

PROTECTING AND PRESERVING THE NORTH WEST CAPE - NOW AND FOR FUTURE GENERATIONS

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Dr Sue Osborne Environmental Protection Authority

Via email: eia@dec.wa.gov.au

27th February, 2007

Dear Dr Osborne,

Cape Conservation Group (CCG) wishes to register its strong opposition to Straits Resources Limited's proposal for a solar salt operation on the eastern margin of the Exmouth Gulf. CCG is a volunteer based community group whose charter is "to protect and preserve the natural environment of the NW Cape - now and for future generations". We are a very active, successful and highly respected community conservation group. We currently have 57 members who represent many age and interest groups and come from multiple sectors of the community. They include people from the medical profession, education sector, dive industry, ecotourism, tourism, conservation, owner-operated businesses, government departments and families.

Cape Conservation Group believes that this project is incompatible with, and will jeopardise, the unique and precious values of the North West Cape and its adjacent marine environment. The proposal is inconsistent with (and may compromise) the vision shared by numerous government agencies for the Ningaloo region. The Western Australian and Commonwealth governments have clearly identified the North West Cape as a globally significant wilderness area which is nationally revered for its natural values.

The region currently supports multiple established, sustainable industries which rely on a productive, balanced and healthy marine environment. The Yannarie Solar Project is expected to contribute relatively small social and economic benefits to the state and local area, however poses considerable threats to the future of existing industries.

The Yannarie Solar Salt operation is of a size and scale previously unheard of in Western Australia and could have significant negative impacts on a regional scale. Exmouth Gulf is one of the most productive marine environments in Australia – it is a precious natural asset that warrants protection in the interests of intergenerational equity.

We believe that the ERMP is fundamentally flawed for several reasons. A large portion of the "science" in the document is not comprehensive, repetitive or conclusive. A considerable amount of data that has been used to support the operation is cursory, incomplete, poorly substantiated and short term. The environmental sensitivities and high value of this region demand that thorough, long-term, independent science is undertaken to provide a solid foundation for base-line assessment of the environment, comprehensive evaluation of environmental impacts and the formulation of effective, detailed, environmental management strategies. None of this has been comprehensively addressed in the ERMP.

Consequently, CCG considers the proponent has failed to competently address multiple legislative requirements necessary for an Environmental Review and Management Plan and subsequent consideration by the EPA. Examples of this are provided in the accompanying document.

The ERMP fails to adequately examine the risks to the environment as well as concerns relating to economic and social impacts that surround this proposal. If anything went wrong with a project of such a large scale, the effects would be irreversible and may be felt for many years to come. CCG firmly believes that the risks are just too great, and that approval should NOT be given for the Salt works to proceed.

Due to the voluntary nature of our group and ongoing commitment to various other CCG conservation initiatives, we are unable to address our concerns arising from the ERMP in as much detail as we would like. However please consider the following comments relating to Terrestrial flora and fauna, Mega Fauna, Climate Change, Social Surrounds, Bitterns Management, Non Indigenous Marine Species, Climate Change and some General/Miscellaneous concerns.

Thank you for the opportunity to comment on the project. If you have any further queries regarding this submission, please contact Kelly Ritchie on 9949 1560 or Kate Macgregor on 9949 1226. We do not require that our submission remains confidential.

Yours sincerely

Kelly Ritchie

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SUBJECT

Terrestrial Flora/ Fauna

Terrestrial F Section	PAGE	COMMENTS	SOURCE OF	RECOMMENDATION,
			INFORMATION (IF APPLICABLE)	SAFEGUARDS OR ALTERNATIVES
5.2.4 (Vol 1) EPA Guidance Statement No. 56	5-72 to 5-73	The ERMP notes that the availability of regional information and data regarding flora and fauna is scarce composed of three surveys conducted at locations spatially distant from the project area. The terrestrial fauna investigations for the Yannarie Solar project area comprised a single, 10 day survey period between 15/08/2004 and 24/08/2004. This survey period could not adequately document fauna representative of the area or take into account seasonal variations, migration, reproduction, foraging or other variable behaviour of wildlife. The eastern side of Exmouth Gulf is characterised by rainfall which is variable in frequency and intensity. This climatic feature inevitably has considerable impacts on terrestrial flora and fauna and necessitates a requirement for long term survey work that considers the response of fauna assemblages (and other ecological factors) to a range of rainfall conditions. A single, 10 day survey period does not comprise a thorough survey of the area and is insufficient to provide base-line data against which future monitoring can be measured.	EPA Guidance Statement No 56.	Long term fauna surveys should be conducted to establish base-line data and formulate effective environmental management strategies prior to any EPA assessment.
		The single terrestrial survey undertaken by the proponent is incompatible with the recommendations outlined in EPA Guidance Statement no 56. For example: In general fauna and faunal assemblage surveys conducted for baseline information (i.e. the first detailed survey of the area prior to development) should be multiple surveys conducted in each season appropriate to the bioregion and the faunal group. The most important seasonal activity times for many faunal groups are related to rainfall and temperature. Thus, a survey in the season that follows the season of maximum rainfall is generally the most productive and important survey time. However, in some cases there may also be a need to time surveys according to the seasonal activity patterns of		

Cape Conservation Group: Response to t	the Yannarie Solar Project ERMP.		
	particularly important species (such as Specially Protected Fauna or Priority species) or particular assemblages (e.g. mollusks or amphibians).(p17)		
	The duration and spatial scale of fauna sampling are pivotal in environmental impact assessment and the methodology design and intensity of the survey needs careful consideration and will vary regionally and take into account local conditions. For example, studies (e.g. How 1998, How et al. 1991, Rolfe and McKenzie 2000) have shown that extensive sampling effort is required in both a temporal and spatial scale before the composition of a herpetofaunal assemblage (including its rarer species) can be adequately determined. (p18)		
	Position Statement no 3: Terrestrial biological surveys should provide sufficient information to address both biodiversity conservation and ecological function values within the context of proposals and the results of surveys should be publicly available.		
	The area of the proposed Yannarie Solar project is relatively pristine. The area is relatively intact from the perspective of fire history and weed invasion. It is also somewhat isolated from the influences of pastoral grazing pressure and feral predators present on the hinterland. Where else in Western Australia is this landscape type in the rangelands so pristinely represented? The state government has made a commitment to preserve representative ecosystems within bioregions (CALM, 2002). This site is a surely a highly suitable candidate. Areas such as this are becoming increasingly rare in Western Australia. The site for the proposed salt mine should be retained as a pristine representative of this specific rangelands landscape. Where else in Western Australia are the claypans, such as those in the proposed project area, represented in conservation estate?	Biota Environmental Sciences, 2005. The proponent Salt Project: Fauna and fauna assemblages survey, unpublished report prepared for The proponent Salt Pty Ltd In the Yannarie Salt Project ERMP, 2006. Department of Conservation and Land Management, 2002. A Biodiversity Audit of Western	Evaluate and consider the value of the proposed project area as a protected, pristine representation of the Cape Range Sub-region.

