ORD HYDRO POWER DEVELOPMENT PROJECT
STATE ENERGY COMMISSION OF WESTERN AUSTRALIA

REPORT AND RECOMMENDATIONS

BY THE

ENVIRONMENTAL PROTECTION AUTHORITY

September 1980

Department of Conservation and Environment
Western Australia

Bulletin No. 82

1. INTRODUCTION AND SUMMARY

The Report is concerned with the proposal by the State Energy Commission of Western Australia (SECWA) to construct and operate a 60 MW hydro-electric power station using water from Lake Argyle on the Ord River. SECWA and its consultants prepared a Draft Environmental Review and Management Programme which the Environmental Protection Authority has assessed along with comments received during a six-week public review period.

The Authority also visited the site of the proposal at Lake Argyle in July, 1980 during a field trip to the Kimberley region which gave Members first-hand knowledge of the development.

The EPA has concluded that the Draft ERMP has addressed the major areas of potential environmental impact and is an acceptable document. Some environmental aspects concerning the project have been identified in the EPA's assessment and from the public comments. These are discussed at Appendix 1. A summary of the public comments is at Appendix 2.

CONCLUSION

The EPA considers that the project is environmentally acceptable and recommends that approval for it to proceed be subject to the provisions for environmental management contained in the Draft Environmental Review and Management Programme.

2. THE PROPOSAL

Although the possibility of using the Ord Dam for hydro-electric power generation has been under review since the dam was constructed, this project was initiated as a result of studies conducted by the Northern Territory Energy Commission (NTEC) to evaluate alternatives for Darwin's future power supplies. The studies indicated that development of the Ord hydro potential was the quickest and most economical way of reducing the Northern Territory's power costs and dependance on imported oil.

The Ord Dam differs from convential dams in that it is designed to trap wet season run-off and discharge it slowly over an extended period. This is achieved by the design of the spillway which is a long, narrow channel through rock about 8 km from the Dam. Water from the spillway rejoins the Ord River about 30 km downstream. The project entails raising the height of the spillway by 6 m and widening it by 50 m about 4 m above the bottom of the channel. This latter action is necessary to maintain the long term flood discharge capability of the spillway.

The spillway modifications will not markedly alter the regime of Lake Argyle : what it will do in effect is to divert water from the spillway to flow through the turbines instead. The project is designed to use this water and not to affect the Dam's agricultural irrigation water supply potential.

Other engineering works proposed include construction of a 60 MW power station just downstream from the Dam wall and associated tunnels and tailrace, and a substation for transforming and switching the power for the 220 kV Darwin line and 66 kV local line. Transmission lines beyond the substation were not included in the ERMP.

3. ENVIRONMENTAL EFFECTS

The Ord River region's environment has been grossly modified by man in recent times. The construction of the two dams has altered the flow of the Ord River from seasonal to permanent and apart from inundation of the land, the creation of Lakes Argyle and Kununurra has provided a permanent fresh water focus in the region.

The ERMP has concluded that the project will not greatly alter this modified environment and summarises the main effects as :

3.1 Physical

a) Constructional activity will provide some local disturbance, largely temporary. Examples include noise and vibration from blasting, drilling and construction work, some dust and an innocuous amount of exhaust emissions.

b) Spillway modifications should slightly increase the full supply level (FSL) of Lake Argyle. However the maximum level to which the lake has already flooded exceeds this proposed new FSL. Spillway modification will also allow a greater discharge down Spillway Creek than presently exists and this could endanger the safety of the road bridge across it. This aspect is under review by the PWD. The creek itself will revert to its previous ephemeral condition.

c) Discharges from the power station may slightly affect bank stability for about the first 8 km downstream.

3.2 Biological

a) Vegetation lining the river banks downstream of Lake Kununurra may be affected during the period of intermittent discharge. During this time bush cattle may invade the irrigated agricultural areas.

b) Vegetation along Spillway Creek will alter as the spillway is only expected to flow about once in 10 years. Some vegetation in the upper reaches of the Ord may also be affected. However these areas are already subject to water level fluctuations.

3.3 Socio-economic

a) A field survey of Aboriginal Sites in areas likely to be affected by the project was conducted by the Aboriginal Sites Department of the W.A. Museum. A number of recommendations were made concerning the discoveries. However it was noted that no sites were found or had previously been recorded which are of current ritual significance to Aborigines and are directly threatened by the proposal.

b) The design of the project has ensured sufficient water for irrigated agriculture at all times.

c) The modifications to the spillway could prevent barramundi migration downstream in the wet season and thus prevent enactment of the Fish Farming (Lake Argyle) Development Agreement Act, 1976. This Agreement allows trapping of the fish as they leave Lake Argyle. However a firm commitment to this venture has yet to be made.

d) The tourist and recreation potential of the area was recognised in the ERMP and visual impact of engineering structures will be minimised.

e) The construction workforce will have some socio-economic impact on Kununurra.

f) Workforce education should reduce the already small risk of infection by Murray Valley Encephalitis (MVE) due to mosquito attacks, particularly at dawn and dusk between February and May each year.

APPENDIX 1

ENVIRONMENTAL ASSESSMENT OF CONSTRUCTING AND OPERATING THE ORD HYDRO POWER PROJECT

The following points either emerged from the EPA's assessment of the Draft ERMP or were raised in public comments.

The Authority recommends that SECWA considers and, where appropriate, acts accordingly on these matters.

