Quicklime plant and limestone quarry, Nowergup near Wanneroo — change of Environmental Conditions to allow increases in production rates

Swan Portland Cement Ltd

Proposed change to Environmental Conditions

Report and recommendations of the Environmental Protection Authority

Environmental Protection Authority
Perth, Western Australia
Bulletin 733
March 1994

THE PURPOSE OF THIS REPORT

This report contains the Environmental Protection Authority's environmental assessment and recommendations to the Minister for the Environment on the environmental acceptability of the proposed amendment to the original proposal.

Immediately following the release of this report there is a 14-day period when anyone may appeal against it to the Minister.

After the appeal period, and determination of any appeals, the Minister consults with the other relevant ministers and agencies and then issues his decision about whether the amended proposal may or may not proceed. The Minister also announces the legally binding environmental conditions which might apply to any approval.

APPEALS

If you disagree with any of the contents of this assessment report, including the recommendations, you may appeal in writing to the Minister for the Environment outlining the environmental reasons for your concern and enclosing the appeal fee of $10.

It is important that you clearly indicate the part of the report you disagree with and your reasons so that the grounds of your appeal can be properly considered by the Minister.

SEND YOUR APPEAL PLUS FEE TO:

Hon Minister for the Environment
12th Floor, Dumas House
2 Havelock Street
WEST PERTH WA 6005

CLOSING DATE

Your appeal (with the $10 fee) must reach the Minister's office no later than 5.00 pm on 25 March, 1994.

Environmental Impact Assessment (EIA)

Process Timelines in weeks

Date	Timeline commences after receipt of full details of proposal from the proponent	Time (weeks)
20/10/93	Proponent document distributed by EPA for comment (distribution targeted to relevant Government agencies)	3
9/11/93	Comment period closed	
15/11/93	Issues raised during public comment period summarised by EPA and forwarded to the proponent	1
10/1/94	Proponent response to the issues raised received	not required
	EPA Section 46 report to the Minister for the Environment released	2

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Contents

Appendices

1. Background

Swan Portland Cement Ltd (the proponent) received approval from the Minister for the Environment to develop the quicklime plant and limestone quarry at Nowergup on 8 June 1992, subject to a number of legally binding Environmental Conditions and Commitments (Appendix 1). That approval was given after an assessment by the Environmental Protection Authority (EPA) and release of its Report and Recommendations on the proposal (EPA Bulletin 491) in October 1991.

Swan Portland Cement Ltd (Swan) proposes to increase the production capacity of the quicklime plant from the original 230,000 tonnes/annum to 460,000 tonnes/annum, and to increase the rate of limestone quarrying from the approved 450,000 tonnes/annum to approximately 1,000,000 tonnes/annum.

As this proposal constitutes a significant change to the original proposal, consideration of an amendment to the existing Environmental Conditions is necessary. The Minister for the Environment, under the provisions of Section 46 of the Environmental Protection Act, has requested that the EPA inquire into the proposal and report to him. This report fulfils that request.

The EPA considered that, given the extent of public impact previously associated with this project, it would seek written submissions from those members of the public and government agencies who previously made submissions. The EPA determined that the document should be available for review to these for three weeks, starting on 20 October 1993 and closing on Tuesday 9 November 1993. The EPA received four submissions from government agencies and one private submission (a list of submitters is given in Appendix 3).

2. Changes to the original proposal

The proposed increase in production capacity would require changes to some aspects of the approved project description.

Quarrying

The quarrying rate of limestone to be supplied to the quicklime plant would increase from the approved rate of 450,000 tonnes/annum to up to approximately 1,000,000 tonnes/annum. The machinery to be used for quarrying operations would be larger units than those previously proposed; however, the amount of machinery would not be increased from that required for the approved project. The total area cleared for quarrying would remain the same.

Quicklime plant

The quicklime plant would have an overall maximum capacity of 460,000 tonnes/annum. Site preparation and construction of the plant would take about 20 months, compared with 12 months for the approved plant.

The requirement for natural gas would increase from 4 TJ/d to 8 TJ/d. As with the approved project, it is proposed that natural gas be supplied by the State Energy Commission of Western Australia (SECWA) from its lateral servicing the Pinjar gas turbine station. The environmental implications of supplying natural gas and the selection of the pipeline route between the Pinjar station and the quicklime plant would be addressed separately by SECWA.

Due to a recent reassessment by Swan, the modified proposal would not require any increase in electrical power from the 5 MW required for the approved project. The environmental implications associated with the provision of power to the quicklime plant would be addressed separately by SECWA.

The revised proposal would not require any increase in the plant water requirements of 200–500 kL/day (about 180,000 kL/annum). The Water Authority has indicated that, subject to

compliance with a number of conditions, it would issue a licence for Swan to draw up to 180,000 kL/annum from groundwater contained in the deep Leederville Formation. Similarly, the revised proposal would not require any increase in the potable water requirements of 1.5 kL/day. The water for domestic use would be obtained from the shallow aquifer.

With the revised proposal the calciner tower height would increase by 24 metres to about 89 metres.

Atmospheric emissions
The total flow-rate volume from the stack on the calciner tower would increase from 112,050 Nm^3/h to 230,000 Nm^3/h (see discussion Section 4).

Solid residue
The percentage of silica reject material produced relative to input tonnes to the quicklime plant has been increased from 15 per cent to about 32 per cent. The volume of reject material would increase from about 75,000–80,000 t/a to about 320,000 t/a. This reject material would comprise high silica rejects and fines. The fines, which would be sourced from the grinding process, could probably be returned to the calciner when stable operations were established. As for the approved proposal, silica rejects and fines would be made available for sale; otherwise, the rejects would be returned by truck to quarried areas for rehabilitation purposes.

Product transport
Quicklime would be transported in B-trains and other bulk tankers. The main roads to be used for transporting the quicklime would be the same as those for the approved project. The frequency of load-outs from the plant would depend on market demands; however, based on a six-day week, it is expected that the number of vehicle movements required to transport quicklime would increase from about 60 per day to about 80–120 per day. Quicklime would be transported direct to consumers, including approximately 18,000 tonnes/annum to Swan's Rivervale plant.

Workforce and schedule
The operation of the quicklime plant would require an increase in the workforce from 20 to 25 for the approved project to about 30 for the revised proposal. Site development, preliminary quarrying and construction of the quicklime plant are scheduled to commence by June 1994. Commissioning of the project is scheduled for the first quarter of 1996.

3. Public consultation

The proponent's programme of consultation involved discussions with government authorities, including the City of Wanneroo, the Department of Planning and Urban Development, SECWA, the Department of Transport, and the Department of Resources Development.

A public open day was held at Swan's leases on Saturday, 18 September 1993 between 10 a.m. and 2 p.m. Nine residents and landowners attended the open day, together with four representatives from Swan, two consultants to Swan, and representatives from the EPA (now Department of Environmental Protection (DEP)) and the Department of Resources Development. Issues raised were similar to those brought up at the previous two open days, and included the location of the plant site, noise levels from quarrying and plant operations, hours of quarrying operations, traffic routes, estimated life of the quarry, height of the calciner tower, use of and risk to groundwater supplies, and composition of atmospheric emissions.

The proponent's responses to issues raised in public submissions is provided in Appendix 2.

4. Advice of the Environmental Protection Authority

4.1 Previous advice on the original proposal

In assessing the original proposal for the proposed quicklime plant and quarry at Nowergup in 1991, the Authority identified the main issues requiring detailed consideration as:

- conservation of native vegetation, particularly *Eucalyptus "argutifolia"*;
- rehabilitation of the quarried area;
- protection of water resources;
- noise and dust impacts from the quarrying operations;
- noise, dust and gaseous emissions from the quicklime plant;
- visual impacts from the plant and quarry; and
- traffic and other social impacts.

