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TORRES STRAIT COASTAL MANAGEMENT COMMITTEE
~~**IN CONFIDENCE**~~

CMC MEETING NO 12

23 NOVEMBER 2011

Torres Strait Coastal Management Committee Meeting 12
Torres Strait Regional Authority, Conference Room
Level 1, 46 Victoria Parade, Thursday Island
23 November 2011, 8:30 am – 12:30pm

Morning tea provided

AGENDA

- 1. Opening Prayer**
- 2. Preliminaries**
 - a. Introductions
 - b. Apologies
- 3. Previous meeting- 7 December 2010 (meeting No. 11)**
 - a. Minutes
 - b. Actions

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Main Meeting

- 5. Update: Major Coastal Works Program**
- 6. Updates from the Climate and Coastal Working Group (CCWG) (verbal brief)**
 - 6.1 Minor Coastal Works Proposal (for decision)**
- 7. Climate Change Adaptation - developing a framework for a regional adaptation process for the Torres Strait (for decision)**

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UPDATES

- 9. TSRA**
 - a. Tide Gauge Project (*for information*)
 - b. Extreme Sea Level study – key findings (*for information*)
 - c. King Tides 2011/2012 (*for information*)

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- 12. Department of Environment and Resource Management (DERM)**
 - a. Draft Queensland Coastal Plan (*for information*)
 - b. Light Detection and Ranging (LiDAR) capture of all inhabited Torres Strait Islands (*for information*)
 - c. Temporary tide gauges – Moa and Dauan (*for information*)
 - d. Coastal hazard and vulnerability studies (*for information*)
 - e. Climate Change Adaptation discussion paper (*for information*)
- 13. Department of Climate Change and Energy Efficiency (DCCEE)**
 - a. Project update: Climate change impacts (coastal erosion and inundation) and identification of adaptation options for Torres Strait communities (*for information*)
 - b. Private Members Motion: Torres Strait Sea Walls (*for information*)

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- b. Climate Change Adaptation in Indigenous Communities – Research Plan

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- 18. Other business**
- 19. Next meeting and meeting close**

1. OPENING PRAYER

2. PRELIMINARIES

- a. Introductions
- b. Apologies

3. PREVIOUS MEETING- 7 DECEMBER 2010 (MEETING NO. 11)

- a. Minutes of previous meeting (Attachment 1)
- b. Actions from previous meeting (Table 1)

Table 1 Actions from previous Meetings.

ISSUE	ACTION	WHO	OUTCOME
Coastal Works	<p>Scope and implement short term coastal works options.</p> <p>Develop a regional list of priority coastal works based upon technical assessments to inform allocation of associated funds</p>	s47F	<p>Short term coastal work opportunities were identified were sand replenishment works on Warraber and Masig and scoping works on Poruma. Sand replenishment works were undertaken at Warraber in February 2011(funding: TSIRC 75%, TSRA 25%). TSRA funded a Poruma Seawall Feasibility Study in June and has co-funded (DERM 80%, TSRA 20%) TSIRC to undertake sand replenishment works on Masig by the end of 2011. See also CAPS projects.</p> <p>See Attachment 2. Compiled from existing reports.</p>
Torres Strait Climate Change Strategy Action Plan; CMC TOR	<p>TSRA is to establish a formal process to develop this including undertaking the following tasks:</p> <ol style="list-style-type: none"> 1. Review of current expertise within the working group and identify gaps; 2. Formally establish an Implementation Committee; 3. Develop a number of documents in support of the working group including terms of reference ; 		<p>Terms of reference for the Climate and Coastal working Group developed (Attachment 3).</p> <p>Action plan for Managers compiled based upon Climate Change Strategy.</p> <p>CCWG met formally in Cairns on 1 August and again on Nov 22 on Thursday Island</p>

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	4. Formally invite members to participate in the Implementation Committee		
Emergency Preparations for coming Wet Season and King Tides	s47F [redacted] to speak to EMQ to investigate council eligibility for disaster funding for impacts not derived from extreme weather events.	s47F [redacted]	Advice from EMQ was impact from tides are predictable events and as such not eligible for disaster funding. However if king tides also have a storm surge component then council would be able to apply for disaster funding.
	Consider an objective process to assess coastal erosion and flood mitigation technologies. s47F to progress this discussion with s47F	s47F	Issues discussed with DERM and DCCEE – currently there is no process to assess various flood and erosion control technologies, and agencies do not have the resources currently to progress such a process.

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5. UPDATE: MAJOR COASTAL WORKS PROGRAM (Refer to Attachment 2)

Purpose:

To update Members on efforts to progress the design and construction of major coastal works required to address coastal erosion and inundation on the six most vulnerable communities.

Background:

- The low-lying communities of Saibai, Boigu, Iama, Poruma, Masig and Warraber are particularly exposed to ongoing coastal erosion and inundation issues that impact the communities, infrastructure and natural values of these islands;
- Inundation during King Tide events leads to a range of impacts including:
 - the need to shut down waste treatment plants due to salt water incursion into the system;
 - Scouring and erosion of the foreshore areas;
 - Undermining of roads;
 - Corrosion of vehicles;
 - Salt intrusion into community gardens;
 - Undermining of important cultural heritage areas such as cemeteries;
 - Increased risks of hazards such as floating debris, crocodiles and mosquitoes.
- For the most part, communities have had to develop their own defences against flooding in lieu of outside support. Seawalls have been built by communities on a number of islands, but many of these are failing due to the fact communities did not have access to good engineering advice or suitable materials;
- The Major Infrastructure Program funded the construction of an engineered seawall for Boigu in 1998. Due to a lack of accurate tidal datum information, the wall was constructed too low to prevent inundation during King Tide events;
- Community leaders in the Torres Strait have been calling for government assistance for over a decade to reduce the impact of these events through the construction of suitable coastal engineering solutions;
- Numerous studies have been done investigating coastal erosion and inundation on the six most vulnerable communities including the DERM Rapid Assessment Reports, Coastal Engineering Solutions Report, ^{s47F} investigations into erosion and inundation on Iama, Masig, Warraber and Poruma; Systems Engineering Australia report on Extreme Water Levels in the Torres Strait as well flood mapping in the Torres Strait Sustainable Land Use Plans;
- TSRA in collaboration with TSIRC and TSC have made various submissions to government seeking funds to address erosion and inundation issues in the region, but as yet the required funding has not yet been secured. Submissions include:
 - Applications under the Natural Disasters Mitigation Program (2007)
 - A submission to the House of Representatives Standing Committee on Climate Change, Water, Environment & the Arts: Inquiry into climate change and environmental impacts on coastal communities (2008)
 - ^{s22}
 - A submission to the Senate Standing Committee report on Torres Strait: Bridge and Border 2010.
- The cost of the major coastal works program was estimated at \$22 million dollars;

- The need for action to address these immediate issues has been recognised by both the House of Representatives Standing Committee on Climate Change, Water, Environment and the Arts report *"Managing our coastal zone in a changing climate: the time to act is now"* and the Coastal as well as in the recent Senate Report *"The Torres Strait: Bridge and Border"*;
- On 18 August 2011 the House of Representatives considered a private Member's motion submitted by Mr Warren Entsch MP, on the problems of coastal erosion and inundation in the Torres Strait, as a result of regular flooding including from King Tides. The House supported this private Member's motion, acknowledging the problems confronting Torres Strait communities;
- TSRA engaged AECOM to revise initial costing for the major coastal works program undertaken for Saibai, Boigu and Warraber. TSRA have also engaged AECOM to provide costings for proposed works on Poruma and Iama and to address drainage issues on Boigu and Saibai;
- TSIRC with support from TSRA undertook sand replenishment works at Warraber in February 2011;
- TSRA and DERM have contracted TSIRC to undertake required sand replenishment works on Masig to the value of \$180,000;
- TSRA and TSIRC continue to seek the required funds and are currently investigating options through State and Federal infrastructure programs and through Regional Development Australia. Round table of RDA funding is now open for expressions of interest. **Refer to Attachment 2 for costings.**

Issues:

- Funding is urgently required to properly deal with the most pressing coastal issues for the six most at risk islands (Saibai, Boigu, Iama, Warraber, Poruma and Masig) to address tidal inundation and erosion risks to key service infrastructure and important cultural sites such as cemeteries.
- Due to increasing costs of freight, materials and the contribution of CPI, the costs of implementing the major coastal works program is likely to now be closer to \$24 million dollars.
- Opportunities to secure funds through Regional Development Australia are constrained by the associated funding guidelines which give preference to applications able to demonstrate a dollar for dollar contribution for projects up to \$5 million and a 2:1 contribution for projects from \$5-15 million.
- Significant government assets continue to be exposed to deterioration from salt water flooding.
- Climate Change and associated sea level rise is expected to continue to make flooding and erosion worse over the coming years.
- Torres Strait communities are highly frustrated that repeated calls over the last decade for assistance from government to mitigate the impact of high tides still go largely unanswered. Community frustration over on-going research without associated on ground actions is beginning to impact support for key climate change and coastal research on some

communities who feel there is a lack of commitment to implement research recommendations.

- Communities will be facing another season of king tides and possible extreme weather events this wet season without the protection they have been seeking for many years.

RECOMMENDATION:

That Members **NOTE** the status of efforts to secure funding for the major coastal works program.

