

Onslow Solar Salt Project, Onslow

Onslow Salt Pty Ltd

Proposed changes to environmental conditions

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

**Environmental Protection Authority
Perth, Western Australia
Bulletin 776
May 1995**

JTR

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 **25 May 1995**.

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Summary

The Environmental Protection Authority herein reports on the environmental implications of the proposed withdrawal of three conditions from the Minister for the Environment's 1991 statement of approval for the Onslow Solar Salt project near Onslow. Onslow Salt Pty Ltd, the replacement proponent for Gulf Holdings Pty Ltd, is finalising the design of the saltfield and considers that the three conditions are not now required in view of the latest information on the protection of arid zone mangroves from the impacts of saltfields.

The main environmental issues addressed by the three conditions (12, 13 & 14) respectively relate to:

- freshwater flooding and its importance to mangroves;
- tidal flushing of the algal mats on the salt flats; and
- bitterns (highly salty fluid) discharge and its impact on mangroves.

The objective of condition 12 was to allow periodic freshwater flooding of the mangroves in Beadon Creek by a floodway constructed through the saltfield ponds. The EPA evaluated the newly available technical information and concluded that, relative to daily tidal flushing, periodic freshwater floods are unimportant in maintaining the water quality suitable for the growth of arid zone mangroves. Accordingly, the EPA concludes that condition 12 could be withdrawn; as a consequence, commitment 1.1.1 and part of commitment 2.0, which repeats the requirements of the condition, could also be withdrawn.

Condition 13 was designed to ensure that tidal flooding of algal mats on the salt flats would not be significantly reduced by the diversion of seawater into the saltfield ponds. The EPA reviewed additional technical information and concluded that there would only be a slight reduction of the wetted area of salt flats, for less than 20% of the high tides. Accordingly, the EPA now concludes that Onslow Salt's proposed pumping schedule would have an insignificant effect on the algal mats and mangroves and that condition 13 could be withdrawn; as a consequence, part of commitment 2.0, which repeats the requirements of the condition, could also be withdrawn.

Condition 14 was designed to protect the mangroves from potentially lethal effects of prolonged contact with the bitterns left after extraction of salt (sodium chloride). The EPA evaluated the available technical information and concluded that the crucial factor in limiting the risk of contact is to discharge the bitterns into a channel which has a base below the root zone of the mangroves. Because of the density of the bitterns, it mainly sinks to the deepest part of the channel. Accordingly, the EPA concludes that Onslow Salt's proposed bitterns discharge plan would minimise the risk to the mangroves lining the tidal creek, and condition 14 could be withdrawn; as a consequence, part of commitment 3.0, which repeats the requirements of the condition, could also be withdrawn.

Since 1991 there have been improvements in the way in which conditions are worded and structured, to make procedures, requirements and responsibilities clearer. Without changing the intent or effect of the conditions, the Environmental Protection Authority recommends that these improvements should be implemented in the new environmental statement, along with the changes to the conditions and commitments recommended above.

Onslow Salt Pty Ltd also applied for an extension of the current time limit of environmental approval, which expires in August 1996. They seek a revised time limit of five years from this assessment. This is because of depressed world salt markets, difficulties in finalising the design of the saltfield and extended delays in site investigations and other developmental work. The EPA recommends that environmental approval be granted for five years from the date of the new statement.

Summary of Recommendations	
1	The proposed withdrawal of conditions 12, 13 and 14 and the consequential changes to commitments 1.1, 2.0 & 3.0 is environmentally acceptable and approval recommended subject to EPA's recommended conditions and proponent's commitments.
2	Restructure and reword current conditions and add a new condition on compliance auditing, as summarised in Table 1.
3	Amend the list of commitments, as shown in Appendix 2.
4	Add two procedures and a note to the new statement.
5	Grant an extension of environmental approval of five years from the date of the new statement.

1. Introduction and background

Gulf Holdings Pty Ltd received approval in 1991 to develop a new saltfield near Onslow to produce and ship salt from a new port facility to be built near Beadon Point (Figure 1). That approval followed the assessment of Gulf Holdings' Environmental Review and Management Programme (Gulf Holdings Pty Ltd, 1990) and the release of the Environmental Protection Authority's Bulletin 495 (Environmental Protection Authority, 1991). Onslow Salt Pty Ltd has since replaced Gulf Holdings Pty Ltd as the proponent and is developing the final design of the Onslow Solar Salt project.

In developing the final design since 1991, Onslow Salt conducted detailed technical investigations on-site and examined the operations at Cargill Salt and Dampier Salt in the Pilbara region. Onslow Salt considers that three design elements for the operation of the saltfield, which are required under the current environmental conditions, would be unnecessarily restrictive in view of current environmental knowledge. Onslow Salt made a submission to have three environmental conditions withdrawn from the Minister for the Environment's statement of approval signed on 13 August 1991 (Appendix 1).

The Minister requested the Environmental Protection Authority (EPA) to examine the environmental implications of the proposed changes and report to him under Section 46 of the Environmental Protection Act, 1986. This assessment report contains the EPA's recommendations regarding the possible withdrawal of the three environmental conditions, and other implications for the environmental management of the project.

2. Proposal description

The proposed changes requested by Onslow Salt Pty Ltd involve the withdrawal of three conditions and consequential changes to three commitments from the 1991 statement. Onslow Salt submitted a final proposal in January 1995 (Onslow Salt Pty Ltd, 1995), which contained a detailed description and justification for the proposed changes.

The three conditions proposed for withdrawal are:

Condition 12. To ensure that Beadon Creek continues to receive freshwater overland flows, a flood water channel through the ponds shall be incorporated into the final design of the proposal, to the satisfaction of the Minister for the Environment on advice from the Environmental Protection Authority, and built at the time of construction of the ponds.

Condition 13. Pumping from Beadon Creek into the condenser ponds shall only occur on outgoing tides unless the proponent can demonstrate that other pumping regimes would have no significant adverse environmental impacts on the algal mats. To this end the proponent shall be required to undertake a programme of trials approved by the Environmental Protection Authority to demonstrate that other pumping regimes are environmentally acceptable, to the satisfaction of the Minister for the Environment. Until then and apart from these approved trials, pumping shall remain confined to outgoing tides.

Condition 14. Discharge of bitterns into Middle Creek shall occur only on outgoing tides, or into the ocean via an appropriate outfall channel, whichever is the most environmentally acceptable to the Environmental Protection Authority. Prior to construction of the crystalliser ponds, the proponent shall submit to the Environmental Protection Authority a justification of the proposed option, for approval by the Environmental Protection Authority.

The withdrawal of the three conditions would necessitate changes to three proponent

commitments, 1.1.1, 2.0 & 3.0, as discussed in section 2.4. The requirements of the three conditions and Onslow Salt's submission are summarised below.

2.1 Floodout channel - condition 12

Condition 12 requires Onslow Salt to construct a floodway channel through the ponds to ensure freshwater floods continue to periodically inundate the Beadon Creek coastal area. The principal rationale behind this condition was to preserve the existing hydrological conditions of the mangrove ecosystems as much as possible, because in 1991 there was a lack of scientific knowledge about the various environmental factors influencing arid zone mangrove ecosystems. Other factors supporting the rationale involved considerations of flood control, protection of fish nursery grounds and protection of Onslow's groundwater supply, which are discussed in section 4.

Onslow Salt considers that there would be no environmental benefit to the mangroves from the construction of a floodway channel because daily tidal flushing is the dominant factor influencing water quality. However, Onslow Salt made a commitment (commitment 2.0, Appendix 2) that, should monitoring show the operation of the saltfield is having an adverse effect on the mangroves, a floodway channel would be constructed if required, as one of a range of rehabilitation options.

2.2 Seawater pumping - condition 13

Condition 13 requires Onslow Salt to limit seawater pumping to outgoing tides only. The rationale behind this condition was to ensure that the tidal flooding of the salt flats, and especially the algal mats, which contribute nutrients to the mangroves, would not be significantly reduced by the diversion of seawater into the ponds. Onslow Salt note that other saltfields do not have this restriction of pumping times, and pump at rates of 20 cubic metres/second.

For stage 1 of the operation of the Onslow saltfield, Onslow Salt proposes to pump from Beadon Creek at a nominal rate of 8 cubic metres/second for about 1 hour during the highest part of the tide, including incoming tides. Onslow Salt notes that only the six highest tides out of 29 in a half-lunar cycle can inundate the algal mats, and that a restriction in pumping times is therefore irrelevant to the flushing of algal mats for the rest of the time.

Onslow Salt considers that the condition is unnecessarily restrictive both operationally and when considering the low risk of a significant environmental impact, based on evidence from Cargill and Dampier Salt mines. Onslow Salt is committed to monitoring the effect of its proposed pumping regime on the algal mats and mangroves, and to rehabilitate the mangroves should any adverse effects be observed.

2.3 Bitterns discharge - condition 14

Condition 14 requires Onslow Salt to limit the discharge of bitterns (a dense, highly saline fluid) into Middle Creek to outgoing tides only, or directly into the ocean via an appropriate outfall channel. The rationale behind this condition was to limit the opportunity for bitterns to be discharged or washed into the root zone of the mangroves, which would create a severe risk to their health. It is accepted that there would be some loss of bottom dwelling animals from the tidal creek because bitterns can be lethal to some animals.

Onslow Salt proposes to discharge bitterns via a channel, which has a base below the root zone of the mangroves, at half tide or higher into Middle Creek. Onslow Salt notes that Middle Creek has only a sparse mangrove ecosystem compared with other creeks in the region.

The volume of bitterns to be discharged in stage 1 of the saltfield development would be about 7000 cubic metres/day. Onslow Salt notes that other saltfields discharge at rates of up to 20,000 cubic metres/day. Onslow Salt proposes that the potential impact on the mangrove ecosystems be resolved by monitoring the effects of bitterns discharge and comparing it with pre-discharge conditions. Onslow Salt is committed to rehabilitating or replacing any mangroves killed by the

discharge of bitterns.

2.4 Changes to commitments

As a consequence of the withdrawal of the three conditions, Onslow Salt proposes that three of the environmental management commitments in the schedule to the Minister's statement of 13 August 1991 (Appendix 1) would need changes, as follows:

Public access to Onslow - commitment 1.1.1

Onslow Salt committed to maintain reasonable public access to Onslow such that access across the causeway at Point D (Figure 1) would not cause additional restriction to public access beyond that caused by the flooding of creek crossings on the main road further inland.

In the proposed amended layout of the saltfield, if the floodway channel is not needed, previous water flow across the causeway at Point D will be prevented by a floodwall. Onslow Salt considers that commitment 1.1.1 would therefore not be relevant and should be withdrawn, if condition 12 is withdrawn.