The EPA considered that these issues were manageable and recommended that the proposal could proceed, subject to the proponent's modified commitments and the EPA's recommendations.

The EPA made the following key recommendations:

- the Department of Conservation and Land Management, in consultation with the Department of Planning and Urban Development and the Department of Mines, should prepare a management programme for *Eucalyptus "argutifolia"* , which should consider the future land use of Swan Portland Cement Ltd's lease and the protection of the populations of *Eucalyptus "argutifolia"*, after quarrying ceases in the lease area.
- the proponent be required to ensure that the introduced noise from the project does not cause the noise in the surrounding residential areas to exceed:
  - 50dB(A) from 7am to 7pm Monday to Saturday;
  - 45dB(A) on Sunday and from 7pm to 10pm Monday to Saturday; and
  - 40dB(A) from 10pm to 7am every day.
- the proponent should prepare and implement an Environmental Management Programme to the satisfaction of the EPA to include, but not necessarily be limited to the following issues:
  - clearing of native vegetation;
  - conservation of *Eucalyptus "argutifolia"*;
  - rehabilitation of quarried sites and haul roads;
  - water quality protection;
  - dust impacts associated with the quarrying and transportation operations;
  - auditing of greenhouse gas emissions;
  - visual impacts and landscaping;
  - social impacts; and
  - periodic reporting of monitoring results and consequential changes to environmental management

Those recommendations directly applicable to the proponent are now covered in Environmental Conditions (Appendix 1).

4.2 Major potential impacts associated with modified proposal

4.2.1 *Eucalyptus "argutifolia"*

The gazetted rare species *Eucalyptus "argutifolia"* occurs within the lease area. Most of the populations are located on the eastern side of the ridge, in shallow pockets of soil. Swan does not intend to mine the populations of *E. "argutifolia"* and has developed management plans and provided commitments to ensure their survival.

The revised proposal would result in quarrying operations approaching populations of *E. argutifolia* within the Wesco Road leases in a shorter time than the approved proposal. The revised proposal would result in one of the populations on the Pinjar lease (Population D) being reached within three to four years of plant commissioning, instead of six years. Similarly, quarrying would approach Population C (located within the Wesco lease) sooner than the anticipated 20 years.

The EPA notes that a number of commitments were made as part of the approved project in relation to the conservation of all populations of *E. "argutifolia"* in the leases (Appendix 1), and that these commitments would apply if the revised proposal was approved. In addition, prior to the commencement of any clearing activity, Swan is required to prepare a conservation management plan (as part of the EMP) to address the conservation of all populations of *E "argutifolia"* contained within the proposal area.

The EPA considers that the revised proposal does not have any additional impacts on the populations of *E "argutifolia"* which occur within the proposal area, other than approaching the populations within a shorter time frame than that for the approved project. The EPA considers that this aspect is manageable through the conservation management plan required as part of the Environmental Management Programme.

The EPA notes that there has been no significant progress by the Department of Planning and Urban Development towards preparing a previously recommended management programme that should address, together with other issues, the long term protection of the populations of *E. "argutifolia"* during the post-quarrying and decommissioning phase of the project.

4.2.2 Noise

For the approved project, it was predicted that the operation of the quicklime plant by itself would not be audible at any of the residential locations since the noise emissions from the plant would be well below established background noise levels. However, during operation of the quarry in the day, there would be occasions when the background noise would be sufficiently reduced to cause noise from quarrying activities to be audible. This situation already occurs in the general area because of the presence of a number of other quarries and limestone block cutting operations.

The proponent has indicated that noise level predictions based on modelling for the revised proposal show that:

- the quicklime plant would be just audible when the background noise levels fell below 25 dB(A) (the frequency of this occurring should be low);
- during operation of the quarry in the day, noise emissions from the quarrying operations would dominate noise associated with the quicklime plant, and there would be occasions when the background noise would be sufficiently reduced for the noise from quarrying activities to be audible; and
- the revised proposal would not result in noise emissions from the operation of the quicklime plant or from quarrying activities exceeding those limits set by the EPA for the approved project.

The proponent's noise assessment developed noise contours for a range of different operational scenarios, including worst case situations. These scenarios included a temperature inversion, a light easterly wind and a light south-westerly for two operational scenarios involving simultaneous quicklime plant and quarrying operations. This worst case modelling indicates that a light easterly results in the highest predicted noise levels. These were:

- 45 dB(A) for the scenario with the quicklime plant operating, together with all quarrying equipment operating in the quarry; and
- 43 dB(A) for the scenario with the quicklime plant operating and two off-road haul trucks operating at the plant, together with all remaining quarrying equipment operating in the quarry.

The proponent has acknowledged that, should these noise levels occur between 10.00 p.m. and 7.00 a.m., the 40 dB(A) noise limit stated in the Environmental Condition applicable to these hours would be exceeded. However, as Swan has indicated that quarrying is not planned to be undertaken outside normal working hours and would continue to be restricted to daylight hours, it is unlikely that the predicted noise levels under the worst case scenario would occur.

The EPA notes that the proponent has previously made a commitment to meet all appropriate noise emission requirements set by the EPA (Commitment 32) and, in the revised proposal, made a statement (in response to submissions on the revised proposal) to committing to ensuring that the noise limits set in the Environmental Conditions would not be exceeded.

The EPA considers that the potential for operational noise exceedances to occur as a result of the expanded operation is low. However, should justifiable noise complaints from the project be received by the EPA, the proponent will be required to address plant noise through the conditions of Works and Licensing for the plant, and quarrying and transport noise issues through the Environmental Management Programme.

4.2.3 Gaseous emissions

Nitrogen oxides

The emission of nitrogen oxides has the potential to contribute to photochemical smog sometimes experienced in the Perth metropolitan area.

The revised proposal would increase the amount of nitrogen oxides emitted to the atmosphere on a pro-rata basis to 23 kg/hr. Swan's predicted nitrogen oxide emission rate represents 1.3 per cent of the estimated worst case scenario emission rate for SECWA's nearby Pinjar power station (1,740 kg/h, based on the simultaneous operation of all gas turbines, which would be rarely required). The emission concentration of nitrogen oxides would not change.

Measures to be adopted by Swan to minimize nitrogen oxide emissions include the use of up-to-date technology in plant design and pollution control, specifically low NO_x burners which, in recent trials in cement kilns at Rivervale, have reportedly demonstrated a significant reduction in nitrogen oxide emissions.

The revised proposal incorporates a stack 1–2 m above the height of the calciner tower through which atmospheric emissions would be vented. This increase in the stack height above that proposed for the approved project would assist in plume mixing and dispersion.

Swan has pointed out in its response to submissions the various factors associated with its proposal which would minimize the contribution of its nitrogen oxide emissions in the formation of photochemical smog in the region. These include the relatively low nitrogen oxide emissions rate, the general remoteness of the quicklime plant site relative to the metropolitan area, the prevailing summer wind patterns, and Perth's meteorological and topographical characteristic.

Nitrogen oxides emissions have not been modelled to determine ground level concentrations. Swan has indicated that, prior to the granting of Works Approval, it would model the ground level concentrations of nitrogen oxides and submit the results to the EPA.

The EPA considers that nitrogen oxides emissions from the revised proposal are unlikely to create a significant environmental impact. Ground level concentrations of nitrogen oxides should be monitored and controlled by Swan within limits to be specified in the Licence conditions.

Oxides of carbon

Carbon dioxide emissions would increase from about 260,000 tonnes/annum to about 520,000 tonnes/annum. The EPA has previously noted that, if quicklime were not manufactured in Western Australia to meet local requirements, it would be imported, which would result in the generation of an equivalent amount of carbon dioxide elsewhere. The manufacture of quicklime using natural gas as the source of heat would result in negligible emissions of carbon monoxide.

