

# **PEARL PRODUCERS ASSOCIATION**

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9<sup>th</sup> March 2007

The Chairman  
Environmental Protection Authority  
PO Box K822  
Perth WA 6842  
(Attention Sue Osborne)

Dear Sir/Madam,

## **Yannirie Solar Salt - Environmental Review and Management Programme (ERMP Assessment 1521)**

The Pearl Producers Association (PPA) is the peak representative body for the *Pinctada maxima* pearl oyster culture industry in Western Australia.

Pearling activities associated with Exmouth Gulf cover the range of operational stages found within the industry. Exmouth Gulf is site of wild pearl oyster stocks which are subject to fishing as part of the management quotas.

Hatchery activities onshore produce pearl oyster spat which is settled on longlines and grown-out to seedable size in Exmouth Gulf. It is a 5 year timeline between spawning and seedable size for pearl oyster spat. The region is renown for spat production with several pearling companies in WA and the Northern Territory reliant on the spat from the Kailis hatchery for their round pearl culture pearl oyster supply. Several companies have established spat grow out sites within Exmouth Gulf given the unique conditions available for this important stage of the pearling operation.

Pearl oysters are also seeded in Exmouth Gulf when reaching maturation and are held on longlines during the important post operative stage (turning program) between May and October. After this period the pearl oysters are transported to pearl farms in cyclone impact mitigation regions at the Monte Bellos and the Kimberley.

The pearling industry depends on pristine water quality conditions with high nutrient value and the region between NW Cape and the WA/NT border (including Exmouth Gulf) produce the most conducive environment for producing the highest quality pearls in the world.

The value of Australian pearl production based on the *Pinctada maxima* pearl oyster species has varied between \$120 and \$175 million per year between 1995 and 2001. The Western Australian industry, which equates to 95% of this value, has 17 pearling licences issued under the Pearling Act 1990. Each licence is fully transferable and has a quota attached for wild stock pearl oyster collection and a quota for the total oysters allowed to be seeded for the first time in any year made up from wild oysters and hatchery produced oysters.

Paspaley Pearls operates 5 licences in WA with a quota holding equating to 44% of total quota issued. Kailis is the second largest in WA with two licences and approximately 11% of quota. A full schedule of quota holders is attached.

Seeded pearl oysters are grown in mesh panels, attached to horizontal longlines with floatation buoys on the surface. The mesh panels containing oysters are attached to the longlines and suspended below the surface. The pearl oysters feed naturally through nutrient flow in tidal systems. No artificial feed is used in the pearling process.

The pearling industry employs in excess of 800 people in the region NW Cape to WA/NT border. The work is very focussed on manual handling to minimise stress to oysters.

Clearly, this industry is of considerable importance to Western Australia, and to the regional communities in Exmouth, Broome and the Kimberley in particular. The WA government listed the WA Pearl as one of the seven icons of WA during the 175th anniversary of founding of WA together with the Swan River and Rottneest.

### **Summary of Major Concerns**

The following have been identified as threats to the pearling industry and are discussed in detail in Section 3.3:

- Introduction of marine pests;
- Nutrient content in water; and
- Pollution, including the management of bitterns and general waste disposal.

### **Response to Relevant ERMP Sections**

#### **Introduction of marine pests**

The expected increase in marine international and domestic vessel traffic poses a high risk for the introduction of marine pests. Straits estimate 40-50 ships up to 100,000 tonnes will be loaded annually at 3,000,000 tonnes salt production and increasing to 120-150 ships at 10,000,000 tonnes salt production. Each ship loading requires a number of barge loads from the production site which will necessitate a large dredge to establish a barge channel from the new boat harbour.

From around the world and within Australia, there are many examples of Invasive Marine Species (IMS) being introduced and or translocated by a variety of vectors, including ballast water from international commercial shipping, biofouling on a wide range of vessels especially barges or dredges and natural vectors such as ocean current movements. Northern Pacific Seastar, Pacific oyster, European Fan Worm to name just a few. Specific threats to pearl oysters are the Asian Green Mussel and the Black Stripe Mussel which have the ability to wipe out the pearling industry if they take any hold due to the spectacular growth rates and smothering tendencies of substrate including pearl oysters.