Protection of Beadon Creek mangroves - commitment 2.0

Onslow Salt committed to: monitor the mangroves; monitor the effects of pumping on outgoing tides on the adjacent algal mats; implement a rehabilitation plan for both the algal mat and mangrove communities, if adverse effects are observed; and, to incorporate a design for a floodway channel into the pond layout.

If condition 12 is withdrawn, the requirement to incorporate a floodway channel into the design of the ponds, repeated in this commitment, should also be withdrawn because it is unnecessary at this stage of the project. This involves the removal of the last paragraph (see Appendix 1).

If condition 13 is withdrawn, the requirement to restrict pumping to outgoing tides, repeated in this commitment, should also be withdrawn. This involves the removal of the second and third last paragraphs (see Appendix 1).

This would leave commitment 2.0 (Appendix 2) as follows:

The proponent has initiated a growth monitoring programme in the Beadon Creek catchment. If significant damage is occurring or seems likely to occur to mangroves as a result of the Proponent's works, the Proponent undertakes to carry out a study by experts to determine the nature of the problem and its possible remedies and to prepare and implement a plan for rehabilitation of those mangroves and algal mats to the satisfaction of the Minister - eg.:

(a) restriction of pumping at high tide;

(b) irrigate creek headwaters with seawater from the creek or the first evaporation pond to promote mangrove growth;

(c) propagate mangroves in irrigated areas; and

(d) construct a flood channel to allow inland floodwaters to flow through the condenser ponds to Beadon Creek.

The Proponent undertakes to carry out the most appropriate remedy to the extent reasonably necessary.

Bitterns discharge — commitment 3.0

Onslow Salt committed to: limit the discharge of bitterns into Middle Creek to outgoing tides only, or directly into the ocean via an appropriate outfall channel; monitor the mangrove ecosystems; and, if necessary, implement a rehabilitation plan and revise the bitterns discharge strategy. The first part of the commitment repeats condition 14. Onslow Salt proposes to remove this part and to reword the commitment (Appendix 2) as follows:

Bitterns will be discharged in a controlled manner into Middle Creek at half tide or higher. The proponent shall undertake a monitoring programme, to the satisfaction of the Environmental Protection Authority, to demonstrate that the discharge strategy is environmentally acceptable

or, if significant damage is occurring, or seems likely to occur, prepare and implement a revised discharge strategy and rehabilitation plan to the satisfaction of the Minister for the Environment.

2.5 Time limit of approval

During the course of the EPA's assessment, Onslow Salt applied for an extension of time for the substantial commencement of the project as required by condition 34. The time limit of environmental approval of the project, based on the 1991 statement, would expire on 13 August 1996. Onslow Salt justify the delay in commencement on the grounds of depressed world salt markets, difficulties in finalising the design of the saltfield and extended delays in site investigations and other developmental work.

Onslow Salt is requesting that the time limit be five years from the date of the new statement.

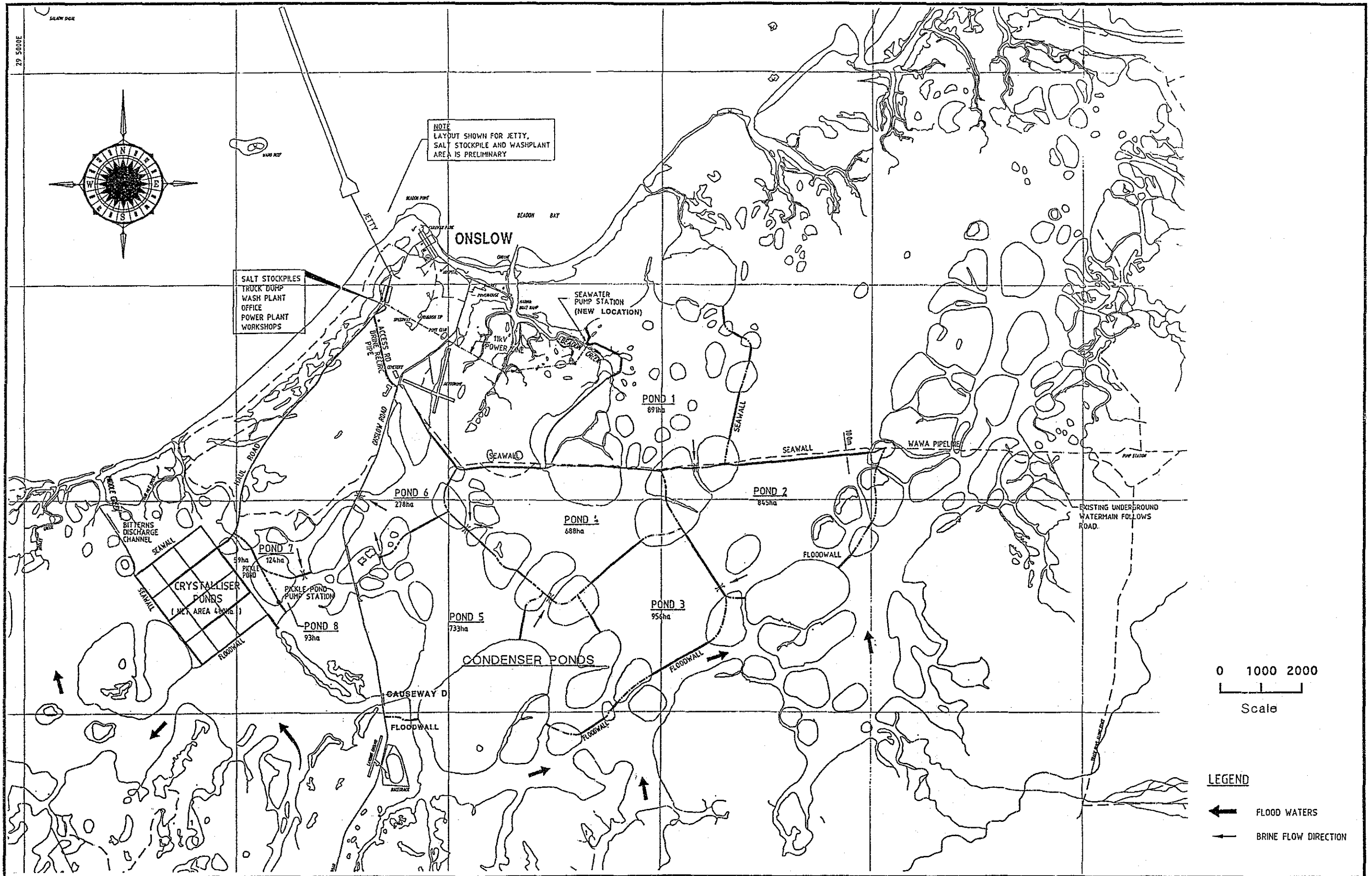


Figure 1. Modified site plan of the Onslow Saltfield project, Onslow

3. Environmental impact assessment process

Following discussions between Onslow Salt Pty Ltd, the Department of Resources Development and the Department of Environmental Protection (DEP), Onslow Salt submitted a preliminary proposal, to change several environmental conditions and commitments, to the Minister for the Environment on 11 November 1994. The Minister requested the Environmental Protection Authority to report on the environmental implications of Onslow Salt's proposed changes to the statement of 13 August 1991.

The Department of Environmental Protection issued draft guidelines in November 1994 following a review of the draft proposal document. Onslow Salt submitted a final proposal document in January 1995, which requested the withdrawal of three conditions and consequential amendments to three commitments. On 10 April 1995, Onslow Salt submitted a letter with a request for an extension of the time limit of environmental approval.

In February 1995, the EPA distributed copies of Onslow Salt's proposal document for comments to the Shire of Ashburton, the Department of Conservation and Land Management, the Department of Resources Development, the Water Authority of Western Australia, the Main Roads Department, the Fisheries Department of Western Australia and the Conservation Council of Western Australia.

The Environmental Assessments Committee of the EPA examined the issues on 10 March 1995 and made recommendations to the EPA for its subsequent meeting.

The Department of Resources Development provided a copy of a draft report on the impacts of the solar salt industry on arid zone mangroves in the Pilbara (Semeniuk, in prep.). This report was particularly useful as it compiled and summarised all the available and important information on arid zone mangroves. Reports from existing salt mining companies were also useful, in particular, Cargill Salt's report on its bitterns discharge monitoring programme (Cargill Salt, 1993a).

The proponent briefed the Chairman of the EPA in November 1994. A site visit for members of the EPA was not considered necessary. Officers of the DEP previously inspected the site during the assessment of the original project.

4. Evaluation

The Environmental Protection Authority notes from written submissions that:

- the Shire of Ashburton supports the proponent's request to amend the three conditions;
- the Main Roads Department has no comments; and
- the Fisheries Department has no objections to the amendments subject to sufficient monitoring being conducted.

In addition, verbal responses received from the Department of Conservation and Land Management, the Department of Resources Development and the Water Authority did not raise any specific environmental issues other than the main issues discussed below.

The main environmental issues identified from the assessment by involved agencies are:

- the importance of freshwater floodout to mangroves;
- the maintenance of adequate tidal flooding of algal mats on the salt flats; and
- a strategy for bitterns discharge which would protect the mangroves.

Other related issues involve the protection of: Onslow's groundwater supply, the coastal fish and prawn nursery grounds, the algal mats and the bottom dwelling animals in the tidal creek into which bitterns would be discharged.

The EPA considered the available information on these environmental issues and, as discussed below, recommends approval of Onslow Salt's request to withdraw conditions 12, 13 and 14,

and the consequential changes to the three commitments.

Recommendation 1

The Environmental Protection Authority concludes that Onslow Salt's proposal to withdraw conditions 12, 13 and 14 from the statement of 13 August 1991, and the consequential changes to commitments 1.1.1, 2.0 and 3.0, is environmentally acceptable.

In reaching this conclusion, the Environmental Protection Authority recognised that the conditions and commitments include:

- **provisions for monitoring the impacts of the saltfield operation;**
- **a rehabilitation option to construct a floodway channel if monitoring shows an adverse effect on the Beadon Creek mangroves; and**
- **provisions for the stabilisation and rehabilitation of mangrove and algal mat ecosystems if they are affected by the operation of the saltfield.**

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

- **the Environmental Protection Authority's recommendations in this report.**

The EPA's experience is that it is common for details of proposals to alter during the process of final design. In many cases the alterations are not environmentally significant or would have positive effects on the environmental performance of the project. The EPA believes that such non-substantial changes should be provided for and a standard condition is normally included in the statement (see condition 2; Appendix 1).

The changes described in this proposal were considered substantial and an environmental assessment was required. However, in the course of that assessment, Onslow Salt described two other changes to the design of the salt field based on site investigations and a review of other saltfields operations. These changes consist of the relocation of the pumping station and the relocation of some of the floodwalls. These changes have been determined to be not substantial by the Environmental Protection Authority, on advice of the Department of Environmental Protection, and will be submitted for approval by the Minister for the Environment under condition 2.

The EPA's recommendation was primarily based on an evaluation of the main environmental issues, a summary of which is presented below.

