## **Issues Paper –Stokes Inlet**

This paper brings together the main issues for Stokes Inlet as identified in the environmental condition report, literature review, social and organisational questionnaire response and values/issues table prepared by the steering group. The table below shows the main categories of values, the questions that need to be answered and a suggestion of which organisation may be able answer them. This paper provides an indication of what background papers need to be prepared and what they should address as well as providing a basis to discuss priority research needs.

Issue	Question / comment	Who
Fish	Fishing was identified as the single most important value by the community with the greatest perceived threat to this value considered to be professional fishers.	
	<ul> <li>What information is available on fish stocks in the Inlet? What is the present catch (species and amount) and what is the by-catch? What is the catch used for?</li> <li>How have the fish stocks changed over time?</li> <li>How long has the Inlet been professionally fished?</li> <li>How many licensed fishers use the Inlet? Where are they from? and how long do they generally stay at the Inlet?</li> <li>How much net do the professional fishers use? and do they fish the river?</li> <li>Is professional fishing having an impact on the Black Bream population/size?</li> <li>Is netting having an impact on the Black Bream population/size?</li> <li>What are the present fishing regulations with regard to Stokes Inlet? How are these enforced? and, Can this enforcement be increased?</li> <li>Can there be changes in commercial fishery practises at the Inlet? What are the options for closure of the fishery to professionals?</li> </ul>	Fisheries
	<ul> <li>What existing Fisheries management process/techniques exist to control the fishing effort at Stokes Inlet?</li> </ul>	
	<ul> <li>If the commercial fishery at Stokes is closed what impact will this have on other estuarine fisheries on the south coast?</li> </ul>	
	<ul> <li>What impact would the closure of the commercial fishery have on stocks and size of fish (particularly Black Bream)?</li> </ul>	
	<ul> <li>What information exists on recreational fishing catch and impacts?</li> </ul>	
	<ul> <li>How is the allocation between recreational and commercial fishing determined?</li> </ul>	Murdoch
	<ul> <li>What other factors influence fish stock and size?</li> </ul>	Fish group
	<ul> <li>Can 'recreational only' zones be introduced eg the rivers?</li> </ul>	

	<ul> <li>What are optimum environmental conditions for the recruitment and growth of Black Bream? (salinity, nutrients, dissolved oxygen, temperature etc)</li> <li>What are considered major threats to the sustainability of fish stocks in the Inlet?</li> <li>How should the Inlet be managed to maintain a productive fishery?</li> <li>What resource condition target could be used for fish stocks?</li> <li>What sandbar opening policy would be most useful in maintaining or enhancing fish stocks/condition (particularly for Black Bream)?</li> </ul>	CENRM (Paul Close)
	<ul> <li>Are the fish caught safe to eat?</li> <li>Has there been any analysis of fish for toxins/bacteria/pesticides etc? What would be involved in carrying out this study, if it has not been done?</li> <li>The presence of potentially icthyotoxic species indicates the probability of fish kill events in this estuary. What levels of each would result in this occurring?</li> <li>What recommendations should be included in the management plan to safeguard or enhance future fish stocks, particularly Black Bream?</li> </ul>	
Management	<ul> <li>DEC planning processes are underway which will influence the future vesting and management of the Inlet. It is expected that the new Coastal Reserves Management Plan for the Esperance region will suggest the incorporation of Stokes Inlet into the existing Stokes National Park. Additionally regional marine planning may suggest that the Inlet is incorporation into a marine reserve.</li> <li>What stage is the coastal reserves management plan at? What time frame is involved?</li> <li>Is it intended to include Stokes Inlet within the National Park or within the Marine Reserve system?</li> <li>What public consultation has been carried out as part of the coastal reserves planning process?</li> <li>What are the benefits associated with changing the vesting of the Inlet?</li> <li>What impact would this change have on access and activities at the Inlet?</li> <li>What barriers are there to changing the vesting of the Inlet (eg mineral sands)?</li> <li>How can the Stokes Inlet management plan better integrate with the coastal reserves plan?</li> <li>How many rangers are based at Stokes Inlet? Can the number be increased? How often are the campsites inspected? (the community highly value their interaction with the ranger)</li> <li>What is the present fire management policy? Should control burns be increased?</li> </ul>	DEC
	<ul> <li>How do the community presently have a role in the management of the Inlet and National Park?</li> <li>Is there a need to extend the Park into the farmland on the north-west side of the Inlet to better</li> </ul>	