Cape Conservation Grou	p: Response to the	Yannarie Solar Project ERMP.		<u>, </u>
			Australia's 53 Biogeographical Subregions in 2002, Department of Conservation and Land Management, Perth.	
5.3.4 (Vol 1) Birds	5-81	All of the passerines recorded during the 10 day study were mangrove specialists, 28 of the 48 recorded wader species are listed as migratory species under the EPBC Act and the area was ranked as of international importance for five species. Clearly, the region is significant for birds. How will these migratory species be impacted by habitat destruction and modification, noise, activity of humans and facilities, associated impacts on their food source and other changes to the ecosystems with which they interact? Where has this been examined in the ERMP? How can mitigation and management methods be ascertained without this information? The purpose of the ERMP is to provide "a <u>detailed</u> review of potential environmental impacts and management measures for the relevant environmental factors". This has not been undertaken in the ERMP presented by the proponent and therefore the proponent has not adequately addressed the threats and management regime for species listed under the EPBC Act.		The proponent needs to conduct more comprehensive research into the potential impacts its operation will have on migratory bird populations, and the proponent needs to provide a more detailed review on the management measures that will be implemented to mitigate these impacts. The proponent needs to provide the results of its research and its review for public consideration, prior to any EPA assessment.
4.2.6 (Executive Summary) Terrestrial fauna	27	"Experience at other Western Australian saltfields has indicated a potential benefit for migratory birds and other shorebirds. Observations at the Port Hedland salt field have been that the concentrator ponds have developed into a significant habitat attracting over twenty CAMBA and JAMBA listed migratory species (Dampier Salt Limited, 2006)." Despite the fact that new habitat for migratory species was created at this site, the presence of twenty new species of bird indicates a shifting baseline as a result of the salt field development, which the proponent hasn't considered. The proponent has presented misleading and incomplete information.		
5.3.5 (Vol 1) Mangrove fauna	5-84	Equipment failure during the 10 days of surveys resulted in no bats being recorded during the survey period. Instead, the Yannarie project is presumed to provide habitat for the Little North-western mastiff Bat,		The proponent needs to conduct more comprehensive research into the bat populations that might exist

Cape Conservation Group:	Response to the Yannarie Solar Project ERMP.	
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Cape Conservation Group	o: Response to the	Yannarie Solar Project ERMP.		
		which is a mangrove specialist and listed as a Priority 1 species by DEC. The information regarding bat species, abundance and distribution in the proposed project area is therefore virtually nil. By projection, bat fauna may include a P1 species. This documentation is clearly inadequate to predict the impact of the project on bat species and develop "a detailed review of potential environmental impacts and management measures for the relevant environmental factors" The inadequacy of the Straits ERMP research is confirmed by the identification of "eight species of bats forage in the mangroves" in the National Directory of Important Wetlands in Australia – Eastern Exmouth Gulf (DEH).		in or adjacent to the project area. The proponent needs to address the potential impacts its operation will have on bat populations, and the proponent also needs to provide a more detailed review on the management measures that will be implemented to mitigate these impacts. The proponent needs to provide the results of its research and its review for public consideration, prior to any EPA assessment.
5.3.6 (Vol 1) Mammals 5.3.7 (Vol 1) Reptiles	5-85	A 10 day survey period is inadequate to effectively establish base-line data for future monitoring, or anticipate the impact of the project. The ERMP claims that comparing their 10 day fauna survey with comparison data sets collected at sites near Onslow and Tubridgi exhibiting "Similar coastal habitats in the locality indicate that the mammal fauna of Yannarie Solar Project area was well sampled for a single survey phase". However, the 10 day survey identified an additional four species of reptiles that were not recorded by the two comparison data sets. How can the 10 day survey conducted in the proposed project area be effectively compared to studies at other sites for mammals when it is clear the comparison is inapplicable for reptiles? Clearly, the presumption that the Yannarie surveys can be equated to the previous two studies and are therefore comprehensive is incorrect and misleading. It is glaringly apparent that much further research must be conducted. This is supported in the EPA's guidance statement no 56 which states: The duration and spatial scale of fauna sampling are pivotal in environmental impact assessment and the methodology design and intensity of the survey needs careful consideration and will vary regionally and take into account local conditions. For example, studies (e.g. How 1998, How et al. 1991, Rolfe and McKenzie 2000) have shown that extensive sampling effort is required in both a temporal and spatial scale before the composition of a	EPA Guidance Statement No 56.	The proponent needs to conduct more comprehensive research into the mammal and reptile populations that exist in and adjacent to the project area. The proponent will need to address the impacts its operation will have on the mammal and reptile populations, in light of any new information. The proponent will also need to provide a more detailed review on the management measures that will be implemented to mitigate these impacts. The proponent needs to provide the results of its research and its review for public consideration, prior to any EPA assessment

