commitments of 28 March 1990 and 12 November 2001 are attached).

Dr Judy Edwards MLA
MINISTER FOR THE ENVIRONMENT AND HERITAGE

- 6 DEC 2001

Proponent's Consolidated Environmental Management Commitments

28 March 1990

&

12 November 2001

SODIUM CYANIDE (LIQUID) PLANT, EXPANSION TO 40,000 TPA (DEBOTTLENECKING), KWINANA (1390)

(Includes Downstream Solids Plant)

AUSTRALIAN GOLD REAGENTS PTY LTD

SODIUM CYANIDE PLANT - EXPANSION TO 40 000 tpa (DEBOTTLENECKING)

SUMMARY OF MANAGEMENT COMMITMENTS

The commitments which the proponent has made to environmental management during the design, construction and operation of the expanded facilities are as follows:

1. Prior to implementing any modifications to the design of the existing plant, the following safety checks will be undertaken:

   (1) referral of the proposed modification to the process licensor, Roehm GmbH;

   (2) liaison with the risk consultant on the proposed changes if they are likely to affect the risk analysis; and

   (3) HAZOP analysis of the proposed modifications to the plant design.

2. Construction of the proposed expansion will be undertaken in accordance with a Construction Stage Management Report similar to that prepared for the existing plant, but recognising the potential hazards of the existing plant, together with relevant conditions imposed by the Environmental Protection Authority.

3. All construction materials and practices will be in accordance with the relevant Australian codes and international standards where appropriate.

4. The plant design will ensure that emissions of nitrogen oxides during normal operating conditions will be within the National Health and Medical Research Council (NH&MRC) recommended guidelines and will also comply with guidelines adopted by the Victorian Environment Protection Authority.

5. Safety features incorporated in the existing plant will be incorporated in the expanded facilities.

6. Wastewater from the plant will be managed according to the wastewater management strategy approved by the Environmental Protection Authority for the existing plant.

7. The process and storage areas will be sealed and bunded so that any washings, contaminated stormwater run-off or spills will be collected and directed to the wastewater treatment plant sump, and analysed and treated prior to disposal. Any discharge of treated wastewater into Cockburn Sound will comply with the criteria specified in Bulletin No. 103 or the terms of the Environmental Protection Authority licence.

8. Approval for any additional storage of sodium cyanide will be sought from the Chief Inspector, Explosives and Dangerous Goods, Department of Mines.

9. A fire protection system will be incorporated in the expanded facilities in accordance with the requirements of the plant design and the Western Australian Fire Brigades Board. CSBP works personnel will be trained in the appropriate fire-fighting techniques. In addition to the fire-fighting capability of CSBP's Kwinana works, the fire-fighting co-operative established by the industrial operators in the Kwinana district will be available for emergency assistance.

10. All employees will be trained in the safe work practices and emergency procedures appropriate to the operation of the plant and handling of all associated materials. The management structure for the expanded facilities will incorporate at least two tiers of personnel technically qualified to manage hazardous chemical operations.

11. On-site emergency facilities at CSBP's Kwinana works will continue to include a dedicated emergency response vehicle, fire tender and an ambulance at all times, and an occupational health sister will be in attendance during normal working hours.

12. A detailed operating manual has been prepared for the existing plant from information supplied by the licensor, covering all process work, including start-up, shut-down, plant testing, inspection and emergency action. The procedures manual will be amended as necessary to include the expanded facilities.

13. The proponent will arrange for observers from the licensor to be at the plant during commissioning of the expanded facilities if it is deemed necessary by the licensor and the proponent.

14. The expanded facilities and any interconnections to the existing plant will be subject to a full HAZOP study and follow-up prior to commissioning.

15. Stocks of neutralizing agent (ferrous sulphate) are located along the transport routes at agreed locations. They will be inspected regularly to ensure that they are kept in good order.

16. Emergency response practice sessions will take place on a basis agreed with the relevant authorities.

17. The plant operator will maintain a dedicated emergency response vehicle at the Kwinana works and this will be available to service any off-site incident involving the transport of sodium cyanide.

18. Upon commissioning, monitoring of the existing plant will be undertaken in accordance with a comprehensive Environmental Monitoring and Management Programme, and the proposed expansion will be incorporated into this Environmental Monitoring and Management Programme to the satisfaction of the Environmental Protection Authority.

19. Liaison with local Shires, the Environmental Protection Authority, the Department of Mines, Westrail and counter-disaster groups will occur as appropriate in regards to proposed changes to the agreed transport routes or the addition of new market areas.

20. The proponent will prepare a Total Hazard Control Plan to the satisfaction of the Chief Inspector, Explosives and Dangerous Goods, Department of Mines, for the sodium cyanide plant and the expanded facilities at Kwinana.

Proponent's Consolidated Supplementary Commitments of 12 November 2001 – Sodium Cyanide (Liquid) Plant, Expansion to 40,000 tpa (Debottlenecking), Kwinana (Assessment No. 1390)