The establishment of an IMS in a new environment can threaten biodiversity and aquatic health, as well as specific industries dependent on marine resources.

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Large Panamax salt transport vessels and transfer/loading barges introduce the main vector for IMS translocation into Exmouth Gulf through ballast water and hull biofouling.

The presence of any IMS would trigger the Pearl Oyster Translocation Protocol with the likely result that all translocations would be prohibited until the risk for the spread of the IMS has subsided. This would have significant operational and financial implications for the pearling industry.

#### **Nutrient content in water**

The pearling industry depends on pristine water quality conditions with high nutrient value and the region between NW Cape and the WA/NT border (including Exmouth Gulf) produce the most conducive environment for producing the highest quality pearls in the world.

The proposed building of the 70km long sea wall and modification of landforms and creek flow will change the nutrient regime in the area. The proposal is for redirection of the natural run off through two creeks to either end side of the 70 km seawall which will decrease the nutrient content in the water and changes the salinity gradient in the middle of the wall. The redirection of the natural run off has been poorly considered in the ERMP.

Habitat modification will also occur for the inshore waters opposite the seawall and the inland areas of the Exmouth Gulf behind the seawall which are very important to fishing activities. The Straits Project is likely to alter existing habitat formats through redirection of important nutrients and the impact of bittern discharge or leakage.

The eastern side of Exmouth Gulf requires flooding events which move a significant way inland and experience evaporation and nutrients are then returned to the Gulf during the next flooding event. The seawall proposal will greatly impact the natural nutrient flow from this process and significantly alter hydrology and salinity within the mangrove community thus altering the drainage and sedimentation and reducing the flushing of mangroves. It is expected the soil water table will rise causing water logging of mangroves and possible death of mangroves situated above the intertidal zone as has happened in Port Hedland.

The significant dredging required for the boat harbour and barge channel may create changes in local drainage patterns, current directions and water circulation.

## **Pollution**

### **Management of Bitterns**

In information received under the logo of Straits Salt they estimate toxic waste production (bitterns) from salt generation at 20 billion litres per year at 10,000,000 tonnes production. This amount is significantly higher than any other salt producer in WA.

Straits Salt acknowledge they do not have sufficient technology available to them at this stage to responsibly manage the discharge of this waste so they have indicated that they will store the waste until satisfactory technology to handle such waste is developed.

Although bitterns would not need to be disposed of for many years until pond floors have been developed (5 to 10 years depending on final size), when the salt production is a full capacity, storage of bitterns will not be possible for beyond a few days and inability to discharge would cause operations to cease, which is unlikely to happen. Once discharge starts taking place, this will then be continuously for much of the year for the rest of the life of the project.

It is not likely that the release of bitterns into Exmouth Gulf could ever be managed to achieve acceptable environmental outcomes. The volumes involved (in the order of 1000's of cubic meters per hour) make measures such as piping of the bitterns to deeper water (where it can more easily be mixed) non feasible.

The feasibility of 100% resource recovery of a significant proportion of the bitterns produced and re-use of bitterns is very unlikely and the commitment to undergo a later approvals process belies the dependence of the proposal on gaining that approval at a later date. If re-use / resource recovery was a feasible option, would other existing salt producers not have utilised this option? It is more likely that bittern recovery will depend on small niche markets and will not be a commercially viable solution. It is our opinion that the proponent has therefore failed to address the most difficult environmental issues it faces. This may be in

the hope that once established, there will be additional social and economic leverage in support of the project.

This approach is totally irresponsible and, until satisfactory proposals for responsible management of the toxic waste or bitterns is established and discharge options carefully evaluated, the entire proposal to generate salt production should be rejected. If the project were to be approved with the condition that "No bitterns are to be discharged into the Gulf for the life of the project" - the project would probably become non-viable.