4.1 Freshwater floods and mangroves

4.1.1 Objective

To evaluate the importance of periodic freshwater floods on coastal environments at Onslow and to ensure that the mangroves and algal mats in particular are protected from the cumulative impacts of the operation of the salt mine.

4.1.2 Technical information

With regard to protecting the mangroves, Onslow Salt summarised the current literature on arid zone mangroves, carried out further site investigations and evaluated the monitoring results at currently operating salt mines in the Pilbara. Onslow Salt's principal conclusion was that it is highly unlikely that periodic freshwater floods are significant to the health of either the mangrove ecosystems or the algal mats on the adjacent salt flats.

With regard to flood control, Onslow Salt has modified the layout of the saltfield floodwalls to ensure that the road into Onslow would not be cut by diverted floodwaters. The current design would divert most floodwaters to the northeast such that the saltfield would not be damaged.

Onslow Salt notes that the construction of a floodwall near Causeway D on the Onslow road (Figure 1) would make commitment 1.1.1 irrelevant.

With regard to the protection of fish nursery grounds, Onslow Salt concludes that it appears highly unlikely that periodic freshwater floods contribute significantly to the water quality of the tidal creeks systems and, hence, to the productivity of the coastal fish nursery grounds, particularly in the absence of evidence of a potentially significant impact on the mangroves.

With regard to the protection of Onslow's groundwater supply, Onslow Salt determined that, because the perched lens of brackish water underlying Onslow is topographically higher than the saltflats, there could not be a significant connection with overland flow and, secondly, that the groundwater supply is primarily recharged by direct infiltration.

In addition to the extensive technical information provided by Onslow Salt, the EPA referred to various other sources in considering this issue. The EPA primarily considered a report by Dr Semeniuk, for the Department of Resources Development (Semeniuk, in prep.), on the impacts of the solar salt industry on mangroves. The annual environmental management reports from the two operating salt mines provided much relevant information (Cargill Salt, 1993b).

The EPA previously considered proposals which involved potential or actual impacts on mangroves and developed a policy for proponents of developments in coastal areas near mangroves that:

- there should be no significant loss of mangrove ecosystems from direct or indirect impacts;
- the proponent should monitor the health of, and changes to, nearby mangroves; and
- if any adverse effect is observed, the proponent should implement stabilisation and rehabilitation.

4.1.3 Evaluation

The EPA notes, with regard to the importance of freshwater input to the health of mangroves, that Dr Semeniuk's report (Semeniuk, in prep) indicates that floods have little effects on prevailing conditions of tidal flats and mangroves, and solar salt operations would have little effect on freshwater input to mangroves.

The EPA considers that the conclusions from the latest research, and observations from existing saltfield operations, support Onslow Salt's contention about the lack of influence of freshwater flood input on mangrove ecosystems. The conclusions indicate that the water quality of arid zone mangroves is dominantly controlled by tidal flushing, and that freshwater input from either groundwater or floods would only have an influence on the landward fringe of the mangroves.

The EPA notes that the proponent's commitment 2.0 includes several rehabilitation options, including an option to construct a floodway channel, if monitoring shows any adverse effect on the Beadon Creek mangroves. The EPA notes and accepts Onslow Salt's conclusions that there does not appear to be any other significant environmental impacts from the diversion of floodwaters, such as on coastal fish nurseries, Onslow's freshwater lens and public access.

The EPA also found that Onslow Salt's proposed change was not inconsistent with the policy concerning the protection of mangroves. Accordingly, the EPA considers that condition 12 could be withdrawn and the consequential amendments to commitments 1.1.1 and 2.0 could be made.

4.2 Tidal flooding of salt flats

4.2.1 Objective

To evaluate Onslow Salt's proposed pumping plan and to ensure that the algal mats on the salt flats continue to receive adequate tidal flushing to sustain them and to allow nutrients to be

flushed into the mangroves

4.2.2 Technical information

Onslow Salt estimates that pumping from the original pump station location along the eastern arm of Beadon Creek would affect the water levels over about 100 hectares of the 1000 hectares of Beadon Creek catchment. The reduction in wetted area would be about 10 hectares.

Onslow Salt proposes to move the pumping station some 700 metres further up the eastern arm of Beadon Creek which would reduce the area impacted to less than 10 hectares. Onslow's proposed pumping regime is similar to that at other salt mines in the Pilbara.

In addition to the extensive technical information provided by Onslow Salt, the EPA considered the results of calculations by Cargill Salt on the impact of its pumping regime on the flooding of salt flats at Port Hedland (Cargill Salt, 1993b). The EPA notes that Cargill Salt pump at a rate of 20 cubic metres/second compared with Onslow Salt's proposed pumping rate for stage 1 of 8 cubic metres/second.

4.2.3 Evaluation

The EPA considers that Onslow Salt's conclusions about the area potentially impacted are realistic, particularly when considering the lower pumping rate proposed by Onslow Salt compared with Cargill Salt's pumping rate. The EPA concludes that the small reduction in area (less than 1%) of salt flat which is flooded a few times each lunar tidal cycle is not likely to have an environmentally significant effect on the algal mats or the mangroves.

Accordingly, the EPA considers that condition 13 could be withdrawn and the consequential amendment to commitment 2.0 could be made.

4.3 Bitterns discharge

4.3.1 Objective

To evaluate Onslow Salt's bitterns discharge plan and to ensure that the mangroves are protected from the potentially lethal effects of the discharge of the highly saline bitterns.

4.3.2 Technical information

Onslow Salt examined the monitoring results for the discharge of similar quantities of bitterns by Cargill Salt at Port Hedland and concluded that, as long as the bitterns is discharged into a channel which has a base below the root zone of the mangroves, there is no evidence of adverse impacts on the health of the mangroves. Cargill Salt discharges over all stages of the tidal cycle into such a channel.

Onslow Salt evaluated the regional mangrove communities and concluded that the mangroves in Middle Creek and nearby Four Mile Creek are sparse and relatively insignificant. Onslow Salt acknowledges that there would be an adverse effect on the bottom-dwelling animals in the deeper parts of the creek channel.

In addition to the technical information provided by Onslow Salt, the EPA considered information from Cargill Salt's bitterns discharge monitoring programme at Port Hedland (Cargill Salt, 1993a) and from Dr Semeniuk's report (Semeniuk, in prep).

The key points from the technical reports are:

- bitterns can be lethal to juvenile fish and prawns;
- bitterns can result in lower abundance and diversity of benthic animals in the tidal creeks;
- bitterns can be lethal to mangroves if prolonged contact occurs;

- because of its high density, most of the bitterns remains as a concentrated stream in the deepest parts of the discharge channel and creeks for distances of about 2 kilometres and for periods of at least one lunar tidal cycle; and
- whilst some mixing of the bitterns occurs at the interface with incoming seawater, the mixed bitterns is diluted sufficiently so that no effect on mangroves has been detected at the existing salt mines.

4.3.3 Evaluation

The EPA notes the low level of impact on mangroves observed from the monitoring of the discharge of bitterns at Cargill Salt and Dampier Salt. The EPA concludes that the critical factor to prevent bitterns from being flushed into the mangroves is to discharge it into a channel which has a base below the root zone of the mangroves.

Onslow Salt's amended discharge proposal incorporates such a channel and restricts discharge periods to mid-tide or higher which should maximise dilution with seawater and provide refuges, which have normal seawater salinity, above the bitterns stream for most bottom-dwelling animals.

Accordingly, the EPA considers that the requirement to limit Onslow Salt's discharge regime to outgoing tides only is no longer appropriate and considers that condition 14 could be withdrawn and the consequential amendment to commitment 3.0 could be made.

5. Changes to current statement

The Onslow Solar Salt project is currently subject to environmental conditions and commitments as a result of the environmental assessment of the original documentation on the proposal. In conducting an assessment of the modifications to the proposal resulting from the withdrawal of the conditions, the Environmental Protection Authority takes the opportunity to update the Minister's statement in view of modern methods of structuring statements, wording environmental conditions and assigning auditing responsibility.

5.1 Objective

The objective of reviewing existing conditions and commitments is to achieve one environmental statement and one list of proponent commitments that provides for adequate protection of the environment and for efficient and effective environmental auditing. It is also considered that this objective will assist the public, the proponent and relevant involved agencies to easily identify the environmental requirements associated with the Onslow Solar Salt project.

5.1.1 Changes to environmental conditions

The current environmental conditions (Appendix 1) have been restructured to achieve the objective, and Table 1 summarises the proposed changes to the original statement. A revised statement containing the recommended environmental conditions arising from this assessment is included in Section 7.

The original statement contained 34 conditions. That statement is to be withdrawn and replaced by a new statement contained in Section 7. Conditions in the new statement have been renumbered from 1 to 23. The EPA proposes that a standard environmental condition regarding compliance auditing be added, as follows:

Compliance auditing

To help determine environmental performance, periodic reports on progress in implementation of the proposal are required.

- 23 *The proponent shall submit periodic Progress and Compliance Reports, in accordance with an audit programme prepared by the Department of Environmental Protection in consultation with the proponent.*

Table 1 provides a summary and description of the proposed changes to the conditions in the Minister's statement. Details of reworded conditions are contained in Section 7.

Table 1. Changes to conditions

Original condition number	Intent of original condition	Evaluation	Proposed changes to condition
1	Proponent to implement the proposal and fulfill the commitments.	Update to include modifications.	Add references to January 1995 modified proposal.
2	To allow minor changes with insignificant environmental impacts to be approved directly.	EPA has delegated to the DEP the responsibility for providing advice to the Minister.	Reword.
3	Prepare and implement an Environmental Management Programme. Any disagreement would be referred to the Minister.	Update structure and auditing responsibility; possible disagreement now covered as a procedure, which applies to all conditions.	Reword and divide into parts 3-1 (prepare) and 3-2 (implement). Remove sentence on disagreement.
4	Prepare and implement a rehabilitation plan for borrow areas.	Update structure and auditing responsibility.	Divide into parts 4-1 (prepare) and implement (4-2).
5	Refine flood predictions with additional monitoring.	Update structure and auditing responsibility.	Reword.
6	Maintain access on public roads to Onslow.	Update structure and auditing responsibility.	Reword.
7	Repair erosion damage caused by flood diversion.	Update structure and auditing responsibility.	Reword.
8	Conduct a faunal survey of islands created by ponds, plan to relocate any sensitive vertebrate populations.	Update structure and auditing responsibility.	Reword and divide into parts 8-1 (conduct survey), 8-2 (prepare plan) and 8-3 (implement plan).
9	No indirect impacts on mangroves.	Restructure with other specifically related conditions; update auditing responsibility.	Reword and renumber 9-1.
10	Prepare mangrove monitoring and rehabilitation plans.	Restructure with other specifically related conditions.	Reword and renumber 9-2.
11	Implement rehabilitation plan if necessary.	Restructure with other specifically related conditions.	Reword and renumber 9-3.