Sulphur dioxide

Based on stack gas testing at Swan's Rivervale plant and the total flow rate volume associated with the revised proposal, Swan estimates the mass emission rate for sulphur dioxide would be 0.13 kg/h. Swan also report that SECWA has indicated that the Pinjar power station emits no sulphur dioxide. The EPA considers that sulphur dioxide emissions from the revised proposal are unlikely to create a significant environmental impact.

Greenhouse gas auditing

The EPA considers that, as required for the approved project, Swan should undertake annual audits of all greenhouse gases emitted by the quicklime plant as part of the Environmental Management Programme, and provide the results to the EPA.

4.2.4 Dust

The proposal has the potential to generate dust pollution outside the lease boundary during plant construction, quarrying activities, limestone haulage and quicklime plant operations. The Authority notes that Swan is committed to various measures to minimise dust emissions.

Dust emissions from the operation of the quicklime plant would be controlled by electrostatic precipitators and bag filters for both the revised proposal and the approved project. The revised proposal would incorporate the same conceptual particulate monitoring programme using high volume samplers as outlined for the approved project. The high volume samplers would be located upwind and downwind of prevailing wind patterns from the quicklime plant.

Swan has indicated that the revised proposal would not result in increased concentrations of suspended particulates being emitted from the quicklime plant compared with those for the approved project. Additionally, the operation of the quicklime plant under the revised proposal would comply with the EPA's air quality objectives on particulate matter concentrations. As part of the approved project, Swan made an environmental commitment (which would also apply for the revised proposal) that the levels of suspended particulates from the operation of the quicklime plant would be below the limit of 100 mg/Nm^3 as recommended by the National Health and Medical Research Council. Based on extensive pilot plant testing conducted over several years, and based on the effectiveness of the electrostatic precipitator and bag filters to be used, Swan believes that particulate emissions would be significantly lower than the 100 mg/Nm^3 (or 23 kg/h) limit. In the event of an electric power failure, the plant would shut down and an estimated 4–6 kg of particulates (composed of limestone dust) would be released into the atmosphere.

The EPA notes that the revised proposal would potentially increase the generation of dust. Swan has indicated that dust would be minimized through the application of water from mobile tankers within the quarry and along haul roads. Additionally, rehabilitation of quarried areas would commence as soon as practicable following backfilling and recontouring.

The EPA is concerned about the possible effects of particulate deposition on the *E. "argutifolia"* populations. Swan has indicated that, although no estimates on the predicted rate of particulate deposition at the nearest population of *E. "argutifolia"* have been made, the amount of

particulate deposition is expected to be negligible, due to the low volume of particulates to be emitted from the stack (after passing through an electrostatic precipitator and bag filters); the proximity of the nearest population of *E. "argutifolia"* , which is located more than 600m from the quicklime plant; and the direction of the prevailing summer and winter winds.

The EPA considers that particulate emissions from the quicklime plant for the revised proposal and the approved project should be controlled under the provisions of the Works Approval and Licence conditions. The EPA considers that, as for the approved project, dust impacts associated with the limestone quarrying and cartage should be monitored and managed through the preparation, implementation and regular review of a dust management plan as part of the Environmental Management Programme. Swan has indicated that this plan would be prepared in consultation with and to the satisfaction of the EPA.

4.2.5 Groundwater

No incremental impacts on groundwater resources through increased groundwater abstraction would result from implementation of the revised proposal.

The increased operational workforce would result in a small increase in the utilization of the biological water treatment system for domestic effluent; however, it is unlikely to result in significant additional environmental impacts on groundwater quality.

The increased volume of material to be returned to the quarry area from the quicklime plant would have no detrimental effect on regional groundwater quality, as the silica reject material is insoluble.

The increased rate of quarrying would result in an increased rate of clearing and groundwater recharge in the short term. However, the revised proposal would also result in earlier cessation of quarrying and earlier rehabilitation of disturbed areas, allowing the water table regimes to be re-established more rapidly.

Quarrying for both the approved project and the revised proposal would be undertaken downstream of the Water Authority's current and proposed groundwater borefields. Swan considers that, for this reason, any potential pollution source associated with quarrying is unlikely to impact groundwater in the borefields. Fuel storage, refuelling, servicing and parking of mobile equipment would be undertaken as far from the western boundary of the Priority One zone as is practicable.

Swan considers that additional impacts are unlikely in relation to the Priority One zone of the designated Public Groundwater Source Protection Area or the area covered by the Environmental Protection (Gnangara Mound Crown Land) Policy. The revised proposal would result in the same quarry area, vegetation to be cleared, quarry profile, water requirements, volume of reject material to be returned to the quarry, and similar or less volumes of water to be used for dust suppression in the quarry.

The EPA considers that potential groundwater impacts associated with the revised proposal are manageable. As for the approved project, Swan should be required to prepare and implement a water quality protection plan in consultation with the Water Authority of Western Australia and to the satisfaction of the EPA, prior to the commencement of any clearing activity for the proposed plant site and quarry.

4.2.6 Traffic

The EPA notes that the revised proposal would result in an increase in daily traffic from 124–142 vehicle movements (one-way trips) associated with the approved project to 164–212 vehicle movements (one-way trips). The revised proposal would also result in an increase to the 1991–92 Monday to Friday annual average daily traffic flow on Pinjar Road immediately east of Wanneroo Road from 3.4–3.9 per cent to 4.4–5.8 per cent.

The EPA considers that traffic issues associated with the revised proposal are unlikely to create a significant environmental impact. However, should justifiable complaints arise as a result of traffic problems, Swan would be required to monitor and report on them as part of the social impacts component of the Environmental Management Programme.

5. Conclusions and recommendations

The Environmental Protection Authority concludes the modifications to the proposed quicklime plant and limestone quarry at Nowergup are environmentally acceptable and may proceed, subject to the following recommendations:

Recommendation 1

The Environmental Protection Authority concludes that the modifications to expand the quicklime plant and limestone quarry at Nowergup near Wanneroo is environmentally acceptable and recommends that Conditions 1 and 2 of the Ministerial statement for the proposal of 5 June 1992 be deleted and replaced by the following condition.

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

1-1 In implementing the proposal, including the modifications to increase the production capacity of the quicklime plant to 460,000 tonnes/annum and the rate of limestone quarrying to approximately 1,000,000 tonnes/annum, as reported on in Environmental Protection Authority Bulletin 733, the proponent shall fulfil the commitments made in the Consultative Environmental Review and included in Environmental Protection Authority Bulletin 584 as Appendix 1; provided that the commitments are not inconsistent with the conditions or procedures contained in this statement (a copy of the commitments is attached).

2 Implementation
Changes to the proposal which are not substantial may be carried out with the approval of the Minister for the Environment.

2-1 Subject to the conditions in this amended statement, the manner of detailed implementation of the proposal shall conform in substance with that set out in any designs, specifications, plans or other technical material submitted by the proponent to the Environmental Protection Authority with the proposal. Where, in the course of that detailed implementation, the proponent seeks to change those designs, specifications, plans or other technical material in any way that the Minister for the Environment determines, on the advice of the Environmental Protection Authority, is not substantial, those changes may be effected.

With respect to the administration of the Environmental Conditions set by the Minister for the Environment, the EPA suggests that the Minister's Statement include a now standard condition and procedure not reflected in the existing Environmental Conditions on the proposal.

Recommendation 2

The Environmental Protection Authority recommends that the following standard condition and procedure be added to the Ministerial Statement for the project to ensure conformity with recent statements.

8 Compliance auditing
In order to ensure that environmental conditions and commitments are met, an audit system is required.

8-1 The proponent shall prepare periodic progress and compliance reports, to help verify the environmental performance of this project, in consultation with the Environmental Protection Authority.