No	Topic	Action	Objective	Timing	Advice
1	Risk	1) Provide a revised QRA of the "as constructed" 25,000 tpa solid sodium cyanide plant in conjunction with the existing liquids plants. 2) Determine cumulative individual off-site risk contours for the liquids and 25,000 tpa sodium cyanide plants. 3) Undertake the required plant modifications if the revised QRA indicates that the combined plants will not meet the EPA risk criteria.	To demonstrate that the EPA's Guidance Statement No. 2, Off-site Individual Risk from Hazardous Plants criteria will be met.	Pre-commissioning Pre-commissioning Pre-commissioning	DMPR
2	Risk	1) Submit a Construction Safety Management Plan. 2) Amend the Safety Report.	To meet DMPR's requirements.	1) Pre-construction 2) Prior to commissioning additional plant	DMPR Chief Inspector of Explosives & Dangerous Goods
3	Noise	1) Develop a Noise Reduction Management Plan for the site. The plan will be comprehensive and will specify the noise reduction measures and the time frame for implementation of the measures. 2) Reduce irregular noise emissions from the Peter Brotherhood turbine by the installation of a silencer on a start-up vent.	To achieve compliance with the Environmental Protection (Noise) Regulations 1997 or to reduce noise emissions to as low as reasonably practicable.	Within 6 months after the review of the Noise Regulations. Pre-commissioning of solid sodium cyanide plant.	Town of Kwinana

4	Groundwater Protection	1) The plant will be fully bunded to DMPR and DEP requirements, and all pipelines containing cyanide solutions which are located outside of the bund will be double-contained. 2) The sea container storage area to be designed and constructed to meet AS 4452. 3) Develop and implement a "contingency and emergency plan".	To protect soil and groundwater from contamination and to deal with the onsite spillage of solid sodium cyanide.	Pre-commissioning Pre-commissioning Pre-commissioning	DMPR
5	Wastewater Discharge	Prepare a wastewater discharge plan to control emissions in the wastewater leaving the site, which includes: • Continuous on-line monitoring of the cyanide concentration. • The concentration of cyanide and copper to be less than 1 ppm. • The emission of nitrogen to be no greater than 14 kg/day on average.	To protect marine flora and fauna.	Pre-commissioning	
6	Atmospheric Emissions	Operate the liquids and solids plants to cumulatively meet the existing DEP licence limits for total cyanide (as CN) and ammonia emissions from the site.	To maintain the existing level of protection to public health and the environment.	On going.	
7	Approvals	Request a Section 46 review of the existing Ministerial Conditions for the production, storage and transport of sodium cyanide, with the intention of including the transport and storage of solid sodium cyanide off-site.	To clarify existing conditions and incorporate transport of solid sodium cyanide.	Complete review prior to off-site transport of solid sodium cyanide.	DMPR

Abbreviations
EPA = Environmental Protection Authority
DEP = Department of Environmental Protection
DMPR = Department of Mineral and Petroleum Resources
QRA = Quantitative Risk Assessment
AS = Australian Standard
ppm = parts per million
tpa = tonnes per annum

MINISTER FOR THE ENVIRONMENT AND HERITAGE

Statement No.

000602

STATEMENT TO AMEND CONDITIONS APPLYING TO PROPOSALS (PURSUANT TO THE PROVISIONS OF SECTION 46 OF THE ENVIRONMENTAL PROTECTION ACT 1986)

SODIUM CYANIDE PLANT AT KWINANA AND
TRANSPORT OF SODIUM CYANIDE BY RAIL
SODIUM CYANIDE PLANT EXTENSION, KWINANA
(Includes Transport of Solids)

Proponent: Australian Gold Reagents Pty Ltd

Proponent Address: PO Box 345, Kwinana WA 6167

Assessment Number: 1422

Previous Assessment Numbers: 113, 197 and 908

Previous Statement Numbers: Statement No. 006 published on 15 October 1987, Statement No. 073 published on 24 August 1989, and Statement No. 384 published on 12 May 1995.

Report of the Environmental Protection Authority: Bulletin 1047

Previous Reports of the Environmental Protection Authority: Bulletins 274, 284, 387 and 772

The implementation of the *transport component* of the proposals to which the above reports of the Environmental Protection Authority relate is subject to the conditions and procedures contained in Ministerial Statement No. 384 (12 May 1995), as amended by the following:

Published on

- 2 AUG 2002

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Condition 1 (Proponent Commitments) of Statement No. 384 is deleted and the following condition is inserted:

1 Proponent Commitments

The proponent has made a number of environmental management commitments in order to minimise risks to the public and to protect the environment.

1-1 In implementing the proposals, including the modifications on the transport of sodium cyanide by road and the transport of solid sodium cyanide, as reported on in Environmental Protection Authority Bulletins 772 and 1047, respectively, the proponent shall fulfil the relevant commitments published on 12 May 1995 and those made on 16 July 2002. (Copies of both the commitments of 12 May 1995 and 16 July 2002 are attached).

The following conditions and procedures are inserted immediately following condition 6 of Statement No. 384:

7 Review of Transport Options (Kwinana to Fremantle)

7-1 The proponent shall complete the review of transport options and related matters referred to in supplementary commitment 6 immediately following the two-year period of transport of solid sodium cyanide commencing on the issue of the section 45(7) notices to the decision-making authorities, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority, unless the rail improvements (which are expected to be completed along with significant progress in relation to how freight moves between Kwinana and Fremantle) have not been completed in the opinion of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

In that event, the proponent shall complete the review within three years following commencement of solid sodium cyanide transport, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

8 Duration (Road Transport of Solid Sodium Cyanide - Kwinana to Fremantle)

8-1 The proponent may use road transport of solid sodium cyanide for a period of not more than three years from the issue of the section 45(7) notices to the decision-making authorities, unless the rail improvements referred to in condition 7-1 have not been completed, in the opinion of the Minister for the Environment and Heritage acting on advice of the Environmental Protection Authority.

In the event that rail improvements have not been completed, the Minister for the Environment and Heritage, acting on advice of the Environmental Protection Authority, will extend the duration of the use of road transport of solid sodium cyanide beyond the three years referred to above.

