

# **Ord River Dam hydro power project**

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**Ord Hydro Consortium**

**Proposed changes to environmental conditions**

**Report and recommendations  
of the Environmental Protection Authority**

**Environmental Protection Authority  
Perth, Western Australia  
Bulletin 756  
September 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 proposal.

Immediately following the release of the report there is a 14-day period when anyone may appeal to the Minister against the Environmental Protection Authority's report.

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 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 the assessment report or 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 the reasons for your concern so that the grounds of your appeal can be properly considered by the Minister for the Environment.

## ADDRESS

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 23 September 1994.

## Environmental Impact Assessment (EIA) Process Timelines in weeks

Date	Timeline commences from receipt of full details of proposal by proponent	Time (weeks)
18 July 1994	Proponent Document Released for Public Comment	4
15 August 1994	Public Comment Period Closed	
19 August 1994	Issues Raised During Public Comment Period Summarised by EPA and Forwarded to the Proponent	4 days
30 August 1994	Proponent response to the issues raised received	1 1/2 weeks
7 Sept 1994	EPA reported to the Minister for the Environment	

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## Contents/Overview of structure

	<b>Page</b>
<b>Summary</b>	<b>i</b>
<b>1. Introduction and background</b>	<b>1</b>
<b>2. Summary description of proposal</b>	<b>1</b>
<b>3. Environmental impact assessment method</b>	<b>2</b>
<b>4. Evaluation</b>	<b>2</b>
4.1 Issue 1 — Water management	2
4.1.1 Objective	2
4.1.2 Evaluation framework	2
4.1.3 Proponent's response	3
4.1.4 Evaluation	4
4.2 Other issues	4
4.2.1 Rehabilitation	4
4.2.2 Aboriginal issues	4
4.2.3 Environmental hygiene management	5
4.2.4 Visual amenity/aircraft safety	5
4.3 Changes of commitments	5
4.4 Additional condition	8
<b>5. Discussion and synthesis</b>	<b>8</b>
<b>6. Conclusions and recommendations</b>	<b>8</b>
<b>7. Recommended environmental conditions</b>	<b>9</b>
<b>8. References</b>	<b>11</b>

## **Table**

1. Summary of changes	5
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## **Appendices**

1. Environmental Statement 1992	
2. Summary of submissions and proponents response	
3. List of Submitters	
4. Proponent's commitments	

## Summary

In April 1992, the Minister for the Environment issued a statement that a proposal to build a hydro-electric power station on the Lake Argyle Main Dam of the Ord River could proceed subject to a number of environmental conditions and commitments. The proponent for this proposal, Argyle Diamond Mines (ADM) decided not to proceed with the proposal at that time. In 1994, the proposal was taken up and modified by the Ord Hydro Consortium, and the proposed changes were referred to the Minister for the Environment. In February 1994, the Minister for the Environment requested the Environmental Protection Authority to initiate investigations and provide a report to him under Section 46 of the Environmental Protection Act.

This report deals with proposed changes to the previous environmental conditions, to take into account the proposed changes to the proposal which had been the subject of the 1992 Ministerial Statement.

The changes to the previously approved project are proposed to be:

1. the power station to be reduced from 40 MW to 30 MW;
2. construction of a switching station north of the Argyle Tourist Village, separate from the power station itself, at the junction of the two proposed transmission lines;
3. the addition of a 132 kV transmission line to Kununurra to provide electricity to SECWA; and
4. the construction of a 132/22 kV substation within the SECWA site at Kununurra.

Issues which were previously raised and dealt with in Bulletin 615 are not being re-assessed, although some reference is made to them in the context of this assessment. Additional issues raised included:

1. additional information on the switching station and substation;
2. additional information on water management, including effects on ecology, on water birds, and on other users;
3. Aboriginal issues;
4. soil conservation issues; and
5. issues associated with the addition of the new transmission line to Kununurra.

Through the proponent's document and the commitments which have been given, the issues have been well addressed. The Environmental Protection Authority considers that the changes proposed to the previously approved Ord River Hydro-electric power station proposal are environmentally acceptable, given the commitments made by the Ord Hydro Consortium.

The Environmental Protection Authority therefore recommends that this proposal be found environmentally acceptable subject to the statement which was issued in April 1992 being amended to reflect the changes, and the commitments which were then made also being amended to reflect the changes.

Recommendation	
1	Project acceptable subject to conditions and commitments

# 1. Introduction and background

Since the recognition of the potential for irrigation in the Ord River Irrigation Area in the early 1940s<sup>1</sup> and the eventual damming of the Ord River in the 1960s,<sup>2</sup> there has been an interest in the development of hydro power generation in the East Kimberley, either through the Diversion Dam at Bandicoot Bar, or from the tunnels included in the main dam at Lake Argyle.

Many feasibility studies have been carried out, but none have thus far been implemented.

In 1992 a proposal was put forward by Argyle Diamond Mines Pty Ltd (ADM) to build a 40 MW hydro power generation plant at Lake Argyle, with a transmission line taking power to the ADM minesite. The proposal was reported on in EPA Bulletin 615, carried through to Ministerial approval and the setting of Environmental Conditions, in a statement issued in April 1992.

The present change to Environmental Conditions is being sought by the Ord Hydro Consortium, which has taken over the project which was approved for ADM, but will also include a transmission line from a switching station at the dam-site power station to the State Electricity Commission's power generation facility in Kununurra. The size of the proposed hydro power generation plant has been reduced from the 40MW proposed by ADM to 30MW. Although the concept of a power line to Kununurra had been included when ADM originally put their proposal forward, it was not included in the final proposal which was assessed by the Environmental Protection Authority.

## 2. Summary description of proposal

The Ord Hydro Consortium proposes the construction of a 30MW hydro electric power station at the Ord River Main Dam on Lake Argyle, with power distribution north to Kununurra, and south west to the Argyle diamond mine. The new proponent for this project is the Ord Hydro Consortium, which is comprised of three organisations. These are Pacific Hydro Limited, ABN AMRO Australia Limited, and Merz Australia, which is a division of Sinclair Knight Merz Pty Ltd.

The power station and transmission line to the Argyle minesite were the subject of a Public Environmental Review (PER) under the requirements of the Environmental Protection Act 1986, and the proposal was found to be environmentally acceptable subject to a number of environmental conditions. (see Ministerial Statement of April 1992 at Appendix 1.)

The current proposal incorporates that proposal for which the Ministerial Statement was issued in 1992, but is seeking changes to the environmental conditions to accommodate the following elements:

1. Reducing the size of the power station from 40MW to 30MW;
2. Changing the location of a switching station from adjacent to the power station itself to an abandoned gravel pit north of the Argyle Tourist Village, to allow the use of a single line from the power station to the switching station, and from the switching station to the ADM minesite and to Kununurra. The original proposed location would have involved having two transmission lines running up the scarp face from the power station;
3. Adding a 132 kV transmission line of approximately 45 km to Kununurra; and
4. Constructing a 132/22 kV substation in Kununurra, within the existing SECWA lease, and connected directly with the Commission's existing plant.

This assessment deals with changes to the previously assessed proposal, and does not examine again those matters which were dealt with in Bulletin 615. A comparison of the commitments made as a part of the Statement that was issued on 29 April 1992 and those commitments for the current changes to the proposal is included at Appendix 4.

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<sup>1</sup>Durack(1991)

<sup>2</sup>Hamilton (1991)

### **3. Environmental impact assessment method**

The statement which was issued in April 1992 is shown in Appendix 1. The summary of submissions and the proponents response to those submissions appears in Appendix 2, and a list of submitters appears as Appendix 3. The proponents revised commitments following the response to submissions appear in Appendix 4.