A number of procedural statements are now incorporated in the Minister's Statement to clarify the roles of the Minister, the Environmental Protection Authority and other government agencies in the verification of compliance and the determination of any disputes arising thereof.

- **The Environmental Protection Authority is responsible for verifying compliance with the conditions contained in this statement, with the exception of conditions stating that the proponent shall meet the requirements of either the Minister for the Environment or any other government agency.**

- **If the Environmental Protection Authority, other government agency or proponent is in dispute concerning compliance with the conditions contained in this statement, that dispute will be determined by the Minister for the Environment.**

6. Recommended Environmental Conditions

The following Recommended Environmental Conditions would amend the Minister's original Statement (Appendix 1) and apply an additional condition to ensure continued review of the environmental performance of the proposal.

PROPOSAL: QUICKLIME PLANT AND LIMESTONE QUARRY, NOWERGUP NEAR WANNEROO (491/836)

CURRENT PROPONENT: SWAN PORTLAND CEMENT LTD

CONDITIONS SET ON: 5 JUNE 1992

Conditions 1 and 2 are amended to read as follows:

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

1-1 In implementing the proposal, including the modifications to increase the production capacity of the quicklime plant to 460,000 tonnes/annum and the rate of limestone quarrying to approximately 1,000,000 tonnes/annum, as reported on in Environmental Protection Authority Bulletin 733, the proponent shall fulfil the commitments made in the Consultative Environmental Review and included in Environmental Protection Authority Bulletin 584 as Appendix 1; provided that the commitments are not inconsistent with the

conditions or procedures contained in this statement (a copy of the commitments is attached).

2 Implementation

Changes to the proposal which are not substantial may be carried out with the approval of the Minister for the Environment.

2-1 Subject to the conditions in this amended statement, the manner of detailed implementation of the proposal shall conform in substance with that set out in any designs, specifications, plans or other technical material submitted by the proponent to the Environmental Protection Authority with the proposal. Where, in the course of that detailed implementation, the proponent seeks to change those designs, specifications, plans or other technical material in any way that the Minister for the Environment determines, on the advice of the Environmental Protection Authority, is not substantial, those changes may be effected.

The following condition and procedure are inserted after condition 7.

8 Compliance Auditing

In order to ensure that environmental conditions and commitments are met, an audit system is required.

8-1 The proponent shall prepare periodic progress and compliance reports, to help verify the environmental performance of this project, in consultation with the Environmental Protection Authority.

Procedure:

1 The Environmental Protection Authority is responsible for verifying compliance with the conditions contained in this statement, with the exception of conditions stating that the proponent shall meet the requirements of either the Minister for the Environment or any other government agency.

2 If the Environmental Protection Authority, other government agency or proponent is in dispute concerning compliance with the conditions contained in this statement, that dispute will be determined by the Minister for the Environment.

Appendix 1

Environmental Conditions set and proponent's commitments for the quicklime plant and limestone quarry at Nowergup near Wanneroo

(Assessment number 491)

5 June 1992

Ass # 491

Bull # 482

State # 267

WESTERN AUSTRALIA

MINISTER FOR THE ENVIRONMENT

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

QUICKLIME PLANT & LIMESTONE QUARRY, NOWERGUP NEAR WANNEROO (491)

SWAN PORTLAND CEMENT LTD

This proposal may be implemented subject to the following conditions:

1. Commitments

In implementing the proposal, the proponent shall fulfil the commitments (which are not inconsistent with the conditions or procedures contained in this statement) made in the proponent's Consultative Environmental Review and included in Environmental Protection Authority Bulletin 584 as Appendix 1. (A copy of the commitments is attached).

2. Detailed Implementation

Subject to these conditions, the manner of detailed implementation of the proposal shall conform in substance with that set out in any designs, specifications, plans or other technical material submitted by the proponent to the Environmental Protection Authority with the proposal. Where, in the course of that detailed implementation, the proponent seeks to change those designs, specifications, plans or other technical material in any way that the Minister for the Environment determines on the advice of the Environmental Protection Authority, is not substantial, those changes may be effected.

3. Noise Levels

3-1 The proponent shall ensure that the noise emissions from the project do not cause or contribute to noise levels in excess of:

- 50db(A) slow from 7am to 7pm Monday to Saturday inclusive, but excluding gazetted public holidays;
- 40db(A) slow from 10pm to midnight and from midnight to 7am every day; and
- 45db(A) slow at all other times;

when measured:

(1) at any point on or adjacent to other premises not occupied by the proponent and used for residential or other noise-sensitive purposes; and

(2) at a height between 1.2 and 1.5 metres above ground level and at a distance greater than 3.5 metres from any reflecting surface other than the ground.

3-2 Where the combined level of the noise emissions from the project and the normal ambient noise exceeds the levels specified in condition 3-1, this condition shall be considered to be contravened only when the following criteria are also met at the measurement point:

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8 JUN 1992

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- the noise emissions from the premises are considered to be audible by the Environmental Protection Authority; and
- the noise emissions from the premises are identifiable by the Environmental Protection Authority as emanating from the project.

3-3 Noise emissions shall not cause unacceptable annoyance due to tonal or impulsive components. These characteristics shall be assessed by the Environmental Protection Authority.

3-4 Exemption may be granted from conditions 3-1 and 3-3 in respect of any premises used for residential purposes by the negotiation of a written agreement with the occupier(s) of that premises. Such agreement shall be acceptable to the Environmental Protection Authority.

4. Environmental Management Programme

A comprehensive environmental management programme should be prepared to enable the proponent to detect, report on and manage any significant impacts on the environment.

4-1 The proponent shall prepare an Environmental Management Programme following consultation with the appropriate government departments, to the satisfaction of the Environmental Protection Authority. Plans to be prepared as part of the Environmental Management Programme shall include, but not necessarily be limited to:

(1) clearing of native vegetation;

(2) conservation of *Eucalyptus "argutifolia"*;

(3) rehabilitation of quarried sites and haul roads;

(4) noise management;

(5) water quality protection;

(6) dust impacts associated with the quarrying and transport operations;

(7) auditing of Greenhouse gas emissions;

(8) visual impacts and landscaping;

(9) social impacts; and

(10) periodic reporting of monitoring results and consequential changes to environmental management.

4-2 The timing of the preparation and review of these plans shall be to the satisfaction of the Minister for the Environment upon advice from the appropriate government departments.

4-3 As part of the Environmental Management Programme, the proponent shall prepare an "Audit Programme" in consultation with and to the satisfaction of the Environmental Protection Authority. The programme shall include, but not be limited to, the preparation of regular "Compliance Reports" to show the progress of the proposal, any changes to the original proposal, and how the proponent has complied with the environmental conditions.

4-4 The proponent shall subsequently implement the Environmental Management Programme to the satisfaction of the Environmental Protection Authority upon advice from the appropriate government departments.

5. Decommissioning

The proponent shall be responsible for decommissioning and removal of the plant and installations and rehabilitating the site and its environs, to the satisfaction of the Environmental Protection Authority. At least six months prior to decommissioning, the proponent shall prepare and subsequently implement a decommissioning and rehabilitation plan, to the satisfaction of the Environmental Protection Authority.

6. Proponent

No transfer of ownership, control or management of the project which would give rise to a need for the replacement of the proponent shall take place until the Minister for the Environment has advised the proponent that approval has been given for the nomination of a replacement proponent. Any request for the exercise of that power of the Minister shall be accompanied by a copy of this statement endorsed with an undertaking by the proposed replacement proponent to carry out the project in accordance with the conditions and procedures set out in the statement.