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Attachment 2: Priority Coastal Works – Torres Strait (note: recommendations and costs from recent visit by AECOM coastal engineers for Saibai, Boigu and lama to be received before the end of November)

Island & Sites	EPA Suggested Works	EPA Priority Level	Chairs /community comments	Coastal Engineering Systems report recommendations	JCU Coastal Management Plans	Cost estimate	Priority
SAIBAI							
1. East of Airstrip (240m)	<ul style="list-style-type: none"> NONE 	NA	<ul style="list-style-type: none"> The sea wall provides adequate protection along the coast The housing land adjacent to the eastern airstrip is frequently inundated. Council would like this area to be costed as well 	<ul style="list-style-type: none"> Local remedial works to address undermining of existing coral & rock wall 	<ul style="list-style-type: none"> NA 	s11C	High
2. From airstrip west to main tidal drain (760m)	<ul style="list-style-type: none"> Reconstruct seawall (priority to damaged sections) Replace remaining wall Talk to Qld Transport about cost contribution to airstrip section i. 	Design works – VERY HIGH Actual works – MODERATE to VERY HIGH	<ul style="list-style-type: none"> Council agrees with the EPA's VERY HIGH priority works the area in front of the church (section 2 very high priority) is also their highest priority 	<ul style="list-style-type: none"> Option 1 – replace entire wall – seabee blocks and overtopping wall Option 2 Replace parts at risk of failure, repair remaining sections 	<ul style="list-style-type: none"> NA 	s11C	Very High
3. Main tidal drain west	<ul style="list-style-type: none"> Maintain or construct 	Survey and design works –	<ul style="list-style-type: none"> Areas of this section is regarded as VERY HIGH 	<ul style="list-style-type: none"> Rehabilitation of existing wall 	<ul style="list-style-type: none"> NA 	s11C	Very High

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<i>to sewerage plant</i>	seawall (inundation) <ul style="list-style-type: none"> Assess Standard of existing wall to plan works required Upgrade or replace existing walls as required (to new design standards) 	HIGH Construction- MODERATE	priority, particularly in front of the sewerage treatment plant and extending into 50m west of EPAs Section 3 (to prevent sewerage contamination with episodes of flooding)	(975m) <ul style="list-style-type: none"> Extension of wall with seabee and overtopping wall (90m) 			
4. Cemetery	<ul style="list-style-type: none"> Engage engineer to design new wall Wall should be relatively simple and locally constructed 	VERY HIGH	<ul style="list-style-type: none"> Although the Cemetery is a VERY HIGH priority, it was not considered the highest priority 	<ul style="list-style-type: none"> Modified Seabee wall (155m) AECOM Report – solid block wall – awaiting cost estimate 	NA	s11C	Very High
BOIGU							
1. Cemetery (155m)	<ul style="list-style-type: none"> Extend terminal end of existing revetment 50m 	VERY HIGH	VERY HIGH PRIORITY (number one priority)	<ul style="list-style-type: none"> Construct seabee wall along entire length with wave wall 	NA	s11C	Very High

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	<ul style="list-style-type: none"> westward From new revetment, extend wall 90m westward 						
2. <i>Rock wall from barge landing to church</i>	<ul style="list-style-type: none"> Survey foreshore to make sure it has not lowered over time Assess adequacy of existing rock wall reconstruct according to approved design 	MODERATE	<p>VERY HIGH PRIORITY</p> <ul style="list-style-type: none"> The foreshore is lowering over time- no need for another survey. Council have been witnessing this for some time Rock wall requires some additional work 	<ul style="list-style-type: none"> Site 1 New Seabee wall with wave wall (90m) Site 2 rehabilitate rock wall 	NA	s11C	Very High
3. <i>Erosion protection wall (670m)</i>	<ul style="list-style-type: none"> Confirm actual highest tide Survey existing wall height relative to updated highest tide 	<p>Design and survey- HIGH</p> <p>Actual Works MEDIUM</p>	<ul style="list-style-type: none"> Desalination plant starting to slump Some rocks already pushing out Information relating to datum points gathered 12-18 months ago was incorrect. Survey's did not listen to local 	<ul style="list-style-type: none"> Construct wave wall behind existing Seabee wall 	NA	s11C	High

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	<ul style="list-style-type: none"> Redesign wall to cope (consider potential sea level rise, disposal of rainwater runoff, and community access to sea) 		knowledge				
MASIG							
<i>1. Barge loading ramp</i>	<ul style="list-style-type: none"> Trial of manual sand bypass (plan of works and development application required) Maintenance dredging from channel to be placed on beach to east Investigate need for wand 	VERY HIGH	<ul style="list-style-type: none"> This area is a HIGH priority. 	NA	<p>In the short term, move sand from the west of the ramp to the east of the ramp,</p> <p>In the longer term, replacement of the jetty with an open pile structure,</p>	s11C	Very High

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	retaining walls to restrict sand movement into navigation channel						
3. Cemetery	<ul style="list-style-type: none"> Construct a low sand bund (bank) on higher ground immediately seaward of cemetery 	HIGH	<ul style="list-style-type: none"> This is considered VERY HIGH priority, 	-	<p>Area D (the village, cemetery and airstrip) the community</p> <p>Look after and build the boeywadh by managing tracks and vegetation, and not allow further building on the berm.</p> <p>In relation to Area E (the south-west shoreline- accepts the situation and does nothing at this time.</p>	s11C	High
Northern and southern township extremities	40m wide development free buffer zone created *as new buildings are to be replaced, they are built outside the buffer zone)	MODERATE	The Beaches on the northern side are considered a HIGH priority		<p>Area B- northern side of the village:</p> <p>Raise the level of the boeywadh and activity maintains and manage it.</p> <p>this may involve moving some huts</p>	s11C	Medium

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PORUMA							
1. <i>Southward side</i>	<ul style="list-style-type: none"> Rebuild shelter further inland Redesign shelter so it can be moved Remove concrete rubble etc, placed on beach (erosion concern) Council to discourage dumping of rubble into eroding areas and remove the existing rubble 	MODERATE	It has been recognised by Nora Pearson on behalf of the community that their area of priority is on the south western side of the island- where their resort is located.	CES Report Recommendations: Consider temporary erosion protection works	<p>Take action to stop the erosion as soon as possible</p> <p>beach renourishment from off-reef sand sources should be investigated as an immediate priority</p> <p>seawall in the vicinity of the resort may be necessary to stop the erosion in the longer term</p>	s11C	High
Area B (the road east of the harbour)	NA	NA	Wants the present wall to be repaired and, extended	Poruma Seawall report	Investigate installation of a culvert or pilling of the barge	s11C	Medium

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			slightly seawards near to the barge ramp groyne to provide more room for the foreshore road (should sand from off-reef sources be found to enable filling behind the wall).	Construction of a seawall along this section would be prohibitively expensive. Recommend removal of eastern groyne to allow natural transportation of sand and use materials to enhance existing sea wall in critical places. Consider covering existing seawall with sand from western beach to create a dune and stabilise with vegetation.	ramp, when it is due for replacement		
WARRABER							
<i>1. Eastern end of seawall</i>	<ul style="list-style-type: none"> Assess adequacy of existing rock wall Reconstruct or modify according to 	Extensions and assessment of existing wall- VERY HIGH Reconstruction of the eastern	<ul style="list-style-type: none"> The community agrees that the eastern end of the seawall is a VERY HIGH priority. 	CES Report recommendations: Existing concrete grouted rubble walls appear function and robust.	Area A (The north western corner) build a new higher wall extending from the end of the permanent wall on the beach-rock	s11C	High

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	<p>approved design (use local workforce and materials)</p> <ul style="list-style-type: none"> Extend existing wall seaward 	<p>section of the wall</p> <p>MODERATE TO HIGH</p>		<p>Reconstruct entire 160m of loose rubble wall. Extend wall 120m (part rock, part Seabee)</p>			
South Eastern Resort site	-	-	-	-	protect the resort area as much as possible by building and maintaining the berm	s11C	Medium
IAMA							
Area A (The Northern Bay and Spit)	-	Further investigation required- shoreline erosion management plan prepared to guide future mitigation works	Refer JCU		<p>Area not appropriate for housing, only for activities compatible with occasional flooding.</p> <p>Reinforce rock wall.</p> <p>Investigate offshore breakwater for safe anchorage.</p> <p>Road along spit: built wall to protect the area from flooding from the mangroves behind the spit</p>	s11C	High

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Area A (The Northern Bay and Spit)	-	Further investigation required- shoreline erosion management plan prepared to guide future mitigation works	Refer JCU		Area not appropriate for housing, only for activities compatible with occasional flooding. Reinforce rock wall. Investigate offshore breakwater for safe anchorage. Road along spit: built wall to protect the area from flooding from the mangroves behind the spit	s11C	High
Area B (The Southern Beach)	-	-	-Refer JCU	-	Maintain and strengthening rock wall protecting access road at the southern end of the beach Maintain berm to provide overtopping protection	s11C	Medium

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Area C (The Back Road)	-	-	-Refer JCU	-	Construction of a higher wall on seaward side of road (boat ramp at the eastern end of the Back Road needs to be altered so its not the low point for water access)	s11C	High
Area D (The Rubbish Dump and Sewage Plant)						s11C	Low

6. OUTCOMES AND RECOMMENDATIONS FROM CLIMATE AND COASTAL WORKING GROUP MEETING 22 NOVEMBER 2011

Purpose:

To inform Members of the meeting outcomes of the outcomes of the meeting held on the 22 November 2011 and provide a status report on actions from the Climate Change Strategy.

RECOMMENDATION:

That Members **NOTE** the verbal update and handouts from the Working Group

That Members **NOTE** the status the Torres Strait Climate Change Actions that the Working Group is progressing.