	<ul> <li>protect the Park and roads? Are there agreements that can be used to manage such areas?</li> <li>How are indigenous values included in the Parks management? Is there scope for a Noongar warden to work with DEC and represent the Traditional Owners view (equal say in country)?</li> <li>Can Traditional Owners be granted free entry into the Park?</li> <li>What recommendations should be included in this Plan to ensure management of the Inlet is improved?</li> </ul>	
Recreational values - Water	<ul> <li>The community identified recreation including many watersports as why they visit and value the Inlet</li> <li>What are the proposals for improvements to the boat ramp?</li> <li>Is boat signage at the Inlet adequate?</li> <li>What are the present boating restrictions? How are boating restrictions presently enforced?</li> <li>Is dredging a channel required for boating access?</li> <li>Is there a proposal for a water ski area at the Inlet? What would the impacts be on the visitors to the park, safety, noise etc? And to the environment, clearing for parking bays, boat ramp, and wave erosion?</li> <li>What is the process of establishing a ski area?</li> <li>Is there considered to be a conflict between different recreational users?</li> <li>What recommendations should be included in the management plan to ensure recreational facilities are maintained or improved?</li> </ul>	DPI DEC
Facilities	<ul> <li>The DEC facilities and ranger provided at the Inlet are an important value recognised by the community</li> <li>How will the facilities be re-built after the fire?</li> <li>Is there a potential for showers in the future? What would be the impact of these?</li> <li>Are there plans to increase camping sites and BBQ areas? If so where will they be located? and can they be created without adverse impacts on the landscape?</li> <li>Have DEC considered building larger camping areas for larger family groups?</li> <li>Is there a record of vandalism or deliberately lit fires in the Park?</li> <li>Are there controls on noise levels (eg generators, radios) in the Park at present?</li> <li>How do you manage visitor numbers? Is there an optimal visitor level?</li> <li>What recommendations should be included in the management plan to ensure facilities are maintained or improved?</li> </ul>	DEC

Access	The accessibility of Stokes Inlet is highly valued by the community.	
	<ul> <li>What are the existing and planned walk trails in the Park?</li> <li>What is the required process to provide a walk trail to the beach/estuary mouth? Can such a trail be provided? Is it possible to provide more look out points from the walk trail? (Bush walking and scenery are highly valued by the community).</li> <li>Can interpretative signs to display the cultural and natural values of the area be used on the walk trail?</li> <li>What is the maintenance program for roads in the Park? What are main influences on road condition (eg flooding, sediment, drainage)? Can the road be surfaced?</li> <li>Is it practical to construct a road to the beach on the west side of the estuary? What impact on the park (vegetation, scenery etc) would such a road have?</li> <li>What is the status of the estuary track along the western foreshore? Are 4wds causing damage to the sand dunes at the Inlet mouth? Can this be controlled (eg through bollards)?</li> <li>What recommendations should be included in the management plan to enhance safe and considered access within the park?</li> </ul>	DEC
Historical /cultural significance	<ul> <li>The Inlet is important both culturally and through historical family connection.</li> <li>Is there an inventory of European historic sites around the Inlet? What studies are being undertaken that may provide this information?</li> <li>What recommendations exist that relate to their protection/enhancement?</li> <li>How is Moir's homestead managed at present? What restoration work is planned for the homestead?</li> <li>What are the significant cultural sites at the Inlet? Are further surveys required?</li> <li>What needs to be done to better protect or enhance these sites?</li> <li>Should interpretation of the cultural values be introduced? In what form?</li> <li>Can fire, Inlet levels or access damage existing cultural sites/values?</li> <li>What recommendations should be included in the management plan to protect and enhance the historical and cultural significance at the Inlet?</li> <li>Note: A workshop has been held at Stokes Inlet with the Traditional Owners of that land. The consultants report from this workshop will cover most of the questions above relating to Indigenous cultural values and will be summarised into a background paper by Mieke Bourne and Dave Guilfoyle from Restoring Connections.</li> </ul>	Shire of Esperance  SCRIPT funded European values of estuaries project  DoW and Restoring connections