1. DESIGN AND CONSTRUCTION PHASE

1.1. Tourism and Recreation

The EPA recognises that the existing Ord River Project is one of the most important tourist and recreation attractions in the Kimberley Region. The Authority therefore considers it necessary that this is recognised in all phases of design and construction of the proposal. In particular, the EPA :

a) endorses the concept of underground 13.8 kV cables from the power station to the switchyard.

b) recommends that consideration be given to siting the switchyard at site "P" in Figure 7 of Volume 1 of the ERMP. In the event of "P" being impractical, then "D" should be next in priority. The EPA does not believe that site "V" is appropriate from the tourism and aesthetic points of view. The design of the switchyard should be such as to render it as inconspicuous as possible within engineering constraints.

c) points out to SECWA the offer by the Department of Tourism to participate in appropriate aspects of the planning especially in respect of the construction camp and workers relationships to tourist facilities at the Lake Argyle Village complex.

1.2 Aboriginal Sites

The EPA endorses the recommendations made in Section 4.3.1.4 of the ERMP.

1.3 Fish Farming

The Authority notes the possibility that spillway modifications may prevent implementation of the Fish Farming (Lake Argyle) Development Agreement Act, 1976.

It therefore believes that SECWA should consult the Departments of Resources Development and Fisheries and Wildlife to ascertain the likelihood of that project commencing in both the short and long terms before final design and planning of the spillway modifications is concluded.

1.4 Bush Cattle

During the construction phase, when releases of water from Lake Argyle are minimised, the Ord River may dry up downstream from the Diversion Dam. If this occurs, then there is the possibility of bush cattle gaining access to irrigated agricultural areas. In this instance, SECWA should provide the Regional Office of the Department of Agriculture with advanced warning in order that appropriate preventative measures can be taken.

2. OPERATIONAL PHASE

2.1 Tourism

The EPA considers that the development of hydro-electric power at Lake Argyle will generate considerable interest with tourists. The power station would be unique in this State and Eastern States' experience has shown that inspection of such facilities is very popular with visitors. The Authority recommends that SECWA makes provisions for providing public access at appropriate times to the power station after commissioning.

2.2 River and Stream Regimes

It is noted that in general, the banks of the Ord River downstream from the proposed power station, are unlikely to be greatly affected by discharges from the turbines. However the EPA believes that a close watching brief should be kept on the first eight kilometres of river downstream in case problems arise during operations. It is also noted that the Public Works Department is investigating the safety of the traffic bridge across Spillway Creek.

2.3 The Duncan Highway

It has been pointed out to the Authority that there is a possibility that sections of the Duncan Highway may be inundated when Lake Argyle reaches flood levels.

In this regard, Figure 4 of Volume 2 of the ERMP showing boundaries of Lake Argyle is somewhat misleading since the base plan does not show the re-alignment of the Duncan Highway to the east of Lake Argyle. The project is unlikely to significantly alter the possibility of the Highway being inundated at maximum flood levels. However the Main Roads Department has been notified and it has undertaken to inform the Northern Territory Department of Transport and Works.

3. ENVIRONMENTAL MANAGEMENT

3.1 Monitoring

The EPA agrees that a monitoring programme is not warranted at this stage and endorses the concept of SECWA initiating the outlined watching brief. However it recommends that should any environmental concerns arise, SECWA consults with the Department of Conservation and Environment at the earliest possible time. In addition, the EPA is in an advanced stage of making recommendations to Government on conservation reserves for System 7 (the Kimberley region). If the recommendations are accepted, then some parts of Lake Argyle including the islands will be affected. In this instance, should flooding threaten some of the islands, the EPA notes the offer of SECWA to constribute towards an animal rescue operation similar to "Operation Noah" and recommends that it consults directly with the vested authority.

3.2 Ord Ecology Sub-committee

The EPA recommends that SECWA keeps the Ord Ecology Sub-committee informed of environmental and ecological changes as they occur during construction and operation of the project. In particular any changes in patterns of aquatic weeds in Lakes Kununurra and Argyle, noted as part of the watching brief, should be conveyed to the Committee.

APPENDIX 2

SUMMARY OF THE PUBLIC COMMENTS RECEIVED ON THE DRAFT ERMP FOR THE ORD HYDROELECTRIC POWER DEVELOPMENT PROJECT

1. The Department of Conservation and Environment received two comments on the Draft ERMP following a six-week public review period. These were from the Western Australian Department of Tourism and the Town Planning Department.

2. The Department of Tourism considers that :

   2.1 Lakes Kununurra and Argyle constitute one of the most important tourist attractions not only in the region but in the State. Tourism forms an important economic contribution to the region and there is "unlimited" potential for further development.

   2.2 Therefore, every consideration should be given to tourism requirements during planning and construction of the project including such matters as :

      a) siting of facilities for construction crew;

      b) effect on tourist village environment during construction period;

      c) future use of construction facilities as part of the tourist village complex;

      d) location of substations, etc.; and

      e) tourist access when operating.

   2.3 The submission also indicated the Department's willingness to participate in further development planning particularly where it may assist the future potential of tourism in the region.

3. The Town Planning Department considers that :

   3.1 The effect of small changes in water level in Lake Argyle on large areas of the flatter shores of the Lake may need further consideration.

   3.2 Socially, the impact of construction workers should be short term while the operation of the power station may enhance the tourist appeal of the area in the long term.

3.3 A rise in water level may affect Duncan Highway, east of Lake Argyle.

3.4 Talks, proposed with local Aboriginal people concerning the project, should commence soon in order that any unforeseen circumstances may be taken into consideration.