That Members **NOTE** terms for reference for the Working Group

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Summary of progress on Climate Change Action Plan

😊 - Good progress or complete

😐 - Task has been initiated but still has a way to go

😞 - Task not yet initiated

Infrastructure Adaptation, On Ground works and Planning	Priority	Progress	Comment
Continue to allow for sea level rise and storm surge in the construction of new housing through raised floor levels Modification/shifting infrastructure to move out of reach of water (e.g. manholes)	H	😊	All new houses in flood prone areas raised off the ground
Manage boeywadh (berms/dunes) and their vegetation with the intention of building them higher and wider, to ensure that natural defences against inundation are maintained.	M	😞	Some dune management proposed for Community Action Plans
Infrastructure and management options to mitigate against inundation and erosion	H	😐	All sites now scoped for design options and cost estimates. Continuing to seek funding and raise awareness of the issue through media
Manage shorelines for long-term stability and avoiding infrastructure	H	😐	Erosion studies undertaken and management options being developed for all island communities
Develop a regional emergency management plan.	H	😐	TSC Disaster Management Plan complete. TSIRC Plan in progress. Local disaster plans also being developed in collaboration with EMQ
Develop Sustainable Land Use Planning	H	😊	Complete
Implement Sustainable Land Use Planning	H	😞	Lack of planning capacity at TSIRC

<p>Community adaptation plans – long term Work with vulnerable communities to develop longer term adaptation plans addressing sea level rise together with other potential climate change issues. It is envisaged that the process of developing these plans will involve detailed consideration of adaptation options (e.g. sea walls, house raising, levees, filling, relocation, social and cultural programs, emergency planning etc.), as well as social, cultural, economic and environmental assessment over various time horizons and appropriate risk managed and contingency planning</p>	H	☹	<p>A framework for this process is currently being developed – see agenda item 6.</p>
<p>Work with communities on contingency planning for worst case sea level rise scenarios.</p>	M	-	<p>To be discussed with communities as part of adaptation plan development. Ask communities what would be the trigger points at which they would start exploring options.</p>
Enabling Community Adaptation and Building Resilience	Priority	Progress	Comment
<p>Provide communities with the best possible information about likely climate change impacts and scenarios, uncertainties and adaptation options and their advantages and disadvantages.</p>	H	☺	<p>Ongoing. Proposed climate change road-show for 2012 to visit all communities to discuss CC.</p>
<p>Use scenario planning to assist communities to develop future visions for climate adaptation and sustainable development.</p>	M	☹	<p>To be incorporated into CSIRO NERP Project on Community Resilience & Sustainable Futures</p>
<p>Facilitate community information sessions and workshops to identify appropriate community-based adaptation options and approaches to dealing with climate change impacts</p>	M	☺	<p>Work has been undertaken by JCU researchers for some communities. To be progressed further as part of adaptation plan development.</p>
<p>Support communities to identify, adopt and create more sustainable systems,</p>	M	☺	<p>Report on reducing carbon footprint</p>

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technologies and industries to minimise their ecological and carbon footprint and promote increased self-sufficiency.			completed. Regional Waste Management Strategy under development. Sustainable Horticulture program in progress. NERP Community Resilience and Sustainable Livelihoods project will look more deeply at these issues.
Promote local water conservation and recycling, waste reduction and recycling and community gardening initiatives	M	😊	See above
Develop appropriate socio-economic programs and services to address impacts on community health and wellbeing caused by, or associated with, climate change	M	😞	
Empower communities to address the priority issues and impacts facing them locally by providing appropriate resourcing and technical support	H	😞	
Explore alternative livelihood options (e.g. tourism, aquaculture) to broaden the income base to promote resilience	M	😊	Being Progressed through NERP
Traditional Knowledge and cultural practices relevant to climatic and seasonal variations	M	😊	TEK Project in progress, consultant engaged. Ranger Program
Undertake local horticulture programs to increase food production to assist in maintaining food security	M	😊	See above
Mitigation Taking Action to address the cause	Priority	Progress	Comment
Continue to speak out about the vulnerability of Torres Strait communities to the impacts of climate change and the need to minimise greenhouse gas emissions (conferences, media, submissions, etc).	H	😊	Ongoing
Encourage linkages between Torres Strait Islands and other Indigenous coastal communities and small island nations globally.	L	😊	PNG represented on CMC. Linkages through Pacific Climate

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			Change Research Program.
Identify and encourage ways of increasing energy conservation (public education, awareness, raising etc).	M	😊	Ergon PowerSavvy Program
Identify and encourage ways of increasing energy efficiency (installing insulation, applying green building codes etc).	M	😊	Ergon PowerSavvy Program
Identify and implement alternative and renewable energy technology appropriate for Torres Strait communities (e. G. Wind, solar, tidal).	M	😞	Options for Reducing TS Regional Carbon Footprint report completed. Ongoing engagement with EnGen technologies regarding potential of tidal energy. Waste Management Strategy considering viability of waste to energy options. Ergon to replace TI wind turbines.
Transport: Identify and encourage ways of increasing transport efficiency/costs/or off-setting associated emissions.	L	😞	Not yet addressed. Preliminary assessment of transport contribution greenhouse gases provided Options for Reducing TS Regional Carbon Footprint
Water– Reduce reliance on desalination through water conservation, and alternate technologies.	H	?	
Waste Management Implement the regional waste strategy	H	😞	Regional Waste Management Strategy under development.
Waste Management Expand the pilot waste project to other communities if successful	M	-	Will depend on recommendations of Regional Waste Strategy
Develop and implement an environmental policy and environmental management system (EMS) for TSRA to minimise the organisation's	M	😞	Process initiated but has not been progressed.

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environmental impact and carbon footprint			
Encourage and support other agencies to adopt a similar approach	M	☹	Not progressed

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Risk Science to inform Planning Climate change and coastal Research and monitoring	Priority	Progress	Comment
Regional, relevant and robust climate modelling To undertake regional climate change modelling focusing on key issues in the Torres Strait with the aim of improved understanding of potential impacts and reducing uncertainty.	M		CSIRO Climate Change Modelling Complete.
Tide Gauges Monitor sea level and surge through installation of a regional network of tide gauges supplemented with tide boards in individual communities	H		Gauges currently being constructed. Will be deployed once berthing dolphins have been installed.
Expand coastal process/erosion studies through the partnership with JCU to remaining communities with erosion concerns.	H		Project currently in progress.
Refine island mean sea level datum and tidal predictions to attain more reliable data on tide levels and island heights.	H		Tidal datum's revised
LiDAR Undertake high resolution digital mapping of islands and the Torres Strait to assist in modelling and mapping inundation.	H		12 of 15 islands completed
Inundation Modelling Undertake detailed probabilistic inundation assessment and mapping incorporating assessment of	H		Extreme Sea Level Modelling report complete. Mapping

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potential future greenhouse-enhanced conditions.			component will commenced soon using new LiDAR.
Offshore Sand Nourishment: Investigate the feasibility of accessing offshore sand resources for beach nourishment.	L	⊗	Currently not considered a feasible option due to cost and lack of dredging capacity in the region

Attachment 3. Climate and Coastal Working Group Terms of Reference

Terms of Reference for

**Torres Strait
Coastal and Climate Working Group (CCWG)**

Version 1: 29 November 2010

Version 2. 4 March 2011

Version 3. 1 August 2011

Background

The nature and extent of the potential effects of climate change, as well as the geographic, social, cultural and spiritual characteristics of the Torres Strait region make Torres Strait communities amongst the most vulnerable in Australia.

The potential impacts of climate change in the Torres Strait, as well as the risks, uncertainty and vulnerability of the region to climate change, are outlined in the *Torres Strait Climate Change Strategy 2010-2013* (the Strategy).

The Strategy also identifies a range of priority responses and pre-emptive measures, in the form of an Action Plan. The Action Plan incorporates and builds on existing work, focused around appropriate adaptation and management solutions.

Implementation of the actions will depend upon the ability to secure resources and support from all three levels of government, the research sector and other partners, as well as ongoing consultation with Torres Strait communities in regard to their priorities, concerns and preferred adaptive responses.

Sound land use planning, coordination of government support, targeted research and community participation are critical for the implementation of effective and sustainable climate change and coastal management actions in Torres Strait.

The Torres Strait Climate and Coastal Working Group (CCWG) will drive the implementation of identified actions under the Strategy as well as provide strategic advice and technical support as required in accordance with these Terms of Reference (ToR).

The CCWG will replace the Torres Strait Coastal Management Committee (CMC) that oversaw the development of the Strategy. Following the launch of the Strategy in May 2010, the Committee agreed the focus of the group should shift to the implementation of actions identified in the Strategy, based on provision of technical support and advice from operational staff and research partners. To ensure the Working Group's efforts are appropriately responsive to regional and community interests, the CCWG would provide briefings and recommendations to, and seek direction from, all elected members through the TSRA Board reporting framework (or a similar process identified by the members that meets these objectives), and through the advice and input from Torres Shire Council (TSC) and Torres Strait Island Regional Council (TSIRC) representatives on the Working Group.

Roles and Responsibilities of Working Group Members

- progress the implementation of the CCWG Action Plan .
- ensure that actions and outcomes are probably integrated into current and future planning and assessment processes as appropriate
- ensure any planning or development to address coastal issues is undertaken in a collaborative way, in light of the best available information and in line with the precautionary principle.

Torres Strait Housing and Infrastructure Committee, Major Infrastructure Program and Heavy Equipment Committees); and

7. ensure key stakeholders and decision makers remain informed about coastal and climate change related issues and initiatives, and progress in delivering the Strategy.

Membership of the Coastal and Climate Working Group

Membership of the Torres Strait Coastal and Climate Working Group will initially be comprised of technical/operational staff and research partners from the following organisations:

Torres Strait Island Regional Council (TSIRC)
 Torres Shire Council (TSC)
 Torres Strait Regional Authority (TSRA)
 Department of Communities (DoC)
 Department of Infrastructure and Planning (DIP)
 Department of Environment and Resource Management (DERM)
 Department of Climate Change and Energy Efficiency (DCCEE)
 Emergency Management Queensland (EMQ)
 James Cook University (JCU)
 Reef and Rainforest Research Centre (RRRC)
 RPS Group
 CSIRO

Additional members may be included as necessary to provide particular expertise.

Contact details of current Working Group members are found in Appendix B.

Core Operating Principles and Protocols

Meetings

Meetings of the CCWG will usually be convened on Thursday Island on a quarterly basis, unless otherwise agreed by members. The TSRA will provide secretariat support (through the Climate Change and Coastal Coordinator) and chairing arrangements. Meeting venues, catering, and other formalities will be at the discretion of the secretariat.

Out-of-session meetings (via video link or teleconference) may be arranged, at the discretion of the secretariat, with all, or a sub-set of the CCWG, to address particular issues within the scope of these ToR.

Administration & Reporting

CCWG members will provide relevant briefing notes on progress of identified actions and any other relevant developments to the secretariat at least two (2) weeks prior to a CCWG meeting.

The secretariat will develop an agenda and provide briefing notes to all CCWG members prior to CCWG meetings.

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The secretariat will circulate meeting minutes, associated actions and recommendations to all CCWG members. The secretariat will also be responsible for preparing briefing papers, including issues and recommendations put forward at CCWG meetings, for consideration at TSRA Board meetings.

Confidentiality

Any information presented or provided in confidence should be identified and treated in the appropriate manner.

Conflicts of Interest

It is anticipated that some members of the CCWG may also be commissioned, directly or indirectly, to work with other relevant member organisations in the development and delivery of project activities, outputs and outcomes such as through cooperative research arrangements and consultancy agreements. In line with accepted practice, CCWG members would be expected to declare any potential conflict of interest with regard to their responsibilities as a CCWG member that may arise in such cases.