8-2 Following consideration of the review of transport options and related matters, referred to in condition 7-1, the Minister for the Environment and Heritage, acting on advice of the Environmental Protection Authority, may extend the period of three years referred to in condition 8-1.

Dr Judy Edwards MLA
MINISTER FOR THE ENVIRONMENT AND HERITAGE

- 2 AUG 2002

Proponent's Consolidated Environmental Management Commitments

12 May 1995

&

16 July 2002

SODIUM CYANIDE PLANT AT KWINANA AND TRANSPORT OF SODIUM CYANIDE BY RAIL

SODIUM CYANIDE PLANT EXTENSION, KWINANA

(Assessment No. 1422)

(Includes Transport of Solids)

AUSTRALIAN GOLD REAGENTS PTY LTD

TRANSPORT OF SODIUM CYANIDE SOLUTION FROM KWINANA (908)

SCHEDULE OF CONSOLIDATED MANAGEMENT COMMITMENTS

of 12 May 1995

to be audited by the Department of Environmental Protection

AUSTRALIAN GOLD REAGENTS PTY LTD

Transport Management

1 The proponent will conform to all regulations and statutes relevant to the transport of dangerous goods as administered by the Explosive and Dangerous Goods Division, Department of Minerals and Energy (DOME).

2 The proponent will report any significant transport incidents to DOME.

3 The proponent is committed to the transport management systems contained in the document "Transport of Sodium Cyanide Solution from Kwinana, December 1994".

4 A procedure will be maintained for communications with the transport operations base as each vehicle travels along a transport route to a mine and until that vehicle logs off.

5 Each driver will maintain a log which includes time of departure from the Kwinana area, and a general goal will be to clear the metropolitan area before significant traffic build–ups occur.

6 The tank containers will be manufactured to meet Australian and international codes, and will comprise a tank mounted in a steel frame of standard dimensions (referred to as "an iso-tainer").

7 Safety features of the iso-tainers include use of top loading/discharge, a pressure relief device, an integral ruggedised steel frame enclosure and additional strengthening around the loading/discharge point to provide roll-over protection. The tops of the nozzles would be below the top of the iso-tainer frame providing additional roll-over protection.

8 The tanks will be marked clearly with emergency information panels.

9 Sodium cyanide solution will be loaded by a delivery hose and coupling into iso-tainers secured onto railway wagons or road vehicles at the siding at the plant site at Kwinana.

10 During rail transport the iso-tainers will be secured by twistlocks onto a flat-top rail wagon. Each standard gauge wagon will accommodate two iso-tainers and each narrow gauge will accommodate one. The twistlocks will be designed to ensure that in event of a derailment the container will remain secured to the wagon.
The same twistlocks are to be used for securing the iso-tainers to the road trailers.

11 For rail transport, Westrail will provide a controlled siding from the existing railway line to the plant site at Kwinana with facilities for marshalling and shipping of wagons and iso-tainers. As part of these facilities a contained non-porous area and associated sump and pump system will be provided.

Emergency Response Management

12 The proponent will continue to liaise with Local Government Authorities, relevant government departments, State emergency authorities and the local emergency management advisory committees before transport commences along approved transport routes, to address local and specific issues, including setting up emergency plans and training programmes.

13 It is proposed that suitable emergency procedures be developed with the emergency services authorities for transport of sodium cyanide solution. The proponents are willing to continue to participate in the development of any such procedures, and in the implementation of any training programmes.

14 The emergency planning includes:

(1) training of transport operators including Westrail staff;

(2) provision of protective equipment to appropriate staff;

(3) strategic stocks of ferrous sulphate or other cyanide-neutralizing chemicals in event of emergency;

(4) handling and transport procedures for spilled sodium cyanide solution and the neutralized effluent; and

(5) communications.

15 The potential hazards identified will be reviewed and appropriate contingency measures incorporated into existing on-site and off-site emergency procedures for the Kwinana works.

16 The proponent will change emergency response procedures for spillages during transport in accordance with any new data available to minimise ecological impacts.

17 Emergency response practice sessions will take place on a basis agreed with the relevant authorities.

18 The plant operator will continue to maintain a dedicated emergency response vehicle at the Kwinana Works and have appropriately trained response personnel available to service any off-site incident involving the transport of AGR's sodium cyanide solution.

19 Vehicles will continue to be equipped with means of communicating quickly, efficiently and reliably with an operational base, eg by means of 2–way radios, and shall be fitted with equipment and materials in accordance with the approved emergency plan.

20 The neutralizing agents used to treat any spilled sodium cyanide solution will be ferrous sulphate, sodium hypochlorite solution or hydrogen peroxide with copper catalyst or soda ash. Hydrogen peroxide is the preferred reagent for use within the plant. This technology is guaranteed by the process licenser as safe and effective. For offsite incidents, ferrous sulphate is the preferred neutralizing agent but in appropriate situations, other agents such as sodium hypochlorite may be used under strict AGR/CSBP direction.

21 Adequate stocks of neutralizing agent (preferably ferrous sulphate) will be maintained at the plant and along the main transport routes at agreed locations for use in emergencies. They will be inspected regularly to ensure that they are kept in good order.

Auditing

22 In addition to any required audits by a regulatory body, the proponent will continue to perform its own audits.

23 The proponent is committed to and will abide by the principles of Responsible Care which include in the Australian Chemical Industry Council's (ACIC), now the Plastics and Chemical Industries Association (PACIA) Code of Practice for the transport of chemicals.

