MINISTER FOR THE ENVIRONMENT;
EMPLOYMENT AND TRAINING

Statement No.

000481

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

WAGOO HILLS VANADIUM PROJECT AND MINGENEW COAL PROJECT

Proposal: The development of a vanadium mining and processing operation 80 kilometres south-east of Mt Magnet (as documented in schedule 1 of this statement), and a coal mine near Mingenew to provide a source of energy to the vanadium operation.

Proponent: Precious Metals Australia Limited

Proponent Address: Level 3, 18 Richardson Street, WEST PERTH WA 6005

Assessment Number: 1184

Previous Assessment Numbers: 653 and 1146

Previous Statement Numbers: Statement No. 283 published on 17 September 1992, and Statement No. 472 published on 2 April 1998.

Report of the Environmental Protection Authority: Bulletin 887

Previous Reports of the Environmental Protection Authority: Bulletins 633 and 878

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

Note: There are now no conditions or procedures referring to the coal mine near Mingenew. This part of the proposal shall not be implemented, following advice from the proponent. Also, if option 2 (natural gas) referred to in schedule 1 is selected, then the pipeline route should be referred to the Environmental Protection Authority.

1 Implementation

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

1-2 Where, in the course of implementing the proposal, the proponent seeks to change any aspect of the proposal as documented in schedule 1 of this statement in any way that the Minister for the Environment determines, on advice of the Environmental Protection Authority, is not substantial, those changes may be effected.

Published on

- 9 JUL 1998

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2 Proponent Commitments

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

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

3 Environmental Management System

3-1 In order to manage the environmental impacts of the project, and to fulfil the requirements of the conditions and procedures in this statement, prior to the start of mining, the proponent shall demonstrate to the requirements of the Environmental Protection Authority on advice of the Department of Environmental Protection that there is in place an environmental management system which includes the following elements:

1 environmental policy and commitment;
2 planning of environmental requirements;
3 implementation and operation of environmental requirements;
4 measurement and evaluation of environmental performance; and
5 review and improvement of environmental outcomes.

3-2 The proponent shall implement the environmental management system referred to in condition 3-1.

4 Environmental Management Program

4-1 Prior to commencement of ground-disturbing activities, the proponent shall prepare an Environmental Management Program to the requirements of the Environmental Protection Authority on advice of the Department of Environmental Protection, the Department of Minerals and Energy and the Water and Rivers Commission, as appropriate.

This Program shall address:

1 stakeholder consultation involved in the development of the program;
2 options for reducing water demand and to what extent they will be implemented (See condition 5-2);
3 disposal and reuse options for the sodium-rich solid wastes;
4 dispersion modelling to confirm that emissions parameters are adequate to ensure that the Environmental Protection Authority objectives for nitrogen dioxide and sulphur dioxide will be met;
5 control of vanadium dust (including the evaporation ponds) and an ambient monitoring program to determine levels at residential premises near the Wagoo Hills site;
6 control of non-vanadium dust (including the evaporation ponds) and an ambient monitoring program to determine levels at residential premises near the Wagoo Hills site (see condition 6);
7 surveys and management of declared rare and priority flora and vegetation;
8 a rehabilitation program which includes progressive objectives and monitoring;
9 transportation of process materials,
10 monitoring vanadium contamination in soil;
11 protection of Aboriginal sites and liaison with traditional Aboriginals of the area;

12 the management of the potential for fauna deaths due to the barren liquor ponds;

13 the ability to rehabilitate the barren liquor pond and heap leach pad residual solid waste; and

14 the potential presence of stygofauna in groundwater;

and shall include the following Environmental Management Plans:

1 Water Management Plan (See condition 5-2);
2 Greenhouse Gas Emissions Management Plan (See condition 7); and
3 Noise and Blasting Management Plans (See conditions 8-3 and 9-3).

4-2 The proponent shall implement the Environmental Management Program required by condition 4-1.

5 Water Resources

5-1 Prior to any proposed significant use of the surface aquifer, the proponent shall refer such proposal to the Environmental Protection Authority.

5-2 Prior to construction, the proponent shall prepare a Water Management Plan for the Wagoo Hills site for the protection of surface and ground water resources, to the requirements of the Environmental Protection Authority on advice of the Water and Rivers Commission, Agriculture Western Australia, the Department of Minerals and Energy and the Department of Environmental Protection.

This Plan shall:

1 address the impacts of the proposed extraction on existing uses and vegetation;
2 notwithstanding the above, describe how suitable water supplies for any stock and domestic water supplies that are adversely affected by the project will be provided, and how impacts on vegetation will be minimized;
3 address surface water flows affected by the project, ensuring that surface drainage is not adversly affected by the barren liquor ponds and heap leach pads;
4 outline a groundwater monitoring program to determine:
   - whether there has been any contamination arising from the operation of the mine-site, process plant, heap leach pads, barren liquor evaporation ponds and tailings dam, and
   - the level of drawdown in the upper and lower aquifers;
5 address options for reducing water demand and to what extent they will be implemented;
6 address the method of sealing the barren liquor ponds and heap leach pads to ensure the protection of groundwater; and
7 specify responsibility for monitoring, auditing of performance and compliance with the plan.

5-3 The proponent shall implement the Water Management Plan required by condition 5-2.

5-4 The proponent shall make the Water Management Plan required by condition 5-2 publicly available, to the requirements of the Environmental Protection Authority.

6 Non-vanadium Dust Levels

The Wagoo Hills Vanadium Project should not cause excessive levels of "non-vanadium dust".

6-1 The proponent shall not cause short term levels of non-vanadium bearing dust at residential premises near the Wagoo Hills site to exceed 1000 micrograms per cubic metre ($\mu g/m^3$), measured continuously over 15 minutes.