The environmental impact assessment for this proposal followed the *Environmental impact assessment administrative procedures 1993*. In addition to following the administrative procedures, Department of Environmental Protection officers undertook discussions with relevant government agencies and a submitter.

#### *Limitation*

This evaluation has been undertaken using information currently available. The information has been provided by the proponent through preparation of the Environmental Review document (in response to guidelines issued by the Department of Environmental Protection), by Department of Environmental Protection officers utilising their own expertise and reference material, by utilising expertise and information from other State Government agencies, and by contributions from Environmental Protection Authority members.

The Environmental Protection Authority recognises that further studies and research may affect the conclusions. Accordingly, the Environmental Protection Authority considers that if the proposal has not been substantially commenced within five years of the date of this report, then such approval should lapse. After that time, further consideration of the proposal should occur only following a new referral to the Environmental Protection Authority

### **4. Evaluation**

#### **4.1. Issue 1 — Water management**

##### **4.1.1 Objective**

Following on the construction and operation of the proposed hydro-electric power station at Lake Argyle, to maintain a water regime for Lake Argyle, Lake Kununurra and the Ord River such that there are no adverse ecological effects from the proposal. Ensure that changes being considered do not have a detrimental effect on the levels in the lakes, water-bird habitats, fringing vegetation, integrity of the banks, water flows and the use of the waters of the Ord River by other users.

##### **4.1.2 Evaluation framework**

###### **Existing policy framework**

These issues were discussed in Bulletin 615, (and previously in Bulletin 82 in 1980). Advice from the Water Authority of Western Australia indicated then that the size of the weir in the spillway was selected to ensure that there would be no appreciable impact on flood water levels in the reservoir, and that flood security would not be reduced. The Water Authority remains committed to the provision of water supply to all users.

The Environmental Protection Authority concluded in Bulletin 615 that the overall environmental effects of building the weir in the spillway were expected to be minimal.

The issue would not have been raised in this instance as this Bulletin deals with the changes to the environmental conditions which were set in April 1992. However, the matter has again been raised by a number of submitters, notably a tour operator who is reliant on water levels being maintained for the business, and a miner who is concerned that water levels may be too high, and thereby affect the existing and proposed mining operation. Because of the concern expressed, the issue is highlighted in this Bulletin.

The Water Authority of Western Australia has noted in its submission on the project:

"The project is likely to cause some alteration to normal water release practices during the construction phase. This will be managed to minimise the effect on other water users. The Authority has negotiated the conditions of water release with the Consortium, meeting the needs of the Consortium and those of other users of the Ord water resource. We are keeping our customers well informed of changes to water release practise." (Public submission dated 12 August 1994. Permission to quote received 5 September 1994)

### **Public submissions**

Ultimate Adventures, a Tour Safari Operation based in Kununurra, made a submission on the proponent's document. The letter gave the Authority permission to use the comments as desired, and included:

"On the whole, we have found the proposal environmentally acceptable, however we wish to comment on the following points:

- 1) That reasonable flows of water will be maintained during construction (except that of the coffer dam) and throughout the life of the hydro project and that all "water reliant" parties be promptly notified by the relevant Authority (W.A.W.A.) when any changes occur to water flows.
- 2) That the timing for coffer dam construction be scheduled for Off-Tourist Season, i.e. November/December 1994 and that advice of exact dates be sent to all water-users as soon as possible."

Normandy Bow River Diamond Mine wrote to express concerns also. A Company representative met with officers of the Department of Environmental Protection to outline these matters.

"As you are aware Normandy Bow River Diamond Mine and its associated exploration sites are situated near or on the flood plains of Lake Argyle and any changes to the hydrological region of the lake could impact on our operations." (Public Submission dated 9 August 1994. Discussed with submitter on 18 August 1994)

The company disagreed with the statement in the proponent's document which noted that the impact of raising the spillway level remains unchanged and there will be no additional impacts from this project. It should be noted that these issues were raised in the 1991 assessment, and the changes to the spillway proposed then have not been altered for this additional proposal. The issue of raising the spillway is not the subject of this assessment, although it has been previously assessed.

#### **4.1.3 Proponent's response**

In response to the summary of submissions, the proponent has responded in some detail. (Appendix 2). Apart from detailing the timing and effects of the three week coffer dam construction, it is noted that "Water use for the project has no impact on the water levels in Lake Kununurra...At Lake Argyle the effect of the proposal will be that water which currently flows down the spillway will be diverted through the power station to generate energy. The result of this is that while average lake levels will fall slightly (probably less than 1 metre) in the longer term, the range of water levels likely to be experienced in the lake will be very similar to those which have been experienced historically and which were envisaged when the project was first

constructed (approximately 40 metres). Actual levels in the lake in the future will obviously depend on the actual inflows to the reservoir." With specific reference to the Normandy Bow River concerns, the proponent notes "The historical lake level data indicates that the Bow River Mine would have been subject to water levels greater than 90mAHD for slightly more than 25 per cent of the time. The effect of the proposals would be to reduce the time water levels were above this level by two or three per cent." It is further noted "The range of water levels likely to be experienced under the proposal will be the same as happened historically and no new areas will be inundated."

#### **4.1.4 Evaluation**

The assurances of the Water Authority of Western Australia, which manages the water resource, and the commitments of the proponent should ensure that the proposed changes would be environmentally acceptable and could proceed, subject to the commitments which have been made. Many of the individual matters raised are commercial rather than environmental issues, and could be addressed through other processes, such as through the proposed State Agreement Act, or by negotiations with the proponent and the Water Authority.

The Environmental Protection Authority concludes that the advice in Bulletin 615 remains valid, and that changes to the proposal do not affect the advice which was given on that occasion.

## **4.2 Other issues**

A number of issues are listed here, not because they arise specifically out of the proposed changes to environmental conditions, but to highlight matters of concern which have been raised. However, they have been addressed through the environmental commitments that have been given.

### **4.2.1 Rehabilitation**

The objective of rehabilitation of those areas which will be disturbed by the construction and maintenance of this project is that the environment should not be worse off than it was before, that nothing will be done which will aggravate an already disturbed or degraded situation, and that where possible, the vegetation and landscape will be better protected and maintained than previously. Thus, for example, where aggregate is taken from creek beds, or a construction camp is established, a rehabilitation programme will ensure that there is no erosion, that there is no damage to the vegetation beyond that which is unavoidable in the construction process. Commitments have been given in this regard, and amplified in the response to submissions.

Commitment 2 deals with an overall programme of rehabilitation.

"The Consortium is committed to a programme of rehabilitation of areas disturbed during project construction. Rehabilitation works will be designed on a site-specific basis and will generally include, where appropriate, soil erosion control works, surface re-shaping, drainage control, surface stabilization, and habitat restoration."

In addition, commitment 3 refers to site-specific rehabilitation for the switching station site, and commitment 18 commits the proponent to the development of an overall Environmental Management Programme to take into account all the commitments listed, as well as those given in Section 8 of the proponent's document, and in the Response to submissions.

### **4.2.2 Aboriginal issues**

Aboriginal issues have been addressed by the proponent, and include commitments to liaise with Aboriginal communities, and to comply with obligations under the Western Australian Aboriginal Heritage Act 1972-1980.



Commitment 4 is given in this regard:

"A continual programme of liaison and consultation will be carried out with the Doon Doon and Glen Hill Communities during the construction phase of the project. In addition to this liaison programme, the proponent has established a consultation process with the Kununurra region Aboriginal communities via the Aboriginal Legal Service. The Consortium will control the movement of the workforce on pastoral and other leases and the use of off-road vehicles by project personnel for recreational purposes will not be permitted during the construction of the power line within the project area. Contractors will be advised of their obligations under the *Western Australian Aboriginal Heritage Act 1972-1980*."

