

# Coastal Adaptation in the Developing World

A CASE STUDY IN DURBAN, SOUTH AFRICA



## INTRODUCTION

Increases in coastal population, in conjunction with rising sea levels and an increased frequency and severity of storm events, creates potential for disaster.

Forty million people worldwide are estimated to be exposed to a 1 in 100 year storm event (Nicholls et al, 2008).

Durban, South Africa experienced an extreme storm event in March 2007, which caused extensive damage to infrastructure.



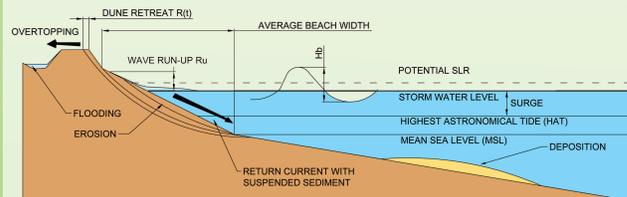
A case study site was selected along the central beaches of Durban, adjoining the city centre.

The Addington District Hospital is located on site.

## STEP 1: VULNERABILITY ASSESSMENT

Vulnerability Indicators:

- Runup
- Overwash
- Dune Retreat



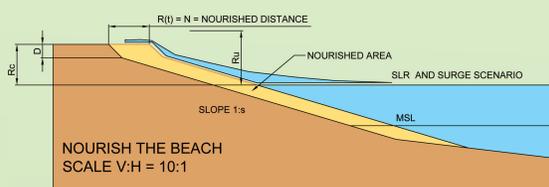
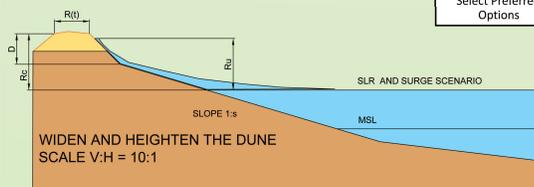
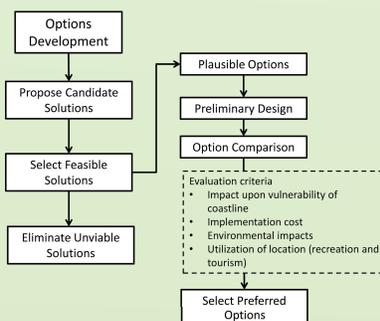
### Methodology

- Assess impacts of 1 in 100 year design storm with different sea level rise (SLR) scenarios
- Identify impacted assets
- Map potential impacts
- Draw up vulnerability cross section

## STEP 2: DEVELOPING PROTECTION SOLUTIONS

Plausible Options:

- Nourishment
- Dune Expansion
- Geotextile Sand Bags
- Sea Wall
- Dike in Dune
- Rock Revetment



## CONCLUSIONS

The case study site is currently vulnerable to 1 in 100 year storm, this vulnerability increases measurably with future SLR scenarios. Softer, sediment based solutions are preferred for the case study site. This is due to the recreational and touristic importance of the beach. Developing a generic vulnerability assessment methodology for developing countries could be useful to local government.

## RECOMMENDATIONS FOR LOCAL GOVERNMENTS

- Gather local data about the marine climate and coastal processes
- Assess the vulnerability of the coastline
- Develop an SLR strategy to plan for future increases in vulnerability
- Develop protection solutions for critical parts of the coastline
- Create awareness about coastal risks

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**References:**  
Nicholls, R. J. et al. (2008), "Ranking Port Cities with High Exposure and Vulnerability to Climate Extremes: Exposure Estimates", OECD Environment Working Papers, No. 1, OECD Publishing