Note: The 1000 $\mu g/m^3$ limit referred to in condition 6-1 is to be considered a minimum standard to be met by the proposal. It should be understood that the project may be subject to more stringent dust limits set by the Department of Environmental Protection through Works Approval and/or Licence conditions.

7 Greenhouse Gas Emissions Management Plan

7-1 Prior to commissioning, the proponent shall prepare a Greenhouse Gas Emissions Management Plan to the requirements of the Environmental Protection Authority on advice of the Department of Environmental Protection.

This Plan shall include:

1 calculation of the "greenhouse gas" emissions (using methodology developed for Australia);
2 measures to limit "greenhouse gas" emissions; and
3 estimation of the "greenhouse gas" efficiency of the project (per unit of product and/or other agreed performance indicators) and comparison with the efficiencies of other comparable projects producing a similar product.

7-2 The proponent shall implement the Greenhouse Gas Emissions Management Plan required by condition 7-1.

7-3 The proponent shall make the Greenhouse Gas Emissions Management Plan required by condition 7-1 publicly available, to the requirements of the Environmental Protection Authority.

Note: The proponent should consider entry (whether on a project-specific basis, company-wide arrangement or within an industrial grouping, as appropriate) into the Commonwealth Government's "Greenhouse Challenge" voluntary cooperative agreement program.

Components of the agreement program include:

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

8 Noise

8-1 The proponent shall conduct operations so that noise emissions do not unreasonably impact on people in the vicinity of the Wagoo Hills site, including residents.

8-2 The proponent shall ensure that noise emissions meet the requirements of the noise control regulations applying from time to time under the Environmental Protection Act.

8-3 Prior to construction, the proponent shall prepare a Noise Management Plan, to include noise surveys (including baseline measurements) and assessments (including the impact of tonal noise) involving consultation with the Department of Environmental Protection, for the Wagoo Hills site, to the requirements of the Environmental Protection Authority.

8-4 The proponent shall implement the Noise Management Plan for the Wagoo Hills site required by condition 8-3.

8-5 The proponent shall make the Noise Management Plan required by condition 8-3 publicly available, to the requirements of the Environmental Protection Authority.

9 Blasting

9-1 The proponent shall conduct operations so that blasting does not unreasonably impact on people in the vicinity of the Wagoo Hills site, including residents.

9-2 The proponent shall ensure that blasting operations meet the requirements of the noise control regulations applying from time to time under the Environmental Protection Act.

9-3 Prior to construction, the proponent shall prepare a Blasting Management Plan for the Wagoo Hills site, to the requirements of the Environmental Protection Authority.

9-4 The proponent shall implement the Blasting Management Plan for the Wagoo Hills site required by condition 9-3.

9-5 The proponent shall make the Blasting Management Plan required by condition 9-3 publicly available, to the requirements of the Environmental Protection Authority.

10 Decommissioning Management Plan

10-1 At least six months prior to decommissioning, the proponent shall prepare a Decommissioning Management Plan to the requirements of the Environmental Protection Authority on advice of the Department of Environmental Protection.

This Plan shall address:

1 removal or, if appropriate, disposal on-site of plant and infrastructure;
2 rehabilitation of all disturbed areas to agreed final land uses; and
3 identification of contaminated areas, including provision of evidence of notification to relevant statutory authorities.

10-2 The proponent shall implement the Decommissioning Management Plan required by condition 10-1.

10-3 The proponent shall make the Decommissioning Management Plan required by condition 10-1 publicly available, to the requirements of the Environmental Protection Authority.

11 Performance Review

11-1 Each six years following the commencement of construction, the proponent shall submit a Performance Review to evaluate the environmental performance relevant to:

1 environmental issues reported on in Environmental Protection Authority Bulletins 633, 878 and 887;
2 proponent's consolidated environmental management commitments documented in schedule 2 of this statement and those arising from the fulfilment of conditions and procedures in this statement;
3 environmental management system environmental management targets;
4 Environmental Management Programs and Plans; and
5 environmental performance indicators;

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

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

12 Proponent

12-1 The proponent for the time being nominated by the Minister for the Environment under section 38(6) or (7) of the Environmental Protection Act 1986 is responsible for the implementation of the proposal until such time as the Minister for the Environment has exercised the Minister's power under section 38(7) of the Act to revoke the nomination of that proponent and nominate another person in respect of the proposal.

12-2 Any request for the exercise of that power of the Minister referred to in condition 12-1 shall be accompanied by a copy of this statement endorsed with an undertaking by the proposed replacement proponent to carry out the proposal in accordance with the conditions and procedures set out in the statement.

12-3 The proponent shall notify the Minister for the Environment of any change of proponent contact name and address within 30 days of such change.

13 Commencement

13-1 The proponent shall provide evidence to the Minister for the Environment within two years of the date of this statement that the proposal has been substantially commenced.

13-2 Where the proposal has not been substantially commenced within two years of the date of this statement, the approval to implement the proposal as granted in statement no. 283 shall lapse and be void. The Minister for the Environment will determine any question as to whether the proposal has been substantially commenced.

13-3 The proponent shall make application to the Minister for the Environment for any extension of approval for the substantial commencement of the proposal beyond two years from the date of this statement.

13-4 Where the proponent demonstrates to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority that the environmental parameters of the proposal have not changed significantly, then the Minister may grant an extension not exceeding two years for the substantial commencement of the proposal.

14 Compliance Auditing

14-1 The proponent shall submit periodic Performance and Compliance Reports, in accordance with an audit program prepared in consultation between the proponent and the Department of Environmental Protection.