7. Time Limit on Approval

If the proponent has not substantially commenced the project within five years of the date of this statement, then the approval to implement the proposal as granted in this statement shall lapse and be void. The Minister for the Environment shall determine any question as to whether the project has been substantially commenced. Any application to extend the period of five years referred to in this condition shall be made before the expiration of that period, to the Minister for the Environment by way of a request for a change in the condition under Section 46 of the Environmental Protection Act. (On expiration of the five year period, further consideration of the proposal can only occur following a new referral to the Environmental Protection Authority).

NOTE

The quicklime plant is a prescribed premises under Part V of the Environmental Protection Act 1986. Accordingly the proponent will be required to obtain a Works Approval prior to constructing the plant and a Licence prior to its operation.

Bob Pearce, MLA
MINISTER FOR THE ENVIRONMENT

- 5 JUN 1992

Proponent's Commitments

PROPOSED QUICKLIME PLANT AND LIMESTONE QUARRY AT NOWERGUP, NEAR WANNEROO (491)

Swan Portland Cement Ltd

The proponent has made the following environmental commitments:

1. All solid refuse and construction material wastes would be removed from site and disposed of in accordance with the requirements of the City of Wanneroo.

2. Where practicable, native vegetation would be retained during site clearing operations within the revised plant site.

3. Where practicable, vegetation and topsoil cleared during the construction phase would be used in the rehabilitation of disturbed areas within the revised plant site and the quarry.

4. Dust suppression measures, including application of water from tankers, would be used to minimize dust generation during site preparation and construction activities.

5. All construction machinery would be fitted with appropriate noise suppression devices. Construction noise levels would comply with the requirements of the Department of Occupational Health, Safety and Welfare. In addition, noise levels would comply with the allowable community noise levels as set out in the Noise Abatement (Neighbourhood Annoyance) Regulations, 1979.

6. Swan would undertake an examination of practical means of reducing the demand for water through recycling and improvements in process technology.

7. Areas of the leases containing populations of *E. "argutifolia"* would not be quarried and would be protected from damage to the satisfaction of the EPA.

8. Swan would ensure that no physical damage to any population of *E. "argutifolia"* would occur as a result of its quarrying or associated operations, and would endeavour to prevent damage from other causes. A quarry management plan addressing the management of *E. "argutifolia"* and other flora, water, and rehabilitation techniques would be prepared in consultation with CALM to the satisfaction of the Department of Mines and the EPA.

9. Quarrying would not be undertaken within 10m of any stem, plant or population of *E. "argutifolia"*. No batter slope steeper than 1:3 would be established within 80m of any stem, plant or population, apart from the access road near Population C.

10. All areas within 80m of the *E. "argutifolia"* populations, apart from the access road near Population C, would be fully rehabilitated in order to re-establish indigenous species on the batter slopes. Rehabilitation would commence within 12 months of the cessation of quarrying in the area, and would be conducted as described in Section 6.3.10 of the CER.

11. A 1.5m barrier fence would be constructed around each *E. "argutifolia"* population, to restrict vehicular movement in the area. Fencing would be erected at least 1 year before quarrying approached within 200m of any population of *E. "argutifolia"*..

12. Swan would fund electrophoretic studies to establish the genetic relationship of individual plants within and between populations of *E. "argutifolia"*.

13. As the subsequent populations of *E. "argutifolia"* would not be approached by quarrying for a considerable time after Population D, it would be possible to assess the results of long-term monitoring of the first population. Should it then be considered necessary, management measures could be revised in consultation with CALM.

14. Rehabilitation of the quarry area would be progressively undertaken to the satisfaction of the EPA, as detailed in Section 6.3.10. of the CER. Rehabilitation would essentially involve the backfilling of silica reject material and the spreading of topsoil over the quarry floor and slopes. Topsoil may be supplemented by the placement of light brush from surrounding vegetation. Consideration would be given to the establishment from seedling of *E. "argutifolia"* in the areas adjacent to existing populations, but this would not be undertaken without the agreement of CALM.

15. A monitoring programme meeting the requirements of the EPA would be established to monitor the rehabilitation of the quarry area, including the populations of *E. "argutifolia"*. Details of the monitoring programme are provided in Section 7 and, in particular, Table 7.1 of the CER.

16. The biological waste treatment system for domestic effluent would be constructed and operated in accordance with the appropriate regulations of the *Health Act, 1911,* and to the satisfaction of the EPA.

17. The plant would incorporate a wide range of safeguards such as fire protection, instrument monitoring, back-up systems and provisions for emergency shut-downs. Where appropriate, personnel involved in the operation of the quicklime plant would be issued with protective clothing and safety equipment. The City of Wanneroo and the Bush Fires Board would be consulted for advice on the prevention and suppression of fires.

18. Gibbs Road would no longer be used by the proponent to transport limestone to Rivervale, once the Pinjar lease quarry and quicklime plant became operational.

19. In the short term, and until access between the revised plant site and Flynn Drive has been constructed, Swan is prepared to use Wattle Avenue East, Pinjar Road and Flynn Drive to Wanneroo Road for the transportation of quicklime if necessary.

20. Prior to the development of the North Wesco lease, negotiations would be held with the City of Wanneroo concerning possible temporary diversion of Wesco Road and other measures to avoid conflict with public road users.

21. An electrostatic precipitator would be installed to ensure the levels of suspended particulates from the quicklime plant were below the limit of 100 mg/Nm^3 recommended by the National Health and Medical Research Council.

22. Measures to be implemented at the quicklime plant to prevent dust generation would include the installation of mist water sprays and dust collection units, covering of conveyors and limestone stockpiles, sealing of internal roads, and retention of vegetation (where practicable) within the plant site.

23. When considered necessary, water from mobile tankers would be applied to the quarry and haul roads to reduce dust levels.

24. A monitoring programme would be established to monitor the air quality (particulate load and gases, and total suspended particulates). Details of the monitoring programme are provided in Section 7 and, in particular, Table 7.1 of the CER.

25. Oil traps and impermeable bunding would be used to contain spills of fuels, oils, lubricants and chemicals. Oil trap sludges, spent containers and waste lubricants would be recycled or disposed of in accordance with the requirements of the City of Wanneroo and the Health Department.

26. A monitoring programme would be established to monitor groundwater, the details of which are provided in Section 7 of the CER and in Response 2.2.

27. All potential noise-generating equipment associated with the quicklime plant would incorporate effective sound-proofing measures, such as mufflers and a range of enclosures, to minimize noise emissions.

28. Quarrying would not be undertaken outside daylight hours, except in exceptional circumstances (refer Response 5.6).

29. All mobile equipment, such as dozers and trucks, would be fitted with silencers to reduce tonal and impulsive noise emissions.

30. Quarrying would not be undertaken any closer than 200m from the westernmost boundary of the Gibbs lease.

31. A monitoring programme would be established to monitor noise emissions resulting from quarrying activities and quicklime plant operations. The details of the programme are provided in Section 7 of the CER.

32. Swan would meet all appropriate noise emission requirements set by the EPA.

33. All external lighting would be screened and would be directed inwards to minimize interference with residents.

34. Specific details of decommissioning are yet to be formulated; such details would be developed nearer to the end of the plant life. The plant site would be left in an unpolluted, stable, free-draining, vegetated condition, free from potential hazards and to the satisfaction of the EPA.

35. Social impact monitoring would be undertaken to address issues raised by members of the public. Details of this monitoring, together with the process through which these issues would be addressed, are provided in Section 7 of the CER and Response 8.7.

Appendix 2

Response by Swan Portland Cement Ltd to issues raised in public submissions on referral document, October 1993

RESPONSE TO ISSUES RAISED IN PUBLIC SUBMISSIONS ON THE REFERRAL OF A REVISED PROPOSAL FOR THE QUICKLIME PROJECT AT NOWERGUP

1 GASEOUS AND PARTICULATE EMISSIONS

1.1 How has the estimate of 100 mg/Nm³ of nitrogen oxides been calculated? On what basis is this prediction made?

The estimate of 100 mg/Nm³ of nitrogen oxides has been based on the results of initial pilot plant testing undertaken by Swan. These initial results indicate that a concentration of between 90 and 100 mg/Nm³ would be produced by the quicklime plant. The concentration of nitrogen oxides associated with the approved project would not change from that associated with the revised proposal.