#### 4.2.3 Environmental hygiene management

Environmental hygiene issues including the suitable disposal of waste, and the need for a plan for appropriate weed control, and the minimisation of ponding to reduce the risk from arbovirus carrying mosquitoes have all been addressed in commitments made by the proponent.

Commitment 6 refers to waste disposal, and the Response to Submissions refers in item 15 to liaison with both the District Manager of the Department of Conservation and Land Management and the staff of the Department of Agriculture with regard to appropriate vehicle hygiene measures. Further, item 17 of the Response to Submissions gives an undertaking that the risks of mosquito borne diseases, together with appropriate prevention and protection guidelines, will be included as part of an overall project induction programme.

#### 4.2.4 Visual amenity / aircraft safety

Visual amenity is an issue which has been addressed by the proponent in the commitments. There are issues here of reducing the visibility of the power poles and the transmission lines by careful siting, and yet being mindful of the safety issues for aircraft, and the possible use of markers as advised by the civil aviation authorities. These issues have been acknowledged through the commitments.

These have been addressed in the proponent's response to submissions, in the original document and commitments, specifically in commitment 15.

### 4.3 Changes to commitments

As a consequence of a new proponent, amendments to the Environmental Protection Act and changes to the proposal, the previous commitments have been revised and expanded. Table 1 outlines these changes.

**Table 1: Summary of changes**

1992 Commitments (included in Statement of 29 April 1992)	1994 Commitments
1. The environmental management programme and associated works will be carried out to the satisfaction of the EPA on advice from WAWA and SECWA and in accordance with practices relevant at the time.	The Ord Hydro Consortium is committed to a programme of environmental management and protection. This programme is detailed in Section 8 and specific commitments to environmental management and protection are as follows:  1. The environmental management programme and associated works will be carried out to the satisfaction of the <u>DEP</u> on advice from WAWA and SECWA and in accordance with practices relevant at the time.

2. ADM is committed to a rehabilitation programme of areas disturbed during project construction. Rehabilitation works will be designed on a site-specific basis and will generally include, where appropriate, soil erosion works, surface re-shaping, drainage control, surface stabilization, and habitat restoration.

2. The Consortium is committed to a programme of rehabilitation of areas disturbed during project construction. Rehabilitation works will be designed on a site-specific basis and will generally include, where appropriate, soil erosion control works, surface re-shaping, drainage control, surface stabilization, and habitat restoration.

3. (insert) The switching station will be located in an abandoned borrow pit, and any additional disturbance will be subject to a site-specific rehabilitation programme.

3 A continual programme of liaison and consultation will be carried out with the Doon Doon, Glen Hill and other relevant local communities during the construction phase of the project. ~~In addition,~~ ADM will control the movement of the workforce on pastoral leases and the use of off-road vehicles by project personnel for recreational purposes will not be permitted during construction of the power line. Contractors will be advised of their obligations under the Western Australian Aboriginal Heritage Act 1972-1980.

4. A continual programme of liaison and consultation will be carried out with the Doon Doon, Glen Hill and other relevant local communities during the construction phase of the project. In addition to this liaison programme, the proponent has established a consultation process with the Kununurra region Aboriginal communities via the Aboriginal Legal Service. The Consortium will control the movement of the workforce on pastoral leases and the use of off-road vehicles by project personnel for recreational purposes will not be permitted during construction of the power line. Contractors will be advised of their obligations under the *Western Australian Aboriginal Heritage Act 1972-1980*.

4. Blasting, when necessary, will be restricted to daylight hours.

5. Blasting, when necessary, will be restricted to daylight hours.

5. The construction site will be cleaned up by the contractor prior to leaving the site. All construction and industrial waste will be removed to a waste disposal site that will be selected, designed, and operated in accordance with standard waste disposal practices.

6. The construction site will be cleaned up by the contractor prior to leaving the site. All construction and industrial waste will be removed to a waste disposal site that will be selected, designed, and operated in accordance with standard waste disposal practices.

6. ADM will require all contractors to comply with statutory regulations for the control of noise in the workplace.

7 The Consortium will require all contractors to comply with statutory regulations for the control of noise in the workplace.

7. During the construction period, there will be periods of heavy traffic use on various sections of roads in and around the dam and spillway area. Traffic management and control will be undertaken at all times during these periods by the project managers

8. During the construction period, there will be periods of heavy traffic use on various sections of roads in and around the dam and spillway area. Traffic management and control will be undertaken at all times during these periods by the project managers.

8 All vehicles used in construction of the transmission line will be equipped with fire extinguishers and knap-sack sprays in case of accidental fire.

9. All vehicles used in construction of the transmission line will be equipped with fire extinguishers and knap-sack sprays in case of accidental fire.

9. Explosives will only be used for foundation preparation where ground conditions do not permit drilling or augering.

10. Explosives will only be used for foundation preparation where ground conditions do not permit drilling or augering.

10. All foundation holes will be kept covered prior to pole erection to prevent injury to stock or native fauna.	11. All foundation holes will be kept covered prior to pole erection to prevent injury to stock or native fauna.
11. Sites for laydown areas will be selected so that disturbance to the environment is minimised.	12. Sites for laydown areas will be selected so that disturbance to the environment is minimised.
12. Each construction camp for the transmission line will be sited to ensure that there will be no impacts on ground or surface water resources.	13. Each construction camp for the transmission line will be sited to ensure that there will be no impacts on ground or surface water resources.
	14. <u>(insert) Construction camp sites along the route north to Kununurra will be located in areas of prior disturbance where possible, or in areas subject to contemporary land degradation such as sheet erosion. Each camp site will be subject to closely controlled environmental management guidelines.</u>
13 The Department of Conservation and Land Management will be invited to participate in final route selection through Coolamon Pocket. In addition, ADM is committed to sound construction management principles for the powerline, which, together with design, will minimise visual impacts. ADM will discuss with station managers, the aspect of transmission line visibility in relation to aerial mustering.	15. The Department of Conservation and Land Management will be invited to participate in final route selection through Coolamon Pocket. In addition, <u>the Consortium</u> is committed to sound construction management principles for the powerline, which, together with design, will minimise visual impacts. <u>The Consortium</u> will discuss with station managers, the aspect of transmission line visibility in relation to aerial mustering.
14. At an appropriate time, ADM will liaise with SECWA and WAWA on relative alternative uses for the power and associated infrastructure. In addition, ADM will advise the EPA of ongoing uses for the power line.	16. At an appropriate time, <u>the Consortium</u> will liaise with SECWA and WAWA on relative alternative uses for the power and associated infrastructure. In addition, <u>the Consortium</u> will advise the <u>DEP</u> of ongoing uses for the power line.
15. An induction programme will be conducted during construction and operation to promote environmental awareness amongst employees and contractors.	17. An induction programme will be conducted during construction and operation to promote environmental awareness amongst employees and contractors.
	18. <u>An Environmental Management Programme containing these commitments and the works detailed in Section 8 of this Review and in the Response to Issues raised in submissions, will be designed and carried out by the proponent in consultation with, and to the satisfaction of, the DEP.</u>
	19. <u>(new clause) The operators of the power line will be made aware of the requirements of the Land and Soil Conservation Act 1983 with regard to access tracks.</u>

The commitments remain materially the same, with the addition of clauses 3, 14 and 18, and the addition of 19 in the response to submissions. Further, there have been additions to previous clause 3 (new clause 4) to include consultation with Aboriginal communities in the Kununurra region through the Aboriginal Legal Service. New clause 3 deals with the relocation of the switching station, and rehabilitation commitments in that regard. New clause 14 deals with construction camp sites on the transmission line route north to Kununurra which represents a

change to the previous proposal. New clause 18 re-affirms the commitment given in clause 1, and is procedural in terms of the development of an Environmental Management Programme. New clause 19 arose as a response to a submission by the Department of Agriculture, and formalises a responsibility under the Land and Soil Conservation Act 1983. The other changes refer to change in proponent, the separation of the EPA and the DEP since the previous statement was issued, and to the addition of consultation with pastoralists regarding marking of power lines to warn aerial mustering pilots regarding the visibility of powerlines. Mustering is not regulated by civil aviation authorities, and there will not be an impact on commercial or general service aviation. However, details of the route will be passed to Director of Survey, Department of Defence (Army) so that the lines can be added to commercially available maps.