14-2 Unless otherwise specified, the Department of Environmental Protection is responsible for assessing compliance with the conditions contained in this statement and for issuing formal clearance of conditions.

14-3 Where compliance with any condition or procedure is in dispute, the matter will be determined by the Minister for the Environment.

Note

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

CHERYL EDWARDES (Mrs) MLA
MINISTER FOR THE ENVIRONMENT

JUL 1998

PROPOSAL

(1) VANADIUM MINING AND PROCESSING

This part of the proposal consists of a vanadium mining and processing operation 80 kilometres south-east of Mt Magnet (see Figure 1). Vanadium pentoxide ore would be mined via open-cut and processed at the adjacent processing plant. Production rates are 2.28 Megatonnes per annum of ore and 7,200 tonnes per annum of vanadium pentoxide.

Two fuel options are considered – a combination of coal, diesel and LPG or natural gas only. Should natural gas be selected as a fuel source, a spur line from the Dampier to Bunbury pipeline would be required. This would be the subject of a separate referral to the Environmental Protection Authority.

The layout of the main process components is shown in Figure 2.

A summary of key proposal characteristics is provided in Table 1 (attached).

The production steps are illustrated in Figure 3 and summarized as follows:

- Processing plant is located immediately adjacent to the mine site.
- Mined ore is trucked to the primary crusher dump pad.
- Ore is crushed and mixed with process water.
- Vanadium/magnetite complex is removed using magnetic separators. Tailings from this stage are inert. The tailings are thickened to recover water for process re-use then pumped to a tailings dam.
- Dewatered vanadium/magnetite concentrate is stored temporarily then mixed with sodium oxalate and sodium sulphate and calcined (roasted) in a rotary kiln. Calcination forms vanadium pentoxide and sodium vanadate.
- Calcined material is quenched with sodium vanadate liquor to form enriched vanadium liquor.
- Liquor is precipitated and filtered and dried to form ammonium metavanadate (AMV).
- AMV is fed to deammoniator and combusted to remove combined ammonium, leaving vanadium pentoxide powder.
- The powder is fed to fusion furnace.
- Molten vanadium pentoxide is flaked to produce 1-3 mm flakes which are drummed or bagged prior to transport to Fremantle for export.
- Infrastructure to support the operation includes an accommodation village, process water supply, power station and roads.

Potential atmospheric emissions include particulates (including vanadium pentoxide), sulphur oxides, nitrogen oxides, ammonia, carbon monoxide and carbon dioxide.

Solid wastes include inert tailings and calcine tailings (containing sodium salts).

(2) MINGENEW COAL PROJECT

This part of the proposal will not be implemented.

Table 1 - Summary of key proposal characteristics - vanadium mining & processing.

Proposal Characteristics	Units[a]	Proposal
Ore extraction	tpa	2.28×10^6
Production capacity (V_2O_5)	tpa	7,200
Life of mine production	years	> 15
Size of ore body	tonnes	34×10^6
Area of tenement	ha	988
Area of disturbance	ha	120
Groundwater requirements	m^3/a	2.4×10^6
Fuel Source - Option 1:		
Coal	tpa	30,000 – 45,000
LPG	tpa	550 - 750
diesel	Litres/a	15×10^6 - 17×10^6
Fuel Source - Option 2:		
Natural gas	Terajoules/a	1570 - 1930
Main reagents:		
Sulphuric acid	tpa	3,000 – 4,300
Aluminium sulphate	tpa	0 – 1,000
Ammonium sulphate	tpa	12,000 – 15,000
Sodium oxalate or Sodium sulphate	tpa	25,000 – 40,000
Sodium hydroxide	tpa	0 – 1,000
Flocculant	tpa	20 - 40
Atmospheric emissions - Option 1:		
Sulphur oxides	g/s	3.58 (power station) 11.3[b] (rotary kiln)
Nitrogen oxides	g/s	31 (power station) 17.6 (rotary kiln)
Carbon dioxide	tpa	124,301 – 148,394
Atmospheric emissions – Option 2:		
Sulphur oxides	g/s	< 1[b] (from any source)
Nitrogen oxides	g/s	< 1 (from any source)
Carbon dioxide	tpa	89,961 – 91,875
Tailings (inert)	tpa	1.5×10^6 – 1.7×10^6
Calcined tailings	tpa	0.65×10^6
Truck movements	trucks/day	4 – 7

(a) Definitions of units:
"tpa" means tonnes per annum;
"m^3/a" means cubic metres per annum;
"g/s" means grams per second; and
"ha" means hectares (1 ha = 10,000 square metres).

(b) There is some uncertainty regarding this value. In the event that sulphate is recycled back into the process, the emission rate from the rotary kiln is likely to increase.