1.2 What is the estimated mass emission rate for nitrogen oxides and other pollutants such as sulphur dioxide and carbon monoxide (in kg/h)? How does the output of these pollutants compare with other nearby pollution sources such as the Pinjar power station?

Based on a scenario in which the emission concentration of nitrogen oxides is 100 mg/Nm³, the mass emission rate would be 23 kg/h. This is based on a total flow-rate volume of 230,000 Nm³/h as stated in Section 2.6.1 of the referral document.

Based on a scenario in which two F9 gas turbines and seven F6 gas turbines are operating simultaneously and based on the typical exhaust gas characteristics provided in Table 2 of the State Energy Commission of Western Australia (SECWA's) 1990 Consultative Environmental Review (CER) for the proposed expansion of the Pinjar 'C' gas turbine, the estimated mass nitrogen oxide emission rate from the Pinjar power station would be about 1,740 kg/h. This estimate represents the worst case scenario as simultaneous operation of all gas turbines would rarely be required. Should both F9 turbines and only three F6 turbines be in operation, the mass emission rate of nitrogen oxides would be reduced to 1,110 kg/h.

Swan's nitrogen oxide emission rate therefore represents 1.3% of the estimated 'worst case scenario' emission rate for SECWA's Pinjar power station, and 2.1% of the mass emission rate associated with the alternative scenario.

The manufacture of quicklime using natural gas as the source of heat would result in no or negligible emissions of carbon monoxide. All atmospheric emissions would pass through the electrostatic precipitator (ESP). In the event of a spark in the presence of any partially burnt natural gas (in the form of carbon monoxide) in the ESP, there is a risk of

an explosion. For this reason, the presence of any carbon monoxide in the ESP is to be prevented for plant safety reasons.

SECWA has indicated that the Pinjar power station emits no sulphur dioxide (SECWA, pers. comm. 22 December 1993). The Pinjar power station uses natural gas from the North West Shelf which, at source, is naturally low in sulphur. Any sulphur component in the natural gas, at source, is removed (presumably through condensation) prior to being delivered southward.

Stack gas testing undertaken on behalf of Swan (in December 1993) in their Rivervale lime kiln stack indicated that the concentration of sulphur dioxide was 4 mg/Nm^3. As the proposed quicklime plant would use the same source of natural gas and limestone as the current Rivervale lime operations, the sulphur dioxide concentration for the revised proposal is expected to be similar. Based on the total flow rate volume associated with the revised proposal, the estimated mass emission rate for sulphur dioxide is 0.13 kg/h.

1.3 To what extend will nitrogen oxides from the upgraded plant contribute to the photochemical smog in the region? What measures does Swan propose to adopt to minimize their output (e.g. low NO_x burners)?

The estimated mass emission rate of nitrogen oxides from Swan's quicklime plant compared with SECWA's Pinjar power station emission rate has been provided in the response to Issue 1.2.

Factors which would assist minimize the contribution of Swan's nitrogen oxide emissions in the formation of photochemical smog in the region include:

- the relatively low nitrogen oxide emissions from Swan's operations;
- the general remoteness of the quicklime plant site relative to the metropolitan area (where it is assumed a significant proportion of nitrogen oxides is generated which result in the formation of photochemical smog, other than perhaps bushfires).
- the prevailing summer wind patterns (when sufficient sunlight is available) prevent emissions combining with air to the south and undergoing photochemical relations as northerly winds are uncommon during summer (refer Figure 5.1 of the CER).
- Perths meteorological and topographical characteristics such as lack of persistent radiation inversion, generally good ventilation by synoptic and mesoscale winds and minimal blockages of stable air flows (Bowman Bishaw Gorham, 1988).

The current metropolitan airshed study is expected to, in part, result in the compilation of an emissions inventory of photochemical precursors and the development of a model of photochemistry and meteorology relevant to Perth. The contribution of Swan's nitrogen oxide emissions on photochemical formation would be better understood when the results of this study are available.

As advised in the EPA Report and Recommendations, once the quicklime plant is commissioned, Swan should forward emissions data on nitrogen oxides to the EPA for use in their metropolitan air shed study. The data to be provided by Swan should be in an appropriate form for the study.

The measures to be adopted to minimize nitrogen oxide emissions associated with the revised proposal are the same as for the approved project; these include:

- incorporation of the most up-to-date technology available in plant design and pollution control; and

- utilization of low NO_x burners which in recent trials in cement kilns at Rivervale demonstrated a significant reduction in nitrogen oxide emissions; however, the technology of low NO_x burners in flash calcining kilns has yet to be established.

1.4 Are any of the pollutants removed in the product i.e. is there a scrubbing effect?

No. No documented evidence or reports are known to demonstrate that nitrogen oxides react with dry lime or limestone to effect any scrubbing action.

1.5 What are the estimated mass emission rates for particulates from the plant, under normal operating conditions, and in the event of power cuts? What are the likely mineralogical and chemical components?

As part of the approved project, Swan made an environmental commitment (Commitment 21—refer Appendix A of the referral document) that the levels of suspended particulates from the operation of the quicklime plant would be below the limit of 100 mg/Nm^3 as recommended by the National Health and Medical Research Council. This commitment forms part of the Ministerial Conditions for the approved project. This commitment would also apply for the revised proposal.

Based on extensive pilot plant testing conducted over several years, and based on the effectiveness of the electrostatic precipitator and bag filters to be used, Swan believes that particulate emissions would be significantly lower than the 100 mg/Nm^3 limit. If this concentration is assumed to be maintained, an estimated 23 kg/h of particulates would be produced; however, this calculation is based on a higher mass emission rate than that which would be expected during normal operations.

As stated in Issue 6.3 of Swans responses to issues raised in submissions to the CER, in the event of an electric power failure, the entire plant, including the calciner, would shut down. Due to the revised rate of feed into the calciner, the normal retention time within the calciner and the settling of some particulates within the electrostatic precipitator (even when no power is available), it is estimated that the volume of particulates to be released into the atmosphere as a result of power outage would be about 4–6 kg. The approved project would have resulted in about 2–3 kg of particulates being released under similar power outage events.

The particulate matter would be composed of limestone dust.

1.6 What is the predicted particulate deposition rate at the nearest population of E. 'argutifolia'? What effect is this likely to have on the plant and its environment?

No estimates of the predicted rate of particulate deposition on the nearest population of *Eucalyptus argutifolia* have been made; however, the amount of particulate deposition is expected to be negligible. Factors to support this assessment include the following:

- the volume of particulates to be emitted from the stack after passing through an electrostatic precipitator and bag filters would be low;
- the nearest population of *E. argutifolia* is located more than 600 m from the quicklime plant;
- the nearest population is located to the north-north-west of the quicklime plant, with the prevailing summer winds being morning easterlies and afternoon south-westerlies and the prevailing winter winds being morning north-easterlies and afternoon westerlies (refer Figure 5.1 of the CER). These winds would therefore not carry particulates in the direction of the nearest population of *E. argutifolia.*

The effect of the quicklime plant operation on the nearest *E. argutifolia* population is expected to be negligible.

1.7 The production of carbon dioxide is unacceptable. Western Australia's carbon dioxide levels have significantly increased over the last few years and it appears that there has been no attempt to reduce them. No more approvals should be given that result in increases in carbon dioxide production.