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		herpetofaunal assemblage		
		(Including its rarer species) can be adequately determined.		
		(p18)		
5.3.10 (Vol 1)	5-87	Six federally listed species potentially live in the area proposed for the	Biota	More extensive and thorough
Significant		salt mine. As the proposed project area is noted as being relatively	Environmental	survey work should be undertaken
species		pristine with minimal impact by ferals, weeds, fire and pastoralism	Sciences, 2005.	to determine whether these species
species		(Biota, 2005), it may constitute significant and important habitat for	The proponent Salt	inhabit the area and what the
		federally listed species. This has not been adequately established during	Project: Fauna and	(current and future) value of a
		a single, 10 day survey period, nor has it been adequately evaluated.	fauna assemblages survey, unpublished	pristine area of habitat is for such species.
		Furthermore, the proposed project area comprises overlapping ecotones	report prepared for	
		and is inhabited by flora and fauna species at the outermost extents of	The proponent Salt	
		their range. How has the fauna survey undertaken by The proponent	Pty Ltd	
		adequately considered the distribution and abundance of federally listed	In the Yannarie	
		species and species at the outer limits of their ranges? How has The	Salt Project	
		proponent ascertained the value of this location and habitat for specific	ERMP, 2006	
		populations and listed species? What is the value of a pristine	,	
		representation of this habitat type for federally listed species and species		
		at the outer extent of their range in the future?		
5.4.2 (Vol 1)	5-91 to	Management measures to address loss of habitat, vehicle and		The proponent needs to provide a
Assessment and	5-93	equipment noise and noise emissions:		more detailed review of its
management of		The proponent claims: "The proponent's flora and fauna conservation		management measures to address
potential impacts		strategy will be developed in consultation with DEC" The purpose of		loss of habitat, vehicle and
potentiai impacts		the ERMP is to provide "a <u>detailed</u> review of potential environmental		equipment noise, and noise
		impacts and management measures for the relevant environmental		emissions. The proponent needs to
		factors" Why has this been deferred and why are the management		provide the results of its review for
		measures to address these threats to fauna not presented in this ERMP?		public consideration, prior to any
		This deference does not comply with the ERMP guidelines. It is		EPA assessment.
		impossible to review and comment on the adequacy of management		
		measures that have not been developed.		The proponent needs to restrict the
				movement of vehicles within and
		Assessment of impact does not refer to a range of potential impacts on		adjacent to the project area to
		terrestrial fauna in the project area through flow-on effects from impacts		daylight hours, so as to avoid road
		to other components of the ecosystems. Eg: How will the food supply of		kill of native and nocturnal fauna.
		birds be influenced by increased sedimentation and/or altered nutrient		
		flows from the algal mats? How will the destruction/loss of mangroves		The proponent needs to conduct
		impact bat socialisation and feeding behaviour? How will modified		more comprehensive research into
		ground water flows, creeks and drainage systems influence the habitat		the potential indirect impacts its
İ	I	available for frogs? The ERMP lacks sufficient detail to adequately		operation will have on native fauna

		assess the impact of threats to the existing ecosystem and individual species within it.	populations, particularly in relation to trophic cascades and habitat loss due to altered hydrological and nutrient flows. The proponent also needs to provide a detailed review on the management measures that will be implemented to mitigate these impacts. The proponent needs to provide the results of its research and its review for public consideration, prior to any EPA assessment.
5.6 (Vol 1) Proponent commitments	5-94	The ERMP states: "The proponent proposes to consolidate these commitments into the preparation and implementation of a Fauna Management Plan" Concerns include: (1) why hasn't this already been done and reported in the ERMP for review as required by the ERMP guidelines; (2) The use of the term "proposes" indicates a lack commitment to this outcome. What happens if EPA approval for this project is granted and The proponent does not develop this plan as "proposed"? Will the entire project be dismantled? Or will the "proposal" fall by the wayside with no enforceability from government agencies?	The proponent needs to develop a Fauna Management Plan and provide details of the plan for public consideration, prior to any EPA assessment. If the proposal is approved prior to the development of a Fauna Management Plan, the EPA needs to make it a licence condition that the proponent must develop a Fauna Management Plan prior to the commencement of any operations.
5.7 (Vol 1) Environmental Outcome	5-95	"The primary outcome that the proponent aims to achieve in relation to terrestrial fauna is to reduce the risk of adverse impacts on the regional abundance of significant species." Why isn't the proponent aiming to reduce the risk of adverse impacts on the localised abundance of significant species?	The proponent needs to amend the aims of its management measures so that they reduce the risk of adverse impacts on the localised abundance of significant terrestrial fauna species.
Chapter 2 (Vol 2) 1 Terrestrial Vegetation Management Plan	2-3	"Flora and vegetation communities will be progressively surveyed within the project area prior to construction of salt field components. Emphasis in the first instance will be placed on surveying the southern portion of the project area which has not yet been surveyed." Without these surveys, how can the proponent claim that, " no vegetation types within the project area represent Threatened Ecological Communities (TECs) or communities of special conservation significance. Most vegetation types are widespread within the vegetation area (page 25)?	Long term flora surveys should be conducted to establish base-line data and formulate effective environmental management strategies prior to EPA assessment.

Cape Conservation Grou	ip: Response to the	Yannarie Solar Project ERMP.		
		These conclusions have been drawn from an incomplete data set. Why haven't these baseline surveys been completed in time for inclusion and consideration within the ERMP? How can the proponent claim that no Declared Rare Flora or Priority species occur in the project area, when a large proportion of the project area hasn't even been surveyed?		
Executive Summary	25	Two species of Declared Rare Flora have been identified in the Carnarvon IBRA Bioregion, 50km from the project area. How will the survival of these populations be impacted upon by hydrological changes caused by the operation? How will the proponent address potential disturbance should these species be identified in the project areas that have been previously unsurveyed?		The proponent needs to conduct more comprehensive research into the potential impacts its operation will have on Declared Rare Flora and Priority species, and the proponent needs to provide a more
4.3.4 (Vol 1) Vegetation and flora of conservation	5-60	A search of the Herbarium Specimen database identified 26 species of Priority flora which could potentially occur in the area of the Exmouth Gulf. While none of these plants species have been recorded closer than 10km from the project area, how will the survival of these populations be impacted upon by hydrological changes caused by the operation? How will the proponent address potential disturbance should these species be identified in the project areas that have been previously unsurveyed?		detailed review on the management measures that will be implemented to mitigate these impacts. The proponent needs to provide the results of its research and its review for public consideration, prior to any EPA assessment.
significance	5-59	Where is the evidence to support the proponent's claim that the coolibah communities (which have conservation significance – Biota, page 27), won't be affected by the development of the area?		The proponent needs to conduct more comprehensive research into the potential impacts its operation will have on the coolibah communities, and the proponent needs to provide a more detailed review on the management measures that will be implemented to mitigate these impacts. The proponent needs to provide the results of its research and its review for public consideration, prior to any EPA assessment.
Appendix 6	11	"During the main flora survey, the species responsive to winter rain were adequately represented; however those species stimulated by	Biota Environmental	