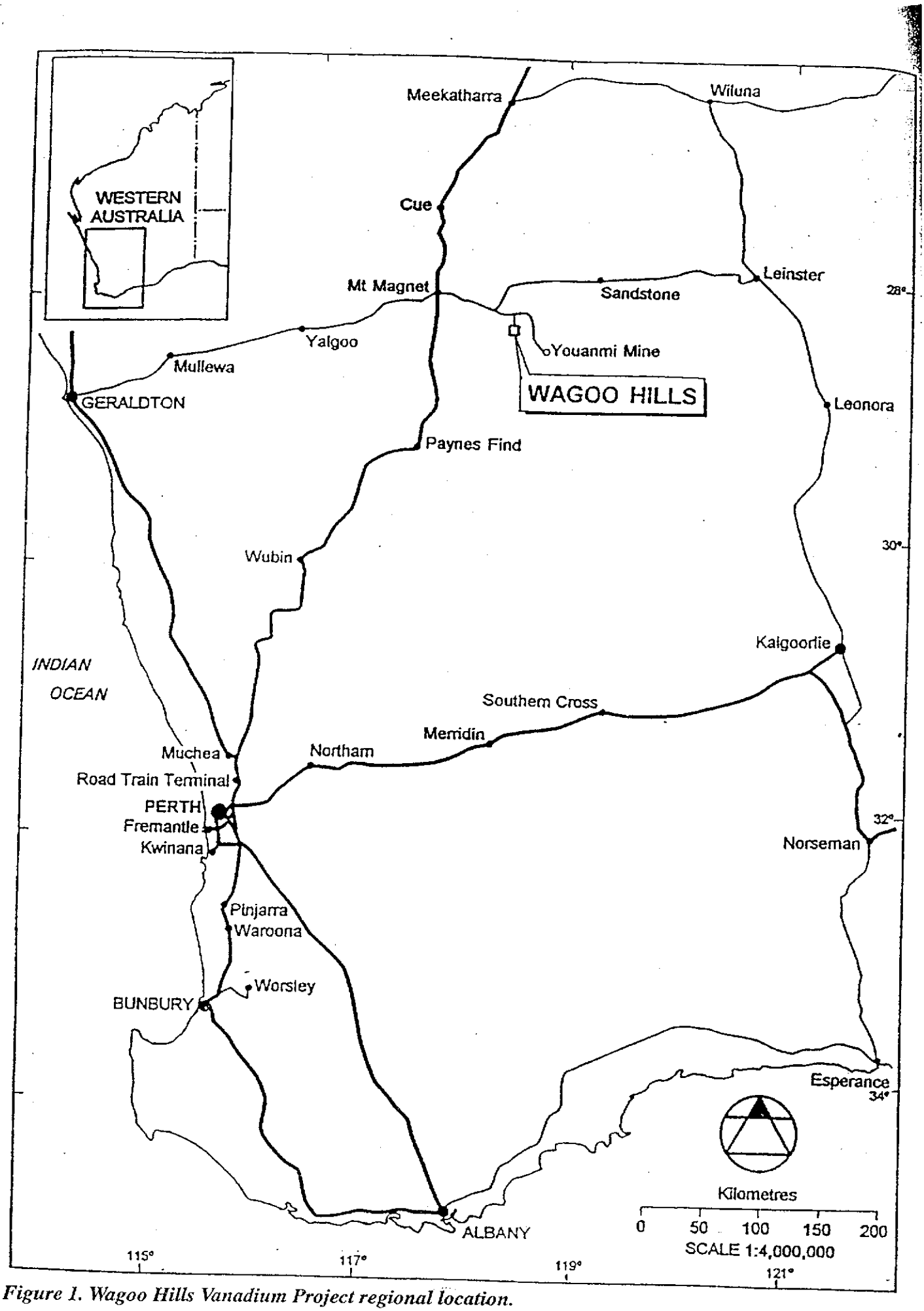

Figure 1. Wagoo Hills Vanadium Project regional location.