Proponent's Consolidated Supplementary Commitments of 16 July 2002
Transport of Solid Sodium Cyanide (Assessment No. 1422)

No.	TOPIC	ACTION	OBJECTIVE	TIMING	ADVICE
1	Transport Management Plan	1) Update the existing Transport Management Plan (TMP) to incorporate the transport of solid sodium cyanide. The TMP is to include: • The approved route (as outlined in submission); • Use of Intermediate Bulk Containers that meet IMDG Code; • Sea container inspections; and • Port disruption procedures; 2) Implement the TMP.	To ensure safe and effective management of transport operations.	Prior to transport of solid sodium cyanide, review bi-annually. Ongoing	MPR
2	Transport Route	Review the approved transport route and update the Risk Assessment (as required). (see Timing column).	To minimise risk.	As required based on: • Updates to the recommended Dangerous Goods Route; • Changes to facilities adjoining the route; and • A review of traffic data. Otherwise 3-yearly review.	MPR

3	Emergency Response & Training	Update the existing emergency response procedures and training provisions to include the transport, storage and handling of solid sodium cyanide.	To provide emergency response during product transport and assistance within the wharf area.	Prior to transport of solid sodium cyanide and update as required by the proponent's standard procedures.	MPR FESA
4	Storage and Handling at Port	Audit the Stevedore's operations, Safety Management System and Emergency Response Plans for handling solid sodium cyanide.	To verify that control measures and assumptions identified in the QRA are provided and/or implemented. To verify that the Port Operations are compliant with Dangerous Goods in Ports Regulations with respect to solid sodium cyanide. To verify that drainage from the solid sodium cyanide laydown area is contained and emergency response is adequate.	Prior to transport of solid sodium cyanide and then bi-annually.	MPR, FPA
5	Storage and Handling at Port	Review the Fremantle Port's Marine Safety and Environmental Management Plan with respect to solid sodium cyanide storage and handling.	To verify compliance with the Dangerous Goods in Ports Regulations with respect to solid sodium cyanide. To verify that the emergency response procedures for a sodium cyanide spill are adequate.	Prior to transport of solid sodium cyanide.	MPR

6	Transport Mode	Review other transport options, including road/rail viability and risk assessment.	To ensure the most effective transport mode is used, and public safety is protected.	Note: The timing requirements of this commitment are determined by condition 7.	MPR DPI

Abbreviations

DEP = Department of Environmental Protection
DPI = Department of Planning and Infrastructure
EPA = Environmental Protection Authority
FESA = Fire and Emergency Services Authority
FPA = Fremantle Port Authority
MPR = Mineral & Petroleum Resources, Department of
IMDG = International Maritime Dangerous Goods
QRA = Qualitative Risk Assessment

Appendix 4
Recommended Environmental Conditions and Proponent's Consolidated Commitments

Statement No.

RECOMMENDED CONDITIONS AND PROCEDURES

STATEMENT TO AMEND CONDITIONS APPLYING TO PROPOSALS (PURSUANT TO THE PROVISIONS OF SECTION 46 OF THE ENVIRONMENTAL PROTECTION ACT 1986)

SODIUM CYANIDE PLANTS (LIQUID AND SOLID) AT KWINANA AND TRANSPORT OF SODIUM CYANIDE BY ROAD AND RAIL, KWINANA

Proponent: Australian Gold Reagents Pty Ltd

Proponent Address: PO Box 345, Kwinana WA 6167

Assessment Number: 1497

Previous Assessments: 113, 197, 300, 300-1, 846, 908, 1390, and 1422

Previous Statements: Statement No. 006 published on 15 October 1987,
Statement No. 073 published on 24 August 1989,
Statement No. 099 published on 1 June 1990,
Statement No. 129 published on 15 March 1991,
Statement No. 347 published on 17 March 1994,
Statement No. 384 published on 12 May 1995,
Statement No. 579 published on 6 December 2001, and
Statement No. 602 published on 2 August 2002.

Report of the Environmental Protection Authority: Bulletin 1132

Previous Reports of the Environmental Protection Authority: Bulletins 274, 284, 387, 427, 450, 727, 772, 1028 and 1047.

The implementation of the proposal to which the above reports of the Environmental Protection Authority relate is subject to the following conditions and procedures, which replace all previous conditions and procedures:

1 Implementation

1-1 The proponent shall implement the proposals referred to above and described collectively within schedule 1 of this statement subject to the conditions of this statement.

2 Proponent Commitments

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

3 Proponent Nomination and Contact Details

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

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

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

4 Compliance Audit and Performance Review

4-1 The proponent shall prepare an audit program and submit compliance reports to the Department of Environmental Protection which address:

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

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

3. the performance of the environmental management plans and programs.

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

4-2 The proponent shall submit a performance review report every five years following the date of publication of this statement, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority, which addresses:

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

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

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

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

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

4-3 The proponent may submit a report prepared by an auditor approved by the Department of Environmental Protection under the "Compliance Auditor Accreditation Scheme" to the Chief Executive Officer of the Department of Environmental Protection on each condition/commitment of this statement which requires the preparation of a management plan, programme, strategy or system, stating that the requirements of each condition/commitment have been fulfilled within the timeframe stated within each condition/commitment.

5 Decommissioning Plans

5-1 Within 6 months following the date of publication of this statement, the proponent shall prepare a Preliminary Decommissioning Plan, which provides the framework to ensure that the site is left in an environmentally acceptable condition to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

The Preliminary Decommissioning Plan shall address:

1 conceptual plans for the removal or, if appropriate, retention of plant and infrastructure;

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

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

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

5-2 At least 12 months prior to the anticipated date of decommissioning, or at a time agreed with the Environmental Protection Authority, the proponent shall prepare a Final Decommissioning Plan designed to ensure that the site is left in an environmentally acceptable condition to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

The Final Decommissioning Plan shall address:

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

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

3 identification of contaminated areas, including provision of evidence of notification and proposed management measures to relevant statutory authorities.