#### **4.4 Additional condition**

The Authority has recommended that an additional condition (condition 9) relating to Decommissioning be added to the existing environmental conditions, and that Condition 1 be varied to incorporate the changes which are the subject of this Report.

### **5. Discussion and synthesis**

The majority of issues which need to be addressed have not changed since the previous assessment. This report deals with the changes to environmental conditions which need to be made to accommodate the inclusion of a power transmission line from the hydro-electric station on the Ord River Main Dam at Lake Argyle, and some minor consequent alterations to the proposal which was found to be environmentally acceptable in the Ministerial Statement of April 1992.

### **6. Conclusions and recommendations**

In concluding that the proposed changes to the environmental conditions for the Ord river hydro-electric project are environmentally acceptable, the Environmental Protection Authority has examined the proposal and the commitments to environmental management of the proponent, sought advice from relevant governmental and private agencies, and from members of the public. It is satisfied that, using information currently available, the following recommendation may be made to the Minister for the Environment.

The Environmental Protection Authority concludes that the proposed changes to environmental conditions for the Ord River Hydro Power project including a power line to Kununurra are environmentally acceptable and recommends that the Environmental Statement for the proposal 29 April 1992 should be updated to reflect changes and to include standard conditions to more effective project management. The proponent shall fulfil the commitments made and implement the environmental management measures as updated through this re-assessment of the proposal.

#### **Recommendation 1**

**The Environmental Protection Authority concludes that the proposal by Ord Hydro Consortium for the Proposed Changes to Environmental Conditions to the Ord River Dam Hydro Power Project is environmentally acceptable.**

In reaching this conclusion the Environmental Protection Authority identified the main environmental factors requiring detailed consideration as:

- maintenance of a water regime for the Ord River system such that there are no adverse ecological effects from the proposal;

- rehabilitation of areas disturbed by construction and operation;
- Aboriginal issues;
- environmental hygiene; and
- visual amenity/aircraft safety.

The Environmental Protection Authority concludes that the environmental factors mentioned above have been addressed adequately by either environmental management commitments given by the proponent or by the Environmental Protection Authority's recommendations in this report.

Accordingly, the Environmental Protection Authority recommends that the proposal could proceed subject to:

- the Environmental Protection Authority's recommendations in this Assessment Report; and
- the proponents commitments (See Appendix 4).

The Authority has established an implementation and auditing system which requires the proponent to advise the Authority on how it would meet the requirements of the environmental conditions and commitments of the project. The proponent would be required to develop a Progress and Compliance Report for this project as a section of the recommended audit programmes.

The Authority's experience is that it is common for details of the proposal to alter through the detailed design and construction phase. In many cases alterations are not environmentally significant or have positive effects on the environmental performance of the project. The Authority believes that such non-substantial changes, and especially those which improve the environmental performance and protection, should be provided for.

The Authority believes that any approval for the proposal based on this assessment should be limited to five years. Accordingly, if the proposal has not been substantially commenced within five years of the date of this report, then such approval should lapse. After that time, further consideration of the proposal should occur only following a new referral to the Authority.

## **7. Recommended environmental conditions**

Based on its assessment of this proposal and recommendations in this report, the Environmental Protection Authority considers that the following Recommended Environmental Conditions are appropriate.

### **ORD RIVER DAM HYDRO POWER PROJECT — PROPOSED CHANGES TO ENVIRONMENTAL CONDITIONS ( INCLUDING POWER LINE TO KUNUNURRA)**

#### **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 additional power line to Kununurra described in the Proponent's document of June 1994, the proponent shall fulfil the commitments made in the Proponent's document of June 1994 and in response to issues raised following public submissions and the commitments published in Environmental

Protection Authority Bulletin 615 as modified and published in Bulletin 756, provided that the commitments are not inconsistent with the conditions or procedures contained in this statement. These commitments are consolidated in Environmental Protection Authority Bulletin 756 as Appendix 4. (A copy of the modified commitments of 1994 is attached.)

## **2 Detailed 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 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 Weed Control**

3-1 Prior to construction of the transmission line, the proponent shall ensure that appropriate plans are developed and implemented to ensure that operations do not introduce potentially harmful species, including contamination by water-borne declared plant seeds, to the satisfaction of the Agriculture Protection Board.

3-2 In addition to the requirements of condition 3-1, where operations may affect the proposed National Park, the proponent shall ensure that plans are developed and implemented to ensure that operations do not introduce potentially harmful species, including contamination by water-borne declared plant seeds, to the satisfaction of the Department of Conservation and Land Management.

## **4 Borrow Pits and Quarries**

4-1 Prior to the commencement of earthworks at each proposed borrow pit or quarry site, the proponent shall obtain approval from the Water Authority of Western Australia, the Western Australian Department of Minerals and Energy and the Shire of Wyndham — East Kimberley for their locations.

4-2 In addition to the requirements of condition 4-1, where operations may affect the proposed National Park, the proponent shall obtain the approval of the Department of Conservation and Land Management for the location of borrow pits or quarry sites.

## **5 Future Use of Transmission Line**

Not less than six months before the closure of the mine, the proponent shall refer to the Environmental Protection Authority a programme to remove the transmission line and rehabilitate the transmission line easement, or alternative proposals for its further use.

## **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.)

## **8 Compliance Auditing**

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

- 8-1 The proponent shall prepare periodic "Compliance Reports" to help verify the environmental performance or otherwise of this project, in consultation with and to the satisfaction of the Environmental Protection Authority. The proponent may include the compliance reporting as part of its environmental reporting obligations pursuant to the Diamonds (Argyle Diamond Mines Joint Venture) Agreement Act.

## **9 Decommissioning**

The satisfactory decommissioning of the project, removal of the plant and installations and rehabilitation of the site and its environs is the responsibility of the proponent.

- 9-1 At least six months prior to decommissioning, the proponent shall prepare a decommissioning and rehabilitation plan.
- 9-2 The proponent shall implement the plan required by condition 9-1.

## **Procedure**

- 1 The conditions contained in this statement are to be complied with to the satisfaction of the Department of Environmental Protection except where they are required to be carried out to the requirements of either the Minister for the Environment or any other government agency.
- 2 Should the Department of Environmental Protection, other government agency and/or proponent be unable to resolve any dispute that occurs concerning these conditions and commitments, that dispute will be determined by the Minister for the Environment.

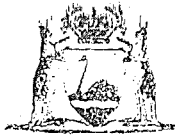
## **8. References**

1. Durack, W. 1991 "Regional History" Paper presented to the "50 years of Ord Irrigation Review and Future Perspectives" Conference, Kununurra November 1991
2. Hamilton, Roy A. 1991. "History of the Ord Project" Paper presented to the "50 years of Ord Irrigation Review and Future Perspectives" Conference, Kununurra November 1991

# Appendix 1

Environmental statement 29 April 1992





WESTERN AUSTRALIA  
MINISTER FOR THE ENVIRONMENT

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

ORD RIVER HYDRO-ELECTRIC PROJECT (390)

ARGYLE DIAMOND MINES PTY LIMITED

This proposal may be implemented subject to the following conditions:

**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, the proponent shall fulfil the commitments (which are not inconsistent with the conditions or procedures contained in this statement) made and included in Environmental Protection Authority Bulletin 615. (A copy of the commitments is attached.)

