

ORDINARY MEETING 27 JULY 2011	3
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BEACH PROTECTION AND SAND NOURISHMENT POST CYCLONE YASI

Tim Smith : 1/3/21-12-: #3226768

RECOMMENDATION:

That Council note this report on the condition of the region's beaches post Cyclone Yasi.

INTRODUCTION:

At Council's Infrastructure Services Meeting on 16 February 2011, a report was requested regarding beach protection, listing priority risk areas post Cyclone Yasi together with short, medium and longer term actions that need to be addressed.

This report gives a brief summary of the condition of all beaches at this time and recommended short medium and longer term actions that should be addressed.

BACKGROUND:

Waves and swell associated with Cyclone Yasi caused erosion on most beaches in the region. Some beaches were eroded by up to 800mm with the sand moving offshore. Large swells post Yasi combined with high tides resulted in further erosion. The worst beach erosion occurred along the western frontage on Fitzroy Island which was close to the track of the cyclone. Approximately two metres of beach frontage adjacent to the resort was lost with the erosion extending back to the paths and grassed areas.

Rough seas with strong south-easterly winds during the week commencing 15 May 2011 resulted in substantial sand loss at the southern end of Newell Beach. Oak Beach was also affected during this event.

Post Cyclone Yasi, most beaches have started to recover with sand that moved offshore gradually returning. However two locations that have not recovered are Newell Beach (southern end) and the frontage at Fitzroy Island.

Council Officers have confirmed with the State Government that costs associated with sand nourishment activities are not claimable from National Disaster Relief and Recovery Arrangements (NDRRA).

COMMENT:

WBM Oceanics Australia prepared a Shoreline Erosion Management Plan (SEMP) for the former Cairns City Council in 2006. The plan provides the background for beach protection and sand nourishment works for the beaches from Ellis Beach in the north to Bramston Beach in the south. It describes the processes, establishes the issues, and quantifies the needs. In 2009, RECS Pty Ltd carried out a Sand Sourcing Investigation that looked at both onshore and offshore sites that may provide suitable sand for beach nourishment. In addition, Council monitors beach profiles on an annual basis with comprehensive surveys at all beaches (Ellis Beach in the north to Bramston Beach in the south). The surveys provide profiles that enable Council to assess changes and the need for sand nourishment. Visual assessment and the surveys provide a sound basis for prioritisation and annual programs. These documents underpin Council's annual sand nourishment program that is funded through a Beach Protection Reserve.

Council added approximately 60,000m³ of sand to the region's beaches in 2010/2011. Consequently, the majority of the region's beaches went into the 2011 wet season in good condition. The exceptions were Machans Beach and the southern end of Holloways Beach where sand pumping work were in progress when Cyclone Yasi struck. The quantities of sand shown below are the quantities added to the region's beaches in the 2010/11 financial year:

Palm Cove around public infrastructure – 500m³
 Clifton Beach in front of the rock seawall – 25,000m³
 Trinity Beach at the southern end – 3,000m³
 Holloways Beach south of Oleander Street – 25,000m³
 Cairns Esplanade – 7,000m³
 Rocky Point – 3,000m³

THE CURRENT CONDITION OF THE REGION'S BEACHES**Wonga Beach and Rocky Point**

Both beaches are in a satisfactory condition. The sand dredged from the Daintree River for ferry operations has been placed at Rocky Point twice in the last four years. This sand moves slowly north to Wonga Beach. A total of 6,500m³ has been placed at Rocky Point since 2007.

Newell Beach

The northern end of Newell beach is in good condition. The southern end was badly eroded in May 2011. Council presently has over 3,000m³ of sand in stockpile from Daintree Ferry dredging operations that needs to be moved. It is proposed to use some of this stockpile to nourish the existing sand adjacent to houses and re-establish access down onto the beach. It is proposed to start this work in the near future. In addition, Queensland Transport will be dredging approximately 2,700m³ of sand from the Newell Beach boat ramp. This material will also be deposited at the southern end of Newell Beach. The combined affect of both projects should be a good profile along Newell beach.