5-3 The proponent shall implement the Final Decommissioning Plan required by condition 5-2 until such time as the Minister for the Environment determines, on advice of the Environmental Protection Authority, that the proponent's decommissioning/closure responsibilities have been fulfilled.

5-4 The proponent shall make the Final Decommissioning Plan required by condition 5-2 publicly available, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

6 Review of Options for the Transport of Solid Sodium Cyanide (Kwinana to Fremantle)

6-1 The proponent shall complete the review of transport options and related matters referred to in commitment 13 by 31 August 2004, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority, unless the rail improvements (which are expected to be completed along with significant progress in relation to how freight moves between Kwinana and Fremantle) have not been completed in the opinion of the Minister for the Environment on advice of the Environmental Protection Authority.

In that event, the proponent shall complete the review by 31 August 2005, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

7 Duration (Road Transport of Solid Sodium Cyanide - Kwinana to Fremantle)

7-1 The proponent may use road transport of solid sodium cyanide for a period of not more than three years from 31 August 2002, unless the rail improvements referred to in condition 6-1 have not been completed, in the opinion of the Minister for the Environment acting on advice of the Environmental Protection Authority.

8 Transport of Liquid Sodium Cyanide

8-1 The proponent shall employ rail transport for the transport of liquid sodium cyanide from Kwinana wherever practicable, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

8-2 The proponent may use road transport from Kwinana in the following circumstances:

1. Temporary interruption of rail service, such as industrial disputes and rail washaways;
2. No rail service or termination of scheduled rail services; or
3. Where goldmines cannot be serviced practicably and/or efficiently by rail from Kwinana.

8-3 At intervals not exceeding two years from the date of publication of this statement, the proponent shall undertake a review of and report on the transport options for liquid sodium cyanide referred to in conditions 8-1 and 8-2, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

9 Safety Report

9-1 The proponent shall develop a Safety Report in accordance with the *National Standard for the Control of Major Hazard Facilities [NOHSC:1014(2002)]*, to the requirements of the Minister for the Environment on advice of the Chief Inspector of Explosives and Dangerous Goods of the Department of Industry and Resources.

9-2 The proponent shall operate the facility in accordance with the provisions of the Safety Report, to the requirements of the Minister for the Environment on advice of the Chief Inspector of Explosives and Dangerous Goods.

Procedures

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

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

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

Notes

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

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

3 The Department of Industry and Resources manages all safety aspects of the storage and transport of dangerous goods under the *Explosives and Dangerous Goods Act 1961* and relevant regulations. The sodium cyanide facility is a Major Hazard Facility and the proponent is required to develop a Safety Report that meets the requirements of the *National Standard for the Control of Major Hazard Facilities [NOHSC:1014(2002)]* to the requirements of the Chief Inspector of Explosives and Dangerous Goods.

Schedule 1

The Proposal (Assessment No. 1497)

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

Table 1: Key Characteristics

Characteristic	Description
General	
Location	Kwinana Beach Road – Kwinana South east corner of the CSBP site and west of Coogee Chemicals – Kwinana Industrial Area.
Disturbance Areas	
Plant areas	Approx 4 hectares
Total area disturbed	4.3 hectares
Liquid Sodium Cyanide Plants	
Plant 1 Commissioned	1988
Plant 2 Commissioned	1998
Plant facilities (x2)	Gas reactor, cooler, absorber, distillation column, and incinerator.
Process Description	• Natural gas, air and ammonia are mixed in the correct ratio; • The mixed gases enter a high temperature reactor where hydrogen cyanide is produced using a catalyst; • Caustic soda is then used to absorb the hydrogen cyanide gas in an absorption tower to produce a 30% sodium cyanide solution; • The gas leaving the absorption tower is burnt in a continuously operating incinerator.
Production Capacity (Plants 1 & 2 combined)	Capacity to produce a combined total of 70,000 tpa sodium cyanide (expressed as 100% sodium cyanide) as a 30% solution
Inputs (nominal)	• 2,200 TJ per year natural gas • 40,000 t per year ammonia • 60,000 dmt per year caustic soda • 24,500 MWhr electricity
Outputs (nominal)	• 14,500 t of steam • 60,000 MWhr electricity
Storage – liquid sodium cyanide	• steel tanks with total capacity of 5,500 m^3 (2,000 t of 100% sodium cyanide) on site. • Up to 140 t in ISO-tainers in transit
Gaseous Emissions	• Tail gases from the incinerator; • Discharge gases from the start-up blower; and • Discharge gases from the shut down stack
Liquid Effluent Discharges	Up to 16 m^3/hr cooling tower blowdown Stormwater
Solid Sodium Cyanide Plant	
Plant Commissioned	2002
Plant Facilities	Two batch evaporators, vacuum pump incorporating a scrubber, condensate tank, slurry tank, centrifuge, spin flash dryer incorporating scrubber system, powder hopper and compacting machine.
Process Description	• The solids plant receives a continuous feed of sodium cyanide solution produced at the liquid sodium cyanide plants which will be directed to one of two batch evaporation units. • Following concentration by evaporation, the sodium cyanide crystals is centrifuged, dried and compressed into briquettes. • The briquettes are then packaged and transported.
Production Capacity	Nominal 25,000 tpa
Inputs	30% sodium cyanide solution
Outputs	Briquettes containing >97% sodium cyanide.
Storage	Area designed to store a maximum of 3,000 t solid sodium cyanide.