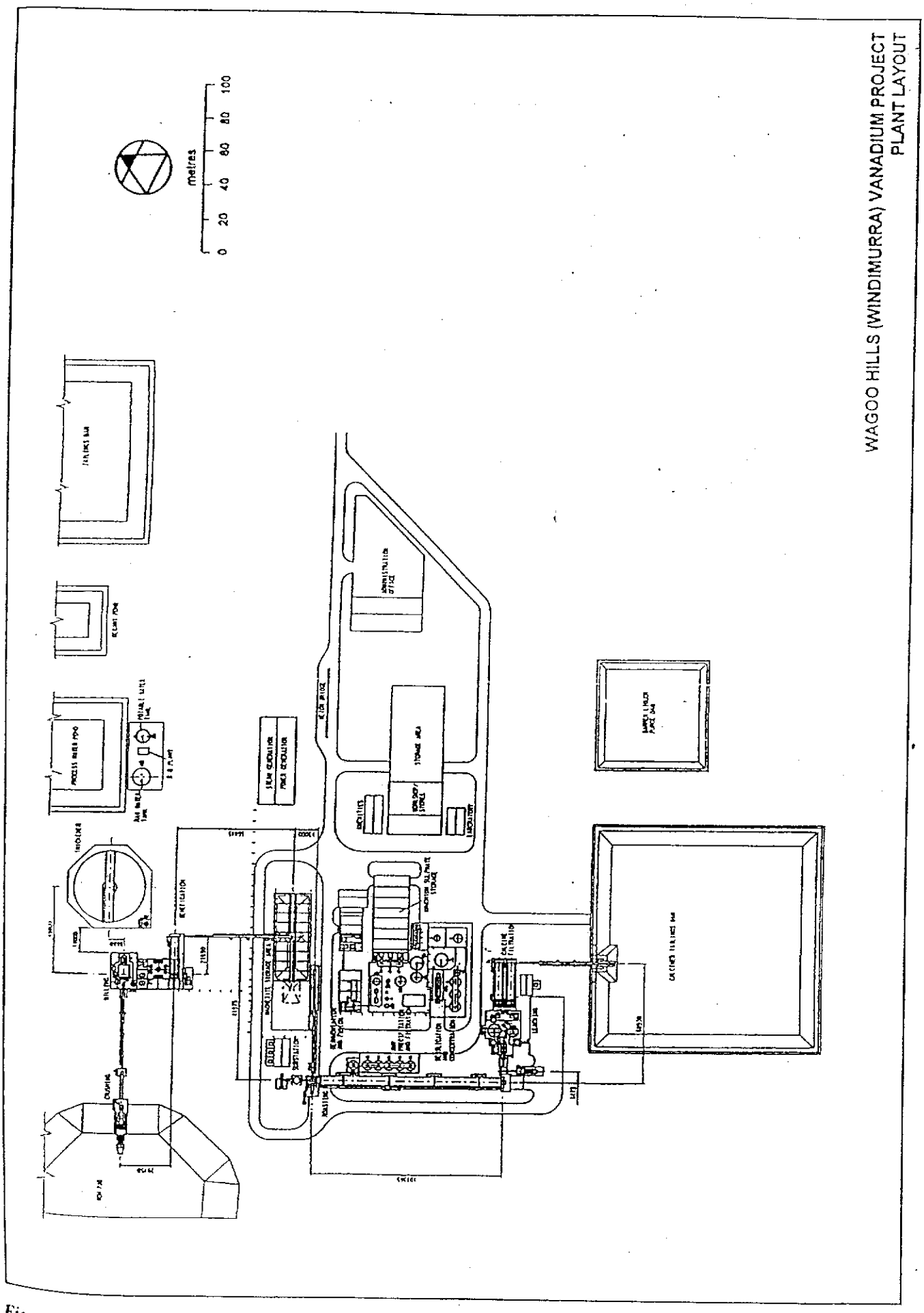

Figure 2. Wagoo Hills Vanadium Project plant layout.

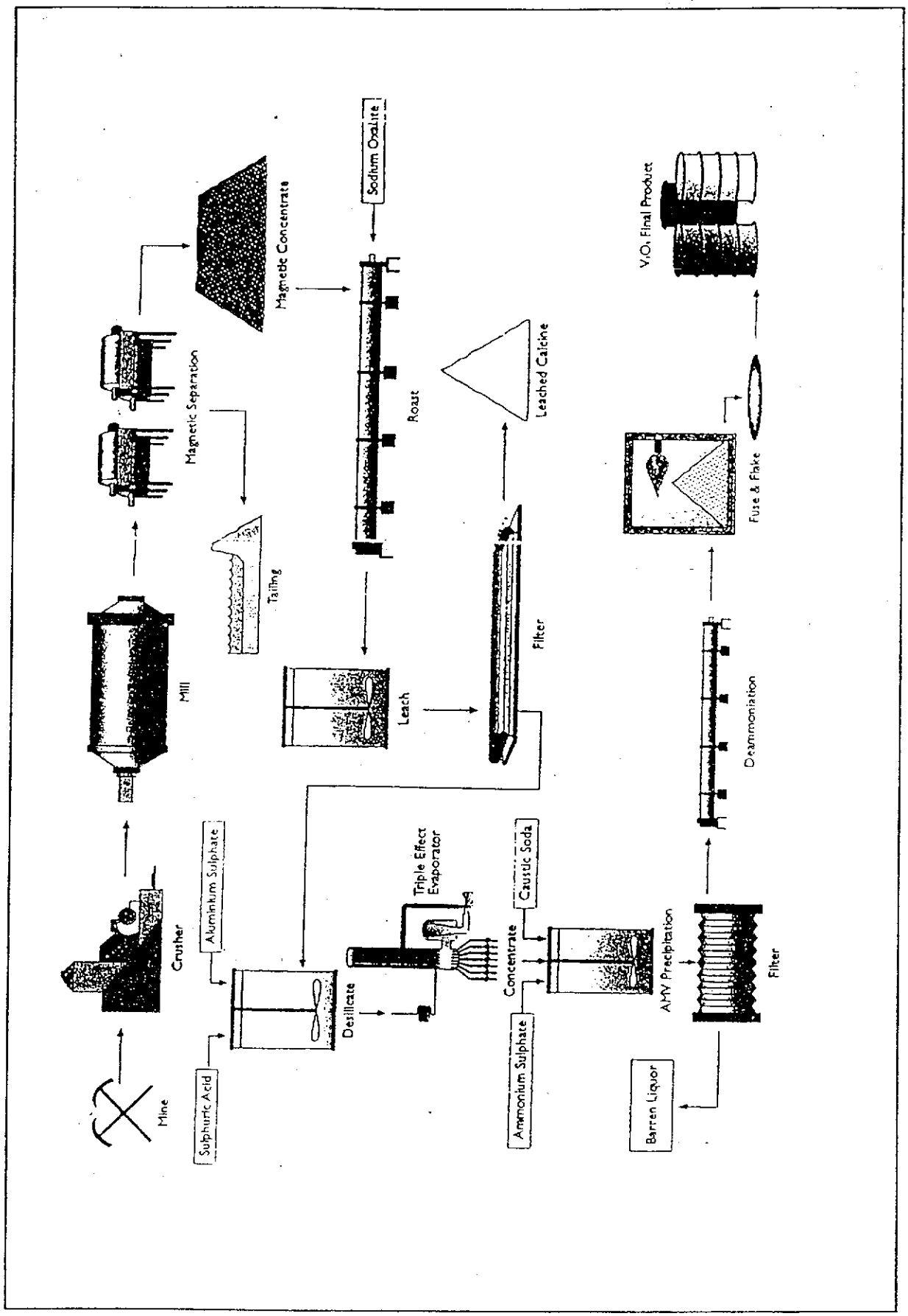

Figure 3. Wagoo Hills Vanadium Project ore processing methodology.