Cooya Beach

The beach is in a satisfactory condition.

Oak Beach

3,000m³ of sand was placed in front of the houses at Oak Beach two years ago. At that time, the upper beach profile was quite degraded. Sand dredged from the bed of the Daintree River was used for that work. The upper area is starting to erode again and it may be appropriate to dispose of Daintree Ferry sand in this location next year.

Ellis Beach

This beach is in a satisfactory condition. Ellis Beach benefits from the sand nourishment program at Clifton Beach.

Palm Cove

The beach is in a satisfactory condition. Sand was placed around infrastructure at the beach in 2010. Palm Cove also benefits from the sand nourishment program at Clifton Beach.

Clifton Beach

The beach is in satisfactory condition. 25,000m³ of sand was placed around the seawall in 2010. While the level of the sand slumped as a result of the cyclone and the weather in May, it is still within tolerance. The beach profiles north and south of the seawall are still good. No sand nourishment work is required in 2011.

Kewarra Beach

Beach surveys indicate that Kewarra Beach has been receding noticeably for the last 30 years. Little sand has moved in around Taylor Point and the erosion continued again this year. While the buffer area around the bay has absorbed the erosion, the vegetation loss continues. Council may need to consider a program of sand nourishment in the future. Our investigations in 2006 showed little sand offshore. The Kewarra Beach Resort has expressed concern with the loss of frontage at the northern end near the mouth of Deep Creek.

Trinity Beach

The southern end of the beach is in satisfactory condition. Council placed about 3,000m³ of sand here in 2010 to assist residents and visitors accessing the beach in front of the park and around drainage infrastructure. Cyclone Yasi severely eroded the northern end of the beach. That erosion had now been restored by reconstructing the rock frontage above the high tide mark and the roadway. There is a lot of sand between the headlands at Trinity Beach and so no sand nourishment is proposed in 2011.

Trinity Park Beach

The beach is in a satisfactory condition

Yorkeys Knob

The beach is in a satisfactory condition

Holloways Beach

About 30,000m³ of sand was dredged onto the beach from Richters Creek earlier in 2011. Some was lost during the rough weather after Cyclone Yasi. The dredge will return in July to pump another 10,000m³ to complete the beach in front of the rock wall for the properties in Hibiscus Lane. That will complete beach nourishment south of Oleander Street and leave the beach in satisfactory condition going into 2012.

Machans Beach

Machans Beach has struggled to maintain any beach profile in front of the rock wall for an extended period. South of Redden Creek, there is no real beach for about half the length of Redden Island. Sand is either isolated south of the Barron River mouth, in and around the Barron River mouth, or in the Redden and Barr Creek mouths. Offshore, major sand inputs from the 1967, 1977 and 1979 floods increased the levels out in the inter-tidal and sub-tidal areas but did not result in any real improvement to the beach itself. The steepness of the rock wall allows deep water right in to the shore and doesn't encourage any sand build-up at the toe. The absence of any major flooding for 30 years has reduced sand input to the system.

Council has provided \$150,000 in the 2011/12 Capital Works program to review the integrity of the Machans Beach Seawall.

Cairns Esplanade

7,000m³ of sand was placed from Smith Street to Upward Street in August, 2010. The beach is still in reasonably good condition except on the point near the volleyball courts. Council still has about 300m³ of sand in stockpile at Yorkeys Knob and Cairns Works have been requested to place this sand at that location. They have also been requested to tidy up the rest of the beach while they have the machine on the beach. This will see the beach go into next wet season in good condition.

Fitzroy Island

The beach and esplanade on the western side of the island along the frontage at the resort suffered severe erosion as Cyclone Yasi tracked in to the coast south of Cairns. Council has responsibility for the esplanade. Council has been working with the owners of the resort to develop a concept for restoration works and a process to gain approvals from Department of Environment and Resource Management (DERM). The serious erosion is around the abutment of the jetty and along the frontage with the beach.

Russell Heads

The protection works at the end of the spit were reinforced with the addition of further sand filled geotextile containers in June 2011. This will see the protection works and the beach go into next wet season in good condition. The beach was not damaged by Cyclone Yasi.