**2 Detailed 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 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 Weed Control**

- 3-1 Prior to construction of the transmission line, the proponent shall ensure that appropriate plans are developed and implemented to ensure that operations do not introduce potentially harmful species, including contamination by water-borne declared plant seeds, to the satisfaction of the Agriculture Protection Board.
- 3-2 In addition to the requirements of condition 3-1, where operations may affect the proposed National Park, the proponent shall ensure that plans are developed and implemented to ensure that operations do not introduce potentially harmful species, including contamination by water-borne declared plant seeds, to the satisfaction of the Department of Conservation and Land Management.

Published on  
29 APR 1992

#### **4 Borrow Pits and Quarries**

- 4-1 Prior to the commencement of earthworks at each proposed borrow pit or quarry site, the proponent shall obtain approval from the Water Authority of Western Australia, the Western Australian Department of Mines and the Shire of Wyndham - East Kimberley for their locations.
- 4-2 In addition to the requirements of condition 4-1, where operations may affect the proposed National Park, the proponent shall obtain the approval of the Department of Conservation and Land Management for the location of borrow pits or quarry sites.

#### **5 Future Use of Transmission Line**

Not less than six months before the closure of the mine, the proponent shall refer to the Environmental Protection Authority a programme to remove the transmission line and rehabilitate the transmission line easement, or alternative proposals for its further use.

#### **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.)

#### **8 Compliance Auditing**

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

- 8-1 The proponent shall prepare periodic "Compliance Reports" to help verify the environmental performance or otherwise of this project, in consultation with and to the satisfaction of the Environmental Protection Authority. The proponent may include the compliance reporting as part of its environmental reporting obligations pursuant to the Diamonds (Argyle Diamond Mines Joint Venture) Agreement Act.

## Procedure

The conditions contained in this statement are to be complied with to the satisfaction of the Environmental Protection Authority except where they are required to be carried out to the satisfaction of either the Minister for the Environment or any other government agency.

Should the Environmental Protection Authority, other government agency and/or proponent be unable to resolve any dispute that occurs concerning these conditions and commitments, that dispute will be determined by the Minister for the Environment.



Bob Pearce, MLA  
MINISTER FOR THE ENVIRONMENT  
29 APR 1992

## MANAGEMENT COMMITMENTS

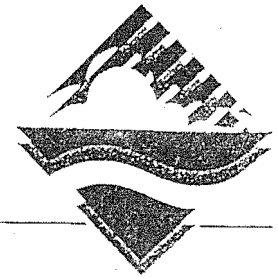
ADM is committed to a programme of environmental management and protection. This programme is detailed in Section 7 and specific commitments to environmental management and protection are as follows:

1. The environmental management programme and associated works will be carried out to the satisfaction of the EPA on advice from WAWA and SECWA and in accordance with practices relevant at the time.
2. ADM is committed to a rehabilitation programme of areas disturbed during project construction. Rehabilitation works will be designed on a site-specific basis and will generally include, where appropriate, soil erosion control works, surface re-shaping, drainage control, surface stabilization, and habitat restoration.
3. A continual programme of liaison and consultation will be carried out with the Doon Doon, Glen Hill and other relevant local communities during the construction phase of the project. In addition, ADM will control the movement of the workforce on pastoral leases and the use of off-road vehicles by project personnel for recreational purposes will not be permitted during construction of the power line. Contractors will be advised of their obligations under the Western Australian Aboriginal Heritage Act 1972-1980.
4. Blasting, when necessary, will be restricted to daylight hours.
5. The construction site will be cleaned up by the contractor prior to leaving the site. All construction and industrial waste will be removed to a waste disposal site that will be selected, designed, and operated in accordance with standard waste disposal practices.
6. ADM will require all contractors to comply with statutory regulations for the control of noise in the workplace.
7. During the construction period, there will be periods of heavy traffic use on various sections of roads in and around the dam and spillway area. Traffic management and control will be undertaken at all times during these periods by the project managers.
8. All vehicles used in construction of the transmission line will be equipped with fire extinguishers and knap-sack sprays in case of accidental fire.
9. Explosives will only be used for foundation preparation where ground conditions do not permit drilling or augering.
10. All foundation holes will be kept covered prior to pole erection to prevent injury to stock or native fauna.
11. Sites for laydown areas will be selected so that disturbance to the environment is minimised.
12. Each construction camp for the transmission line will be sited to ensure that there will be no impacts on ground or surface water resources.

13. The Department of Conservation and Land Management will be invited to participate in final route selection through Coolamon Pocket. In addition, ADM is committed to sound construction management principles for the powerline, which, together with design, will minimise visual impacts. ADM will discuss with station managers, the aspect of transmission line visibility in relation to aerial mustering.
14. At an appropriate time, ADM will liaise with SECWA and WAWA on relative alternative uses for the power and associated infrastructure. In addition, ADM will advise the EPA of ongoing uses for the power line.
15. An induction programme will be conducted during construction and operation to promote environmental awareness amongst employees and contractors.

## Appendix 2

Summary of submissions and proponents response



Mr Derek Fern  
Project Director, Power Transmission and Distribution  
Sinclair Knight Merz  
Brecon 47 Colin Street  
West Perth WA 6005

91/79  
Katrin Wilson

Dear Mr Fern

**ORD RIVER DAM HYDRO POWER PROJECT - SECTION 46 CHANGES  
TO ENVIRONMENTAL CONDITIONS**

Further to previous discussions regarding questions raised during the public submission period, I write to seek your response to the following issues listed below, which have been raised in submissions and by the Department.

A copy of these questions and your responses will be appendicised in the Environmental Protection Authority's assessment report. The Authority will, if necessary, include specific comments on issues with potential environmental impacts which are not adequately covered by your response. Where the proponent considers that a commitment can be made in regard to any of the issues raised, this may assist in simplifying the conditions which the Minister may set.

Under the Environmental Protection Act 1986, the Authority's report is subject to a 14 day appeal period. During this period the public may appeal the Authority's Report and Recommendations. An incomplete answer to any of the attached questions could cause the public to appeal and this would delay the setting of Ministerial conditions. Accordingly, it is in your interest to give a full and reasoned answer to each question. In some instances, you may feel that the issue has already been covered, however this is an opportunity to clarify matters which may not be quite clear.

The issues of concern which have been raised include:

1. There does not seem to be much information on the proposed switching station in the abandoned gravel pit, nor the substation in Kununurra. What are the environmental considerations with building these?
2. Will the programme of rehabilitation of disturbed areas also apply to the borrow pit area for the switching station, or only to 'any additional disturbance'?

3. What provisions will there be in the proposed environmental management programme (EMP) to include protection of visual amenity for the whole project, including, but not confined to the area through Coolamon Pocket?

4. While the coffer dam is being built, will there be enough water for other users? Will there be reasonable maintenance of water flows for other users during construction? Will "water-reliant" users be promptly notified of any expected changes in water flows?

5. Will the proposed timing of the coffer dam in the off-tourist season be adhered to? Will exact dates be sent to all water users as soon as possible so that, for example, tourist operators can make appropriate adjustments to their schedules. Will liaison be maintained with such operators to inform them of changes to water regimes which may affect their operations?

6. Will the slightly increased annual usage of water reduce the levels of Lakes Argyle and/or Kununurra? What effects will this have on other people who may draw water from the lakes? Or for those who make other uses of the water?

7. Will water bird habitats be affected?

8. Will the altered water regime affect fringing vegetation? Although it has been stated that the average annual flow will be similar, what will happen to the pattern of water flow? What are the ecological implications? Will this affect other water users?