Schedule 2

Proponent's consolidated commitments

April 1998

WAGOO HILLS VANADIUM PROJECT & MINGENEW COAL PROJECT (653/1146/1184)

Vanadium Mining and Processing

Precious Metals Australia Limited

Schedule 2

PROPONENT'S CONSOLIDATED ENVIRONMENTAL MANAGEMENT COMMITMENTS FOR THE WAGOO HILLS VANADIUM PROJECT (1184)

April 1992, March 1998

Note : commitments appearing in italics are commitments made in 1998

(1) Implement measures in the process plant to conserve water.

(2) Submit a detailed composition of the coal to the EPA and Department of Minerals and Energy to assist in designed management plans.

(3) Submit final design details of exhaust stacks and exhaust cleaning devices prior to construction for approval by the EPA as part of the Environmental Management Program.

(4) Undertake modeling of principal atmospheric contaminants prior to plant construction.

(5) Implement atmospheric monitoring program.

(6) Ensure that vanadium dust is controlled to below limits established in the Mines Safety and Inspection Act 1994, by incorporating dust extraction and collection equipment in the process plant.

(7) Design and rehabilitate all waste dumps in consultation with the Department of Minerals and Energy and in accordance with the "Guidelines for Waste Dump Design and Rehabilitation" of that Department.

(8) Work cooperatively with the Shire of Mount Magnet, other government bodies and other users of the portion of unsealed road affected by the Wagoo Hills Project to ensure that the road is satisfactorily maintained.

(9) Develop a transportation management and contingency plan to ensure that the transportation of hazardous materials is undertaken safely. A driver training program will be incorporated into the plan and will include regular review of driver awareness. Similarly, the integrity of transportation equipment will be monitored on a regular basis. The transportation management and contingency plan will be developed in consultation with the Explosives and Dangerous Goods Division of the Department of Minerals and Energy and the Western Australian Hazardous Materials Emergency Management Scheme (WAHMEMS).

(10) An EMP will be prepared prior to construction commencing which provides detailed design information on dust control systems. These will be prepared to the satisfaction of the EPA on the advice of the Pollution Prevention Division.

(11) All process areas are sealed with impermeable floors and bunded to permit ready clean-up of spillages, which are potential dust sources.

(12) The calcined tailings dump is continuously wetted to prevent wind blown dust.

(13) PMA will develop a Spill Management Plan which requires immediate clean-up of spills with any contaminated materials or soils being recycled through the process.

(14) Minimise clearing of land consistent with safe and efficient operations.

(15) Develop a management strategy to minimise the spread of saffron thistle. This strategy will be developed in consultation with Agriculture WA.

(16) Maintain strict fire control procedures.

(17) Ensure that all handling, packaging and road transport of inputs to the process plant and products from that plant comply with the requirements of the Australian Code for the Transport of Dangerous Goods by Road and Rail and the Dangerous Goods Regulations 1992.

(18) Prohibit domestic pets in the project area as a condition of employment.

(19) Restrict off-road driving and prohibit hunting by employees as a condition of employment.

(20) Develop an effective operator training and awareness program to ensure that the process plant is well operated and any potential occupational health problems are quickly identified and are rectified immediately.

(21) *In order to protect the health of employees a comprehensive health and safety plan will be developed for the site which will address the following issues:*

- *Frequent occupational monitoring of airborne vanadium levels within works areas.*
- *Regular personal air sampling of employees working in areas with potential exposure to vanadium.*
- *Regular health assessment and urine tests for employees.*
- *Provision of, and training in the correct use of personal protective equipment.*
- *A comprehensive training program in the hazards associated with vanadium for all employees.*
- *Strict segregation of mess and meal break areas from process areas with clear procedures to ensure that contaminated protective clothing cannot enter mess areas.*

(22) The proponent will prior to commencing construction develop a water management plan to the satisfaction of the EPA on advice from the Water and Rivers Commission which demonstrates that the borefield will operate in a sustainable manner.

(23) Undertake to guarantee continuity of stock water if changes in groundwater levels, caused by the Project, adversely affect pastoral activities.

(24) Guarantee to provide the Pastoral Lessee with a potable water supply if the project adversely affects his current source of fresh water.

(25) Prepare drainage management plans for the vanadium mine and process plant at Windimurra in consultation with the Department of Minerals and Energy.

(26) Design the tailings dams in consultation with the Department of Minerals and Energy and in accordance with the "Guidelines on the Safe Design and Operating Standards for Tailings Storages" of that Department.

(27) The proponent will manage calcined tailings by utilising a lined tailings dump fitted with a drainage extraction for the return of leachate to the process.

(28) Storage of hazardous materials will be undertaken in consultation with the Department of Minerals and Energy Explosives and Dangerous Goods Division.

(29) Submit a final design of the storage facility for the sodium salt reagent at Windimurra to the Department of Minerals and Energy and the EPA for approval as part of the Environmental Management Program prior to the construction of the process plant.

(30) Design and implement a monitoring program of groundwater levels and water quality in the borefield and other bores in the vicinity of the project area at Windimurra before operational start and to the satisfaction of the Water and Rivers Commission.

(31) Prepare a Greenhouse Gas management plan.

(32) Rehabilitate the surrounds of the vanadium mine site and the process plant and village areas at the Windimurra following decommissioning of the project.

(33) Prepare specific proposals for site decommissioning in the event of termination of the project and implement those proposals after review and approval of the relevant Government Agencies at the time.

(34) Undertake a vegetation survey over the area affected by the mine and process plant and prepare a vegetation management plan.

(35) Liaise with the traditional Aboriginals of the region as required.