12	Construct a floodwater channel through the ponds to Beadon Creek catchment.	Recent work in the Pilbara region indicates that freshwater floods are not important to the health of arid zone mangroves.	Withdrawn.
13	Pumping shall only occur on outgoing tides.	The EPA concludes that the reduction in wetted area of salt flats (1%) would be insignificant to the health of the mangroves.	Withdrawn.
14	Bitterns discharge shall only occur on outgoing tides or to the ocean via an outfall channel.	Recent monitoring at existing salt mines indicates that bitterns can be discharged without a significant impact on the health of the mangroves.	Withdrawn.
15	Monitor bitterns dilution to protect nearby prawning areas.	Update auditing responsibility.	Reword and renumber 10.
16	Maintain tidal exchange in Middle Creek to ensure dilution of bitterns.	Update structure.	Reword and renumber 11.
17	Refer any proposal for pumping seawater from Middle Creek to EPA.	Update structure and auditing responsibility.	Reword and renumber 12.
18	The proponent shall implement noise abatement measures.	Restructure with other specifically related conditions; update auditing responsibility.	Reword and renumber 13-1.
19	Noise emissions not to exceed noise limits	Restructure with other specifically related conditions.	Reword and renumber 13-2.
20	Ambient noise to be taken into account	Restructure with other specifically related conditions.	Reword and incorporate with 13-2.
21	Tonal or impulsive noise to be taken into account.	Restructure with other specifically related conditions.	Reword and incorporate with 13-2.
22	Exemption from noise limits could be agreed by nearby residents.	Restructure with other specifically related conditions.	Reword and renumber 13-3.
23	Prepare a groundwater monitoring programme for Onslow.	Restructure with other specifically related conditions; update auditing responsibility.	Reword and renumber 14-1.
24	Implement a groundwater monitoring programme, and protect Onslow's freshwater lens.	Restructure with other specifically related conditions; update auditing responsibility.	Reword and renumber 14-2 (implement) and 14-3 (protect).

25	Monitor islands vegetation and rehabilitate.	Update structure and auditing responsibility.	Reword, renumber and divide into parts 15-1 (monitor) and 15-2 (rehabilitate).
26	Ensure dredge spoil does not impact on Wards Reef.	Update structure and auditing responsibility.	Reword, renumber and divide into parts 16-1 (monitor), 16-2 (stop) and 16-3 (prepare alternative plan).
27	Ensure dredge spoil does not impact on Beadon Creek.	Update structure and auditing responsibility.	Reword, renumber and divide into parts 17-1 (monitor) and 17-2 (remove obstruction).
28	Prepare oilspill plan.	Update auditing responsibility.	Reword and renumber 18.
29	Address social impacts and impacts on the prawn fishery.	Update structure and auditing responsibility: divide into parts 29-1 (social impacts) and 29-2 (prawn fishery).	Delete condition 29-1 (repeated in commitments 7, 9.2 & 10.1). Reword condition 29-2 and renumber 19.
30	The proponent shall satisfactorily decommission the site.	Statement of proponent's responsibility.	Condition deleted (intent of condition contained in conditions 20-1, 20-2, 20-3 & 20-4 below).
31	Prepare and implement a decommissioning plan.	Restructure with other specifically related conditions; update auditing responsibility.	Reword, renumber and divide into parts 20-1 (prepare plan), 20-2 (implement plan), 20-3 (prepare short-term plan) and 20-4 (implement short-term plan).
32	Prepare and implement a short-term decommissioning plan.	Restructure with other specifically related conditions.	Reword and divide into parts 20-3 & 20-4.
33	The conditions apply to the legally nominated proponent.	Onslow Salt Pty Ltd assumed responsibility from Gulf Holdings Pty Ltd.	No change to condition, new condition number 21.
34	Time limit on approval.	Proponent applied for extension of time.	Approval for extension recommended; condition reworded and renumbered 22.
New condition	Submit regular compliance and auditing reports.	Standard condition now placed on all projects for auditing purposes.	Add condition to statement. New condition number 23.

Recommendation 2

The new statement issued from this assessment should be structured to reflect the changes to the conditions summarised in Table 1.

5.1.2 Changes to proponent commitments

Onslow Salt requested three changes to the environmental management commitments and these have been incorporated in an updated list of environmental commitments (Appendix 2). The EPA notes that the proponent would be required to fulfill all commitments (condition 1, Table 1) and report annually on its audit programme (condition 23, Section 7).

The EPA took the opportunity to evaluate the audit requirements and Table 2 notes the proposed changes to Onslow Salt's environmental management commitments and the auditing requirements. Note that the conditions referred to are numbered as per the 1991 Statement (Appendix 1).

Table 2. Changes to commitments and audit requirements

Commitment number	Intent of commitment	Audit requirements and changes
1.1.1	Maintain road access at Causeway D on the Onslow road.	Withdraw, as new pond design has made it irrelevant; related to condition 12.
1.1.2	Remedy damage to Urala and Peedamulla Roads to ameliorate or eliminate any impact that has been caused as a result of the project.	Audited by proponent; duplicated by conditions 6 & 7; under control of Shire of Ashburton.
1.1.3	Maintain all-weather access along WAWA pipeline; fencing off access to bunds and sea walls.	Audited by proponent; under control of Water Authority of WA.
1.2	Compensate pastoralists for any damage from diverted floodwaters.	Audited by proponent; duplicated by condition 7.
1.3	Repair any eroded areas around the salt field due to diverted floodwaters.	Audited by proponent; duplicated by condition 7.
1.4	Monitor flooding at the Onslow racetrack and repair damage.	Audited by proponent; duplicated by condition 7.
1.5	Conduct a flora and fauna survey before work commences.	Audited by proponent; duplicated by condition 8.
2.0	Monitor the health of mangroves and, if adverse impacts occur, prepare and implement a rehabilitation plan. Incorporate design for floodway channel.	Withdraw both the requirement to incorporate design of floodway channel and for pumping tests. Remainder audited by proponent; duplicated by condition 9.
3.0	Discharge bitterns on outgoing tides only, monitor mangroves, rehabilitate if necessary.	Withdraw requirement to discharge on outgoing tides only. Rewritten commitment audited by proponent; duplicated by conditions 9 & 15.
4.0	Implement noise management measures and manage noise to within limits.	Audited by proponent; duplicated by condition 18.

5.0	Monitor and protect Onslow's local groundwater supply.	Audited by proponent; duplicated by condition 23.
6.1	Monitor dredging and avoid siltation of Wards Reef and Beadon Creek.	Audited by proponent; duplicated by conditions 26 & 27.
6.2	Fuel storage, oil spill and ballast water discharge plans will be in place.	Audited by proponent; oil/fuel management duplicated by condition 28; ballast water managed by Australian Quarantine Inspection Service.
7.0	Manage impacts during construction phase.	Audited by proponent; duplicated by condition 3.
8.0	Rehabilitation plan for temporary or permanent decommissioning.	Audited by proponent; duplicated by condition 31.
9.1	Maintain public access to jetty.	Audited by proponent; non-environmental issue; under control of Shire of Ashburton.
9.2	Maintain community consultation.	Audited by proponent; duplicated by condition 3.
10.1	Prepare and implement an Environmental Management Programme.	Audited by proponent; duplicated by condition 3.
10.2	Maintain monitoring manual on site.	Audited by proponent; duplicated by condition 35.

The EPA notes that most of Onslow Salt's commitments are duplicated by the environmental conditions, which would be subject to formal audit by the DEP, and that this would make a formal audit by the DEP of the commitments redundant. The EPA notes, therefore, that the commitments would be subject to the proponent's internal audit programme and only low level audit by the DEP, as part of annual compliance reports by Onslow Salt.

Recommendation 3

Proponent commitments 1.1.1, 2.0 & 3.0 in the current statement should be amended as requested by the proponent, as shown in Appendix 2.

5.1.3 Procedures

The EPA recommends that the new statement include two procedures and a note which, where applicable, are standard for recent statements; to clarify the DEP's auditing role, to include a dispute resolution mechanism and to clarify the reporting requirements in relation to the Agreement Act, as follows:

- 1 *Unless otherwise specified, the Department of Environmental Protection is responsible for assessing compliance with the conditions contained in this statement and for issuing formal clearance of conditions.*
- 2 *Where compliance with any condition is in dispute, the matter will be determined by the Minister for the Environment.*

Note:

The reporting requirements for these conditions may be effected through the reporting requirements of the State Agreement Act, subject to meeting the timing requirements of the conditions.

Recommendation 4

The new statement should include two procedures and a note to clarify the DEP's audit role, to include a dispute resolution mechanism and to clarify the reporting requirements, as discussed in section 5.1.3.

5.1.4 Time limit of approval

The Environmental Protection Authority considers that the assessment of Onslow Salt's modified proposal has encompassed a review of the environmental issues related to the entire proposal.

Limitation

This evaluation has used information currently available, which has been provided by the proponent in the proposal document, by DEP officers utilising their expertise and reference material, by the use of expertise and comments from other state government agencies and the public, and by contributions from EPA members.

The EPA considers that Onslow Salt's request for a time limit of approval of five years from the date of the new statement arising from this assessment is realistic and should be approved. The EPA believes that any approval for the changed 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 the new statement, then environmental approval should lapse. After that time, further consideration of the proposal should occur only following a new referral to the EPA (condition 23, Section 7, reflects this conclusion).

Recommendation 5

The environmental approval for the proposal, as modified in this assessment, should be for five years from the date of the new statement.

6. Conclusions

The Environmental Protection Authority concludes that Onslow Salt Pty Ltd's proposal to withdraw three conditions and amend three commitments, which would result in modifications to the implementation of the Onslow solar salt project, is environmentally acceptable, and the proposed changes could be made, subject to the recommendations contained in this report. This conclusion is embodied in Recommendation 1.

The EPA also concludes that it is appropriate to restructure and reword the Minister for the Environment's 1991 statement of approval in line with modern statements. This conclusion is embodied in Recommendations 2, 3 and 4.

The EPA also concludes that environmental approval for the proposal should be for five years from the date of the new statement. This conclusion is embodied in Recommendation 5.

In the next section, the recommended changes to the Minister for the Environment's statement as a result of this assessment are detailed. If the changes are agreed to by the Minister for the Environment, in agreement with the Minister for Resources Development, this statement would replace the previous statement of approval, and could be legally binding on the proponent.

7. Recommended environmental conditions

The following recommended environmental conditions would amend the Minister's original statement (Appendix 1) to reflect the recommendations contained in this report.

Rehabilitation plan for disturbed areas

Construction phase impacts need to be specifically addressed.

- 4-1 Prior to the commencement of construction, the proponent shall prepare a rehabilitation plan for any disturbed areas such as borrow pits, quarries and access tracks to the requirements of the Department of Environmental Protection on advice of the Department of Minerals and Energy.
- 4-2 The proponent shall implement the rehabilitation plan required by condition 4-1.