9. Considerable concern has been expressed about the impacts of raising the spillway to 92.2 m (AHD). It has been suggested that any increase in the water level to greater than 90.0 m (AHD) would have a detrimental effect on the existing and proposed mining activities of the Normandy Bow River Diamond Mine's operations. In particular, it has been noted that an increase in water level above 90.0 m (AHD) would have the following impacts:

- access difficulties to the opposite banks of the Ord and Bow Rivers due to the increase in river breadth;
- inundation of mined out areas thus raising the potential of silt entering the Ord River system.
- inundation of mining areas necessitating the construction of protection levee banks.
- jeopardising a bore field system necessitating relocation.
- prematurely closing the mine.

10. Raising the spillway may involve levels in Lake Argyle being higher than would otherwise have been the case. For how long is it expected that this will be? Whereas average annual flow of water may be similar, and the maximum probable flood level of the dam may not increase, what areas are likely to be inundated that would otherwise not have been, and for how long?

11. What are the ecological implications of the proposed use of aggregate from Spillway Creek and the use of river bed material for the coffer dam? What protection is being offered to Spillway Creek? How will it be affected? What effect will removal of river bed material have on the river bed, its flow, the fauna and flora, (including in the river itself), the banks? How will you ensure that the effects will not be detrimental? Environmental Conditions 4-1 and 4-2 of the existing Statement refer to approvals with



regard to borrow pits and quarries. Given the potential environmental effects of removing river bed material, will these aspects also be included in the EMP?

12. If there is an overall drop in the level of Lake Argyle, (as in a drought, or if there is excess downstream draw) what will happen to the power station?

13. Will there be liaison with civil aviation authorities regarding power-line visibility? Commitment 15 refers to '...discuss with station managers, the aspect of transmission line visibility in relation to aerial mustering and the civil aviation authorities'. It is not clear whether this means the Consortium will liaise with civil aviation authorities and take whatever action is required to ensure that there is no danger to aircraft, or whether this is to be left to station managers. Could this point be clarified

14. In Section 8.4, there is a statement that 'Laydown and hardstand areas will be subjected to a set of rehabilitation procedures where development of such areas is required outside areas suffering from prior disturbance'. Surely all laydown and hardstand areas should be included in the general environmental management programme, and have surrounds rehabilitated, whether there was prior disturbance or not?

15. What vehicle hygiene measures will be employed to prevent the introduction of weeds into the proposed Carr Boyd National Park area? There are requirements under conditions 3-1 and 3-2 of the original Statement requiring the proponent to carry out weed control measures. Are these to be included in the overall EMP?

16. The issue of minimising ponding of water and the development of potential mosquito breeding habitat is considered important. It is understood that this will be included in the proposed EMP for rehabilitation and management. Is this the case?

17. As part of the environmental awareness programmes, will the risks of mosquito borne diseases be included as a part of a health and safety programme? There is potential in the area for Ross River Virus, Australian Encephalitis and other arbo-viruses. Will this information and information on protective measures be included in the induction programmes?

18. On page 27 of the proponent's document, under the discussion on land tenure, it is noted that the route crosses Government Reserve PT 31165 'which is leased by the Dingo Springs Aboriginal Community..' and that a claim had been lodged 'to convert this land to a pastoral lease annexed to the Dingo Springs Community.'. It is understood that portion of Reserve 31165 of King Location has been cancelled as a Reserve, and is to be leased to the Gardungarll Community. What liaison will there be with this community regarding the proposed siting for the power line from the power station to Kununurra?

19. Have the sites identified within either the corridor boundary or within 500 m of the proposed route as noted on p 29 of the proponent's document been referred to the Aboriginal Cultural Materials Committee?

20. Has the anthropological survey referred to in the proponent's document been completed? Will DEP be advised of its completion and conclusions? What implications arise from this survey?


21. It is understood that an objection to the project was lodged by the Miriwunga Gajerronga Ninggunung Aboriginal Community with the Office of Traditional Land Use. While that Office has its own procedures to be followed, has the proponent liaised with that community to ascertain their concerns with the project, and what outcome has been achieved?

There may be some late submissions on this proposal. In the interests of progressing the assessment of this project, this list is provided now but significant issues raised in late submissions (received up to 19 August 1994) will be added to it.

If there are other matters on which you may wish to provide additional information or make a further commitment, please include this in your response to this letter. This may assist in the deliberations and the advice which is provided by the Environmental Protection Authority to the Minister for the Environment.

It is suggested that you discuss your draft response with the project officer, Katrin Wilson, prior to its finalisation.

Yours sincerely

*fos*  
  
R A D'SILVA  
DIRECTOR  
EVALUATION DIVISION  
19 August 1994

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**SINCLAIR KNIGHT MERZ**

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Facsimile Transmission

To: Department of Environmental Protection  
From: R A Steele  
Attention: Katrin Wilson Job No: RAS:RJ:1260:02.57  
Fax No: 322 1598 Date: 30 August 1994  
Copies: G Bertuch - PHL (03) 8995225 No of Pages: 7  
Subject: **ORD RIVER DAM HYDRO POWER PROJECT**  
**Section 46 Changes to Environmental Conditions**

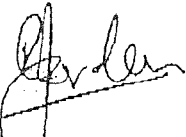
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Your letter 91/79 dated 19 August refers.

Our reply follows hereafter.

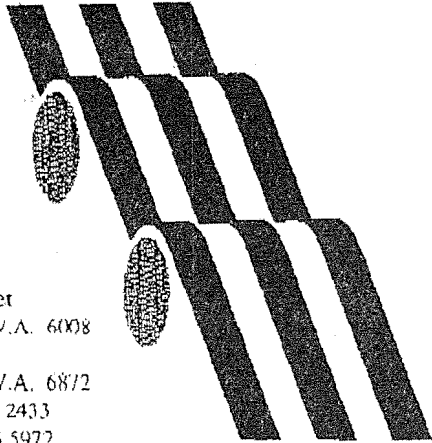
Regards,



*for* R A Steele  
for and on behalf of the  
ORD HYDRO CONSORTIUM

all:

# ORD HYDRO CONSORTIUM



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**Sinclair Knight Merz Pty Ltd**  
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Department of Environmental Protection  
Westralia Square, 141 St Georges Terrace  
PERTH WA 6000

30 August 1994  
DOF:RAS:rj:1260:02.57  
P1552066

Attention: R A D Sipps  
Director - Evaluation Division

Dear Sir

## ORD RIVER DAM HYDRO POWER PROJECT Section 46 Changes to Environmental Conditions

Your letter 91/79 dated 19 August 1994 refers.

- 1 The proposed switching station in the gravel pit will occupy an area 40m x 40m.

The present condition of the site is that it is shielded from the road by a strip of high ground behind which is an essentially flat and level area; behind that again is an elevated area sloping down into a gully.

The screen to the road will not be disturbed other than grading to give heavy vehicle access. At the road end of the first level area there is a quantity of construction materials presumably associated with the original dam construction. This is in a recessed area which does not impinge on the remainder earmarked for the switching station.

The raised area furthest from the road is used as a rubbish tip.

Some minor grading will be required on the central flat area to ensure drainage. The compound will be defined by a high chain link fence and the plant inside will be static electrical equipment on steel structures mounted on small concrete foundations. The structures will be generally not more than 5m high except for landing structures for the incoming and outgoing lines which will be about 7m. Within the compound will be a building about 5m x 3m to house electronic equipment. This will probably be a transportable building.

The substation at Kununurra will be within the existing SECWA power station lease and will occupy the same area as an existing substation. This existing substation is screened on the road side by a high wall. The equipment will consist of two transformers and static switchgear.

## ORD HYDRO CONSORTIUM

The construction of neither site represents an environmental hazard, the only fluids used being transformer oil which will be transported to site in drums and pumped into the transformers after erection. There are no transformers at the switching station.