Expenses

Organisations and individuals involved with the CCWG will cover their own expenses associated with participation and attendance at meetings, including travel and accommodation costs. TSRA will cover catering costs and will consider supporting travel and accommodation for CCWG guests on a case by case basis.

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APPENDIX A –

INDIVIDUAL MEMBERS' RESPONSIBILITIES & AREAS OF EXPERTISE

Organisation/ Member	Legislative/Policy Responsibilities for Coastal/Climate Issues (if appropriate)	Area/s of Expertise & Specific Support to CCWG
Torres Strait Island Regional Council (TSIRC)	Land use planning and development assessment under the <i>Sustainable Planning Act 2009</i> (Qld). Local Government functions under the <i>Local Government Act 2003</i> (Qld).	Council will play a lead role in advising the CCWG on community concerns and priorities in regard to coastal and climate change issues, including threats to infrastructure (within Council's jurisdiction). Council will also be principal contractor in key coastal works initiatives.
Torres Shire Council (TSC)	Land use planning and development assessment under the <i>Sustainable Planning Act 2009</i> (Qld). Local Government functions under the <i>Local Government Act 2003</i> (Qld).	Council will play a lead role in advising the CCWG on community concerns and priorities in regard to coastal and climate change issues, including threats to infrastructure (within Council's jurisdiction). Council will also be principal contractor in key coastal works initiatives.
Torres Strait Regional Authority (TSRA)	Under the <i>Aboriginal and Torres Strait Islander Act 2005</i> (Cth), TSRA has the responsibility to: <ul style="list-style-type: none"> - Formulate, coordinate and implement programs for Torres Strait Islander and Aboriginal people living within the region; - Monitor the effectiveness of these programs, including programs conducted by other bodies; - Advise the Minister for Indigenous Affairs on matters relating to Torres Strait Islander and Aboriginal Affairs in the Torres Strait; - Recognise and maintain the special and unique Ailan Kastom of the Torres Strait Islander people living in the Torres Strait Region; and - Undertake activities necessary to perform its function as defined by the ATSI Act 2005 	TSRA will support the overall coordination of the implementation of the Strategy and provide secretariat support to the CCWG. The TSRA Board will provide overarching guidance and direction in respect to regional issues and initiatives.
Department of	The DCCEE is responsible for coordinating	DCCEE will provide advice and

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Climate Change and Energy Efficiency (DCCEE)	<p>national efforts to:</p> <ul style="list-style-type: none"> - reduce Australia's greenhouse gas emissions - adapt to climate change - shape a global solution - develop programs and initiatives to support householders, industry and the community to save energy and reduce emissions <p>The Commonwealth will take a leadership role in positioning Australia to adapt to climate change impacts that may affect national prosperity or security. In some cases this will require direct action. In other cases the Commonwealth will play a role in driving and coordinating national reform efforts. The government will also embed climate change in its policy making and asset management, and is best placed to generate public good science and other information needed for Australia to effectively adapt to the impacts of climate change.</p>	support in regard to national programs, policies and information of relevance to climate change mitigation and adaptation efforts in the Torres Strait region. DCCEE will also assist in coordinating input and securing resources from other Commonwealth agencies into the implementation of the Strategy.
Department of Communities (DoC)	DoC is responsible for coordinating efforts to meet COAG targets in Queensland, including in relation to construction of new houses, upgrading existing houses and developing infrastructure to address environmental health issues in remote communities	DoC will play a lead role in facilitating partnerships with relevant Queensland Government agencies to deliver actions under the Strategy.
Department of Environment and Resource Management (DERM)	Responsible for the administration of the <i>Coastal Protection and Management Act 1995</i> (Qld).	DERM will play a lead role in the technical assessment of coastal erosion issues/management approaches.
Department of Infrastructure and Planning (DIP)	DIP works closely with local governments and leads a coordinated Queensland Government approach to planning, infrastructure and development across the state under the <i>Sustainable Planning Act 2009</i> (Qld).	DIP will play a lead role in providing advice and support to the CCWG, and in particular, TSC and TSIRC in relation to development planning and infrastructure management.
Emergency Management Queensland (EMQ)	EMQ operates under the <i>Disaster Management Act 2003</i> (Qld). EMQ facilitates the Queensland Disaster Management System: a multi-tiered system of committees and coordination centres at State, Disaster District and at Local level that, in partnership, ensure a coordinated and effective capability to help prevent, prepare for, respond to and recover from disasters in Queensland.	EMQ will play a lead role in providing support and advice in regard to disaster planning and mitigation matters.

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James Cook University (JCU)	JCU is a multi-campus institution that conducts nationally significant and internationally recognised research in areas such as marine sciences, biodiversity, tropical ecology and environments, and global warming. JCU researchers have conducted numerous research projects in collaboration with TSRA and communities in relation to coastal erosion and adaptive management issues and options.	JCU researchers and experts will provide technical advice and support to the CCWG and relevant communities in relation to coastal management and climate change issues and adaptation options. JCU is a project partner and will provide updates and seek advice and input from CCWG members in relation to the delivery of coastal and climate adaptation projects.
Reef and Rainforest Research Centre (RRRC)	RRRC implements the Australian Government's Marine and Tropical Sciences Research Facility (MTSRF) in North Queensland, managing a \$100 million research portfolio comprising \$40 million in Commonwealth funds with additional external funding and in-kind contributions from supporting and partner organisations.	RRRC assists in administering a number of research projects of relevance to coastal and climate adaptation issues, and will facilitate appropriate linkages between researchers and the CCWG when required.
CSIRO	CSIRO Marine and Atmospheric Research (CMAR) aims to advance Australian climate, marine, and earth systems science. It provides a range of scientific and consulting services that are underpinned by this research. CSIRO scientists are studying how climate change will affect Australia's oceans, and developing adaptation options to respond to these challenges.	CSIRO will assist in providing technical advice and information to the CCWG in relation to the impacts of climate change on the Torres Strait region, and relevant adaptation options, including through commissioned research as and when appropriate.
RPS Group	RPS is an international consultancy providing advice regarding local solutions to energy and resources, infrastructure, environment and urban growth issues. RPS group has previously supported TSRA and island communities in developing Sustainable Land Use Plans for the Torres Strait, addressing a range of environmental values and constraints, including coastal hazards, and identifying appropriate planning principles.	RPS may assist the CCWG from time to time in providing relevant data or technical information regarding islands and their vulnerability to coastal hazards, and on appropriate planning principles or issues for consideration, including through commissioned projects as and when appropriate.

6.1. MINOR COASTAL WORKS PROPOSALS

Purpose:

To inform Members of proposed minor coastal works projects under the CEA CAPS process, working group terms of reference, and Community Enterprises Australia (CEA) proposal.

Background:

- In May 2011, TSRA invited Community Enterprises Australia (CEA) to discuss opportunities for community employment and training in relation to works required to address coastal erosion and flooding issues.
- CEA advised they were developing Community Action Plans for each island community which reflected community priorities and would focus on building local capacity through training and delivery of on ground works.
- It was agreed at the beginning of the process that CEA, TSRA and Councils would work closely together to assess suitability of projects and resources required and to ensure coastal works are executed in line with required standards and within existing capacity constraints.
- Eight island communities nominated minor coastal works projects as a high priority for funding under the CAPS process.

Community	Proposed minor works
Boigu	Maintain common level of seawall (address low point near ramp).
Saibai	Assist with construction of a block wall to protect cemetery. Patch holes behind existing seawall to slow wall deterioration.
Iama	Erosion control at far end of south beach. Assist with construction of bund wall between community and mangroves on spit
Poruma	Assist with dismantling of rock groin and relocation of rocks to assist with coastal protection
Masig	Install Terra –lock erosion control bags to address coastal erosion. Dune enhancement and stabilization. Reinforce and stabilize berm protecting cemetery.
Warraber	Install Terra- lock bags to address local erosion issues
Erub	Clean up, beautification and possible stabilization of coastal strip at Anzac Park
Hammond	Yet to be identified

- CEA were successful in securing ^{s11C} directly for the program. In addition CEA have funds for:
 - Training aligned to the Coastal Management Works (concrete block construction, minor erosion control methods, site monitoring, event monitoring, understanding issues of coastal management and erosion control measures);
 - Plant and equipment hire (also to be done in cooperation with TSIRC reduced plant hire rates for the projects);
 - Project Support/supervision assistance through a suitably qualified Community Development Officer^{s11C}
 - CDEP participants to do the projects
- Each part of the program needs to be approved through TSRA for expenditure of funds against the CAPs which will be coordinated from the TSI CEA head office.

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- TSRA has already purchased 5,400 Terra-lock geotextile erosion control bags that can be utilised for these projects.
- CEA representatives consulted with each community as part of the CAPS development as to what communities considered to be viable and priority works that might be delivered through the CAPS. These options were then discussed further with TSIRC engineer^{s47F} and TSRA Climate and Coastal Coordinator and work-shopped with the Climate and Coastal Working Group. A list of proposed minor works is listed below:
- Project participants may also be able to assist with regular monitoring of key coastal sites to collect information of flood levels and the effectiveness of the minor works projects.

Issues:

- Proposals are not inconsistent with previous recommendations.
- Proposals should not trigger NTRBC issues of compensation as it is the community and Traditional owners requesting this need.
- Regular community consultation will be important when developing works proposals ensuring communities appreciate the scope and limits of minor coastal works projects in addressing major coastal problems.
- Undertaking these works will deliver a range of benefits including direct benefits to communities including building community understanding of coastal processes and possible solutions; providing local employment opportunities and achieving on ground outcomes to address coastal issues.
- The project has broader strategic value in supporting our ongoing efforts to secure major funding through a demonstration that communities are proactive in addressing coastal issues where they can and that training and skills development are in place that would support local employment in the delivery of the coastal works program.
- Works which involve construction or implementation of erosion controls will require good supervision by a suitably qualified engineer or coastal specialist to ensure they are done to the required specifications. A suitable person is yet to be being recruited.
- TSIRC have indicated they can assist with some in-kind contributions. TSRA, through the Climate and Coastal Program, may be able to consider further minor financial assistance if required.
- The funds need to be expended and works completed by 30 June 2012. Whilst aiming to be equitable between communities, funds will be allocated on a needs basis as costs will vary according to the type of work being done.
- Detailed costings and project proposals are still in development.