Flood studies

The diversion of flood waters needs to be studied and managed.

- 5 The proponent shall implement a surface waters monitoring programme immediately following approval of the proposal, to the requirements of the Department of Environmental Protection on advice of the Water Authority of Western Australia.

Public road access

Public road access to Onslow must be maintained during construction.

- 6 During construction of the ponds, the proponent shall ensure that access on gazetted roads is not impeded and that causeways are maintained to the requirements of the Department of Environmental Protection on advice of the Main Roads Department.

Erosion control

Impacts from the diversion of flood waters need to be managed.

- 7 Where lands are significantly adversely affected by erosion or flooding, the proponent shall undertake remedial measures.

Faunal survey

Islands formed by the flooding of the salt field ponds may isolate sensitive fauna.

- 8-1 Prior to the flooding of the ponds, the proponent shall conduct a faunal survey of areas which would be isolated by the flooding of the ponds.
- 8-2 The proponent shall prepare a plan for the relocation of any populations of vertebrate fauna which are identified as sensitive by the Department of Conservation and Land Management, and which would be isolated on islands by the construction of the ponds, to the requirements of the Department of Environmental Protection on advice of the Department of Conservation and Land Management.
- 8-3 In the event that sensitive fauna are identified, the proponent shall implement the fauna relocation plan required by condition 8-2.

Mangroves and related ecosystems

The protection of coastal ecosystems, particularly mangroves, is important.

- 9-1 The proponent shall construct and manage the facility such that there are no significant indirect adverse impacts on the mangroves or algal mats beyond the boundary of the solar salt facilities.
- 9-2 Prior to the completion of pond construction, the proponent shall prepare a growth monitoring and rehabilitation plan for mangroves in the Beadon Creek area.
- 9-3 In the event that monitoring shows any areas of mangroves are likely to be or have been

significantly adversely affected by the project, the proponent shall implement the plan required by condition 9-2, for rehabilitation or replacement of these mangroves, within a timeframe to be set by the Department of Environmental Protection after consultation with the proponent.

Bitterns monitoring

Undiluted bitterns may affect the productivity of the nearby prawning fishery.

- 10 The proponent shall monitor the dilution of the bitterns between the mouth of Middle Creek and the nearby prawning area to the requirements of the Department of Environmental Protection on advice of the Fisheries Department.

Note: The monitoring results would be used for resolving issues addressed by condition 19.

Dilution of bitterns

The bitterns discharge channel needs to be kept open to the ocean to allow dilution.

- 11 To facilitate the unhindered discharge of bitterns from Middle Creek to the ocean, the proponent shall maintain adequate tidal exchange through the mouth of Middle Creek.

Pumping from Middle Creek

Any proposal to pump from Middle Creek needs environmental assessment.

- 12 The proponent shall refer any proposal for dissolution of bitterns with seawater pumped from Middle Creek to the Environmental Protection Authority.

Noise management

The proponent has proposed appropriate noise control strategies in accordance with noise limits.

- 13-1 The proponent shall implement the proposed noise abatement measures, which include:
 1. the appropriate placement of earth bunding;
 2. the reduction of sound levels on specific noise-making machinery;
 3. daytime shift-only operation of the washplant;
 4. use of rubber-tyred vehicles rather than bulldozers where possible; and
 5. the restriction on the use of those bulldozers to the western side of the salt stockpiles from 9pm to 6am.
- 13-2 The proponent shall ensure that noise emissions from the project do not cause or contribute to unreasonable noise as defined by the relevant noise provisions under the Environmental Protection Act, 1986.
- 13-3 The proponent shall provide written advice by the occupier(s) of premises used for residential purposes of any exemption from condition 13-2.

Onslow's groundwater

The freshwater lens under Onslow needs to be protected from saline intrusion.

- 14-1 Prior to construction of the ponds, the proponent shall prepare a groundwater monitoring programme for the townsite of Onslow, to the requirements of the Department of Environmental Protection on advice of the Water Authority of Western Australia.
- 14-2 Prior to the construction of the ponds, the proponent shall implement the groundwater

monitoring programme and monitor for at least ten years following the filling of the ponds.

- 14-3 The proponent shall protect Onslow's freshwater lens against saltwater intrusion from the ponds to the requirements of the Department of Environmental Protection on advice of the Water Authority of Western Australia.

Islands vegetation

Vegetation on the islands formed by the ponds may be affected by saline intrusion.

- 15-1 The proponent shall monitor the vegetation on the shores of islands formed by the filling of the ponds for the effects of saline intrusion.

- 15-2 Where vegetation is killed, the proponent shall rehabilitate those areas by planting with salt-tolerant species.

Dredging impacts

Sediment from the dredging operation may impact on Wards Reef

- 16-1 The proponent shall monitor the effect on Wards Reef from sediment from the dredging of the shipping channel.

- 16-2 If the monitoring required by condition 16-1 shows that Wards Reef is adversely affected, the proponent shall stop the dredging operation.

- 16-3 If the dredging operation is stopped, the proponent shall prepare an alternative dredging plan to the requirements of the Minister for the Environment.

Beadon Creek

Dredge spoil could obstruct the entrance to Beadon Creek harbour.

- 17-1 The proponent shall monitor the depth of the entrance channel of Beadon Creek during the dredging of the shipping channel.

- 17-2 If sediment from the dredge spoil causes significant obstruction of the entrance channel of Beadon Creek, the proponent shall remove the sediment, to the requirements of the Department of Environmental Protection on advice of the Department of Transport.

Oilspill plan

The increased risk of oilspills from shipping needs management.

- 18 Prior to the construction of the trestleway, the proponent shall prepare an oilspill contingency plan to deal with both onshore and offshore spills, to the requirements of the Department of Environmental Protection on advice of the State Committee for Combatting Marine Oil Pollution.

Potential impacts on Onslow community and fishing industry

Potential conflicts with existing land/sea uses need management.

- 19 The proponent shall identify any impacts on the prawn fishery and resolve any issues which arise, to the requirements of the Department of Environmental Protection on advice of the Department of Resources Development and the Fisheries Department.

Decommissioning plans

A decommissioning plan is required.

- 20-1 At least six months prior to cessation of operations, the proponent shall prepare a decommissioning plan, to the requirements of the Department of Environmental Protection on advice of the Department of Resources Development.
- 20-2 The proponent shall implement the decommissioning plan required by condition 20-1.
- 20-3 At least three months prior to any temporary suspension of operations, the proponent shall prepare a plan for the short-term care and maintenance of the project to the requirements of the Department of Environmental Protection on advice of the Department of Resources Development.
- 20-4 The proponent shall implement the temporary decommissioning plan required by condition 20-3.

Proponent

The environmental conditions legally apply to the nominated proponent.

- 21 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.

Time limit on approval

The environmental approval for the proposal is limited.

- 22 If the proponent has not substantially commenced the modified project within five years of the date of this statement, then the approval to implement the proposal as granted in the statement of 13 August 1991 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).

Compliance auditing

To help determine environmental performance, periodic reports on progress in implementation of the proposal are required.

- 23 The proponent shall submit periodic Progress and Compliance Reports, in accordance with an audit programme prepared by the Department of Environmental Protection in consultation with the proponent.

Procedures

- 1 Unless otherwise specified, the Department of Environmental Protection is responsible for assessing compliance with the conditions contained in this statement and for issuing formal clearance of conditions.
- 2 Where compliance with any condition is in dispute, the matter will be determined by the Minister for the Environment.

Note:

The reporting requirements for these conditions may be effected through the reporting requirements of the State Agreement Act, subject to meeting the timing requirements of the conditions.

The new list of proponent commitments which will be attached to the new statement is shown in Appendix 2.

8. References

Cargill Salt, 1993a. Environmental Management Programme. Bitterns Discharge Monitoring Programme Stage 1 Report, December, 1993. Cargill Salt, Port Hedland.

Cargill Salt, 1993b. Environmental Management Programme. First Progress and Compliance Report. Cargill Salt, Port Hedland.

Environmental Protection Authority, 1991. Proposed solar salt project at Onslow, Report and Recommendations of the Environmental Protection Authority, Bulletin 495, January, 1991. Perth, Western Australia.

Gulf Holdings Pty Ltd, 1990. Environmental Review and Management Programme, Onslow Salt Project, Volumes 1 & 2, April, 1990. Gulf Holdings Pty Ltd, Perth.

Onslow Salt Pty Ltd, 1995. Onslow Solar Salt Project, Proposal for Amendment of Environmental Conditions, January, 1995. Onslow Salt Pty Ltd, Perth.

Semeniuk V. & Semeniuk C., in preparation. Study of the Impacts of Pilbara Coastal Developments on Arid Zone Mangroves - Stage 3, Assessment of impacts of the Solar Salt Industry, December, 1994. Report for the Department of Resources Development, Perth.

Appendix 1

Statement of Conditions of Approval, 13 August 1991

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

ONslow SOLAR SALT PROJECT (164)

GULF HOLDINGS PTY LTD

This proposal may be implemented subject to the following conditions:

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 in the Environmental Review and Management Programme for the solar salt proposal and in subsequent correspondence from the proponent to the Environmental Protection Authority. (A consolidated copy of the commitments is attached).
2. 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. The proponent shall prepare, submit and subsequently implement an Environmental Management Programme encompassing measures to monitor the environmental effects of the proposal and to provide appropriate management strategies based on the monitoring results, to the satisfaction of the Minister for the Environment, on advice from the Environmental Protection Authority. The Environmental Management Programme may be separate for each of the phases of the proposal, that is, pre-construction, construction, commissioning and operational and shall be approved by the Minister for the Environment on advice from the Environmental Protection Authority prior to the commencement of each phase. In the event of any disagreement between the proponent and the Environmental Protection Authority in relation to the Environmental Management Programme, the matter may be referred to the Minister for the Environment for determination.
4. Prior to the commencement of construction the proponent shall prepare and subsequently implement a rehabilitation plan for any disturbed areas such as borrow pits, quarries and access tracks as part of the Environmental Management Programme, to the satisfaction of the Minister for the Environment on advice from the Environmental Protection Authority and the Department of Mines.
5. The proponent shall, immediately after approval of the proposal, begin a programme to monitor all surface water flows likely to be affected by the project, with the aim of refining early predictions made in the flood studies. The monitoring programme shall be submitted to the Environmental Protection Authority for approval, on advice from the Water Authority, prior to commencement.
6. Prior to construction of the ponds the proponent shall take appropriate steps, to the satisfaction of the Minister for the Environment on advice from the Department of Main Roads, to ensure that access on gazetted roads in the vicinity of the development will not be compromised by construction associated with this proposal, and that floodways and causeways will be protected from damage caused by changes in flood regime as a result of constructions related to this proposal.
7. Where lands are significantly adversely affected by erosion or flooding as a result of the project, the proponent shall undertake remedial measures, to the satisfaction of the Minister for the Environment.