Attachment 1 to Statement 481

Change to Proposal

Proposal: Windimurra Vanadium Project – recommissioning and extension

Proponent: Windimurra Vanadium Pty Ltd

Change: Amendment Key Proposal Characteristics

Features of previously approved Proposal:

Element	**Quantities/Description**
Ore Extraction	2,280,000 tpa
Production Capacity	7,200 tpa V_2O_5
Life of mine	>15 years
Size of Ore Body	34,000,000 tonnes
Area of Disturbance	120 hectares
Natural Gas requirements	1,570-1,930 TJ/annum
Groundwater requirements	2,400,000 kl/annum
Carbon Dioxide emissions *Please note the mine was powered by Gas	89,961-91,875 tpa (if powered only by gas) 124,301-148,394 tpa (if powered by coal)
Non magnetic tailings (inert)	1,500,000-1,700,000 tpa
Calcine Tailings	650,000 tpa
Ferrovanadium Slag	Nil
Desilication Sludge	5,500 tpa
Barren Liquor	93,700 tpa
Truck Movements	4-7 per day

Features of changed Proposal:

Element	Quantities/Description
Ore Extraction	3,900,000 tpa
Production Capacity*	10,515 tpa V_2O_5
Life of mine	20+ years
Size of Ore Body	79,000,000 tonnes
Area of Disturbance	705 hectares
Natural Gas requirements	2,500-2,800 TJ/annum
Groundwater requirements**	3,250,000 kl/annum
Carbon Dioxide emissions	174,751 tpa
Increase and change in the type of reagents	
Non magnetic tailings (inert)	3,200,000 tpa
Calcine Tailings	1,040,000 tpa
Ferrovanadium Slag	8,300 tpa
Desilication Sludge	9,000 tpa
Barren Liquor	120,900 tpa
Truck Movements	5-9 per day
Production of new product – Ferrovanadium	
5 new waste stockpiles	Covers 110 hectares
New barren liquor disposal pond	Covers 15 hectares
Extension of calcine waste disposal facility	Additional 4 hectares
Movement of tailings storage facility	Additional 80 hectares

Note:

* Figures are for production of vanadium pentoxide flake (V_2O_5) and Ferrovanadium.

** No additional groundwater requirements will be necessary as current licences allow 3,250,000 kilo litres/annum.

Approved under delegation:

Barry Carbon
Chairman
Environmental Protection Authority

Approval Date: 22/10/07

Attachment 2 to Ministerial Statement 481

Change to Proposal

Proposal: Windimurra Vanadium Project

Proponent: Midwest Vanadium Pty Ltd

Change: Production of iron ore

Key Characteristics Table:

Element	Description of proposal	Description of approved change to proposal
Ore Extraction	3,900,000 tpa	3,900,000 tpa
Production Capacity (vanadium pentoxide flake (V_2O_5) and ferrovanadium)	10,515 tpa	10,515 tpa
Production capacity (iron ore)	N/A	**2 Mtpa**
Life of mine	20+ years	20+ years
Size of Ore Body	79,000,000 tonnes	79,000,000 tonnes
Area of Disturbance	705 hectares	**610 hectares[1]**
Natural Gas requirements	2,500-2,800 TJ/annum	2,500-2,800 TJ/annum
Groundwater requirements	3,250,000 kL/annum	**3,600,000 kL/annum**
Carbon Dioxide emissions	174,751 tpa	**176,000 tpa**
Non magnetic tailings (inert)	3,200,000 tpa	3,200,000 tpa
Calcine Tailings	1,040,000 tpa	1,040,000 tpa
Ferrovanadium Slag	8,300 tpa	8,300 tpa
Desilication Sludge	9,000 tpa	**10,000 tpa[2]**
Barren Liquor	120,900 tpa	**140,000 tpa[2]**
Truck Movements	5-9 per day	**Up to 65 per day**
Five new waste stockpiles	Covers 110 hectares	Covers 110 hectares
New barren liquor disposal pond	Covers 15 hectares	Covers 15 hectares
Extension of calcine waste disposal facility	Additional 4 hectares	Additional 4 hectares
Movement of tailings storage facility	Additional 80 hectares	Additional 80 hectares

Note 1: The area of disturbance has been adjusted to reflect the areas currently disturbed and approved for disturbance, plus additional areas of disturbance applied for as a Section 45C application for Ministerial Statement 773 also shown in Figure 4 below

Note 2: These volume estimates have been adjusted to reflect what was approved by the Department of Mines and Petroleum in Mining Proposal: Stage 2 or Recommencement of Mining at Windimurra Vanadium Project (MVPL, 2009)

Dr Chris Whitaker
DEPUTY CHAIRMAN
Environmental Protection Authority
under delegated authority