RECOMMENDATION:

That Members NOTE the proposed activities as suitable projects for delivery through the CAPS.

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Attachment 1: Project Template Minor Coastal Works CAPS

CEA – Torres Strait Islands - Community Development Project

Community:		
Project Name: Coastal Management Skills Development & Minor Works		
Description: Undertake various Seawall repair works in cooperation with TSIRC		
Link into TS Climate Change Strategy		
Other projects identified by TSRA and TSIRC that contribute to the work experience and skills development of CDEP participants in coastal management.		
What is the purpose:		
Provide valuable skills development and training in land and sea management. Improve the ongoing management and protection of community assets.		
Stake Holders/Partners	Role of Stakeholder/contribution	Contact Name
Community Enterprises Australia	Provision of CDEP participants, materials, tools/equipment and training.	s47F (Regional Manager)
TSIRC	Contribution to materials and authority to undertake minor works on sea walls	
Traditional Owners	Identification and approval of suitable community improvement projects	
TSRA	Climate Change Strategy Access to best practice in seawall management	

Action/strategies (What do we need to do to make this happen)	By Whom
Identify suitable sites for small scale repairs to seawall – patch gaps and backfill soil lost from undercutting	
Actions/Strategies (Cont.)	

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Tools & Equipment	
Materials	
Travel	
Freight	
Supervision	
Training	
Insurance	
Other costs	

Total Estimated Budget: \$ _____

OH&S: Follow OH&S Policies and Procedures: Target – work in a safe manner, identify and mitigate risks, no injuries, no workers compensation claims

Key Performance Indicators & Milestones – How will we measure our progress

Key Performance Indicator – Related to Actions	

7. CLIMATE CHANGE ADAPTATION – DEVELOPING A FRAMEWORK FOR A REGIONAL ADAPTATION PROCESS FOR THE TORRES STRAIT

Purpose:

To **NOTE AND SEEK** the Committee's views on a proposal to develop a TSRA Project Brief on an adaptation framework which will support regional and local resilience to climate change which is a key action in the *Torres Strait Climate Change Strategy 2010-2013*.

Background:

- The likely impacts of climate change on communities and the environment of the Torres Strait are recognised by communities and government agencies as a significant threat to the region. Impacts are not confined to impacts on infrastructure, but are likely to be far reaching across social, economic and environmental sectors.
- Regardless of what mitigation efforts are undertaken globally, climate change impacts are expected to continue to increase into the foreseeable future due to lags in the climate system response time, necessitating the need for meaningful adaptation planning and action at all scales.
- In response to the climate change threats to the Torres Strait, in 2010 the Torres Strait Coastal Management Committee released the *Torres Strait Climate Change Strategy 2010-2013*, a strategic document that outlines current and future climate projections for the region, keys risks and vulnerabilities and identifies a number of priority actions for implementation. In late 2010 the TSCMC established the Climate and Coastal Working Group (CCWG) to drive the implementation of the identified actions. Working with key stakeholders to develop adaption options is an action identified in the Action Plan.

Why is there a need for a separate Climate Change Adaptation process?

- Whilst the Strategy identifies many key tasks that would form part of a regional adaptation strategy, there is a need for a framework to progress these actions which:
 - Is underpinned by resilience and sustainability principles;
 - Develops an integrated adaptation plan process for both the community scale and regional scale that links with regional planning and development strategies;
 - Includes agreed risk and vulnerability assessment processes;
 - Includes a process to assess community and institutional capacity for adaptation;
 - Has a strong focus on building community and institutional capacity for adaptation;
 - Includes a clear process for community and regional participation and implementation;
 - Integrates regional and local disaster management strategies;
 - Clarifies short, medium and longer term threats, adaptation options and where possible, associated thresholds;
 - Where possible and appropriate, links in with State and Federal climate change adaption frameworks and actions;
 - Includes an ongoing learning process of self reflection and evaluation.

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For a regional and local adaptation process to be successful it is critical that:

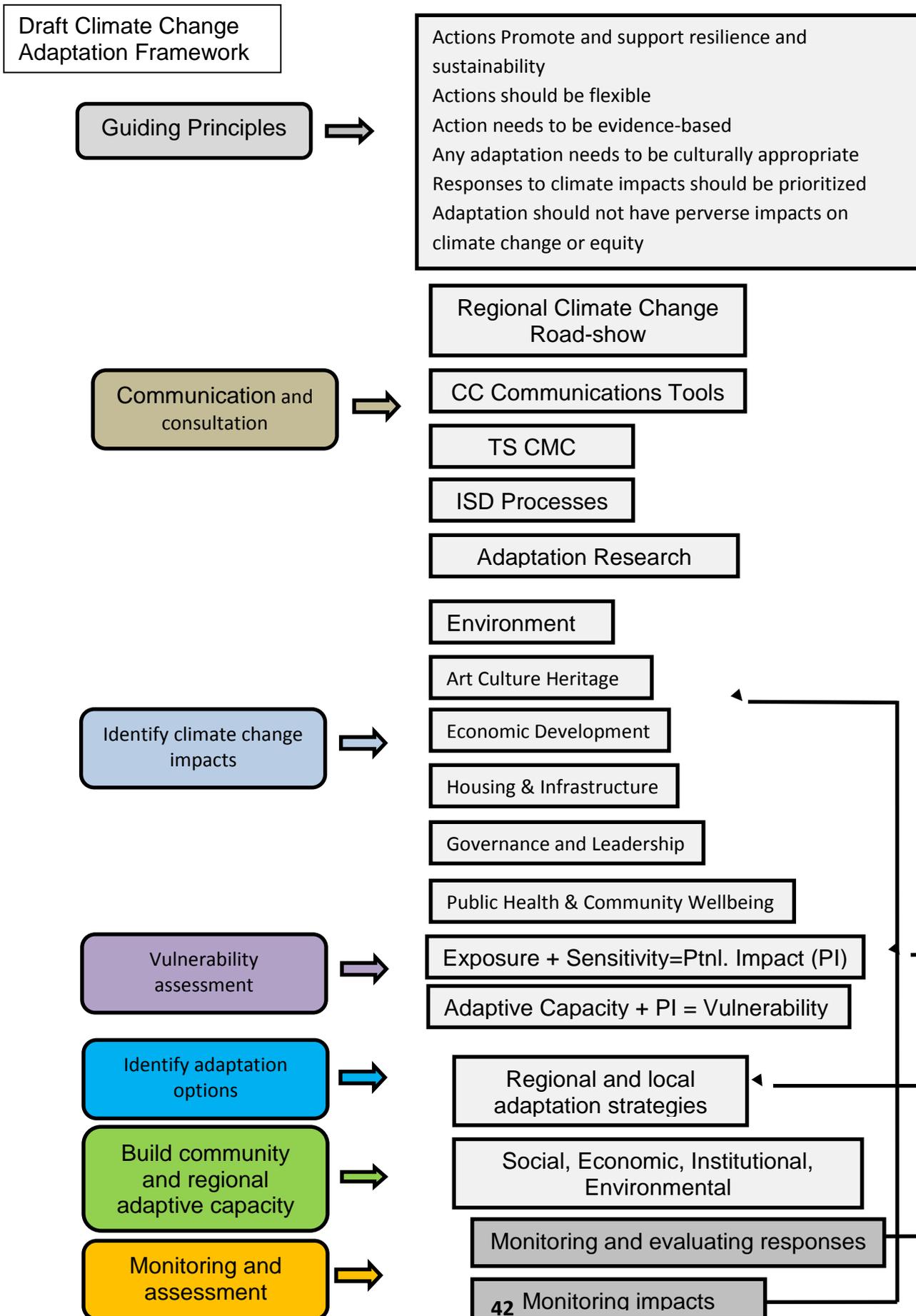
- Climate change adaptation and building community resilience to change and impacts must be a high priority for all levels of government;
- Adaptation considerations and responses need to be embedded within existing policy and institutional frameworks (Adapting to Climate Change in Australia- An Australian Government Position Paper);
- There is a strong focus on ensuring meaningful community and government engagement in the process from the beginning (both bottom –up and top down approach required);
- There is a clear understanding of the scale of responses needed and who is best placed to drive each response;
- There is good collaboration amongst agencies involved in development and delivery;
- Includes agreed risk and vulnerability assessment processes;
- Has a strong focus on building community and institutional capacity for adaptation;
- Includes a clear process for community and regional participation and implementation;
- Integrates regional and local disaster management strategies;
- Clarifies short, medium and longer term threats, adaptation options and where possible, associated thresholds;
- Where possible and appropriate, links in with State and Federal climate change adaption frameworks and actions; and
- Includes an ongoing learning process of self reflection and evaluation.

Issues:

- Development and implementation of a strategic regional adaption strategy will help ensure the Torres Strait is seen as a progressive, and a leading region in relation to responding to climate change.
- Notwithstanding the role of the Committee and Working group, failure to implement a strategic adaptation process that integrates with regional development processes will result in ad hoc responses to climate change and the implementation of maladaptive actions.
- A significant time and resource commitment will be required for proper engagement and development of a regional adaptation process.
- As a key action from the *Torres Strait Climate Change Strategy 2010-2013*, LSMU with the Working Group will develop the concept into a draft Project Brief outlining the detail, including costs, timeframes and required resources. If supported internally within TSRA, with support from other organisations, a full Project Plan will be developed and costed.

RECOMMENDATION:

That Members NOTE AND SUPPORT the concept of a Climate Change Adaptation Framework, noting an internal Project Brief will be developed.



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UPDATES**9. TSRA PROJECT UPDATES:****a. Tide Gauge Project****Purpose:**

To update Members on the current status of the Torres Strait Tide Gauge Project.