8. Prior to the flooding of the ponds the proponent shall conduct a faunal survey of areas which would be isolated by the construction and flooding of the ponds and shall prepare and subsequently implement a plan, if appropriate as part of the Environmental Management Programme, for the relocation of any populations of vertebrate fauna which are identified as sensitive by the Department of Conservation and Land Management, or would be isolated on islands by the construction of the new ponds, to the satisfaction of the Minister for the Environment, on advice from the Environmental Protection Authority and the Department of Conservation and Land Management.

9. The proponent shall construct and manage the facility such that there are no significant indirect adverse impacts off the actual site of the solar salt facilities, including no significant indirect loss or detriment of mangroves or algal mats off site, to the satisfaction of the Environmental Protection Authority.

10. Prior to the completion of pond construction the proponent shall prepare a growth monitoring plan for mangroves off site in the Beadon Creek area, and a mangrove ecology research plan, to the satisfaction of the Environmental Protection Authority.

11. In the event that monitoring shows any areas of mangroves are likely to be or have been significantly adversely affected by the project, the proponent shall, within a timeframe to be set by the Environmental Protection Authority after consultation with the proponent, prepare and implement a plan for rehabilitation of these mangroves, to the satisfaction of the Environmental Protection Authority.

12. To ensure that Beadon Creek continues to receive freshwater overland flows, a flood water channel through the ponds shall be incorporated into the final design of the proposal, to the satisfaction of the Minister for the Environment on advice from the Environmental Protection Authority, and built at the time of construction of the ponds.

13. Pumping from Beadon Creek into the condensor ponds shall only occur on outgoing tides unless the proponent can demonstrate that other pumping regimes would have no significant adverse environmental impacts on the algal mats. To this end the proponent shall be required to undertake a programme of trials approved by the Environmental Protection Authority to demonstrate that other pumping regimes are environmentally acceptable, to the satisfaction of the Minister for the Environment. Until then and apart from these approved trials, pumping shall remain confined to outgoing tides.

14. Discharge of bitterns into Middle Creek shall occur only on outgoing tides, or into the ocean via an appropriate outfall channel, whichever is the most environmentally acceptable to the Environmental Protection Authority. Prior to construction of the crystalliser ponds the proponent shall submit to the Environmental Protection Authority a justification of the proposed option, for approval by the Environmental Protection Authority.

15. The proponent shall monitor the dilution of the bitterns between the mouth of Middle Creek and the nearby prawning area to the satisfaction of the Minister for the Environment.

16. So as to facilitate the unhindered discharge of bitterns from Middle Creek to the ocean the proponent shall be required to maintain the mouth of Middle Creek to the extent that it is kept open, to the satisfaction of the Environmental Protection Authority.

17. Any proposal for redissolution of bitterns with seawater pumped from Middle Creek shall be referred to the Environmental Protection Authority.

18. The noise abatement measures proposed by the proponent shall, where appropriate, and to the satisfaction of the Minister for the Environment on advice from the Environmental Protection Authority, be implemented. These include:

- the appropriate placement of earth bunding;
- the reduction of sound levels on specific noise-making machinery;
- daytime shift-only operation of the washplant;
- use of rubber-tyred vehicles rather than bulldozers where possible;

- the restriction on the use of those bulldozers to the western side of the salt stockpiles from 9pm to 6am.
19. The proponent shall be required to ensure that the noise emissions from the project do not cause or contribute to noise levels in excess of:
- 50db(A) slow from 7am to 7pm Monday to Saturday;
 - 45db(A) slow on Sunday and from 7pm to 10pm Monday to Saturday;
 - 40db(A) slow from 10pm to 7am every day, when measured:
 - at any point on or adjacent to other premises not occupied by the proponent and used for residential or other noise sensitive purposes; and
 - at a height between 1.2 metres and 1.5 metres above ground level and greater than 3.5 metres from any reflecting surface other than the ground.
20. Where the combined level of the noise emissions from the project and the normal ambient noise exceeds the levels specified in condition 19, this condition shall be considered to be contravened only when the following criteria are also met at the measurement point:
- the noise emissions from the premises are considered to be audible by the Environmental Protection Authority; and
 - the noise emissions from the premises are identifiable by the Environmental Protection Authority as emanating from the project.
21. Noise emissions shall not cause unacceptable annoyance due to tonal or impulsive components. Those characteristics shall be assessed by the Environmental Protection Authority.
22. Exemption may be granted from conditions 19 and 21 in respect of any premises used for residential purposes by the negotiation of a written agreement with the occupier(s) of that premises. Such agreement shall be acceptable to the Environmental Protection Authority.
23. The proponent shall, prior to commencement, submit to the Environmental Protection Authority a groundwater monitoring programme for the townsite of Onslow, to the satisfaction of the Minister for the Environment on advice from the Water Authority.
24. The proponent shall, prior to the construction of the ponds, install groundwater monitoring sites within the township of Onslow and continue to monitor these sites for a minimum period of ten years from when the ponds are filled, and take whatever action is necessary to protect Onslow's freshwater lens against saltwater encroachment from the ponds, to the satisfaction of the Minister for the Environment.
25. The proponent shall monitor the foreshores of islands created by the ponds for the effects of rising saline groundwaters and rehabilitate areas where vegetation has been subsequently lost as a result of increased salinity, by planting with salt-tolerant species, to the satisfaction of the Environmental Protection Authority.
26. The proponent shall monitor Wards Reef during dredging of the shipping channel in connection with the establishment and maintenance of the project to ensure that the reef is not in the path of the dredge plumes or silt from the dredge spoil, to the satisfaction of the Environmental Protection Authority. If this monitoring shows that the reef is receiving sedimentation as a result of the dredging this activity shall stop until an alternative plan, to the satisfaction of the Minister for the Environment, has been devised.
27. The proponent shall monitor the mouth of Beadon Creek to detect the presence of silt mobilised as a result of the dredging of the shipping channel. If, in the opinion of the Environmental Protection Authority, dredge spoil causes significant siltation of the mouth of Beadon Creek the proponent shall be responsible for the prompt removal of the obstruction, to the satisfaction of the Environmental Protection Authority on advice from the Department of Marine and Harbours.
28. Prior to the construction of the trestleway, the proponent shall prepare an oilspill contingency plan to deal with both onshore and offshore spills, to the satisfaction of the

Minister for the Environment on advice from the State Committee for Combatting Marine Oil Pollution.

29. The proponent's environmental management programme shall take into account potential environmental problems associated with the activities of company or contract personnel and make appropriate arrangements for the minimisation of any impacts arising from these activities, to the satisfaction of the Environmental Protection Authority. In this context the proponent shall recognise any impacts on the prawn fishery and negotiate with the affected parties, seeking advice from the Department of Fisheries and the Department of State Development to resolve any issues which may arise.

30. The proponent shall be responsible for decommissioning and removal of the plant and installations, and rehabilitating the site and its environs to the satisfaction of the Environmental Protection Authority.

31. At least six months prior to cessation of operations, the proponent shall prepare and subsequently implement a decommissioning and rehabilitation plan, to the satisfaction of the Environmental Protection Authority upon advice from the Department of Mines.

32. Should the project be placed on a care and maintenance basis, the proponent shall prepare and subsequently implement a plan for the short term care and maintenance of the project area at least three months prior to the suspension of operations, to the satisfaction of the Environmental Protection Authority on advice from the Department of Mines.

33. 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.

34. 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).

Bob Pearce, MLA

MINISTER FOR THE ENVIRONMENT

**ONslow SALT PROJECT - GULF HOLDINGS PTY LTD
ENVIRONMENTAL REVIEW AND MANAGEMENT PROGRAMME
SUMMARY OF COMMITMENTS**

A suitably qualified environmental supervisor will be on site at all times during the construction and commissioning phases of the project, to prepare and carry out environmental induction programmes for construction and operations workers and to ensure that work is performed in an environmentally acceptable manner.

Prior to the commencement of any site works it is The Proponent's intention to prepare a record of the current physical and biological environment by means of landsat images, aerial photographs, videos, still colour photographs, site surveys, soil samples, levels and the like as considered appropriate by the Proponent. These records will serve as a reference for claims made of any damage which has resulted from works carried out by the Proponent.

1.0 FLOODING AND EROSION

1.1 Road Access

1.1.1 Main Road

The Proponent undertakes to maintain reasonable access to Onslow such that the flood access on the causeway at Point D will not cause additional restriction to highway access beyond that caused by the existing creek crossings on the main road at Points E and F further inland.

The Proponent will ensure that changes to Causeway D do not lower the existing serviceability of the road at 20 years average return interval when overtopped and that no damage will occur to any causeway into Onslow for the 100 year flow

1.1.2 Urala, Peedamulla Roads

The Proponent believes its works will have no impact on these gravel roads which are closed in flood time for a considerable number of days. However, the Proponent undertakes that it will reasonably do such things as are necessary to ameliorate or eliminate any impact that has been caused as a result of the project.

1.1.3 Water Authority Pipeline

In conjunction with WAWA, an all weather controlled access road will be maintained along the pipeline which will be dependent on the resolution of public liability insurance, security, ongoing maintenance and operational matters. All access to bunds and sea walls will be fenced off (Section 8.3.2.7) which will prevent access to sensitive coastal areas

1.2 Pastoral

If as a result of the Proponent's works floodwaters backup in natural creeks and cause loss of pasture, stock, fences or other damage to pastoral property outside the Proponent's leases, the Proponent will discharge its legal obligations to compensate the pastoral leaseholder for the loss incurred.

1.3 Erosion

If detrimental scouring occurs in creek beds, creek walls or the salt flats or along the edges of islands as a direct result of the Proponent's works, the Proponent will repair and/or stabilise such erosion by stonepitching, regrading or redesign as appropriate to the reasonable satisfaction of the Minister for the Environment.

1.4 Racetrack

The Proponent commits to monitoring the situation in the area of the existing Onslow race track to determine if its works are increasing the incidence of flooding. If this can be proved the Proponent undertakes to carry out such remedial works as may be reasonably necessary e.g. a bund around the racetrack.

1.5 Indigenous Animals

The Proponent has committed to carrying out a flora and fauna survey of the islands before work commences.

If isolated islands within the ponds become over populated or fauna is endangered as a result of the Proponent's work the Proponent will undertake a study by experts of the situation to determine which animals can survive under the new conditions and which animals will need to be removed by the Proponent to the mainland or larger islands and put into effect remedial management practices.

2.0 BEADON CREEK

The Proponent has initiated a growth monitoring programme in the Beadon Creek catchment. If significant damage is occurring or seems likely to occur to mangroves as a result of the Proponent's works, the Proponent undertakes to carry out a study by experts to determine the nature of the problem and its possible remedies and to prepare and implement a plan for rehabilitation of those mangroves and algal mats to the satisfaction of the Minister e.g.