Characteristic	Description
	Solid sodium cyanide will be stored in IBCs packed into sea containers or a warehouse. Small quantities may be stored in ISO-tainers (equipped to allow injection of water to dissolve the sodium cyanide at the mine site).
Gaseous Emissions	Ammonia, hydrogen cyanide and sodium cyanide.
Liquid Effluent Discharges	• 10 m^3/hour wastewater, containing up to 12 kg/day of nitrogen. • All liquid effluent is treated and then pumped to CSBP's effluent pond.
Transport	
Liquid Sodium Cyanide	By road and rail. *The Dangerous Goods (Transport) (Road and Rail) Regulations 1999*, Australian Dangerous Goods Code and recommendations of the Department of Industry and Resources Guidance Note T117 "Recommendations for Route Selection for the Transport of Dangerous Goods in the Perth Metropolitan Area" are adhered to at all times for transport and packaging.
Solid Sodium Cyanide	The *Dangerous Goods (Transport) (Road and Rail) Regulations 1999*, Australian Dangerous Goods Code and recommendations of the Department of Industry and Resources Guidance Note T117 "Recommendations for Route Selection for the Transport of Dangerous Goods in the Perth Metropolitan Area" are adhered to at all times for transport and packaging.

Key:
dmt – dry metric tonne
kg/day – kilograms per day
m^3 – cubic metres
m^3/hr – cubic metres per hour
MWhr – megawatt hours
t - tonnes
Tj – terajoules
tpa – tonnes per annum

Figures

Figure 1 - Project location (attached).
Figure 2 – Site Layout (attached).

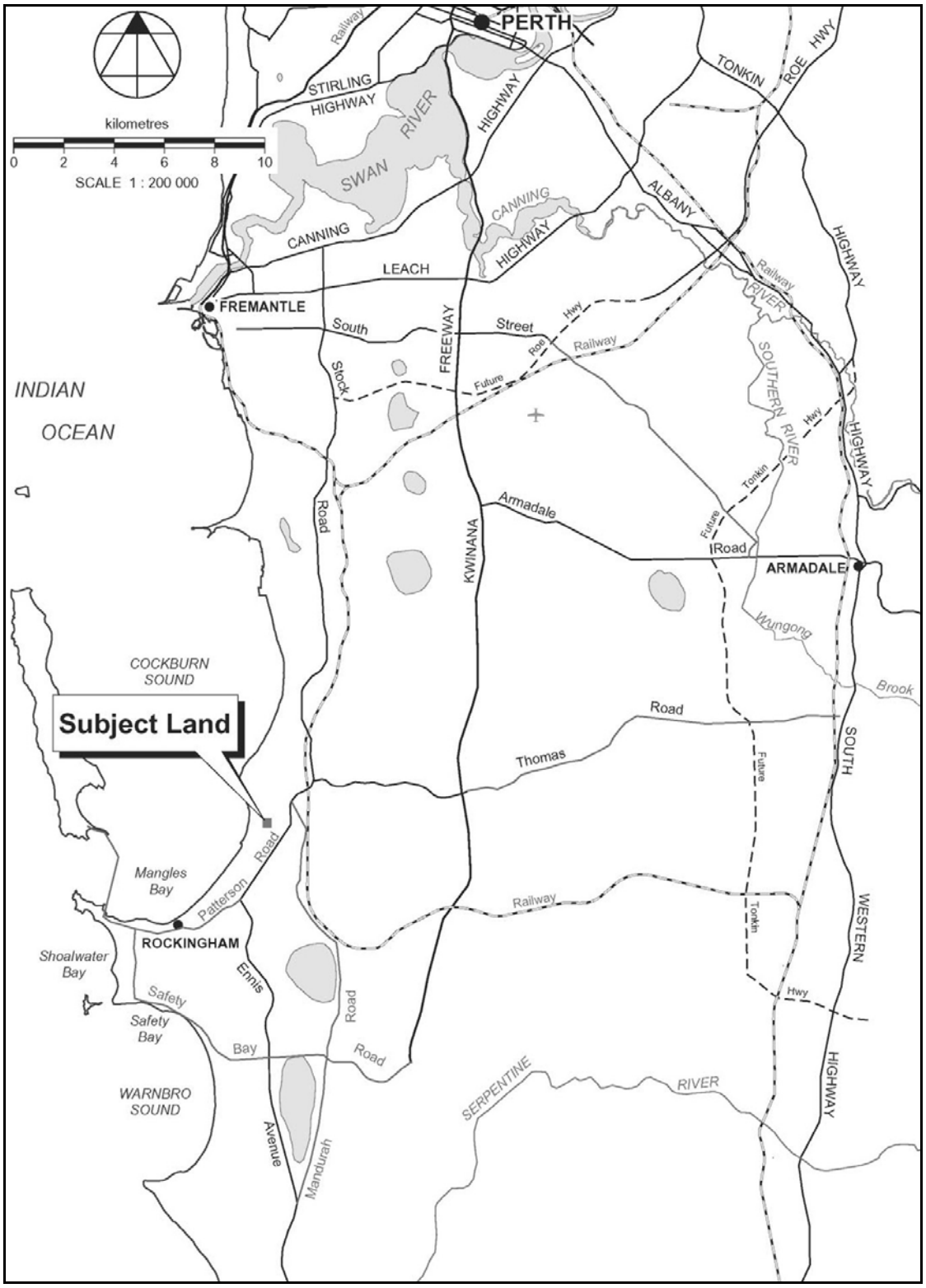

Figure 1: Project location (Source: ATA Environmental, 2003)