Background:

- There is still significant uncertainty associated with tidal activity in the Torres Strait and the accuracy of current tidal predictions;
- Tide gauges are used to develop an accurate estimate of mean sea level, which is used as a key reference point of Global Positioning Systems (GPS) and in turn used for survey work relating to construction and planning. They also provide accurate information on tidal range and variability;
- Tide gauges also allow for improve early warning of significant tidal events;
- Information obtained from the gauges will also be potentially useful for other agencies to monitor tides impacting neighbouring villages in Western PNG;
- This project will install six tide gauges to collect tidal data and one National Tidal Centre (NTC) gauge to accurately monitor long term changes in sea level funded through a \$1million allocation from the Major Infrastructure Fund;
- Aurecon are the Project Managers under the MIP process for design, construction and installation of the gauges;
- Where possible tide gauges will be mounted on berthing dolphins;
- The Bureau of Meteorology (BoM) maintains a network of 14 NTC gauges around Australia. This gauge will be located on Thursday Island due to infrastructure requirements;
- In May 2011 DERM committed to being project partners and to undertake ongoing maintenance and repairs on the tide gauges using a proportion of the \$1 million allocated by Minister Wong in 2010 for the gauge maintenance.

Current Status:

- Phase A (work scope confirmation, design report and documentation) of the MIP funded component of the project has now been completed and the Design Report finalised. The project has now moved to Phase B which covers procurement, construction, installation and handover and a defects liability period;
- The Bureau of Meteorology (BoM) have agreed to the proposed budget and costing for the NTC gauge.
- Installation of most of the tide gauges is dependent upon the schedule for installation of berthing dolphins by the Department of Transport and Main Roads (DTMR). Based upon the updated DTMR installation schedule, the gauges will be installed in two groups.

Installation of group one (Waiben, Poruma, lama and Kubin) will commence as soon as equipment and berthing dolphins are ready for deployment (refer to table below for dates. Installation of group two (Boigu, Saibai and Ugar) will commence in April/May 2012.

- DTMR are not intending to install dolphins at Saibai and Poruma. Gauges will be installed on the jetty instead. Improvements in technology mean the tide gauges will be much smaller than traditional gauges already deployed along the Queensland coast and as such will take up less space. The NTC gauge will be located on the wharf at Thursday Island.
- DTMR have indicated until a test pile is done they are unsure if a dolphin can be installed at Boigu (proposing installation date now May 2012). Aurecon are preparing options for an alternative site if required.
- An updated program for delivery of the tide gauge project is provided below:

Procurement Stage

Task Name	Duration	Start	Finish
Procure specialist equipment	5 weeks	1/11/2011	6/12/2011
Prepare tender documentation for supply and installation of housing infrastructure	1 week	21/11/2011	28/11/2011
Procure tenders for supply and installation of housing infrastructure	2 weeks	5/12/2011	19/12/2011
Assess tenders and report	1 week	19/12/2011	23/12/2011
Award contract	1 week	9/01/2012	13/01/2012

Construction Stage – Tide Gauge Instrument

Task Name	Duration	Start	Finish
To be handled by DERM: Put together and test each tide gauge for Poruma, Saibai, Kubin and lama Islands.	2 weeks	30/11/2011	14/11/2011
Supply and install housing infrastructure for Poruma, Saibai, Moa and lama Islands.	2 weeks	16/01/2012	30/01/2012
To be handled by DERM: Install and commission each tide gauge for Poruma, Saibai, Kubin and lama Islands.	2 weeks	30/01/2012	13/02/2012

DTMR

Task Name	Duration	Start	Finish
Complete berthing dolphin at Ugar (~ completed by end of November)	N/A		
Complete berthing dolphin at Mabuiag (~ completed by March 2012)	N/A		
Complete test pile and possible berthing dolphin at Boigu (~ completed by May 2012)	N/A		

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- The selection of islands listed below should provide good regional coverage for an early warning system for high tides.

Proposed list of gauge locations:

Island	Type of Gauge	Installation	Other rationale
Boigu	Standard Tide Gauge	Berthing Dolphin	Northern islands. Highly vulnerable, dynamic tidal regime. Distinctly different tidal conditions.
Saibai	Standard Tide Gauge	Jetty	Northern islands. Highly vulnerable, dynamic tidal regime. Distinctly different tidal conditions.
Iama	Standard Tide Gauge	Berthing Dolphin	Central islands. Highly vulnerable, there is significant churning between Moa and Iama.
Poruma	Standard Tide Gauge	Jetty	Central islands. Highly vulnerable.
Mabuiag	Standard Tide Gauge	Berthing Dolphin	Western islands. Tides in this region are more variable
Ugar	Standard Tide Gauge	Berthing Dolphin	Eastern islands, also important for shipping channel
Thursday Island	National Tidal Centre Gauge	Customs Wharf	Easy access, weather station, NTC gauge requires highly stable placement (site of previous MSQ gauge)

Issues:

- DERM cannot currently commit to taking over the management of the tide gauges once current maintenance funds are exhausted. TSRA will continue to be the default owner while negotiating other options. Sufficient data may be received within the five year timeframe which would allow the option to remove some of the gauges if required;
- BoM have yet to commit to long-term ownership of the NTC gauge; and
- Delays in the installation of berthing dolphins have pushed back deployment of the gauges, in some cases to May 2012, which will mean a loss of king tide data for those locations for the 2011/2012 season;

RECOMMENDATIONS:

That members note the status of the project.

9b. Torres Strait Extreme Water Level Study**Purpose:**

To provide Members with a summary of key findings from the study.

Background:

- In 2009 ^{s47F} of Systems Engineering Australia (SEA) was engaged to undertake an assessment of extreme ocean water levels and inundation hazards in the Torres Strait. This included all inhabited island communities as well as Seisia on Cape York Peninsula;
- This report has for the first time addressed the quantification of extreme ocean water levels in the Torres Strait. This information can now be used to perform detailed community vulnerability mapping and risk assessments as well as forming a rational basis for adaptation planning and assisting in the design of emergency services;
- The above analyses was undertaken assuming (1) present climate conditions and (2) enhanced-greenhouse conditions for the years 2050 and 2100;
- The study has also significantly improved knowledge of the land-sea elevation datums across the various island communities and provides estimates of the risks from extreme winds;
- Due to complications associated with delays in tidal datum revisions and associated impacts on delivery of the project, the mapping component was removed from this project and will be undertaken once the new digital elevation models (produced from LiDAR) have been received from DERM (see DERM LiDAR update).

Key findings:

- The study confirms the most vulnerable communities in order of vulnerability are Saibai, Boigu, Masig, Warraber and lama.
- For Saibai the modelling suggests an annual likelihood of encroachment up to 0.56 m in depth and up to 1 m in an extreme 1000 y return period situation.
- The next most vulnerable is Boigu, where the annual event is about 0.1 m depth, reaching up to 0.8 m by 1000 y. This is followed by Masig, Warraber and lama;
- It is likely that by 2050, five communities (Saibai, Boigu, Warraber, lama and Masig) would be experiencing significantly adverse impacts.
- Other communities start to become vulnerable at the extreme 10,000 y condition. This includes Erub, Hammond, Mabaug, Moa_St_Pauls, Ngurupai, Poruma, Seisia and Waiben. The remaining communities appear free of encroachment in *present* climate conditions.
- For the projected climate of 2050, the existing five communities that are already principally affected are further impacted by the 0.3 m sea level rise. Erub is also affected now at the 5 y return period, Hammond is increasingly vulnerable by the 25y level and Poruma becomes at risk around 100 y;
- By 2100, with a possible 0.8 m sea level rise and increased Tropical Cyclone intensities, a total of 13 sites are affected beyond the 5 y level and 11 of these sites are affected across the full return period range. Saibai, Boigu, Warraber, Masig, lama, Erub, Poruma and Hammond would be experiencing significantly adverse impacts.

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- Ocean water levels in the region are dominated by the highly variable astronomical tide but extreme water levels are caused by often subtle combinations of relatively small inter-annual changes in the regional ocean level, strong seasonal variability due to the prevailing winds and occasional high energy weather events (monsoon surges and tropical cyclones).

Issues:

- It is recommended that various long-term geophysical data collection studies in the region be continued and expanded to ensure reliable data is available for future studies.

RECOMMENDATION:

That Members NOTE the report and consider the implications of its key findings in community planning processes.

9c. 2011/2012 Wet Season and King Tides

Purpose:

The update Members of expected weather conditions and predicted King Tides for the coming wet season.

Background:

- 2010-2011 experienced a very strong La Nina which brought major flooding to much of Queensland. According to the Bureau of Meteorology, ocean conditions currently indicate a return of La Nina conditions for the coming wet season, but weaker than those experienced last year;
- During La Nina years there is usually an earlier start to the wet season, and more cyclones than normal across the Australian Region. Cyclones are inherently unpredictable and relatively uncommon in the Torres Strait. However they can occur in the region and communities should still be prepared for possible cyclone activity Storms in the Gulf of Carpentaria can have a significant influence on wave surge in the Torres Strait;
- Below is a list of predicted astronomical tides for the coming wet season. King tides begin as early as November for some communities. Tides either side of the dates listed below, whilst lower than the peak, can still be significantly high. Poor weather conditions can add additional height to the levels predicted.

Astronomical Tidal predications for Jan – Mar 2012 (AusTides 2012(formally Seafarer Tides))

Island	2010 King Tide	2011 King Tide	2012 King Tide peak	Date
Saibai	-	-	3.8	Nov 25
Saibai	-	-	3.8	Dec 24
Saibai	3.9	3.7	3.5/ 3.7	Jan 9 /Jan 22-23
Saibai	3.8	3.7	3.5/ 3.5	Feb 7-8/ Feb 20-21
Boigu	-	-	4.5	Dec 22
Boigu	4.8	4.7	4.5/ 4.7	Jan 6/ Jan 20
Boigu	4.7	4.7	4.6/ 4.7	Feb 3/ Feb 17
Boigu	-	4.4	4.4	Mar 6
Iama	-	-	3.8	Nov 25-26
Iama	-	-	3.9	Dec 24-25
Iama	4.1	3.9	3.8	Jan 21-24
Iama	4.1	4.0	3.8	Feb 20
Iama	-	3.9	3.7	Mar 7-8
Poruma	-	-	3.9	Nov 25-26
Poruma	-	-	4.0	Dec 24-25
Poruma	4.2	4.0	3.5/ 3.7	Jan 10/ Jan 22-23
Poruma	4.1	4.0	3.5/ 3.6	Feb 7-8/ Feb 19-20
Poruma	-	3.8	3.5	Mar 7-8
Warraber	-	-	3.7	Nov 25-26

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Warraber	-	-	3.8	Dec 25
Warraber	4.1	3.8	3.7/ 3.9	Jan 9-11/ Jan 22-23
Warraber	4.0	3.9	3.8/ 3.8	Feb 7-9/ Feb 20-21
Warraber	-	3.8	3.8	Mar 8
Masig	-	-	3.8	Nov 25-26
Masig	-	-	3.9	Dec 24-25
Masig	4.1	3.9	3.7/ 3.9	Jan 10-11/Jan 22-23
Masig	4.1	3.9, 4.0	3.8/ 3.8	Feb 8/ Feb 19-20
Masig	-	3.9	3.8	Mar 7-8

Issues:

- Low Lying communities are still highly exposed to the impact of king tides and strong storm surge activity;
- Funds to address these issues are yet to be secured despite the agreed need to protect communities from such events by all levels of government, researchers and communities;
- Extended period of high tide activity increases the risk of King Tides coinciding with a storm event;
- Regional Disaster Plans have yet to be finalised.