Flora and Fauna	The community value the natural environment for both its beauty and ecology.	
(not including fish		
or phytoplankton)	<ul> <li>What information presently exists about the Inlet's aquatic vegetation and invertebrate populations and the foreshore vegetation values? (species, distribution and condition)</li> <li>Why have mussels declined in the Inlet?</li> </ul>	DEC
	<ul><li>Is there a need for further mapping of vegetation/fauna values? In what areas?</li></ul>	
	<ul> <li>As recreational pressure is greatest along the foreshore near camping areas and near roads, have surveys of vegetation values been undertaken in these areas?</li> </ul>	DoW
	<ul> <li>What information is available on bird populations at the Inlet? (species, distribution and numbers)</li> </ul>	
	<ul> <li>Is the Inlet an important breeding ground, feeding ground or habitat for birds?</li> <li>What can be done to enhance experience for bird watching? (eg bird hides)</li> <li>Are starlings a threat to the Inlet?</li> </ul>	Esperance Bird group?
	<ul> <li>What are the optimal environmental conditions for health of the Inlets flora/fauna values (water level, sediment, salinity, nutrients etc)?</li> </ul>	
	<ul> <li>What are key threats to the flora and fauna (ferals, weeds, salinity etc)? What is being done to manage these threats? and what can be done in the future?</li> </ul>	
	<ul> <li>Is dieback a potential threat to the Park? How is it being managed?</li> </ul>	
	<ul> <li>Is there a resource condition target that can be used relating to the natural environment?</li> </ul>	
	<ul> <li>What recommendations should be included in the management plan to safeguard or enhance the natural environment?</li> </ul>	
Inlet (Water quality Sediment Climate change)	Recent water samples taken from the Inlet suggest it is eutrophic to hypereutrophic. Deterioration in water quality may in turn impact upon fish, recreation, aesthetics and ecology of the system, all things which are identified values associated with the Inlet.	
Climate change)	What is the present condition of the Inlet? How has it changed over time?	
	What is the present condition of the inlet: Flow has it changed over time:     What are the main influences on water quality condition in the Inlet?	DoW
	What are the nutrient cycles within the Inlet? How could these be determined (eg benthic chamber studies)?	
	<ul> <li>What are the groundwater-estuary interactions? What are the nutrient and salinity contributions to the Inlet from groundwater?</li> </ul>	
	What are the ocean-estuary interactions/exchange when the bar is open and when it is closed?	DAFWA
	<ul> <li>What are the salinity dynamics within the Inlet? What is the nature and duration of stratification?</li> </ul>	
	<ul> <li>What are the likely impacts of more frequent bar breaking (due to clearing)?</li> </ul>	
	<ul> <li>What is the likely impact of artificially breaking the bar on both the recreation and environment of</li> </ul>	

	<ul> <li>the Inlet?</li> <li>What are the phytoplankton assemblages? What are their seasonal trends? Does the Inlet experience toxic algae blooms? What impact could toxic species have on Inlet fauna? Is the presence of algae increasing? Are the species changing?</li> <li>Is the Inlet becoming shallower?</li> <li>What are the impacts of sedimentation on the Inlet? Are they significant?</li> <li>How much sand is moving into the Inlet from the surrounding dunes?</li> <li>Would stabilisation and revegetation of the western dune reduce sand movement?</li> <li>What was the rate of sedimentation pre and post-clearing? Do we know where most of the sediment is coming from? What is the best way to measure the rates of sedimentation? Coring?</li> <li>What are the likely impacts of climate change on the inlet? (rainfall on stream flow and temperature on evaporation etc)</li> <li>What mitigation and adaptation strategies is there, that could be used to counter the impacts climate change?</li> <li>What resource condition targets could be used for the Inlet (that relates to fish stocks, recreation etc)?</li> <li>What recommendations should be included in the management plan to improve the Inlets water quality?</li> </ul>	
Catchment	<ul> <li>Catchment impacts on the Inlet are recognised by the community and organisations and are of concern.</li> <li>What information presently exists on water quality (loads, nutrient concentrations and salinity) in the catchments tributaries?</li> <li>What are the catchment contributions to nutrients in the Inlet? How these contributions are determined? Where and what are the main sources of these contributions?</li> <li>What sampling is done on the tributaries? What could be done?</li> <li>How much sediment is being contributed to the Inlet from the catchment?</li> <li>Where is the greatest catchment erosion occurring?</li> </ul>	ERF
	<ul> <li>What are the sediment loads in the river pools?</li> <li>Where should catchment rehabilitation work be undertaken to minimise catchment impacts on the Inlet?</li> <li>Where is the Young River Catchment Management Plan at and what are its priority recommendations? What are the type and location of targeted works in the Young River catchment?</li> <li>How can the nutrient, salinity and sediment input from the catchment be reduced?</li> </ul>	DoW

- Will a plan be prepared for the Lort River Catchment?
- How will the catchment works be funded?
- Has there been a foreshore condition survey for the Lort and Young Rivers? Where does the reserve need to be widened?
- What recommendations should be included in the management plan to decrease the catchments impact on the Inlet in terms of salinity, sediment, nutrients and other pollutants?