Approval date: 30 August 2011

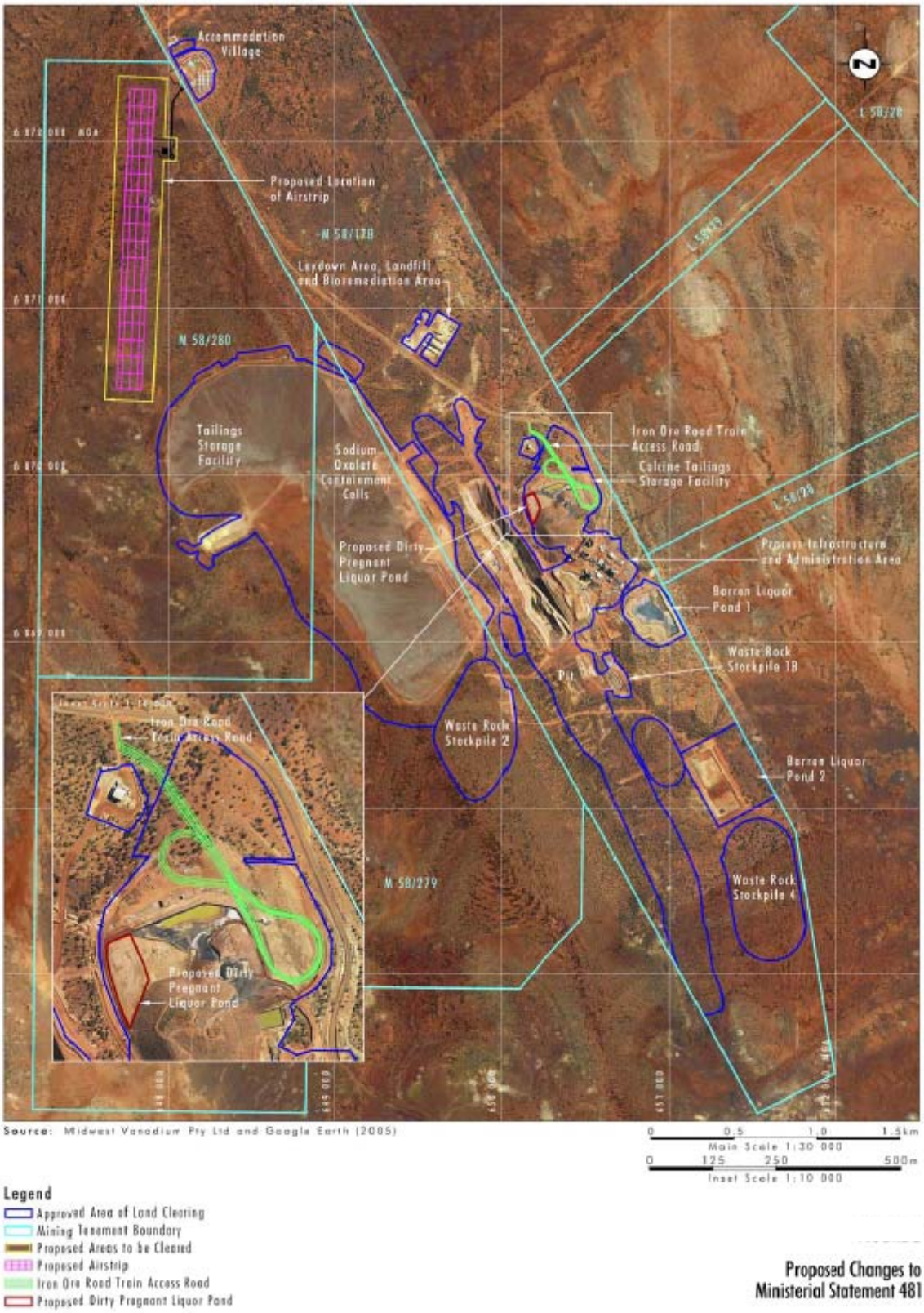

Figure 4: Proposed Changes for Production of Iron Ore

Attachment 3 to Ministerial Statement 481

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

This Attachment replaces Schedule 1, Attachment 1 and Attachment 2 to Ministerial Statement 481

Proposal: Windimurra Vanadium project: Land clearing and mining below the base of weathering

Proponent: Windimurra Vanadium Limited

Changes:

- Increase the ore extraction from 3,900,000 tpa to 4,500,000 tpa (increase of 600,000 tpa).

Table 1: Summary of the Proposal

Proposal Title	Windimurra Vanadium Project
Short Description	The proposal is to develop a vanadium mining and processing operation 890 kilometres south-east of Mt Magnet, and a coal mine near Mingenew to provide a source of energy to the vanadium operation.

Table 2: Location and authorised extent of physical and operational elements

Element	Location	Previously Authorised Extent	Authorised Extent
Ore Extraction	-	3,900,000 tpa	**4,500,000 tpa**
Production Capacity (vanadium pentoxide flake (V2O5) and ferrovanadium)	-	10,515 tpa	10,515 tpa
Production capacity (iron ore)	-	2 Mtpa	2 Mtpa
Life of mine	-	20+ years	20+ years
Size of Ore Body	-	79,000,000 t	79,000,000 t
Area of Disturbance	Figure 5	610 h	**Not more than 815 ha (authorised under Ministerial Statement 773)**
Natural Gas requirements	-	2,500-2,800 TJ/a	2,500-2,800 TJ/a
Groundwater requirements	-	3,600,000 kl/a	3,600,000 kl/a
Carbon Dioxide emissions	-	176,000 tpa	176,000 tpa
Non magnetic tailings (inert)	-	3,200,000 tpa	3,200,000 tpa
Calcine Tailings	-	1,040,000 tpa	1,040,000 tpa
Ferrovanadium Slag	-	8,300 tpa	8,300 tpa
Desilication Sludge	-	10,000 tpa	10,000 tpa
Barren Liquor	-	140,000 tpa	140,000 tpa
Truck Movements	-	Up to 65 per day	Up to 65 a day

Element	Location	Previously Authorised Extent	Authorised Extent
Waste Stockpiles	Figure 5	110 ha	110 ha
Barren liquor disposal pond	Figure 5	15 ha	15ha
Extension of calcine waste disposal facility	Figure 5	4 ha	4ha
Movement of tailings storage facility	Figure 5	80 ha	80ha

Note: Text in **bold** in Table 2 indicates a change to the proposal.

Table 3: Abbreviations

Abbreviation	Term
ha	hectare
tpa	tonnes per annum
Mtpa	mega tonnes per annum
t	tonnes
TJ/a	tetra joule per annum
kL/a	kilo litre per annum

Figures (attached)

Figure 5 – Development Envelope

Dr Tom Hatton
CHAIRMAN
Environmental Protection Authority
under delegated authority

Approval date: 10 Dec 2019

Figure 5: Development Envelope