To meet current and future demand, quicklime can be either manufactured within Western Australia or interstate or imported from overseas. As noted in the EPA Report and Recommendations, if quicklime was not manufactured in Western Australia, it would need to be imported, meaning that an equivalent amount of Greenhouse gases (including carbon dioxide) would be generated elsewhere in the world. Therefore the net effect of whether quicklime is manufactured in Western Australia or overseas on carbon dioxide emissions would be similar.

The question of whether any more approvals should be granted to projects that result in increased carbon dioxide emissions is one that is best addressed by the State regulatory authorities, rather than Swan.

2 NOISE IMPACTS

2.1 The noise modelling for mobile equipment, based on 85 dB(A) at 1 m, appears to be too low, unless substantial modifications are made to suppress the noise output. Swan should either rerun the model based on a higher sound level, such as 102 dB(A) at 1 m or, alternatively, make a commitment to ensure that all mobile equipment are modified to meet the noise level of 85 dB(A) at 1 m.

The contours developed from the noise modelling were based on sound power estimates of stationary plant and equipment at the quicklime plant and from mobile plant equipment operating in the quarry. The Sound and Vibration Technology Pty Ltd (1993) report listed the equipment modelled and the associated sound power, including the total sound power for the plant and the mobile plant equipment. A copy of the relevant table is provided in Appendix A.

The mobile equipment sound power was evaluated by assuming that the average noise level around the operating vehicle was 85 dB(A) at 1 m. This would be achieved through modifications to quarrying equipment, including:

- installation of engine bay cowls
- upgrading the standard exhaust systems
- incorporating noise suppression covers around radiators.

Such noise reductions have been achieved at other mine sites in Western Australia and could similarly be achieved by Swan. Swan would consult with these other mine operators to obtain advice on how best to minimize noise from quarrying/mining equipment operations associated with the revised proposal.

Swan would ensure that noise emissions at the nearest residence does not exceed those limits set by the Ministerial Conditions for the approved project.

2.2 Contrary to the statements in the referral document, the diagrams provided in the document show that the noise levels set under the Environmental Conditions would be exceeded under certain scenarios. What plans does Swan have to ensure that these circumstances do not arise?

The predicted maximum noise levels emanating from quarrying and quicklime plant operations associated with the revised proposal would not result in noise emissions exceeding those limits set in the Ministerial Conditions issued for the approved project.

Figures 5.2–5.7 and Table 5.4 of the referral document present the results of modelling on noise predictions for a number of worst case scenarios. These scenarios include a temperature inversion, a light easterly wind and a light south-westerly for two operational scenarios involving simultaneous quicklime plant and quarrying operations. This worst case modelling indicates that a light easterly results in the highest predicted noise levels. These were:

- 45 dB(A) for the operational scenario with the quicklime plant operating, together with all quarrying equipment operating in the quarry; and

- 43 dB(A) for the operational scenario with the quicklime plant operating and two off-road haul trucks operating at the plant, together with all remaining quarrying equipment operating in the quarry.

Should these noise levels occur between 10.00 p.m. and 7.00 a.m., the 40 dB(A) noise limit stated in the Ministerial Condition applicable to these hours would be exceeded. However, Swan has indicated that 'quarrying is not planned to be undertaken outside normal working hours and would continue to be restricted to daylight hours'. Therefore, quarrying would be most unlikely to occur between 10.00 p.m. and 7.00 a.m.. For this reason, the predicted noise levels under the worst case scenario would not occur.

Swan is committed to ensuring that the noise limits set in the Ministerial Conditions would not be exceeded.

2.3 There is concern about the increase in traffic due to the expansion of the operation.

As indicated in Section 5.2.2 of the referral document, the revised proposal would result in an increase in daily traffic from 124–142 vehicle movements (one-way trips) associated with the approved project to 164–212 vehicle movements (one-way trips). As no traffic counts are known to have been conducted on Flynn Drive, the percentage increase on existing traffic levels is unknown; however, it should be noted that future expansion of the Flynn Drive industrial area is likely to result in greater increases in local traffic than that associated with Swan's revised proposal.

The revised proposal would result in a percentage increase to the 1991–92 Monday to Friday annual average daily traffic flow on Pinjar Road immediately east of Wanneroo Road from 3.4–3.9% to 4.4–5.8%. The traffic generated by the revised proposal is not considered to represent a significant increase in traffic or congestion levels or to represent a noticeable decline in road safety.

Such traffic to be generated by the project is considered to be consistent with that associated with an industrial area such as that at Flynn Drive.

3 PROPOSAL DESCRIPTION

3.1 In relation to plant layout (Figure 2.2), provide more information such as north point, scale, identifying co-ordinates and topographic contours.

An amended Figure 2.2 is provided in Appendix B. The amended figure contains the north point and scale.

The general location of the plant site within the leases is shown in Figure 1.1 of the referral document. Until further work on geotechnical conditions and detailed contour surveying is undertaken, the precise location of the plant within the general location is unknown.

Topographical and cadastral details of the general plant area have already been provided in Swan's responses to issues raised in submissions as part of the assessment of the approved project.

The intentions of Figure 2.2 in the referral document were to provide an indication of the type of facilities to be established and to provide a pictorial representation of the conceptual lay-out of those facilities.

3.2 Is there going to be an environmental assessment of the gas pipeline and powerline routes to the plant? These should be publicly assessed as part of the project as the route may travel through environmentally sensitive areas.

As stated in the referral document (Section 2.4.2 and 2.4.3), the environmental implications of supplying natural gas and power and the selection of the natural gas pipeline route between the Pinjar power station and the quicklime plant and the selection of the power line route to the quicklime plant would be addressed by SECWA.

The environmental assessment of the provision of natural gas and power to the quicklime plant is expected to commence with a referral document to the EPA. Whether the environmental assessment of these facilities is to be undertaken on a formal or informal basis is an issue for the EPA, not Swan.

4 GROUNDWATER PROTECTION

4.1 Part of the lease is either in the Priority One Zone water resource area or extremely close to the zone. In addition part of the lease comes under the Environmental Protection (Gnangara Mound Crown Land) Policy. We are unconvinced that the operation will not impact on the zone as mining, abstraction of groundwater, clearing and destruction of native vegetation are involved in this project and are listed as having potential for impact. Water will also be discharged in the Priority One Zone area to control dust during operations, and solid waste disposal.

In relation to the impacts on the Priority One Zone of the designated Public Groundwater Source Protection Area (PGSPA) or the area covered by the Environmental Protection (Gnangara Mound Crown Land) Policy, additional impacts are unlikely. The revised proposal would ultimately result in the same quarry area, the same vegetation to be cleared, the same quarry profile, the same water requirements, the same volume of reject material to be returned to the quarry and similar or less volumes of water to be used for dust suppression in the quarry. The EPA considered that the impacts associated with the

approved project were manageable. The impacts associated with the revised proposal are considered by Swan to be similarly manageable.

4.2 The commitment by the proponent to locate fuel storage, parking etc.' ... as far from the western boundary of the Priority One Zone as is practicable' is not good enough. Conditions placed on this project must specify an appropriate distance.

The statement in the referral document that 'fuel storage, refuelling, servicing and parking of mobile equipment would be undertaken as far from the western boundary of the Priority One Zone as is practicable' is entirely consistent with a statement made in the EPA Report and Recommendations. Swan has adopted this strategy to ensure that the revised proposal is consistent with the intent and purposes of the designated PGSPA's and the Environmental Protection (Gnangara Mound Crown Land) Policy.

The establishment of conditions which specify an appropriate distance from the boundary of the Priority One Zone is not considered by Swan to be warranted.

5 VEGETATION

5.1 There is concern about the casual manner in which endangered flora species are passed over in this report. These plants will not be adequately protected and further loss will occur. Tiny pockets of trees left in otherwise totally cleared areas will soon degrade and the trees will be lost.