	13	"As only a portion of the project area could be systematically sampled, not all of the variation in vegetation, nor all the flora species, would have been identified." The information contained within the ERMP about terrestrial vegetation	Sciences (Biota) 2005. Yannarie Salt Project: Flora and vegetation assessment – Baseline Botanical Survey,	
		is therefore made up of an incomplete data set. Given this knowledge about the seasonal variation in the community composition of terrestrial vegetation, why hasn't the proponent initiated surveys to capture this variation? Why wasn't this done in time for consideration within the ERMP? Additional vegetation surveys need to be conducted to ensure that comprehensive, year-round baseline data exists, prior to any operations going ahead.	unpublished report prepared for The proponent Salt Pty. Ltd.	Additional vegetation surveys need to be conducted to ensure that comprehensive, year-round baseline data exists. The proponent also needs to formulate effective environmental management strategies in light of the new information. This needs to be done prior to any EPA assessment.
Appendix 6	32	"A number of the flora species present are found at their northern, southern and western extremities of their state distribution."	Biota Environmental Sciences (Biota)	
	35	"Only a single weed species was documented from the 191 species recorded, highlighting the high degree of intactness of the flora of the Yannarie Salt project area."	2005. Yannarie Salt Project: Flora and vegetation assessment –	
	35	"The survey area contained a representation of various vegetation types that were in relatively good condition, unlike a number of ecosystems in the Cape Range Sub-region which are under threat (known to be at risk), largely from pastoral activity and feral animals such as goats, foxes, cats and rabbits."	Baseline Botanical Survey, unpublished report prepared for The proponent Salt Pty. Ltd.	
	25	Given the above statements, and given that the vegetation within the project area is generally in Very Good to Excellent condition, and that several medium to high priority ecosystems were identified in the survey area, would it not be prudent to recognise this relatively pristine area as an excellent candidate for protection within a comprehensive, adequate and representative reserve system (especially considering that only 2-3% of the Cape Range Sub-region is currently protected within reserves)?		Evaluate and consider the value of the proposed project area as a protected, pristine representation of the Cape Range Sub-region.

SUBJECT

Mega fauna

(whales, dugongs, turtles etc)

Section	PAGE	COMMENTS	SOURCE OF INFORMATION (IF APPLICABLE)	RECOMMENDATION, SAFEGUARDS OR ALTERNATIVES
Marine Mega fauna	Pg6-110	 Listed as marine and migratory species under the EPBC Act, Listed under the Wildlife Conservation Act 1950 as Schedule 4 (fauna that is in need of special protection). Exmouth Gulf and Ningaloo support significant dugong populations that are likely interconnected with Shark Bay, which has been identified as a nationally and internationally significant dugong habitat. Factors affecting seasonal or periodic movement of dugong within Shark Bay, Ningaloo and Exmouth Gulf and between these areas are not well understood. Dugong have been observed around Hope Point (documented in the Straits ERMP, page 6-110). Evidence to suggest that Exmouth Gulf is an important feeding and breeding calving area. The southern and eastern sides of the Gulf appear to be the preferred habitat for dugong. Impacts to dugong are said to be negligible in the ERMP given the small scale of dredging required. However there is no discussion in the ERMP on the significance of the Exmouth Gulf dugong population at the State scale and the potential impact that disturbances (direct and indirect) will have on the conservation status of dugong in WA. 	Straits ERMP Jenner, C. and Jenner, M., (2005) Final Report Distribution and abundance of humpback whales and other mega-fauna in Exmouth Gulf, Western Australia, during 2004/2005. Centre for Whale Research WA Inc.	Give them special protection by conducting further research to ensure disturbance to them and their environment will not occur. Conduct more comprehensive research prior to EPA assessment. Conduct more comprehensive research prior to EPA assessment.
Marine Mega fauna		 Humpback whales: Listed as Vulnerable under the EPBC Act, Listed under the Wildlife Conservation Act 1950 as Schedule 1 	Jenner, M., (2005) Final Report Distribution and	Give them special protection by conducting further research to

Cape Conservation Grou	page 6-126	(Fauna that is rare or is likely to become extinct) Exmouth Gulf is used as a nursing and resting area, particularly on their southern migration with newborn calves. Gulf may be a critical resting area for humpback whales. Cow/calf pods can rest and nurse in the Gulf for periods of 1-2 weeks before continuing their southern migration. ERMP states that "it is probable that animals will quickly habituate and the noise will not produce any startle or alarm type of responses". There is no reference provided to justify this statement. McCauley et al (1998) states that cow/calf pods are more sensitive to acoustic disturbance than adult pods, suggesting that the pods in Exmouth Gulf are likely to be particularly vulnerable to vessel movement, noise and vibration.	abundance of humpback whales and other mega-fauna in Exmouth Gulf, Western Australia, during 2004/2005. Centre for Whale Research WA Inc. McCauley, R.D., Jenner, M.N., Jenner, F., McCabe, K.A., & Murdoch, J. (1998). The response of humpback whales (Megaptera novaeangliae) to offshore seismic survey noise: preliminary results of observations about a working seismic vessel and	ensure disturbance to them and their environment will not occur. Conduct more comprehensive research prior to EPA assessment. Jenner & Jenner recommend further research be done prior to EPA assessment.
Marina Maga		Whale sharks:	of observations about a working	
Marine Mega fauna		 Listed as Vulnerable under the EPBC Act. There is little knowledge about the importance of Exmouth Gulf for whale sharks. Whale sharks have been sighted in the Gulf opportunistically outside of whale shark season (March-July), (specifically December 2005, and September and November 2006). It is possible that whale sharks are present in the Gulf 	Wilson, E. pers comm.	Give them special protection by conducting further research to ensure disturbance to them and their environment will not occur.