RECOMMENDATION:

That Members note the report and consider the implications for their communities.

12. DEPARTMENT OF ENVIRONMENT AND RESOUC E MANAGEMENT (DERM)**Purpose:**

To provide members with an update on a number of matters relevant to the committee.

Draft Queensland Coastal Plan

- The Queensland Coastal Plan seeks to ensure coastal areas at risk from storm tide inundation, coastal erosion and sea level rise are either not developed for urban purposes or developed in a way that removes the risks to the community and assets;
- The Torres Strait has been specifically identified as a region where the policy recognises the limited possibilities for coastal development outside of vulnerable areas. The actual policy is given below;
- The plan also required an adaptation strategy be prepared for areas at risk from coastal hazards including climate change. DERM is developing the Queensland Coastal Hazard Adaptation Strategy Guideline and in partnership with Department of Climate Change and Energy Efficiency, Townsville City Council and LGAQ is funding an adaption strategy for the Townsville region to demonstrate best practice for local government.

The relevant passages from the Plan are inserted below:

Queensland Coastal Plan Policy 1 – Land use planning

1.4 A planning instrument is to avoid allocating new areas for urban purposes within a coastal hazard area, other than for:

- a) coastal-dependent development; or
- b) Industrial development; or
- c) Temporary or relocatable uses, including open space or recreation facilities.

1.5 Despite section 1.4, in the coastal and island communities located in local government areas between and including Wujal Wujal Aboriginal Shire and Burke Shire (the list of communities includes Torres Strait and NPA), expansion of existing settlements may occur within coastal hazard areas if:

- a) the settlements (including development for community and infrastructure purposes) cannot feasibly be located outside of the coastal hazard areas ;
- b) options for infill and consolidation of existing developed areas on less vulnerable land are exhausted;
- c) sufficient space is allocated adjacent to the settlements for the construction of erosion control structures that will minimise present and future coastal hazard risks to vulnerable communities;
- d) dwellings, development for accommodation purposes, community refuge buildings;
- e) Essential community service infrastructure are located and designed to minimise the need for future erosion control structures.

Coastal LiDAR Capture Project

- LiDAR is the capture of very high resolution land level data by laser sensors on planes;

- LiDAR capture over 14 of the 15 target islands in the Torres Strait has been completed. For the remaining island of Moa only 20% was captured due to weather conditions;
- The contractors are now processing the data for delivery to Department of Environment and resource Management (DERM). The processes LiDAR products will be available free of charge to TSRA and the councils.

Coastal Hazard and Vulnerability studies

- As part of its state-wide coastal hazard mapping project, DERM will prepare coastal hazard maps for the Torres Strait island communities. These maps are intended for long term planning purposes rather than emergency management;
- Coastal hazard area maps show the area of land affected by erosion or storm tide inundation up to a specific level of risk. In simple terms, this is the impact of a one in 100-year storm event (or the average recurrence probability of one per cent per annum). The maps provide mapping of coastal hazards which includes not only sea level rise impacts but coastal erosion and storm tide inundation;
- The mapping will support policies in the Queensland coastal plan and will be especially useful for assisting the development of sea level rise adaptation strategies. This project is also linked to the TSRA's storm tide inundation study, the temporary tide gauge project and the Torres Strait islands tidal datum project.

Temporary Tide Gauge Project

- This is a DERM initiated project to complete assessment of tidal planes on all inhabited Torres Strait islands and follows on from the Torres Strait islands tidal datum project;
- Temporary tide gauges are to be established on Moa Island (St Pauls and Kubin) and at Dauan Island, and will record data for several months. Installation is currently in progress with liaison support from TSRA;
- Accurate knowledge of tidal planes is essential for current day design of infrastructure or housing and also accurately determining areas to be affected by storm tide inundation and sea level rise.

Queensland Climate Change Adaption Strategy

- The Premier and Vicky Darling, Minister for the Environment, released the Climate Change: Adaptation for Queensland issues paper on 29 August during the community cabinet meeting in Torres Strait;
- The eight week public consultation period has ended and 61 submissions were received;
- A draft copy of Queensland's updated climate change adaptation strategy is expected to be completed by late February 2012.

RECOMMENDATION:

That Members NOTE the report.

13: DEPARTMENT OF CLIMATE CHANGE AND ENERGY EFFICIENCY (DCCEE).s47F**Purpose:**

To provide members with an update on a number of matters relevant to the Committee.

Research Project: Climate change impacts and adaptation options for Torres Strait communities: Understanding climate change driven inundation and coastal erosion impacts on Torres Strait communities and the Development of Adaptation Options (Dr Kevin Parnell, JCU)

Background:

On 5 May 2010, the Australian Government announced \$400,000 of new funding for research into the impacts of climate change on Torres Strait communities. The project is being conducted by James Cook University under the leadership of Dr Kevin Parnell. The project is an extension of Dr Parnell's previous coastal studies on the coral cay islands - Masig, Poruma, Warraber and Iama.

This project is funded by the Department of Climate Change and Energy Efficiency (DCCEE) and is being conducted by Dr Kevin Parnell, Scott Smithers and their team from James Cook University. The project extends to other communities previous coastal studies on the coral cay islands and Iama

The project aims:

- To work with the communities to identify and prioritise erosion and inundation threats.
- To identify the underlying causes of coastal erosion on Torres Strait islands, and to develop long-term, sustainable solutions that work with, rather than against, the natural processes.
- To provide real data about the processes involved in erosion, and credible and strategic options to address it, that are achievable and backed up by science so that communities have a good basis for obtaining funding for the implementation of adaptation strategies (including works where appropriate) to address coastal erosion and inundation in a long-term and sustainable fashion.

Other details:

- The project will run from December 2010 until June 2013;
- The project is now well underway. Shoreline mapping has been undertaken at all locations (with the exception of Saibai and Boigu, where the work plan involves different things), between 1 and 3 times. This allows for the examination of seasonal changes in where sand is stored on the beaches, and allows the calculation of the volume of sand in different parts of the system. Currents and waves have been recorded at a number of sites, and sediment samples have been collected for case studies on sediment sources.
- The first set of comprehensive results will be sent to communities before Christmas;
- It was assumed at the start of the project that LIDAR data would be available for all communities. To date, this is only available for Mabuiag, Boigu and Saibai. This means that the quality of inundation mapping will be much less than was envisaged at the start of the project. We will continue to incorporate LIDAR data into the analysis if it becomes available up to June 2013.

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- It was also assumed that maps would be produced from the analysis of surge events undertaken by ^{s47F}. These were going to be used to map threatened infrastructure, for the various scenarios presented. The maps have not yet been produced, meaning this aspect of the work will not be able to be undertaken;
- The priorities at this stage are a) a second visit to Dauan; b) a second visit to Badu (the first visit was delayed due to problems obtaining PBC approval and then being unable to get accommodation); c) visiting Boigu and Saibai and getting discussions on adaptation options and valuations started on Boigu and Saibai.

Private Members Motion: Torres Strait Sea Walls

- On 18 August 2011 the House of Representatives considered a private Member's motion submitted by Mr Warren Entsch MP, on the problems of coastal erosion and inundation in the Torres Strait, as a result of regular flooding including from King Tides. The House supported this private Member's motion, acknowledging the problems confronting Torres Strait communities.
- The Hon Greg Combet MP, Minister for Climate Change and Energy Efficiency, wrote to the Torres Strait Island Regional Council on 20 September 2011 on this issue and a DCCEE representative will provide a short briefing on this issue at the meeting.

c. Tidal Gauge Project (*Refer also to agenda item 8(a) TSRA Tide Gauge Project*)

- In May 2010 the Australian Government announced funding of \$1 million for tidal gauge monitoring in the Torres Strait;
- This initiative will provide information to assess tidal variation and potential sea level rise in an area that is characterised by complex ocean behaviour. The information will support planning decisions, including planning to withstand the impacts of rising sea levels;
- The Bureau of Meteorology (BOM) and the Torres Strait Regional Authority have agreed on costs for the initiative.

Status of initiative

- Thursday Island has been identified as the preferred site for a tide gauge. Discussions are continuing between the Bureau of Meteorology and the Torres Strait Regional Authority on longer term management and ongoing support for the project.

RECOMMENDATION:

That Members NOTE the report.

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Recommendations:

That the Members NOTE the project.

16 b. Research Project: Limits to Climate Change Adaptation for Low-Lying Communities in the Torres Strait (Dr Scott Smithers, JCU)

Purpose:

To provide members with an update on the above project.

Background:

- Coastal erosion and inundation are severe problems for many Torres Strait communities, and considerable community concern exists in the communities regarding the longer-term prospects for their islands in a climate-changed world;
- Communities on Torres Strait Islands – such as Boigu and Erub have always adapted to coastal and climate changes, and will need to continue to adapt into the future;
- Improved understanding of community views on appropriate and effective adaptation strategies, and importantly the social and cultural limits to adaptation (when community assets, activities, and culture can no longer be sustained) when particular adaptation strategies are used is critical to the long-term viability of these communities;
- The NCCARF project seeks to provide more detail on the human dimension, by developing culturally appropriate and sensitive climate change adaptation strategies that acknowledge and incorporate local and context-specific knowledge with clear identification of when and where particular adaptation strategies should or should not be considered, what level of performance is expected and how this should be monitored, and when and why an adaptation strategy might be considered ineffective in sustaining livelihoods, island settlements and cultural activities;
- This project is working with community members on two islands (Boigu and Erub), to explore their experiences and views of:
 - The impact and severity of climate change;
 - The impact of climate change on their livelihood resources (how people/households/communities make a living);
 - Past, present and future adaptation strategies;
 - The effectiveness of these strategies, including the perceived limits to adaptation.
- Overall, this project sets out to better understand how members of the communities on Boigu and Erub consider climate change is and will further impact on their livelihoods, and to define the adaptation strategies that communities and community members in the Torres Strait consider are appropriate, and how and when particular adaptation strategies are effective or otherwise;
- Delivering on this objective will provide new and necessary information required to guide culturally-appropriate adaptation planning and responses for these communities.