### **General Waste Disposal**

Straits propose using a desalination plant which in itself creates liquid wastes that may contain high salt concentrations, chemicals used during defouling of plant and equipment and toxic metals. A small amount of solid waste is also produced from desalination plants.

Discharge options again need careful evaluation even if stored with bitterns waste for reasons outlines above.

Food wastes and human wastes must also not be disposed of in the ocean as this may risk local marine life.

Spoil from dredging and waste from construction of the seawall, jetty and roads also present problems if dumped or allowed to leach into the marine environment as it may alter current flows or increase turbidity of adjacent creeks and tidal areas.

### **Conclusions**

The WA pearling industry is extremely concerned about the proposed development for a huge salt mining project on the eastern side of Exmouth Gulf.

The Straits Salt project is building a series of ponds with walls extending non stop for 70kms - the equivalent distance from Yancheep to Rockingham - expected to have a range of direct and indirect impacts on the natural environment and radically altering natural drainage and replenishment patterns that could starve much of the ecosystem of its vital natural resources.

Commercial pearl farms contributing up to \$40 million in export income to WA operate within the area proximate to the land the subject of Straits' mining application.

Most importantly is the risk from introduction of non-native invasive marine species and the spread of diseases from ballast water discharge and the changes to water quality from waste discharge from salt production. Fully laden 70,000 tonne bulk transport ships will be in and out of Exmouth Gulf to export the salt overseas. Fifteen major marine pests have been identified in Australian waters through introduction from overseas.

Increase in boating traffic past the main pearl farm areas to transport salt from Hope point to a bulk transport vessel in the middle of the Gulf, will increase the risk of water pollution and introduction of marine pests which could affect the pearl production in the whole region.

Pearling operations rely on good quality marine water to produce the world class, highest quality pearls for which Australia is internationally recognised.

Straits Resources, has also failed to detail in the recently release ERMP how it will dispose of vast quantities of toxic bitters that are the by-product of its proposed solar salt project. There is no information presented in Straits Resources ERMP concerning the amount of bitters which will be generated at the 'nominal' salt mine production levels of 10 megatonnes of salt per annum however Straits bitters estimated production in earlier documentation is 20 billion litres per annum.

The coastal and inshore eastern area of Exmouth Gulf is largely undeveloped and streams flowing into the Gulf are small and typically only flow following intensive rainfall around cyclone events. The position of the pond walls appears to physically redirect these streams putting natural flushing and distribution at risk.

The salt production facility will indirectly impact upon pearling operations by changing current water flows, salinity or nutrient availability. The pearling industry is concerned that the impacts may include changes to coastal nutrient runoff into Exmouth Gulf with negative impacts on important mangrove systems and increased turbidity which may in turn increase disturbance to the marine and coastal ecosystems.

The presence of any introduced marine pests would trigger a response under the Pearl Oyster Translocation Protocol with the likely result that all transfers of pearl oysters to operational locations around the Pilbara/Kimberley coast would be prohibited until the risk for spread of marine pests has subsided.

Yours faithfully,

Brett McCallum  
Executive Officer

**Attachment 1**

**Pearling Licence & Quota Holders in Western Australia**

**As at December 2006**

<b>COMPANY NAME</b>	<b>Combined Wild &amp; Hatchery Quota Units</b>
<b>Pearling Licence &amp; Quota Holders</b>	
Arrow Pearls	15
Australian Sea Pearls	70
Blue Seas Pearling	45
Blue Seas Pearling (Administration)	30
Clipper Pearls	37
Cygnets Bay Pearls	75
Dampier Pearls	35
Exmouth Pearls	35
Fantome Pearls	45
Hamaguchi Pearls	35
Maxima Pearls	35
Morgan & Co	65
NorWest Pearls	35
Paspaley Pearls	120
Pearls Pty. Ltd.	100
Roebuck Pearl Producers	75
The Australian South Sea Pearl Company	70
<b>TOTAL</b>	<b>922</b>