The potential environmental impacts of quarrying on the populations of *E. argutifolia* was comprehensively addressed in the CER. Commitments 7–15 are specifically related to the protection of the populations of *E. argutifolia*. Furthermore, one of the Ministerial Conditions for the approved project requires Swan to prepare a conservation management plan which addresses the conservation of all populations of *E. argutifolia* contained in the Wesco Road leases. The plan would be included in the Environmental Management Programme to be prepared by Swan for the EPA. In addition, the EPA recommended that the Department of Conservation and Land Management, in consultation with the Department of Planning and Urban Development and the Department of Minerals and Energy should prepare a management programme that addresses, together with other issues, the long term protection of the populations of *E. argutifolia* during the post-quarrying and decommissioning phase of the project.

The revised proposal does not have any incremental impacts on the populations of *E. argutifolia* which occur in the leases, other than approaching the populations within a shorter time frame than that stated in Swan's responses to issues raised in submissions on the CER. The EPA considered that the environmental impacts associated with the approved project on *E. argutifolia* populations to be manageable. The environmental impacts of the revised proposal would be similar to those associated with the approved project.

Appendix A

NOISE DATA FOR 85 dB(A) FOR ALL PLANT AND EQUIPMENT

Table 1 Noise data for 85 dB(A) for all plant and equipment

Item No	Description	Surface area	31.5	63	125	250	500	1k	2k	4k	8k	O/A
Stationary Plant and Equipment												
1	Elevator drive	24	80	80	83	85	88	88	87	82	74	94
2	ID fan	24	91	94	94	91	88	84	81	78	70	99
3	ID fan building	250	96	99	99	96	93	89	86	83	75	104
4	Belt elevator	54	83	83	86	88	91	91	90	85	77	97
5	Dispatch fan	54	91	91	89	87	86	84	85	79	62	97
6	Air compressors	124	91	91	90	88	88	90	94	93	89	100
7	Conveyor drive form crusher	54	83	83	86	88	91	91	90	85	77	97
8	Mill drive	124	92	92	95	97	102	102	101	94	86	108
Total			100	102	102	101	104	103	103	98	91	111
Total	Plant capacity doubled		83	100	105	104	107	106	106	101	94	114
Mobile equipment												
9	35 tone Off Road trucks		94	102	109	109	108	110	109	103	96	116
10	D9		89	97	104	104	103	105	104	98	91	112
11	Front end loaders		89	97	104	104	103	105	104	98	91	112
Total			96	104	111	111	110	112	111	105	98	119
12	**4 trucks, 1 D9, 1 front end loader**		94	102	109	109	108	110	109	103	96	116
13	Plant + 2 truck		90	102	108	107	108	109	108	103	96	116

Appendix B

REVISED FIGURE 2.2

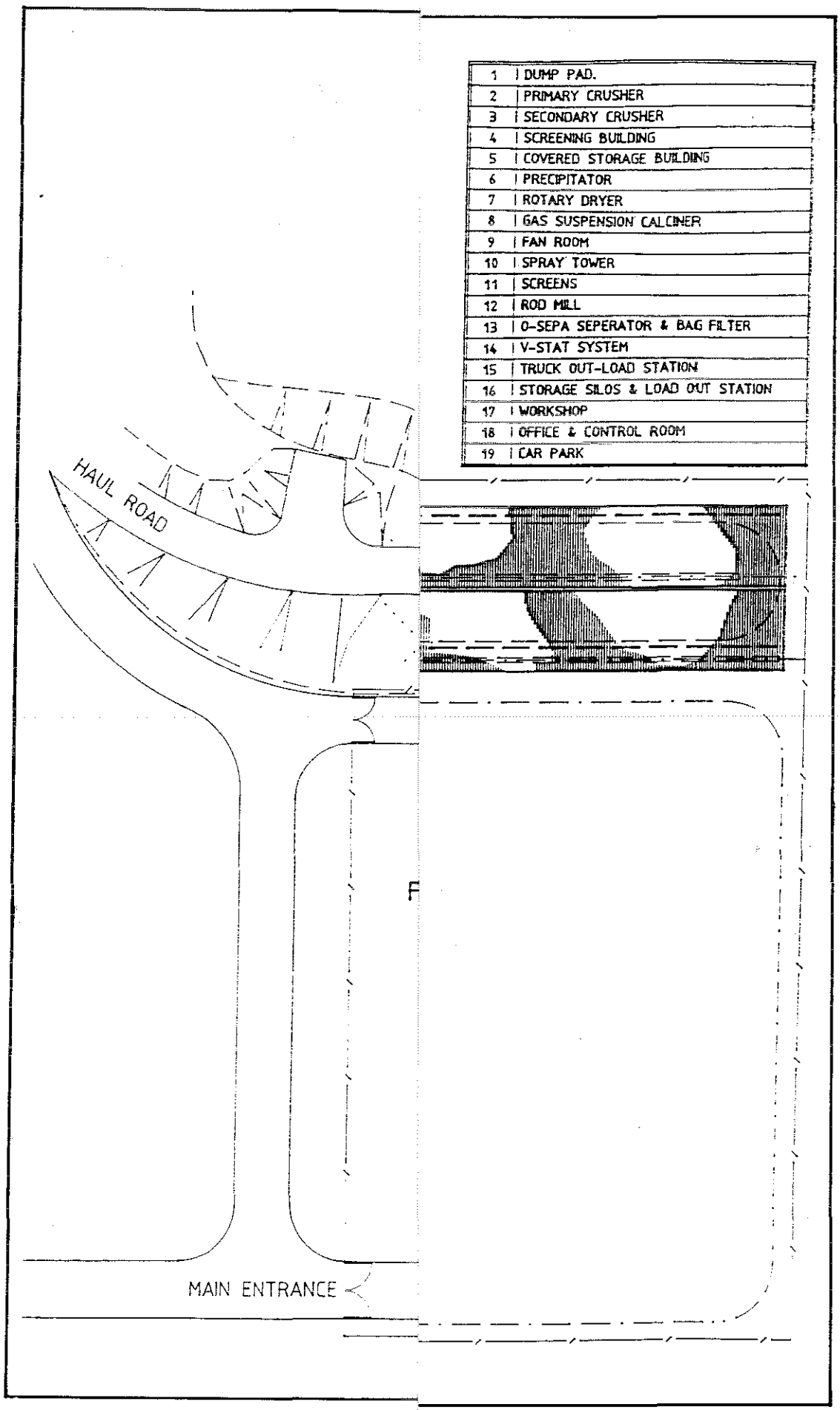

Figure 2.2

CONCEPTUAL LAYOUT OF THE QUICKLIME PLANT

SWAN PORTLAND CEMENT LIMITED

RESPONSE TO ISSUES RAISED IN PUBLIC SUBMISSIONS ON THE REFERRAL OF A REVISED PROPOSAL FOR THE QUICKLIME PROJECT AT NOWERGUP

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KINHILL

DOCUMENT STATUS RECORD

Project number P W 3 0 0 6

Sheet 1 of 1

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This sheet records the issue and revisions of the document. If only a few revisions are made, only the new or revised pages are issued.
For convenience, the nature of the revision is briefly noted under 'Remarks', but these remarks are not a part of the document.

Revision code	Date revised	Chapter/section/page revised, plus any remarks	Signatures		
			Originator	Checked	Approved
A	19/12/93	Draft issue			
B	20/12/93	Issued for review			
C	23/12/93	Issued for review			
D	5/1/94	Issued for review			
0	10/1/94	Issued as final			

Appendix 3

List of organisations and government agencies which made submissions

City of Wanneroo

Department of Minerals and Energy

Conservation Council of Western Australia Inc

Department of Resources Development

Department of Planning and Urban Development