Status of Project:

- Both communities were visited in January this year when s47F interviewed community members;
- These interviews were subsequently transcribed, and responses collated and analysed for inclusion in a draft report submitted to NCCARF for review in July;
- Reviewer comments were returned to the project team in early August and the revised draft submitted to NCCARF in September. We are awaiting further feedback on this second draft.

Issues:

- Budget restrictions meant that only two islands could be examined in this project;
- Erub was selected as a focus island as s47F has worked on Erub previously and has a good rapport with community members. At the request of NCCARF, the other island community collaborating on the project was originally to be Saibai. However, in early communications it became apparent that the community did not wish to participate due to frustrations associated with the limited meaningful community benefits delivered by earlier projects (not undertaken by this team), specifically the lack of remedial works to address immediate community concerns;
- As a result, and following positive responses to our initial approaches, the community at Boigu participated in the study. An issue associated with this switch is that some of the data sets relating to the potential impacts of climate change are not as well developed for Boigu as they are for Saibai. Nonetheless, the Community at Boigu is thanked for sharing their knowledge and participating in the study;
- Once the funding agency (NCCARF) indicates they are satisfied with the report, it is our intention to take the results back to the communities.

Recommendations:

That the Members NOTE the project update

That Member for Boigu and Member for Erub support a future visit by the project team to share the project results with the collaborating communities.

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5. Outcomes and recommendations from interim working group meeting and opportunities to progress interim coastal works

- A number of officers and researchers met on December 6 as a *working group* to work through key aspects of the Torres Strait Climate Change Strategy action plan.
- The core focus of the meeting was to take the actions identified in the strategy and develop them into an implementation plan.
- A table was developed listing information for each action including priority, short term and long terms goals, lead organisation, resourcing required, progress to date, research and monitoring priorities.
- A large number of actions have already been initiated.
- There is good collaboration amongst the various agencies and organisations and a strong commitment to get good outcomes for communities.
- Climate change is a cross cutting issue and this work will be linked in with the integrated service delivery process.
- It was recognised there is a clear need to progress immediate coastal works where possible given the high level of community frustration and the length of time communities have been calling for action to address erosion and flooding issues.
- The working group identified possible short term options for the following four communities. These will be scoped out further and progressed as soon as possible. There is limited funding available through a DERM grant and the TSRA Climate Change and Coastal Program.
 - Masig – sand replenishment;
 - Warraber – replenishment of sand on berms;
 - Boigu - build up sections of seawall and;
 - Poruma – temporary measures to protect resort in the event of an emergency.
- It was noted that there is a great deal of local knowledge in communities which should be incorporated into developing options and solutions to coastal issues.
- It was also noted that communities are tired of ongoing research without seeing the actions that should flow from such work.
- Long term adaptation to climate change also needs to be a focus on the CMC agenda.
- Each year significant funds are spent repairing the damage of high tides to roads and other infrastructure. Estimates of these costs should be included to support funding submissions for coastal works.

ACTIONS:

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1. **Scope and implement short term coastal works options.** ^{s47F} **to coordinate with** ^{s47F}
2. **Develop a regional list of priority coastal works based upon technical assessments to inform allocation of associated funds**

Revised draft CMC Terms of Reference (ToR) and role of CMC

A verbal discussion was held at the working group meeting (which was held the previous day) to consider the focus, membership and direction of the CMC in light of the previous TOR being somewhat out of date.

Different options were discussed. The option of just having the technical and government officers forming an implementation group was canvassed. There would be no formal elected members' forum. Administrative staff would inform elected members at their formal meetings of the outcomes. Other options canvassed included status quo or a hybrid of the existing arrangement. Elected members indicated they found the CMC process useful and wished to continue it in its current form. Members indicated they would like to see better representation at the meetings from agencies that are involved in coastal and climate change issues. Members indicated they would like the agenda to be more focused on issues requiring decisions and on action plan implementation progress. Discussion focused on making sure the CMC was tagged onto a Board meeting to ensure efficiencies; and when there are strategic matters or decisions to be made collectively. Invitations to government or researchers would be on a needs basis.

It was agreed there was a more formal role for the technical and government officers to implement and monitor the plan's progress. TSRA is to establish a formal process to develop this including undertaking the following tasks:

5. Review of current expertise within the working group and identify gaps;
6. Formally establish an Implementation Committee;
7. Develop a number of documents in support of the working group including terms of reference ;
8. Formally invite members to participate in the Implementation Committee

ACTIONS:

3. **Action above tasks within three months**

7 King tides and La Nina

A brief update was given on the expected weather conditions over the coming months given current La Nina conditions, and expected astronomical tides.

Updates**8.a Tide Gauge Project**

Members were given an update on progress of this project together with a table of revised preferred tide gauge locations developed by the tide gauge technical working group.

Once the gauges are deployed for 2-3 years we will get a clearer understanding of where they are most needed and how many will be required to adequately meet our longer term needs. It may be that we will not need to maintain all the gauges in the longer term. Given many agencies will benefit from the data, longer term ownership might be best achieved through a multiparty agreement with relevant State and Commonwealth departments.

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12. Department of Climate Change and Energy Efficiency

12a. Climate change impacts (coastal erosion and inundation) and identification of adaptation options for Torres Strait.

Dr Kevin Parnell gave a presentation of the extension of the coastal erosion and inundation work that will occur on all remaining communities not covered by the original project. Dr Parnell noted that whilst it still needs to be investigated, it may be more cost effective to raise communities such as Boigu and Saibai than to relocate them. Member for Boigu, Cr. Don Banu reiterated that point that his community is not interested in relocation as an option. It was noted that the original research conducted on Masig, Warraber, Poruma and Iama had greatly assisted assessment of priority works and preferred options for these islands, and as such had already added value to the CMC program. The new project has so far been warmly received by communities.

Dr Parnell also gave a brief overview of the National Climate Change Adaptation Research Facility project Limits to Climate Change Adaptation of Low Lying Communities in the Torres Strait (agenda item 14b). This project focuses on the social and cultural aspects of climate change adaptation as compared to the physical aspects covered in the erosion studies.

12b. Response to recommendations in the House of Representatives (HoR) Standing Committee on Climate Change, Water, Environment and the Arts Report: Managing our coastal zone in a changing climate: the time to act is now.

s47F (DCCEE) addressed this issue. The Commonwealth has agreed to the recommendations put forward in the report in relation to issues in the Torres Strait with support for recommendation 17 (*The Committee recommends that the Department of Climate Change, in collaboration with the Queensland Government, CSIRO and Indigenous communities in the Torres Strait, undertake a major study into the vulnerability of the Torres Strait to the impacts of climate change and provide assistance in the development of an adaptation plan*) and in principle support for recommendation 18 (*The Committee recommends that the Australian Government give the five recommendations calling for information, studies and data, as proposed by the Torres Strait Regional Authority, early and urgent consideration with a view to their implementation*). The submissions put forward by the TSRA to the HoR and in other fora on behalf of the CMC had succeeded in getting the government's attention on the climate change and coastal issues faced by communities in the region.

13. Emergency Management Queensland (EMQ)

EMQ representatives^{s47F} were waiting to join the meeting via phone to provide an update. In the interests of time,^{s47F} conveyed the key points to the meeting on their behalf.

- EMQ have deployed Keeping our Mob Climate Safe (KoMCS) officers to various regions to work with SES crews and others to help prepared communities for emergency situations. ^{s47F} were the KoMCS officers for the Torres Strait region. They will be spending extended period in communities to work with them in disaster management.
- The State has signed off on the TSC Disaster Management Plan and was working with TSIRC in the development of their plans.

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- The second round of the Natural Disaster Resilience Program funding will open in February 2011.

ACTION

4. ^{s47F} to speak to EMQ to investigate council eligibility for disaster funding for impacts not derived from extreme weather events.

Other business:

- It was noted there is apparently still some confusion regarding the role of various agencies in disaster planning. It was reiterated that core responsibility for disaster planning and response lay with Councils and the relevant State Government agencies.
- Discussion focused on new products on the market in relation to coastal management. There is a need for an objective process to assess coastal works options and technologies. There are a number of products on the markets, but generally the only information available comes from those selling the products. It was suggested that See Bee blocks be used as a standard against which other seawall and revetment technologies be compared.

ACTION

5 Consider an objective process to assess coastal erosion and flood mitigation technologies. ^{s47F} to progress this discussion with Sel Sultmann and Tim Thelander.

Next meeting: To be advised.

Meeting closed

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Torres Strait future scenarios (CSIRO): Using participatory scenario planning methodologies this project aims to engage regional and community stakeholders to explore potential future trends in the pressures impacting on environmental assets, resulting outcomes for the condition of those assets and Islanders' livelihoods which depend upon them. Using the CSIRO-BoM Conformal-Cubic Atmospheric Model climate change projections will be down-scaled to 8 km², which is a necessary resolution for coastal regions with steep climate gradients. These data will be integrated with models and outputs from Theme 1 and 2, and local knowledge and expertise. In a co-learning exercise scenarios of interactions between development and climate change will be explored for 2030, 2050 and 2100. In an iterative process these will first be built with regional stakeholders in Year 1, and then presented to select communities in Year 2 and 3 before being re-assessed by the regional group in Year 4. From these exercises 'best bet' adaptation strategies will be identified which could be applied today to build the resilience of assets and communities to future pressures. Scenario analysis will also identify key future pressures that should be included in regional and community-based monitoring and reporting programs (linking to Theme 1 and 2). In itself the scenario planning process will create cross-scale social networks, innovations and adaptive capacity which will build the resilience of the region. Using social network analysis this project will evaluate the impact of the process on building partnerships between stakeholder groups.

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