		throughout whale shark season.		Conduct more comprehensive research prior to EPA assessment.
Marine Mega		Turtles:		
fauna		 Four species of turtle are known to occur in the region, all of which are likely to occur within Exmouth Gulf. The Hawksbill, Green and Flatback turtles are listed as Endangered under the EPBC Act, and the Loggerhead turtle is listed as Endangered. All four species are listed as Vulnerable under the Wildlife Conservation Act 1950. 		Give them special protection by conducting further research to ensure disturbance to them and their environment will not occur.
		 Exmouth Gulf is known to provide significant foraging ground for juvenile turtles due to the protected waters and extensive mangals. Green turtles are known to nest on the western side of the Gulf in low numbers at Bundegi. ERMP includes no discussion on the significance of Exmouth Gulf as a foraging ground for juvenile turtles. There are therefore uncertainties in predicting impacts of factors such as vessel movement, dredging and sedimentation, and lighting on turtles that forage within the Gulf. 	Personal observation Personal observation	Conduct more comprehensive research prior to EPA assessment. ERMP includes no discussion on the significance of Exmouth Gulf as a foraging ground for juvenile turtles. There are therefore uncertainties in predicting impacts of factors such as vessel movement, dredging and sedimentation, and lighting on turtles that forage within the Gulf.
Executive Summary	14	"Straits is seeking, as a condition of approval, to conduct an environmental review of the project before commencing Stages 3 and 4." By this stage, environmental degradation may well be beyond the point		If the development is approved by the EPA, an environmental review needs to be conducted before the commencement of Stage 2.
		of no return. The ERMP contains several glaring inconsistencies. For example:		
		Page 20 – In the table of potential environmental impacts associated with solid and liquid waste production, only two items are listed as having a potential impact on marine and terrestrial animals. This table is incomplete given that any contamination of the soil and water by oils, detergents, etc is also likely to have direct and indirect impacts on fauna. Page 35 – Dredge plumes are mentioned as a potential impact on		

	commercial fishing and aquaculture values. Why are dredge plumes not	
	also considered a potential impact on benthic primary producer habitat	
	and ecological integrity? How will this threat be mitigated/managed?	
	The proponent states that they will introduce a series of monitoring	
	programs to monitor the impacts of their operation (eg introduced	
	marine organisms). Why take this risk in the first place?	
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SUBJECT

Social Surrounds

Section	PAGE	COMMENTS	SOURCE OF INFORMATION (IF APPLICABLE)	RECOMMENDATION, SAFEGUARDS OR ALTERNATIVES
Social Surrounds Chapter 7	P 7-1	Public Consultation The proponent claims that comprehensive consultation activities were undertaken to identify community concerns and potential social impacts. This is not consistent with opinion of the local Exmouth community who continue to complain that they have very little understanding of the project and are confused by conflicting reports concerning bitterns management, fly in- fly out workforce and environmental concerns. The local Stakeholder reference group repeatedly requested a guest speaker to discuss socio economic concerns, however a presenter was never provided. The proponent was also extremely reluctant to release their Social Impact Assessment to SRG members. This document has since been released and contains data as old as twelve years, some of which quite possibly doesn't accurately reflect the community of Exmouth today.	Tourism WA, 2006	Consider alternative location for project in an area less important To local fisheries.
		Stakeholders also repeatedly requested artist's impressions of the completed facility and associated infrastructure such as ships and harbour from various locations, (birds eye, Cape Range, Bundegi Beach, Mid Gulf, Islands close by). These were never provided to the community. These images are considered an important component of aesthetic and social values of local residents. The visual impression is also significant with respect to the region's national and international reputation as a pristine wilderness area – salt stockpiles, Panamax bulk carriers and other infrastructure associated with the project are inconsistent with the region's major and growing industry: ecotourism.	WAPC, 1998	
		Existing Industry Exmouth fishing, aquaculture, pearling and tourism industries are linked		If approval is granted for the projemonitoring programs must be

to Exmouth Gulf and rely on a healthy, productive marine environment. They are currently worth more than \$30 million to the region annually. And any negative changes to the gulf environment put these industries at risk.

The EPA objectives relevant to this assessment include:

- To avoid or minimise impacts on commercial and recreational fishing
- To avoid or minimise impacts on commercial aquaculture operations
- To NOT impact adversely on the Exmouth Gulf Fishery

Exmouth is a World-renowned recreational fishing site, estimated to be worth \$10 million to the region annually, and approximately 171 people in Exmouth are employed in the tourism industry Numerous businesses benefit or rely on tourists that visit Exmouth. Tourism generates \$450 million dollars each year on the Coral Coast (Tourism WA, 2006).

"The Gascoyne region is potentially set to become Western Australia's premier water-based, environmental tourism area over the next 25-30 years. Exmouth's close proximity to the Ningaloo Marine Park and Shark Bay Heritage area therefore places the town in a position of strong predicted expansion and growth." Exmouth-Learmonth Structure Plan (WAPC, 1998)

The Strait's proposal threatens existing industries in the following ways:

- Less fish due to changes in habitat, food webs and water quality caused by Straits development, infrastructure and operations.
- A potentially changed ecosystem due to altered nutrient flows around the 70 kilometre long sea wall.
- Water intake pumps that feed the evaporation ponds will suck up fish larvae and juveniles.
- The presence of an industrial port and shipping operation may result in the exclusion of commercial and recreational fishers from important fishing areas.
- Bitterns could enter the Gulf through seepage, wall failure or future discharge by Straits. These events could cause a major 'kill' event.
- The silty bottom of the eastern Gulf is likely to be disturbed by

conducted in a frequent and transparent manner and all data made available to the public.

- dredging activities. This will increase turbidity, could destroy seagrasses and algae (the foundation of the gulf ecosystem) and may decrease visibility in Exmouth Gulf.
- The increase in shipping activity will increase the risk of introduction of exotic marine pests, some of which are capable of killing coral reefs and reducing fish stocks.
- 300 metre long Panamax class bulk carriers, barges and service vessels are likely to disturb threatened species of Sea-turtles, Humpback Whales and Dugongs.
- Some areas of potential eco tourism activity in the Gulf and on the eastern side may no longer be accessible due to OHS concerns and the proponent's accountability concerns.
- An industrial backdrop is incompatible with the region's reputation and future as a nature-based tourism mecca.

Tourism WA and the WAPC are two examples of government departments that have identified the region of the North West Cape as an extremely iconic and valuable tourism attraction, and made a commitment to direct funds for development of the tourism industry. The region's wilderness areas and natural environment are well documented as the primary attraction for tourists.

Tourism WA's destination Development Strategy aims to develop and promote tourism around key 'iconic' experiences. This has been identified as a critical element required for continued growth of the industry in WA. Ningaloo Reef was identified by tourism WA as the most iconic destination in the state. An iconic experience/attraction/event is awe-inspiring...unique to WA, has the potential to draw significant visitors here...gaining recognition nationally and internationally (Tourism WA)".