- (a) restriction of pumping at high tide;

- (b) irrigate creek headwaters with seawater from the creek or the first evaporation pond to promote mangrove growth;
- (c) propagate mangroves in irrigated areas;
- (d) construct a flood channel to allow inland floodwaters to flow through the condenser ponds to Beadon Creek.

The Proponent undertakes to carry out the most appropriate remedy to the extent reasonably necessary.

The Proponent specifically undertakes in relation to (a) and (b) as follows:

After construction of the pumping station the Proponent shall conduct pumping tests at high water spring tide and shall verify by ground survey what changes there are in tidal height and surface wetted area of algal mats under various pumping conditions.

After conclusion of these tests the Proponent's experts shall consult with the EPA to determine what restriction, if any, shall be placed on the number of pumps to be retired at or before high water spring tides, and the duration of retirement. The Proponent shall have the option to demonstrate to the satisfaction of the Minister that irrigation with seawater or similar options are equally as effective as restriction of pumping time in sustaining the mangrove and algal mat communities.

The Proponent specifically undertakes in relation to (d) as follows:

Provision for a floodwater channel through the condenser ponds will be incorporated into the final design of the proposal and should monitoring in the Beadon Creek catchment indicate that lack of freshwater overland flows is causing deleterious impact on the mangrove and algal mat communities, then the Proponent shall construct the floodwater channel to the satisfaction of the Minister".

3.0

DISCHARGE OF BITTERNS

Bitterns will be discharged in a controlled manner into Middle Creek during outgoing tides only. Monitoring will assist in determining the volume capable of being discharged without significant impact on the creek system. (Section 8.3.2.4).

Discharge of bitterns into Middle Creek should occur only on outgoing tides, or into the ocean via an appropriate outfall channel, whichever is the most environmentally acceptable. An appropriate monitoring programme for Middle and Four Mile creeks and the bitterns channel will be prepared and subsequently implemented to the satisfaction of the Environmental Protection Authority. If monitoring shows mangroves are likely to be or have been affected in the Four Mile Creek or Middle Creek systems as a result of the discharge of bitterns, or that erosion of the bitterns channel and surrounds is occurring the Proponent will prepare and implement a plan for a revised bitterns discharge regime and for rehabilitation of affected areas, to the satisfaction of the Minister.

4.0 NOISE

Noise will be maintained at or below statutory levels for residential areas through construction of bunds, work practice and design of machines. Noise will be monitored in the early stages of operation and if unacceptable levels are detected, the Proponent will take action to reduce emissions to acceptable levels. (Section 8.3.1.2, Section 8.3.2.1)

Noise levels will be monitored continuously by an automatic recorder near Clarke Place during the early stages of full scale operation to ensure that the acceptable standards and predictions are being met. The recordings will be displayed in the Supervisor's office for his attention if needed. (Section 8.4.3)

Continuous monitoring shall be for a period of 12 months whereupon the need will be reviewed and continued if necessary as agreed with the EPA.

The noise management proposal is set out fully in Appendix 1 of Bulletin 495 and summarised below:

- automatic noise level recording from a monitor stationed in Clarke Place as above;
- noise problems arising from fixed plant items will be dealt with by servicing, repairing, insulating or withdrawing as necessary;
- noise problems arising from mobile plant will be dealt with by withdrawing the equipment from service until it can be suitably muffled, or new work practices will be developed;
- rubber tyred rather than tracked machines will be used wherever practicable;

- no tracked machines will be allowed to operate on top of the stockpiles between 9 pm and 6 am, unless it can be shown that the resulting noise does not exceed acceptable levels; and
- washplant and haul trucks will initially operate on a single daylight shift.

The Proponent will ensure that the introduced noise from the project does not cause the noise in the surrounding residential areas to exceed:

- 50dB(A) from 7 am to 7 pm Monday to Saturday;
- 45dB(A) on Sunday and from 7 pm to 10 pm Monday to Saturday; and
- 40dB(A) from 10 pm to 7 am every day.

5.0 GROUNDWATER REGIME (ONSLOW)

The Proponent will install groundwater monitoring sites within the townsite of Onslow and continue to monitor these sites for a minimum period of 10 years from when the ponds are filled and take whatever action is necessary to maintain Onslow's gardens against saltwater encroachment from the ponds, to the satisfaction of the Environmental Protection Authority.

Island foreshores will be monitored for the effects of rising saline groundwaters and areas where vegetation has been subsequently lost as a result of increased salinity will be rehabilitated by planting with salt tolerant species.

6.0 MARINE IMPACTS

6.1 Dredging

Dredging will be carried out as far as possible during winter to reduce the impact of suspended sediment (Section 8.3 1.3). The plume will be monitored and if it drifts towards Wards Reef, disposal will be moved to another area. No channel blasting will be undertaken near Wards Reef without further environmental assessment by the EPA.

(a) Construction

The Proponent is committed to monitoring the dredging operation with the aim of minimising the impact on environmentally sensitive areas and the adjacent trawling grounds including the spoil banks and mouth of Beadon Creek.

Specifications will provide for spoil to be kept within the designated areas and heights stated in the ERMP and kept reasonably level. The project supervisors and dredge master will be educated on the importance and relevance of the specifications.

(b) Restricting Mouth of Beadon Creek

The spoil banks will be monitored to determine whether material is drifting towards the shore or the channel.

If material from the spoil banks is contributing to siltation at the mouth of Beadon Creek then the Proponent will:

- remove such accumulation due to its works;
- take reasonable steps to prevent such accumulation from recurring.

6.2

Shipping

Fuel will be stored and conveyed according to standard regulations. A tug/workboat with boom and skimmer and line boat permanently stationed at Onslow will be equipped to deal with marine spills. (Section 8.3.2.8).

The Proponent confirms its undertaking in the ERMP to construct all fuel facilities with the most up to-date protection measures. In addition:

- (a) an oil spill contingency plan to deal with both offshore and onshore spills consistent with the then current industry standards will be in place together with all such equipment needed before the construction of the trestleway.
- (b) a ballast plan consistent with the then current industry standards also be in place before any salt carrying ships are allowed to use the Proponent's jetty.

7.0

CONSTRUCTION

The Proponent's environmental management programme will take into account the potential problems associated with the disposal of rubbish and the behaviour of personnel arising from its construction camp.

A condition of the Construction Contract will specify that personnel are to keep to designated tracks and to extract material only from selected sites to reduce the impact of vehicles and quarrying on the countryside. (Section 8.3.1.4).

All access to bunds and seawalls will be fenced off (Section 8.3.2.7) which will prevent access to sensitive coastal areas.

All quarry sites will be made safe, rehabilitated and fenced off apart from those portions required for maintenance. (Section 8.3.2.5).

Borrow pits will be left in a safe, stable and rehabilitated condition as soon as possible after use, with walls battered and topsoil respread so as to encourage revegetation.

Noise and dust emissions will be managed and movement of vehicles on local roads will be minimised. (Section 8.3.1.1, Section 8.3.1.5). Roads and carparks in the vicinity of the stockpile/washplant will be sealed if necessary. The haulroad will be sheeted with gravel and watered. Construction near the town will be limited to daylight hours.

A part-time community worker will be engaged to assist the new workforce integrate with locals. (Section 8.3.1.5).

Consultation with local Aboriginal people will be ongoing during construction near known sites (Section 8.3.1.6) which will be fenced in parts where they could be accidentally damaged by Contractors plant and personnel. The Proponent will conform to the obligations of the Heritage Act.

Light emissions will be managed through design so as to have minimal impact on Back Beach and the adjacent residential area. (Section 8.3.2.2).

A tree and shrub planting programme will be initiated for the areas affected by the Project, including the new subdivision. If the Bindi Bindi community wishes to supply and maintain the trees they will be contracted to do so. (Section 8.3.2.6).

The Proponent will, subject to agreement, contribute towards the cost of upgrading the water supply main in conjunction with WAWA. (Section 3.2.10.2).

All structures and machinery will be maintained to a high standard. (Section 8.3.2.3).

8.0 REHABILITATION PLAN

At least six months before the end of the life of the project, the Proponent will prepare and subsequently implement a plan for rehabilitation addressing the entire project area, to the satisfaction of the Environmental Protection Authority. In the event of the project being placed on a care and maintenance basis, a plan to ensure that adverse environmental changes will be detected and managed to the satisfaction of the Environmental Protection Authority will be prepared and submitted to the Environmental Protection Authority at least three months prior to shutdown.

9.0 SOCIAL

9.1 Access to Jetty

The Proponent confirms its undertaking in the ERMP that the public may use the jetty at their own risk from 6.00 am to 10.00 pm whenever the jetty is not required for reasonable operational purposes. The existing level of access to Back Beach will not be restricted.

The Proponent in conjunction with the Shire will maintain third party insurance for use of the jetty and assist in maintaining Local Authority by laws on and near the jetty. If the public consistently abuse the privilege offered or damage the Proponent's property, the rights of access will be restricted or withdrawn.

9.2 Local Community Consultation

The Proponent is committed to ongoing community consultation and formal liaison and monitoring processes to be established by the Proponent to the satisfaction of the Environmental Protection Authority, upon advice from the Social Impact Unit, to monitor, review and manage the social impact of the project throughout its life.

Reporting on this liaison, monitoring and management of the social impacts will be part of the Proponent's monitoring reports to the Environmental Protection Authority.

Prior to the start of construction of each phase of the proposal, the proponent will prepare, submit and subsequently implement an Environmental Management Programme (EMP) that addresses, where appropriate, the monitoring, management and auditing and reporting requirements for community consultation, monitoring and liaison, to the satisfaction of the Environmental Protection Authority.

The Proponent will specifically (Section 74.2.10)

- 1) employ a person, in conjunction with DET, to liaise with the Aboriginal community to establish an Aboriginal Employment Action Plan;
- 2) create specific employment training strategies for the local community and provide opportunities for training courses in conjunction with DET. (NB. DET has committed itself to providing a community based resource person to liaise with the person in 1) above;
- 3) make provision to train at least two unskilled workers at all times in specific skills and tasks and provide for formal industrial training.

10.0 ENVIRONMENTAL MANAGEMENT PROGRAMME

10.1 Report

Prior to the start of construction of each phase of the proposal, the Proponent will prepare, submit and subsequently implement an Environmental Management Programme (EMP) that addresses, where appropriate, the monitoring, management, auditing and reporting requirements of the following issues:

- impacts associated with onshore and offshore construction;
- fauna survey and relocation plan for islands isolated by salt ponds;
- ongoing monitoring in Beadon, Middle and Four Mile Creek systems to safeguard the mangrove and algal mat environments;
- the mouth of Beadon Creek to maintain present access levels;
- noise levels in Onslow arising from the processing facilities;
- oilspill contingency plan to minimise impacts from onshore and offshore spills;
- groundwater salinity and levels in the town of Onslow and on susceptible islands;
- community consultation, monitoring and liaison;
- areas under rehabilitation;

to the satisfaction of the Environmental Protection Authority

Appendix 2

Proponent commitments, April 1995.