- 2 The Consortium has no mandate to remove the old construction plant or to close the rubbish tip so they will remain as at present, and rehabilitation will be confined to tidying any area outside the compound used for construction.
- 3 Visual impact in Coolamon Pocket will be apparent only to people in close proximity to it. With regrowth over the construction track little will be seen from the air, although visibility varies with the angle of the sun and position of the observer due to reflection from the conductor wires.

It is proposed to use weathering steel poles over all of the route except the final approach to Kununurra where a preference for galvanised poles has been expressed. The use of poles rather than towers minimises the structure height and avoids the perceived bulk which lattice towers present. From most view points the lines will be backed or shielded by rising ground. One notable exception is at the power station where a line up the cliff face is unavoidable. It is to minimise the impact of this line that the switching station is proposed, the benefit being that the two transmission lines will emanate from the switching station rather than otherwise having both lines up the cliff face.

Environmental management from a visual aspect will be almost entirely confined to the design stage to achieve the measures discussed above. Thereafter the measures will be limited to tidying and rehabilitating construction and lay down areas and, as in consultation with CALM, discouraging as far as possible public use of access tracks.

- 4 The detailed arrangements between the Water Authority and the Consortium have been designed to ensure that supplies of water for irrigation can be maintained during all phases of the project. During cofferdam construction, a period of some three weeks, releases from the Ord River Dam will cease. However there will be adequate quantities of water stored in Lake Kununurra to meet the needs of irrigation users. The Water Authority is communicating with these users to advise them of the conditions to apply during construction of the cofferdam and the likely range of water levels in Lake Kununurra.

Water flows to meet the needs of irrigation will be maintained during the period of construction of the power station. Following earlier discussions with various interested parties, some reduction of flows is proposed during the period from November to April in order to reduce the rate of outflow of water from Lake Argyle, while still meeting the irrigation requirement. The Water Authority is holding further discussions with the affected parties on alternative water release strategies.

The Consortium will maintain close liaison with the Water Authority on any expected changes in water flow during cofferdam construction. The Water Authority will then be advising the local community of these changes. A number of different classes of Water Authority customers have been identified and these will be followed up with separately.

## ORD HYDRO CONSORTIUM

- 5 The timing for construction of the cofferdam is scheduled for a three week time slot in the period November 1994 to January 1995.

As outlined in the reply to Questions 4(b) & (c), the Water Authority will ensure that all water users are advised of changes to water flow regimes so that appropriate adjustments can be made.

- 6 Water use for the project has no impact on the water levels in Lake Kununurra which is controlled by gates on the Kununurra Diversion Dam and will remain unchanged under the proposal. There will be no impact on those who draw from Lake Kununurra or on those who use the lake.

At Lake Argyle the effect of the proposal will be that water which currently flows down the spillway will be diverted through the power station to generate energy. The result of this is that while average lake levels will fall slightly (probably less than 1 metre) in the longer term, the range of water levels likely to be experienced in the lake will be very similar to those which have been experienced historically and which were envisaged when the project was first constructed (approximately 40 metres). Actual levels in the lake in the future will obviously depend on the actual inflows to the reservoir.

There are not expected to be any significant effects on other users of water from the Lake. The various agreements between the Consortium and the Water Authority are designed to ensure that there is ample water available for all users. In the event of an extended drought, when water levels fall in Lake Argyle, the operating rules have been designed to ensure that the priority for water releases changes from meeting power demands to providing drought security for irrigation. Any water released will still pass through the power station to generate energy.

- 7 and 8 During construction of the coffer dam, there will be no discharge through the irrigation valves for a period up to approximately three weeks. This will reduce the water level in the area between the dam and Lake Kununurra to a series of pools. This is a temporary reduction in flow in this section of the river and will not result in long-term impacts on fringing vegetation communities.

Any impacts associated with this temporary cessation of flow will not be significant as limits of flow fall within the range already occurring. Temporary cessation of flow has occurred in the past when Lake Kununurra has been drained as a method of weed control.

The reduced rate of flow referred to in 4(b) during the construction period may effect local fish populations and this may result in a temporary reduction in the number of fish eating birds in the area. This situation will normalise when the construction of the power station has been completed and discharge returns to pre-construction levels.

There may also be an increase in the volume of floating weeds as a result of a decreased flow rate during the construction period. Some species of birds use these floating weed beds, for example, the comb crested Jacana (*Irediparra gallinacea*) and the Black-fronted Plover (*Charadrius melanops*) and accordingly some increase in local populations may occur.

## ORD HYDRO CONSORTIUM

There will be changes to water bird habitats with both adverse and beneficial short term affects. The long-term affects to habitats will be masked by variations in river flow patterns as a function of water management by WAWA.

During operation of the power station the major change in pattern of water flow will be a slight increase in the volume water discharged. This increase in discharge volume is unlikely to affect water bird habitats or fringing vegetation as discharge will still be within the range previously occurring.

- 9 Consultants to Bow River Mining reported in 1991 that the impact of the power station proposal would be that "..... long term average water levels will generally be 0.5m lower than those without the power project." (Kinhill Engineers, Effects of Lake Argyle Hydroelectric Scheme, March 1991). The historical lake level data indicates that the Bow River Mine would have been subject to water levels greater than 90m AHD for slightly more than 25% of the time. The effect of the proposals would be to reduce the time water levels were above this level by 2 or 3%.
- 10 As outlined in previous paragraphs, the effect of raising the spillway level is to redirect water from the spillway into the power station, with average water levels dropping slightly, probably by less than one metre. The range of water levels likely to be experienced under the proposal will be the same as happened historically and no new areas will be inundated.
- 11 It is not intended to utilise aggregates from Spillway Creek. One possibility is to obtain aggregate from existing stockpiles adjacent to Spillway Creek comprising material excavated from the spillway cutting at the head of Spillway Creek. However, a more likely scenario is to obtain aggregate from concrete contractors in Kununurra.  
  
Any material removed from the Ord River bed will be from the immediate vicinity of the power station and coffer dam.
- 12 If a drought occurs the water release rules set by WAWA provide for restricted release of water to serve irrigation needs. All water which is released will pass through the power station to generate power.
- 13 Our main concern for aircraft operation is during mustering which is not regulated by civil aviation authorities. Nothing in the project will impact on commercial or normal general service aviation. There are normally well identified areas where pastoralists employ aerial mustering, hence it is our intention to seek from them their advice where this traditionally occurs. In those areas standard aerial markers will be installed on conductors to warn pilots. Details of the route will also be passed to the Director of Survey, Department of Defence (Army) so that the lines can be added to commercially available maps.
- 14 All areas used for laydown of construction materials and as hardstand areas will be included in the overall environmental management programme and will be subject to site specific rehabilitation procedures.
- 15 We have established contact within the District Manager of CALM in Kununurra and will liaise with his staff and Department of Agriculture to establish what vehicle hygiene measures are appropriate and where they should be applied.

## ORD HYDRO CONSORTIUM

- 16 On the transmission lines ponding is most likely to occur in the vicinity of poles. It is in the interests of pole stability that this does not occur hence there is a strong incentive to prevent it.

Ponding can also occur due to compaction of soil in depressions along the construction track. Where this occurs the top soil will be loosened to restore material absorption.

- 17 Our environmental awareness component will form part of the overall project induction programme and will address all aspects of environmental management for project construction and implementation. The risks associated with mosquito borne disease will be detailed and guidelines will be provided on appropriate protection and prevention measures as part of the programme.

- 18 The Gardungarl Community is part of the Miriwunga Gajerronga Ningguwung Yawurrung Aboriginal Community with whom the Consortium has ongoing negotiations towards a land use agreement. Their representatives have been party to the heritage survey.

- 19 The sites identified on P29 of the document are all known to the Aboriginal Sites Department as the information was drawn from the Department records. Section 6.4.2 refers to 25 sites recorded and registered with the W.A. Museum.