"The Gascoyne region is potentially set to become Western Australia's premier water-based, environmental tourism area over the next 25-30 years. Exmouth's close proximity to the Ningaloo Marine Park and Shark Bay Heritage area therefore places the town in a position of strong predicted expansion and growth." Exmouth-Learmonth Structure Plan (WAPC, 1998)

The vision of the Ningaloo Coast Regional Strategy is: "to develop the [Ningaloo Coast] into a tourism region of international significance focusing on its unique natural features. This would be achieved in a manner that is ecologically sustainable, retains the sense of wilderness and provides local and regional economic and social benefits. The development of existing and new industries which are complementary to this vision will be encouraged".

How is the Straits proposal compatible with the vision of these government departments? How will the world's largest salt mine on the eastern side of Exmouth Gulf, with a host of environmental threats to the surrounding and interconnecting ecosystems, support the governments registered focus for the region?

Previous operations

The following material appeared in an article in *Down to Earth*, *No 61*, *May 2004* regarding a blockade by local protesters at a coal mine in south Kalimantan. Straits Resources Ltd had an 80% interest in the mine at the time.

"Local people, supported by an indigenous organisation, disrupted the coal-mining operations of Australian-owned PT Bahari Cakrawala Sebuku [80% owned by Straits Resources Limited], off south Kalimantan.... Local community leader Abidin Thaher told local newspaper Radar Banjarmasin that... there were many outstanding issues including transparency of community development funds; reclamation of mining areas not yet carried out by BCS; pollution; promised infrastructure development; compensation for land taken by BCS; and the problem of tailing disposal at the mine, which was endangering the community... Mining advocacy network JATAM ..describes how the company's mining operations have polluted the land,

Cape Conservation Group: Response to the	Yannarie Solar Project ERMP.		
	water courses and coastal environment, leading to a drastic decline in local fisheries cleared an area of mangrove and altered the course of three rivers." Source: Kerebok Dec/03 Vol5/40; JATAM: Infosheet PT.BCS & Penghancuran Pulau Sebukuat www.jatam.org ; Radar Banjarmasin 17/Feb/04, 2/Mar/04.		
	Employment		
	Straits Resources will put more than 300 existing local jobs at potential risk, but won't guarantee to generate a similar number of jobs based in the region. "There is unlikely to be considerable benefit for local industries given the limited local capacity to service the project." "There are some local electrical and maintenance contractors in Exmouth and Onslow that are likely to receive some economic benefit over the life of the project. The proposed facility is unlikely to have any significant impact on existing means of deriving income". "It is likely that local employment opportunities will be available at the proposed site, but given the existing local employment profile it is assumed that the majority of employment at the site will be from outside the region." Straits Social Impact Assessment	Straits Social Impact Assessment	The proponent must provide the Exmouth community written commitment in relation to jobs and training for local residents.
	Straits Resources say they intend to employ 190 local people. Many of the positions offered by Straits will be relatively technical positions that may require additional training or sourcing from outside the region. "In the Gascoyne, 50 % of respondents at least generally agreed they would accept some environmental cost in exchange for more job opportunities, but it was noticeable that only 8% of these strongly agreed "While half the survey group said they would incur some environmental cost for jobs, half did not. (Source: Government of	Government of Western Australia 1999	
	Western Australia 1999)." In terms of local economic benefit, the Straits Social Impact Assessment states: "There are some local electrical and maintenance contractors in	Straits Social Impact Assessment	Straits MUST clarify the ACTUAL impact on deriving income.

Cape Conservation Group: Response to the	e Yannarie Solar Project ERMP.
	Exmouth and Onslow that are likely to receive some economic benefit over the life of the project."
	And, on page 11, the stark admission: "The proposed facility is unlikely to have any significant impact on existing means of deriving income".
	Is the projected, relatively low-scale economic return from this project worth jeopardising existing, established and sustainable industries in the region and their potential future development?
	Housing Straits intend housing people in Exmouth. This means that approximately 65 - 70 dwellings in Exmouth would be required for the operational workforce. On 20 th February 2007, there were 3 rental properties available in town.
	The mining industry has contributed to housing madness in Karratha, with rents at \$800/week and a chronic shortage of accommodation. This could happen here. Increased competition for limited housing may result in lower earning families being pushed out to house new families or high income employees. As at 20 th February 2007, 30 families are on the waiting list for Homeswest housing in Exmouth.
	This could mean that there is no guarantee that Straits will be able to house employees in Exmouth. The local income and expenditure projected by Straits as a result of employees residing locally will be reduced or inapplicable. This will effectively erode any anticipated economic benefits for the Exmouth community while increasing the potential cost by threatening existing industries throught the project's infrastructure and operations.
	Straits can NOT guarantee that the workforce will never "Fly In, Fly Out" from Exmouth. 100% of the workforce at Straits Whim Creek Copper Mine originally lived in Whim Creek. This is now around 50%. (SRG, Dec 2005).
SUBJECT	
Climate Change	

Section	PAGE	COMMENTS	SOURCE OF INFORMATION (IF APPLICABLE)	RECOMMENDATION, SAFEGUARDS OR ALTERNATIVES
	page 2-34	 Limit for bund walls and levees set at 40m based on Bruun Rule model. (1962). How appropriate is a rule developed in 1962 in 2007? We now have considerably more detailed, sophisticated and relevant information available about predicted sea level change. ERMP state 'impacts from sea level rise and frequency of over topping of bund walls by sea water are considered inconsequential within the lifespan of the project. ERMP does not adequately address the limitations of the Bruun Rule for predictions of sea level rise and it should identify other methods of predicting sea level rise and use worse case scenarios. There is the potential for containment of water against the bund walls if sea levels are to rise at rates predicted by the IPCC, which could result in flooding of mangals and algal mat communities adjacent to the bund walls. The construction of a bund wall within the area of predicted sea level rise may restrict the inland movement of mangroves when they would otherwise naturally retreat inland to establish in suitable conditions. How will rising sea levels impact the arid zone mangroves, which are regionally significant and therefore have the highest conservation significance? 		Need to undertake adequate modelling of potential sea level rise, and assess the environmental impacts of the development in accordance with predicted climate change patterns prior to EPA assessment.
		 Many scientists predict that there may be greater cyclone intensity and frequency and higher rainfall as a result of climate change. The ERMP has not considered this or conducted any modelling to take this into account. Overtopping of the salt water ponds onto the surrounding environment would occur if storms exceed predicted levels. What are the environmental consequences of this? 		