ONSLOW SALT PROJECT - ONSLOW SALT PTY LTD

SUMMARY OF COMMITMENTS

A suitably qualified environmental supervisor will be on-site at all times during the construction and commissioning phases of the project, to prepare and carry out environmental induction programmes for construction and operations workers and to ensure that work is performed in an environmentally acceptable manner.

Prior to the commencement of any site works it is the Proponent's intention to prepare a record of the current physical and biological environment by means of landsat images, aerial photographs, videos, still colour photographs, site surveys, soil samples, levels and the like, as considered appropriate by the Proponent. These records will serve as a reference for claims made of any damage which has resulted from works carried out by the Proponent.

1.0 Flooding and erosion

1.1 Road access

1.1.1 Main road

Withdrawn

1.1.2 Uralla, Peedamulla Roads

The Proponent believes its works will have no impact on these gravel roads which are closed in flood time for a considerable number of days. However, the Proponent undertakes that it will reasonably do such things as are necessary to ameliorate or eliminate any impact that has been caused as a result of the project.

1.1.3 Water Authority pipeline

In conjunction with WAWA, a controlled-access road will be maintained along the pipeline which will be dependent on the resolution of public liability insurance, security, ongoing maintenance and operational matters. All access to bunds and sea walls will be fenced off (Section 8.3.2.7) which will prevent access to sensitive coastal areas.

1.2 Pastoral

If as a result of the Proponent's works, floodwaters backup in natural creeks and cause loss of pasture, stock, fences or other damage to pastoral property outside the Proponent's leases, the Proponent will discharge its legal obligations to compensate the pastoral leaseholder for the loss incurred.

1.3 Erosion

If detrimental scouring occurs in creek beds, creek walls or the salt flats or along the edges of islands as a direct result of the Proponent's works, the Proponent will repair and/or stabilise such erosion by stonepitching, regrading or redesign as appropriate to the reasonable satisfaction of the Minister for the Environment.

1.4 Racetrack

The Proponent commits to monitoring the situation in the area of the existing Onslow race track to determine if its works are increasing the incidence of flooding. If this can be proved the Proponent undertakes to carry out such remedial works as may be reasonably necessary e.g. a bund around the racetrack.

1.5 Indigenous animals

The Proponent has committed to carrying out a faunal survey of areas which will be isolated by flooding of the ponds before work commences. If isolated islands within the ponds become over-populated or fauna is endangered as a result of the Proponent's work, the Proponent will undertake a study by experts of the situation to determine which animals can survive under the new conditions and which animals may need to be removed by the Proponent to the mainland or larger islands and put into effect remedial management practices.

2.0 Beadon Creek

The Proponent has initiated a growth monitoring programme in the Beadon Creek catchment. If significant damage is occurring or seems likely to occur to mangroves as a result of the Proponent's works, the Proponent undertake to carry out a study by experts to determine the nature of the problem and its possible remedies and to prepare and implement a plan for rehabilitation of those mangroves and algal mats to the satisfaction of the Minister, for example:

- (a) restriction of pumping at high tide;
- (b) irrigate creek headwaters with seawater from the creek or the first evaporation pond to promote mangrove growth;
- (c) propagate mangroves in irrigated areas; and
- (d) construct a flood channel to allow inland floodwaters to flow through the condenser ponds to Beadon Creek.

The Proponent undertakes to carry out the most appropriate remedy to the extent reasonably necessary.

3.0 Discharge of bitterns

Bitterns will be discharged in a controlled manner into Middle Creek at half tide or higher via a channel with an invert level below the mangrove root zone. The proponent shall undertake a monitoring programme, to the satisfaction of the Environmental Protection Authority, to demonstrate that the discharge strategy is environmentally acceptable or, if significant damage is occurring, or seems likely to occur, prepare and implement a revised discharge strategy and rehabilitation plan to the satisfaction of the Minister for the Environment.

4.0 Noise

Noise will be maintained at or below statutory levels for residential areas through construction of bunds, work practice and design of machines. Noise will be monitored in the early stages of operation and, if unacceptable levels are detected, the Proponent will take action to reduce emissions to acceptable levels. Noise levels will be monitored continuously by an automatic recorder near Clarke Place during the early stages of full scale operation to ensure that the acceptable standards and predictions are being met. The recordings will be displayed in the

Supervisor's office for his attention if needed. Continuous monitoring shall be for a period of 12 months whereupon the need will be reviewed and continued if necessary as agreed with the EPA.

5.0 Groundwater regime (Onslow)

The Proponent will install groundwater monitoring sites within the townsite of Onslow and continue to monitor these sites for a minimum period of 10 years from when the ponds are filled and take whatever action is necessary to maintain Onslow's gardens against saltwater encroachment from the ponds, to the satisfaction of the Environmental Protection Authority.

Island foreshores will be monitored for the effects of rising saline groundwaters and areas where vegetation has been subsequently lost as a result of increased salinity will be rehabilitated by planting with salt tolerant species.

6.0 Marine impacts

6.1 Dredging

No dredging will be carried out within 800 metres of Wards Reef. No spoil will be dumped on or within 500 metres of Wards Reef. The proponent will monitor the effect of suspended sediment arising from the dredging and dumping operation on Wards Reef. If the reef is shown to be adversely affected, the dredging operation will be stopped or relocated to another area until an alternative dredging plan is approved.

No channel blasting will be undertaken near Wards Reef without further environmental assessment by the EPA.

The Proponent is committed to monitoring the dredging operation with the aim of minimising the impact on environmentally sensitive areas and the adjacent trawling grounds.

Specifications will provide for spoil to be kept within the designated areas and heights stated in the ERMP and kept reasonably level. The project supervisors and dredge master will be educated on the importance and relevance of the specifications.

If material from the spoil banks is shown to be contributing to siltation at the mouth of Beadon Creek then the Proponent will: remove such accumulation due to its works; take reasonable steps to prevent such accumulation from occurring.

6.2 Shipping

Fuel will be stored and conveyed according to standard regulations. A tug/workboat with boom and skimmer and line boat permanently stationed at Onslow will be equipped to deal with marine spills. The Proponent confirms its undertaking in the ERMP to construct all fuel facilities with the most up-to-date protection measures. In addition:

- (a) an oil spill contingency plan to deal with both offshore and onshore spills consistent with the then current industry standards will be in place together with all such equipment needed before the construction of the trestleway.
- (b) a ballast plan consistent with the then current industry standards also will be in place before any salt carrying ships are allowed to use the Proponent's jetty.

7.0 Construction

The Proponent's environmental management programme will take into account the potential problems associated with the disposal of rubbish and the behaviour of personnel arising from its construction camp.

A condition of the Construction Contract will specify that personnel are to keep to designated tracks and to extract material only from selected sites to reduce the impact of vehicles and quarrying on the countryside.

- All access to bunds and seawalls will be fenced off which will prevent access to sensitive coastal areas.
- All quarry sites will be made safe, rehabilitated and fenced off apart from those portions required for maintenance.
- Borrow pits will be left in a safe, stable and rehabilitated condition as soon as possible after use, with walls battered and topsoil respread so as to encourage revegetation.
- Noise and dust emissions will be managed and movement of vehicles on local roads will be minimised.
- Roads and carparks in the vicinity of the stockpile/washplant will be sealed if necessary.

The haulroad will be sheeted with gravel and watered.

- A part-time community worker will be engaged to assist the new workforce integrate with locals.
- Consultation with local Aboriginal people will be ongoing during construction near known sites which will be fenced in parts where they could be accidentally damaged by Contractors plant and personnel.
- Light emissions will be managed through design so as to have minimal impact on Back Beach and the adjacent residential area. (Section 8.3 2.2).
- A tree and shrub planting programme will be initiated for the areas affected by the Project.
- If the Bindi Bindi community wishes to supply and maintain the trees they will be contracted to do so.
- The Proponent will, subject to agreement, contribute towards the cost of upgrading the water supply main in conjunction with WAWA.

8.0 Rehabilitation plan

Commitment deleted as it repeats condition 31.

9.0 Social

9.1 Access to jetty

The Proponent confirms its undertaking in the ERMP that the public may use the jetty at their own risk from 6.00 am to 10.00 pm whenever the jetty is not required for reasonable operational purposes. The existing level of access to Back Beach will not be restricted.

The Proponent in conjunction with the Shire will maintain third party insurance for use of the jetty and assist in maintaining Local Authority by-laws on and near the jetty. If the public consistently abuse the privilege offered or damage the Proponent's property, the rights of access will be restricted or withdrawn.

9.2 Local community consultation

The Proponent is committed to ongoing community consultation, and formal liaison and monitoring processes to be established by the Proponent to the satisfaction of the Environmental Protection Authority to monitor, review and manage the social impact of the project throughout its life.

Reporting on this liaison, monitoring and management of the social impacts will be part of the Proponent's monitoring reports to the Environmental Protection Authority.

The Proponent will specifically:

- 1) employ a person, in conjunction with DET, to liaise with the Aboriginal community to establish an Aboriginal Employment Action Plan;
- 2) create specific employment training strategies for the local community and provide opportunities for training courses in conjunction with DET. (NB. DET has committed itself to providing a community based resource person to liaise with the person in 1) above);
- 3) make provision to train at least two unskilled workers at all times in specific skills and tasks and provide for formal industrial training.

10.0 Environmental management programme

10.1 Report

Prior to the start of construction of each phase of the proposal, the Proponent will prepare, submit and subsequently implement an Environmental Management Programme (EMP) that addresses, where appropriate, the monitoring, management, auditing and reporting requirements of the following issues:

- impacts associated with onshore and offshore construction;
- fauna survey and relocation plan for islands isolated by salt ponds;
- ongoing monitoring in Beadon, Middle and Four Mile Creek systems to safeguard the mangrove and algal mat environments;
- the mouth of Beadon Creek to maintain present access levels;
- noise levels in Onslow arising from the processing facilities;
- oilspill contingency plan to minimise impacts from onshore and offshore spills;
- groundwater salinity and levels in the town of Onslow and on susceptible islands;
- community consultation, monitoring and liaison;
- areas under rehabilitation;

to the satisfaction of the Environmental Protection Authority.

10.2 Monitoring manual

The Proponent will keep on-site a Monitoring Manual which will contain separate sections as above for each phase of the project, the relevant baseline data, the monitoring commitments in detail, standard forms and frequencies for various tests required, management procedures necessary for different circumstances and reporting requirements.

The Manual will be designed to introduce new employees to the environmental requirements and commitments of the project. It will be available at all times to visitors from the Environmental Protection Authority or other government agencies needing such information.