Bramston Beach

The beach in the town area (southern end) is in a satisfactory condition both north and south of the groyne. The beach did not suffer damage during Cyclone Yasi.

Therefore it is recommended that the current sand nourishment program continue with priorities as follows:

Short term priorities:

- Complete the current Holloways Beach work and remove the pipeline from the beach.
- Carry out the emergent work at the southern end of Newell Beach, followed by disposal of dredge spoil from the boat ramp at the front of the eroded area.
- Assist the owners of the resort at Fitzroy Island address the erosion problem.
- Continue to monitor the condition of the beaches and carry out surveys of beach profiles.

Medium term priorities:

- Establish a source of suitable sand that can meet Council's needs for the future.
- Prepare a SEMP for beaches north of Ellis Beach.
- Plan to put sand on Clifton and Holloways Beaches and the Esplanade again by 2013.
- Establish a sand stockpile that can be used at any time to address emergent issues with safety and access to public facilities caused by severe weather and erosion.

CONSIDERATIONS:Corporate and Operational Plans:

Corporate Plan Goal 4 - Delivering Services and Infrastructure Objective 4.4 – Deliver effective, long term maintenance and renewal of existing infrastructure and community assets.

Statutory:

Sand nourishment and other works for erosion protection require DERM approvals. A number of approvals such as Clifton Beach, Holloways Beach and Cairns Esplanade already exist.

Policy:

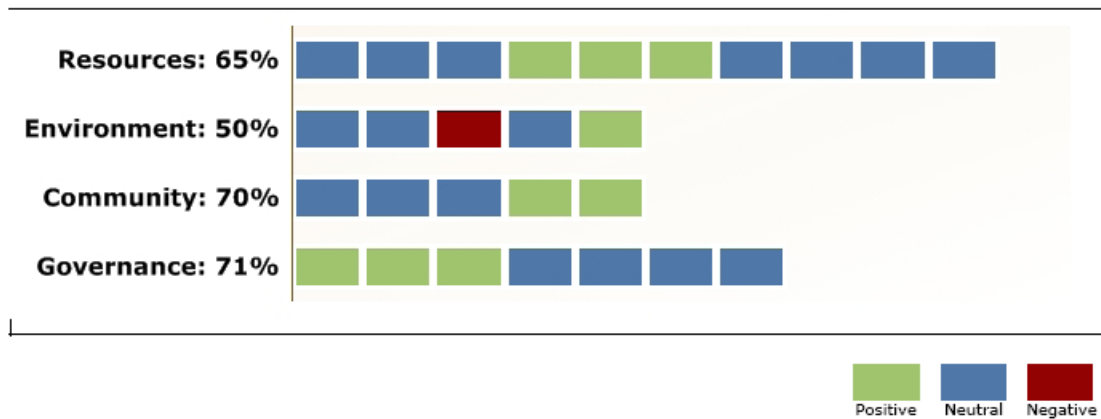
The Shoreline Erosion Management Plan (SEMP) provides Council with information and a basis to enable informed decisions to be made on the overall policy and strategy Council adopts for coastal protection.

Financial and Risk:

Council has provided funding for beach protection and sand nourishment projects in it's annual Capital Works Programs.

Sustainability:

The sand nourishment works are an ongoing requirement for beachfront protection. The design philosophy for foreshore protection where the rock seawalls have been constructed is based on there being sufficient sand in front of the rock wall to act as a buffer. Also the sand helps control any erosion patterns north or south of the walls. The sand also provides a beach profile that is traversable by the public.

**CONSULTATION:**

The sand nourishment program is managed by the Infrastructure Services Department with involvement from Officers within Infrastructure Management, Project Services, Technical Support Services, Fleet and Cairns Works.

CONCLUSIONS:

Council's annual sand nourishment program will result in the region's beaches going into the 2012 wet season in satisfactory condition. Previous technical reports in conjunction with annual beach profile surveys direct officers to the beaches in greatest need of assistance. These works have significant benefits for the community and visitors protecting coastal infrastructure and increasing amenity and recreational opportunities.

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