SUBJECT Bitterns mana	gement	Greenhouse gas emissions: ERMP have put emissions under the heading of minor environmental factors, however they haven't provided information to justify this.		ERMP should identify measures that will be implemented in order to meet the objectives of the WA Greenhouse Strategy prior to EPA assessment.
Section	PAGE	COMMENTS	SOURCE OF INFORMATION (IF APPLICABLE)	RECOMMENDATION, SAFEGUARDS OR ALTERNATIVES
Provisional sustainability criteria	page 2-10	The proponent has a 'goal' for zero discharge of bitterns, however recognises that there may be a future requirement to discharge bitterns. This suggests that at the time of potential discharge, a ten year stockpile of bitterns will have accumulated. The proponent has not adequately evaluated the impact of potential discharge, proposed a discharge strategy or put forward environmental management plans to address the discharge of bitterns. How can the EPA consider this application without this information, particularly given that no viable alternatives (other than the possibility of "future technology") have been offered? The absence of a realistic proposal or evaluation for the disposal of bitterns within the ERMP is a major flaw within this document. This issue is a major environmental consideration that must be addressed in detail and commitments made by the proponent before serious consideration of the Yannarie Salt proposal can proceed. The possibility of poisoning mega fauna such as turtles, dugongs, whales and dolphins (and/or impacts on other components of ecosystems) is an unacceptable, yet possible, outcome if bitterns are released. This issue must be decisively addressed and resolved prior to consideration of the project.	Yannarie Solar ERMP Document	The proponent MUST commit to disposal of bitterns elsewhere if no viable commercial use is found. Discharge into the Exmouth Gulf is unacceptable due to potential harm to wildlife and food webs.

'On December 1997, 94 corpses of green turtles, chelonian mydas, were found at the Oji de Liebre Lagoon (OLL) adjacent to the industrial operation of Expotadora de Sal S.A (ESSA), the largest

Cape Conservation Group: Respon	se to the Yannarie Solar Project ERMP.		
	saltworks in the world, owned by the Mexican Government and		
	Mitsubishi Corporation, located in Baja California Sur, Mexico.		
	Every year about 555x 106 m3 of seawater is solar evaporated,		
	producing 7 x 106 tons of salt and 24.6 x 106 m3 of bitterns, the latter		
	being discharged into the OLL, which is a coastal lagoon of the Pacific		
	Ocean. ESSA claimed that bitterns contain the same salts present in		
	seawater, but 20-fold more concentrated than the former. Ion		
	chromatography with a conductivity detector and ion suppression was		
	used to determine the F-, Cl-, SO42- and CO32- contents of seawater,		
	brines and bitterns collected at ESSA. Furthermore, the osmolality		
	of brines and bitterns from ESSA was measured. F- content in		
	bitterns was 60.5 fold more than that in seawater. The bitterns		
	osmolality was 11000mosm/kg of water; whereas turtle's plasma		
	osmolality was about 400 mosm/kg of waterTheoretical		
	calculations indicate that the salt gland in Sea Turtles has a		
	volume handling capacity equivalent to that of the mammalian		
	kidney. We concluded that the dumping of bitterns into the ocean		
	should be avoided.'- Luis Raul Tovar et al, Centre for		
	Interdisciplinary Research on the Environment and Development,		
	National Polytechnic Institute.		
Bitterns storage	Bitterns could enter the Gulf through seepage or wall failure		The project should be relocated
	should cyclonic activity intensify beyond the proponent's		to a more suitable area, where
	expectations based on computer models using just forty years of		the risk of seepage or wall
	data. The example below demonstrates the inadequacy of 40 years		failure does not substantially
	data for accurately predicting future climatic events.		threaten existing and future
	diam for accounting from the state of the st		industries or wildlife and
	A cyclone hovering in Exmouth Gulf lasted from late Dec 1875 to		habitats.
	early Jan 1876. Most resultant fatalities were on ships at sea in		naorato.
	the area. EMA disasters Data base.		
	me area. Livir aisasters Data base.		
	There is no information presented in Straits Resources ERMP		
	concerning the amount of bitterns which will be generated by the		
	proposed mine. Projected mine production levels are to a massive	Halt The Salt	
	output of 10 Mega tonnes of salt per annum (Mtpa).	Website	
	output of 10 Mega toffics of sait per affiliatif (Micha).	W COSIC	
	However, earlier information provided by the company stated that		

	at 3 Mtpa, approximately 6 gigalitres of bitterns per annum will be		
	generated. Six gigalitres equates to 6 billion litres of bitterns for		
	every year of production!		
	Extrapolating to the 10Mtpa production levels, this will mean		
	approximately 20 billion litres of toxic bitterns every year!!		
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Introduction	of Non Indigenous	Marine Species ((NIMS) by	v marine vessels
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Introduction	Introduction of Non Indigenous Marine Species (NIMS) by marine vessels					
Section	PAGE	COMMENTS	SOURCE OF INFORMATION (IF APPLICABLE)	RECOMMENDATION, SAFEGUARDS OR ALTERNATIVES		
Introduction of NIMS through ballast water or hull fouling	Pages 6- 134 – 6- 140 (Vol 1 Env Review)	Although management of ballast water will be through AQIS, the bulk carriers used for transporting the salt will be trafficking to and from the Exmouth Gulf from "high risk" areas in SE Asia up to 150 times/year. The management of ballast water in Australia is still based on an honour system and the Ship's Captain's log. This does not provide a guarantee that all ships will abide with the legislative requirements as has been the case where ships have been fined. This situation is too risky. On P 6-140 it clearly states that "there are certain circumstances when ships will not be able to exchange ballast water while at sea. In such cases AQIS approval will be obtained prior to ballast water being discharges in Australian waters". This gives no indication how many times this event might occur or why, and whether the discharge will be in Exmouth Gulf – again a very risky event. The Management plan also states that the introduction of NIMS is more likely to occur through hull fouling than ballast water, and yet there on page 6-135 it clearly states that "Western Australia, like most States and Territories is yet to implement formal management strategies for preventing NIMS from being introduced via biofouling." On this basis alone the risk of introducing NIMS is far too high. On page 6-137 the potential environmental impacts are listed and these provide too significant a risk to Exmouth Gulf and potentially Ningaloo Reef. The	Trevor Naughton, former Straits Resources employee	Establish baseline survey data of native and non-native marine species before any approvals for the Yannarie Salt project are even considered. There must be a formal West Australian State management strategy for preventing the introduction of NIMS via hull/biofouling before consideration is given to the Yannarie Salt project.		
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Section	PAGE	COMMENTS	SOURCE OF INFORMATION	RECOMMENDATION, SAFEGUARDS OR
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		At a Stakeholder Reference Group meeting in Exmouth, Straits used the argument that settlement of larvae (from ballast water or hull fouling) would be prevented because the carrier ships would be anchored in deep water. This argument can be countered because "deep" in Exmouth Gulf refers to approximately 22 metres, which is not deep in relative terms. Planktonic larvae are known to have vertical movements of much more than 22 metres. Scientific work has also shown that surface waves create oscillatory movement of water between the surface and the bottom suggesting enhancement of the settlement of benthic larvae. It is the norm for Exmouth Gulf to have surface waves – even if for part of a day. Gulf surface currents (depending on the prevailing wind) could easily transport plantonic larvae to shallower waters for easy benthic settlement.	Friedrich, H. (1965) Marine Biology. Sidgwick & Jackson, London. Ertman, S.C (1998). "Can Surface Waves Promote the Passive Settlement of Benthic Larvae in the Shallow Coastal Ocean?". Ocean Sciences Meeting.	
		Straits Resources carried out a study of the currents on the eastern side of the Gulf, however no studies have been made on the Western side of the Gulf. Surface driven currents have the potential to distribute planktonic larval stages of NIMS to a large section of both the eastern and western sides of the Gulf, and potentially to Ningaloo Reef. Work done on the surface currents of the Great Barrier Reef, using drift cards, indicated immense distances travelled depending on the prevailing wind.	Collins, J. and Walker, T. (1983) "Drift Card Study of the Surface Currents of the Great Barrier Reef". GBRMPA S. Bedford (pers. Comm.)	

