CITY OF DURBAN – BEACH RENOURISHMENT PROGRAMME

HISTORY

Between 1851 and 1926 with the gradual development of Durban Harbour, the harbour channel was dredged deeper and deeper .To prevent the harbour entrance from being blocked up, a large sand trap area was created just south of the harbour mouth to collect sand moving northwards with the littoral current. As a result, the supply of sand onto Durban's main beaches was interrupted and erosion began.

The City Council commissioned the Council for Scientific and Industrial Research (CSIR) to investigate measures for stabilizing and improving the beaches whilst maintaining the harbour entrance channel. In a report published in 1977, the CSIR gave recommendations for a beach restoration scheme. The report suggested the implementation of two concepts to replenish the beaches: a sand pumping scheme and a system of low-level groynes. Two low-level groynes were constructed between 1983 and 1985 and the third built between 1987 and 1989 to create additional beaches. The Sand Pumping Scheme was completed in 1982.

SAND PUMPING SCHEME

The Sand Pumping Scheme is operated to provide a minimum of 280 000 cubic meters of sand to the beaches every year, in other words, to maintain the average annual loss of sand from the beaches due to the natural drift. Any sand over and above that quantity which is pumped onto the beaches will aid in regaining beach width lost in previous years.

The sand used for the scheme comes from the Dredging Services (Transnet) dredger, whose prime function is to maintain the harbour entrance. The dredger removes sand from the sand-trap area and discharges some of its loads into the Council owned storage hopper near the North Pier. This sand is subsequently re-dredged from the hopper by means of equipment housed on a mobile bridge and pumped to the first booster station . The sand and water mixture can be boosted to four other stations along a total 3.5 km pipeline running northwards as far as the Somtseu Road outfall (Snake Park). The sand can be discharged onto the beaches at any one of a number of outlets situated along the beachfront from uShaka to Snake Park Beach.

The quantity of sand received into the Council Pumping Scheme depends on the sea conditions and the availability of sand in the sand-trap. In rough sea conditions no dredging can take place at all. **In addition to the sand received from the maintenance dredging of the sand-trap area, the dredger is also chartered by the Council to provide additional sand by dredging from off-shore outside the trap area at depth's between 18-25 meters and then pumped into the hopper. This activity has taken place since 1982 to 2006 on an ad- hoc basis as deemed necessary.** In 1982 a once-off large quantity of 650 000 cubic meters was pumped onto the beaches in a period of 5 weeks, since the beaches were in their worst condition and this would kick start the sand pumping programme.

OPERATIONAL ACTIVITIES ON BEACH

The 3.5 km H.D.P.E. pipeline from the hopper station to the Somtseu Road Outfall (Snake Park) is buried in the sand together with its 6.6 kv power cable and telemetry signal cabling. On the Lower Marine Parade area, the pipeline and cabling are housed in concrete ducting.

When sand is discharged at the various outlets, the sand pumping staff prepare for discharge by laying lengths of H.D.P.E. piping at the outlets on the beach. As the sand builds up at these locations, so additional piping is added to pump further away. This prevents too large a build up at the original outlet point. Once sufficient quantity has been pumped in a location, the pipes are removed and relaid at another outlet whilst earthmoving machinery spreads the pumped sand evenly over the renourished beach. Sand Pumping staff are positioned at the outlet points for public safety during pumping and whilst machinery is working spreading sand. In past years, sand has been trucked along the beach from one location to another and dumped as required. It has once again been spread evenly by earthmoving machinery. This has also taken place on an ad-hoc basis.

HARBOUR WIDENING PROGRAMME

With the construction of the new North Pier and the Harbour widening process, the existing Council storage hopper has been demolished and a temporary storage bund area constructed by the harbour widening contractors for Transnet. This temporary scheme will only be operational from end June 2009 until a new hopper station is to be built for Transnet at 'A' berth and is to be operated by Transnet. It will pump sand to a proposed new Booster Station O that will be owned and operated by the Council and link up to the remainder of the Council 'old' sand pumping pipeline and booster stations 1-4.

As a result of the demolition of the Council hopper station and the unavailability of sand from the sand trap for reclamation purposes, Durban's beaches are in the worst condition they have been in a decade and the threat of damage to Council Infrastructure seems imminent unless large quantities of sand are immediately pumped onto the beaches.

SAND PUMPING PROPOSAL FOR 500 000 CUBIC METERS FROM OFFSHORE

The City is currently negotiating with Transnet Dredging Services to charter a dredger from Dredging International who have a dredger immediately available up until the end of June 2009. There is a window period of six weeks between mid June 2009 to end July 2009 when this dredger has spare dredging capacity to provide the needed 500 000 cubic meters to the beaches between uShaka and Addington. This will necessitate laying a 900 mm diameter pipeline along the beach from the harbour entrance for a maximum distance of 1400 meters. With the unavailability of sand from the sand trap, sand will be dredged from an area outside the sand trap at a depth of between 19-22 meters where this sand would not normally enter the sand trap with the littoral drift. Samples of the sand from the proposed sand dredge area have been taken and tested for suitability in terms of grain size and for bacterial and heavy metal contaminants. Although the suitability is confirmed, random testing will be undertaken during the dredging / pumping process. This quantity of sand is over and above that which has been requested by the Council from the Port as part of the normal maintenance dredging operations.