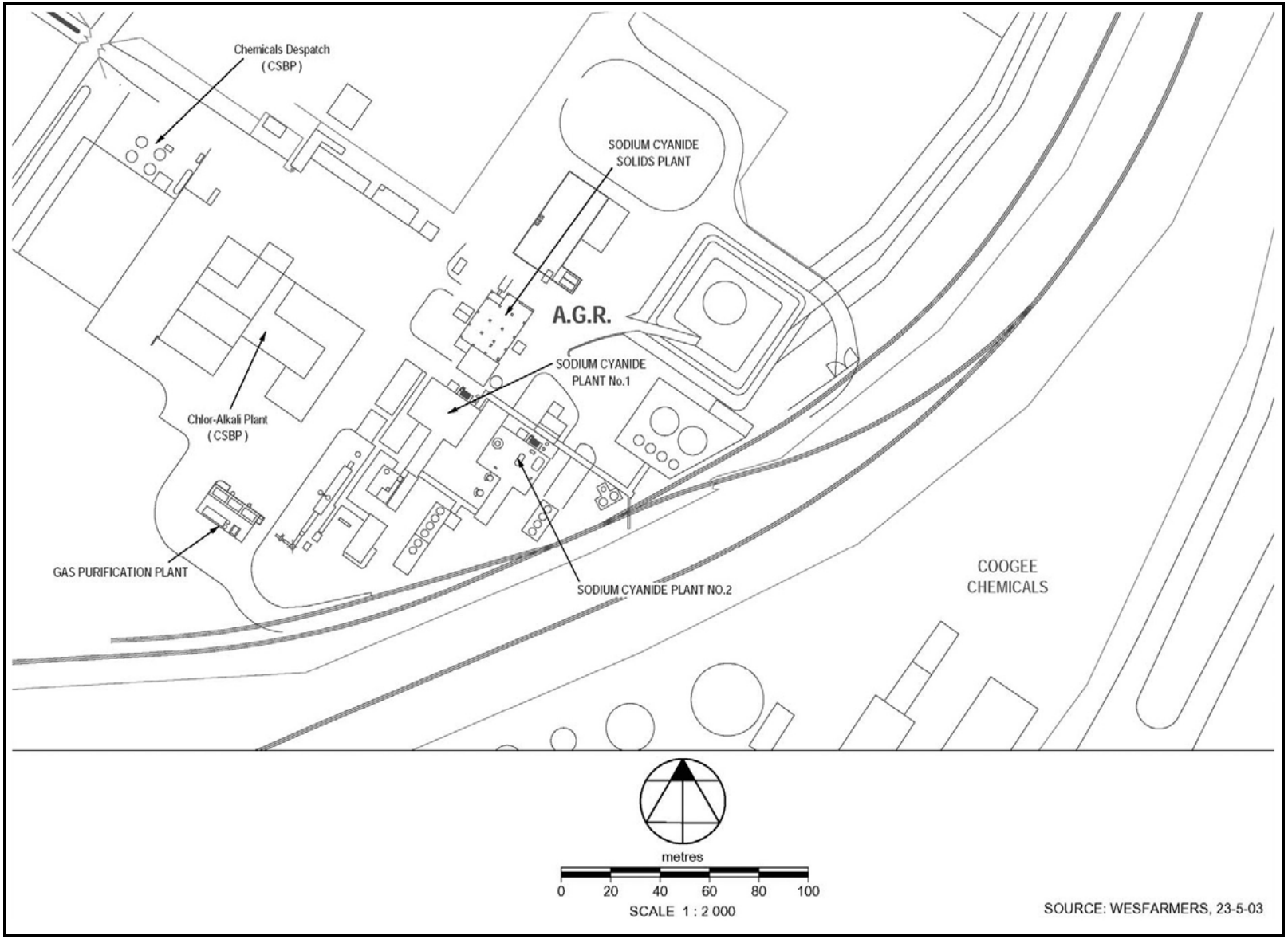

Figure 2: Site Layout (Source: ATA Environmental, 2003)

Schedule 2

Proponent's Environmental Management Commitments

31 March 2004

SODIUM CYANIDE PLANTS (LIQUID AND SOLID) AND TRANSPORT OF SODIUM CYANIDE BY ROAD AND RAIL, KWINANA

(Assessment No. 1497)

AUSTRALIAN GOLD REAGENTS PTY LTD

SODIUM CYANIDE PLANTS (LIQUID AND SOLID) AND TRANSPORT OF SODIUM CYANIDE BY ROAD AND RAIL), KWINANA (ASSESSMENT NO. 1497)

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

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

NO	TOPIC	ACTION	OBJECTIVE/S	TIMING	ADVICE
Manufacture and Storage of Sodium Cyanide					
1	Environmental Management	Have in place an Environmental Monitoring and Management System, which details procedures for the management and monitoring of the solid and liquid sodium cyanide manufacturing facility. The Environmental Monitoring and Management Program will include but not be restricted to: • Water (Surface and Waste) Management Plan (see commitment 3); • Solid Waste Management Plan (see commitment 5); • Noise Management Plan (when required) (see commitment 7); • Transport Management Plan (see commitment 10); and • All monitoring and management procedures for the cyanide business.	To protect the environment in the event of an incident.	Implemented.	
2	Environmental Management	Review the Environmental Monitoring and Management Program as described in commitment 1.	To protect the environment in the event of an incident.	At intervals not exceeding 3 years.	
3	Water Management	Have in place a Water (Surface and Waste) Management Plan, which details procedures for the management of water discharge from the site. This plan includes but is not limited to:	To protect marine flora and fauna and groundwater.	Implemented.	