ERMP (All)		Throughout the ERMP, the proponent makes statements and draws conclusions based upon incomplete datasets or without corresponding references. In many instances, the proponent claims that its operations will have no impact upon the ecological values of the eastern Exmouth Gulf, yet given the lack of scientific data available, there is absolutely no way in which to predict the outcomes that the development may or may not have on the environment. This is misleading and entirely inappropriate (examples provided below).	The proponent needs to conduct additional environmental surveys to develop comprehensive baseline data on the ecological values within the project area. Any new information needs to be released for public consideration prior to any EPA assessment. The proponent needs to be held accountable for all the misleading information that it has presented to the public. All inappropriate statements need to be withdrawn from the ERMP.
Executive Summary	21	"There appears to be no hydrologic link between discharge from the mainland drainage systems and the ecosystems of the intertidal zone. If runoff reaches the intertidal zone, it would be aided by higher sea levels resulting from extreme storm events flooding the supratidal flats. It is most unlikely that the coastal zone ecosystems rely on carbon and nutrient flows generated by mainland discharge." While these extreme storm events occur infrequently, they do occur. How can anyone say for certain that this hydrologic link doesn't play an important role in ecosystem maintenance and function? Where are the long-term studies from which such a conclusion might be drawn? By the proponent's own admission, the surface water flows are a "complex interrelationship between the water courses, floodplain and an intricate maze of dunal ridges." (page 24, Executive Summary) "There will be no impacts on aquaculture leases or any significant risk to commercial or recreational fish and prawn yields." Where are the long-term studies to support such a cut-and-dry conclusion?	
		"No vegetation types within the project area represent Threatened Ecological Communities (TECs) or communities with special	

2.350 00.10017441011	25	to the Yannarie Solar Project ERMP. conservation significance."	
		conservation significance.	
		How can such a conclusion be made when the southern portion of the	
		project area remains to be surveyed (Volume 2, 2-3)?	
		"There are not likely to be any significant risks from NIMS as a result of	
		the Straits operations."	
	34		
		How has the proponent convincingly or adequately demonstrated that	
		this statement is legitimate?	
		"The conservation values of Exmouth Gulf and the adjoining area will	
	38	not be significantly affected by the project because: there will not be a	
		significant impact on marine fauna."	
		How has the proponent conclusively or convincingly demonstrated that	
		marine fauna will not be impacted by the proposed project?.	
		Given the conservation status of fauna species (eg: marine turtles,	
		dugong, whales) and biodiversity of the region, comprehensive, credible,	
		long term and conclusive data is essential to clearly prove this point	
F .:	21	before the project should be considered.	Th
Executive	21	Key Relevant Environmental Factors – seascapes and wilderness values	The proponent needs to address
Summary		have not been addressed. Seascapes have been identified as an important value to members of the local community and this has been	the management measures that will be put in place to mitigate
		highlighted to the proponent on a number of occasions. Why hasn't this	impacts on seascape and
		issue been addressed in the ERMP? What are the management measures	wilderness values.
		in place to reduce the impact of the shipping channel etc on seascape	Wildeliness varies.
		values?	
Executive	14	"Straits are seeking, as a condition of approval, to conduct an	If the development is approved by
Summary		environmental review of the project before commencing Stages 3 and	the EPA, an environmental
		4."	review needs to be conducted
			before the commencement of
		By this stage, environmental degradation may well be beyond the point	Stage 2.
		of no return.	
		The ERMP contains several glaring inconsistencies. For example:	
		Page 20 – In the table of potential environmental impacts associated	
		with solid and liquid waste production, only two items are listed as	
		with some tild region production, only two items are listed as	

having a potential impact on marine and terrestrial animals. This table is incomplete given that any contamination of the soil and water by oils, detergents, etc is also likely to have direct and indirect impacts on fauna.	
Page 35 – Dredge plumes are mentioned as a potential impact on commercial fishing and aquaculture values. Why dredge plumes are not also considered a potential impact on benthic primary producer habitat and ecological integrity?	
The proponent states that they will introduce a series of monitoring programs to monitor the impacts of their operation (eg introduced marine organisms). Why take this risk in the first place?	
Recent Halt the Salt (privately commissioned) research (to be published shortly) strongly indicates the great significance of uninterrupted nutrient flows to the input and assimilation of nutrients to the Gulf is of major concern to the marine Gulf environment.	Consider this new data and continue research until a better understanding of the areas hydrology is achieved. Halt all development in the area prior to this research taking place.