- 20 The anthropological survey is scheduled for completion of field work by the end of August and presentation of the report during September. The DEP will be advised of its completion and conditions.

- 21 As noted above the Consortium is in negotiation with the Community. An agreement was formalised for the heritage survey and another is in preparation for land use. The latter is intended to support any proceedings under either State or Federal legislation.

### 22 Department of Agriculture Submission

Site specific rehabilitation to prevent soil erosion, minimise surface run off, enhance infiltration and vegetation regrowth will be undertaken as part of the construction project.

The operators of the power line will be made aware of the requirements of the Land and Soil Conservation Act 1983 with regard to access tracks.

### 23 Status of Agreements

The Agreement with the West Australian Water Authority will be signed today 30 August 1994 together with the Agreement with the State of Western Australia.

Negotiations are completed with the State Energy Commission of Western Australia and is awaiting finalisation of the Argyle Diamond Mines Agreement before signature.



## ORD HYDRO CONSORTIUM

The Argyle Diamond Mines Agreement is in the final stages of negotiation and should be finalised and signed by mid September.

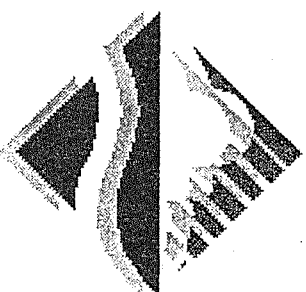
We confirm our commitments made in the Review Document dated June 1994 and include a further commitment that the operators of the power line will be made aware of the requirements of the Land and Soil Conservation Act 1983 with regard to access tracks.

Yours faithfully

A handwritten signature in black ink, appearing to read 'R A Steele', written over a diagonal line that extends from the bottom left towards the top right.

R A Steele  
for ORD HYDRO CONSORTIUM

# Facsimile Message



**ATTENTION:** Mr R Steele  
**ORGANISATION:** Ord Hydro Consortium  
**FROM:** Katrin Wilson  
**DATE:** 31 August 1994  
**TELEPHONE:** 222 7000  
**PAGES:** 1  
**SUBJECT:** Ord River Dam Hydro Power Project

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**MESSAGE:**

**MRR A STEELE:**

**THANK YOU FOR YOUR RESPONSE TO ISSUES RAISED IN PUBLIC SUBMISSIONS.**

**THERE IS AN ADDITIONAL COMMITMENT IN THAT LETTER, AND I WOULD SUGGEST MODIFYING COMMITMENT 18, AND ADDING COMMITMENT 19 ALONG THE FOLLOWING LINES.(CHANGES ARE UNDERLINED). COULD YOU PLEASE ADVISE WHETHER THESE PROPOSED CHANGES ARE ACCEPTABLE TO YOU.**

18 An Environmental Management Programme containing these commitments and the works detailed in Section 8 of this Review and in the Response to Issues raised in submissions, will be designed and carried out by the proponent in consultation with, and to the satisfaction of, the DEP.

(19) The operators of the power line will be made aware of the requirements of the Land and Soil Conservation Act 1983 with regard to access tracks.

**KATRIN WILSON**

**Department of Environmental Protection**

Westralia Square, 141, St Georges Terrace, Perth, Western Australia, 6000.

Facsimile: (09) 322 1598 Telephone: (09) 222 7000

**SINCLAIR KNIGHT MERZ**

Facsimile Transmission

To: Department of Environmental Protection  
Attention: Katrin Wilson  
Fax No: 322-1598  
Copies: G Bertuch PHL (03) 8995225  
B Bagot ABN 02 223 4310  
Subject: ORD RIVER DAM HYDRO POWER PROJECT

From: R A Steele  
Job No: 1260:02:57/2:RAS:RJ  
Date: 1 September 1994  
No of Pages:

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Thanks for your fax of 31 August.

The proposed modified commitments 18 and 19 are acceptable.



Regards,

Rob Steele

**Appendix 3**  
**List of submitters**

## LIST OF SUBMITTERS

### State and local government agencies

Department of Land Administration

Main Roads

Department of Conservation and Land Management

Office of Traditional Land Use

State Energy Commission

Water Authority of Western Australia

National Parks and Nature Conservation Authority

Commonwealth Environment Protection Agency

Western Australian Department of Agriculture

### Members of the public

Ultimate Adventures

Normandy Bow River Diamond Mine

**Appendix 4**  
**Proponents commitments**

ORD RIVER HYDRO POWER PROJECT-CHANGES TO ENVIRONMENTAL  
CONDITIONS ( INCLUDING POWER LINE TO KUNUNURRA)  
ORD HYDRO CONSORTIUM

The proponent has made the following environmental commitments:

- 1 The environmental management programme and associated works will be carried out to the satisfaction of the DEP on advice from WAWA and SECWA and in accordance with practices relevant at the time.
- 2 The Consortium is committed to a programme of rehabilitation of areas disturbed during project construction. Rehabilitation works will be designed on a site-specific basis and will generally include, where appropriate, soil erosion control works, surface re-shaping, drainage control, surface stabilization, and habitat restoration.
- 3 The switching station will be located in an abandoned borrow pit, and any additional disturbance will be subject to a site-specific rehabilitation programme.
- 4 A continual programme of liaison and consultation will be carried out with the Doon Doon and Glen Hill Communities during the construction phase of the project. In addition to this liaison programme, the proponent has established a consultation process with the Kununurra region Aboriginal communities via the Aboriginal Legal Service. The Consortium will control movement of the workforce on pastoral and other leases and the use of off-road vehicles by project personnel for recreational purposes will not be permitted during construction of the power line within the project area. Contractors will be advised of their obligations under the *Western Australian Heritage Act 1972-1980*.
- 5 Blasting, when necessary, will be restricted to daylight hours.
- 6 The construction site will be cleaned up by the contractor prior to leaving the site. All construction and industrial waste will be removed to a waste disposal site that will be selected, designed, and operated in accordance with standard waste disposal practices.
- 7 The Consortium will require all contractors to comply with statutory regulations for the control of noise in the workplace.
- 8 During the construction period, there will be periods of heavy traffic use on various sections of roads in and around the dam and spillway area. Traffic management and control will be undertaken at all times during these periods by the project managers.
- 9 All vehicles used in construction of the transmission line will be equipped with fire extinguishers and knap-sack sprays in case of accidental fire.
- 10 Explosives will only be used for foundation preparation where ground conditions do not permit drilling or augering.
- 11 All foundation holes will be kept covered prior to pole erection to prevent injury to stock or native fauna.
- 12 Sites for laydown areas will be selected so that disturbance to the environment is minimised.
- 13 Each construction camp for the transmission line will be sited to ensure that there will be no impact on ground or surface water resources.

- 14 Construction camp sites along the route north to Kununurra will be located in areas of prior disturbance where possible, or in areas subject to contemporary land degradation such as sheet erosion. Each camp site will be subject to closely controlled environmental management conditions
- 15 The Department of Conservation and Land Management will be invited to participate in final route selection through Coolamon Pocket. In addition, the Consortium is committed to sound construction management principles for the powerline, which, together with design, will minimise visual impacts. The Consortium will discuss with station managers, the aspect of transmission line visibility in relation to aerial mustering and the civil aviation authorities.
- 16 At an appropriate time, the Consortium will liaise with SECWA and WAWA on relative alternative uses for the power and associated infrastructure. In addition, the Consortium will advise the DEP of ongoing uses for the power line.
- 17 An induction programme will be conducted during construction and operation to promote environmental awareness amongst employees and contractors.
- 18 An Environmental Management Programme containing these commitments and the works detailed in Section 8 of this Review and in the Response to Issues raised in submissions, will be designed and carried out by the proponent in consultation with, and to the satisfaction of, the DEP.
- 19 The operators of the power line will be made aware of the requirements of the Land and Soil Conservation Act 1983 with regard to access tracks.