NO	TOPIC	ACTION	OBJECTIVE/S	TIMING	ADVICE
		This plan includes but is not limited to: • Management of contaminated stormwater; • Management of liquid spills and washdown water; • Liquid waste storage requirements; • Process and storage area sealing and bunding requirements; • Requirements for monitoring/testing prior to disposal; • Discharge requirements include concentration of cyanide and copper each to be less than 1 ppm and emission of nitrogen to be no greater than 14 kg/day on monthly average; • Contingency/emergency procedures; and • Reporting requirements.			
4	Water Management	Review the Water (Surface and Waste) Management Plan as described in commitment 3.	To protect marine flora and fauna and groundwater.	At intervals not exceeding 3 years.	
5	Solid Waste Management	Have in place a Solid Waste Management Plan, which details procedures for the management of solid waste disposal from the site. This plan will include but not be limited to: • Recyclable wastes will be removed by an approved contractor; • General refuse (domestic and industrial solid waste) will be disposed of at an appropriate landfill; • Solid waste storage requirements; and • Reporting and review requirements.	To ensure that waste is relocated to the correct locations to minimise potential contamination to the receiving environment	Implemented.	
6	Solid Waste Management	Review the Solid Waste Management Plan described in commitment 5.	To ensure that waste is relocated to the correct locations to minimise potential contamination to the receiving environment.	At intervals not exceeding 3 years.	

NO	TOPIC	ACTION	OBJECTIVE/S	TIMING	ADVICE
7	Noise Management	Prepare a Noise Management Plan. The Noise Management Plan will include detailed description of: • The acoustical model of the plant; • Best practicable measures to minimise noise emissions; • Operating procedures to be adopted for particular activities to minimise noise impacts; • The noise monitoring program; and • The complaint management procedure.	To ensure compliance with prescribed standards and minimise where practicable noise impacts.	Within 6 months after the review of the Noise Regulations has been completed and the new Regulations are made publicly available	
8	Noise Management	Implement the approved Noise Management Plan described in commitment 7 if required.	To ensure compliance with prescribed standards and minimise where practicable noise impacts	As soon as the Noise Management Plan is approved by the EPA	
9[1]	Facility Emergency Response	Be represented in KIMA and KIPS and maintain emergency response capabilities in accord with the Safety Report and approved Transport Management Plan.	To ensure that the emergency response and fire-fighting capability is appropriate to respond to all emergency and fire scenarios.	Implemented.	DoIR
Transport of Sodium Cyanide					
10	Transport Management Plan	Have in place a TMP, which details procedures for the management of the transport of solid and liquid sodium cyanide. The TMP will include but not be limited to: • Procedure for Transport Emergency Response for both liquid and solid sodium cyanide; • Procedure for obtaining DoIR authorisation for changes to the approved (as outlined in submission) sodium cyanide transport routes; • Process for liaison with Local Government Authorities, relevant government departments, State emergency authorities and the local	To protect the environment in the event of an incident.	Implemented.	DoIR

NO	TOPIC	ACTION	OBJECTIVE/S	TIMING	ADVICE
		emergency management advisory committees before transport commences along approved transport routes, to address local and specific issues, including setting up emergency plans and training programs; • Procedure for reviewing the approved transport routes and updating the transport risk assessment based on updates to Dangerous Goods Transport Routes, changes to facilities adjoining the route and a review of traffic data as required or otherwise three yearly; • Specifications for the use of Intermediate Bulk Containers that meet the IMDG Code for the transport of solid sodium cyanide; • Procedures for sea container inspections; • Procedure for Port disruption; • Procedure for communications with the transport operations base as each vehicle travels along a transport route to a mine and until that vehicle logs off; • Procedure for maintenance of a log, which includes time of departure from the Kwinana area, and a general goal will be to clear the metropolitan area before significant traffic build-ups occur. • Location and description of the most effective and suitable neutralising agents used to treat any spilled sodium cyanide; • Procedure for external and internal audits of all aspects of the TMP; • Procedure for annual emergency exercises in association with FESA; • Procedure for incident follow-up; and • Procedure for review and update of TMP every two years or when required.			
11	Transport Management Plan	Review Transport Management Plan described in commitment 10 above.		Two yearly	DoIR
12	Solids Export Emergency	Audit the Stevedore's operations, Safety Management System and Emergency Response Plans for handling of solid sodium cyanide.	• To verify that:	At intervals not exceeding 2 years (from November	DoIR and FPA

NO	TOPIC	ACTION	OBJECTIVE/S	TIMING	ADVICE
	Response	Emergency Response Plans for handling of solid sodium cyanide.	• control measures and assumptions identified in the QRA are provided and/or implemented • the Port operations are compliant with Dangerous Goods in Ports Regulations with respect to solid sodium cyanide and • drainage from the solid sodium cyanide laydown area is contained and emergency response is adequate.	2002).	FPA
13	Transport Options	Review other transport options, including road/rail viability and risk assessment.	To ensure the most effective transport mode is used and public safety is protected.	Within three years from 31 August 2002.	DoIR, City of Fremantle

[1] CSBP Limited is a full member of KIMA and is AGR's representative.

Abbreviations:
DoIR = Department of Industry and Resources
EPA = Environmental Protection Authority
FESA = Fire and Emergency Services Authority
FPA = Fremantle Port Authority
IMDG = International Marine and Dangerous Goods
KIMA = Kwinana Industries Mutual Aid
KIPS = Kwinana Industries Public Safety
QRA = Qualitative Risk Assessment
TMP = Transport Management Plan