



LISTEN TO OUR OCEANS

CASE STUDY

CCell Reef at Telchac Puerto, Yucatan - Mexico



BACKGROUND

The beach at Telchac Puerto had been losing sand for the last decade, which has had a detrimental impact on the tourism industry and the value of coastal properties. Solutions implemented to date in the area have been at best insufficient, with most causing further erosion damage downstream and incurring a high environmental cost. A group of beachfront property owners, supported by the local and

regional government, decided to implement a CCell Reef to mitigate coastal erosion while simultaneously promoting the surrounding marine life.



CCELL REEF

Manufacture and installation of CCell reef for coastal protection at Telchac Puerto Community in Yucatan, Mexico.

Structure Type:
CCell Arch Reef 1.0

Owner(s):
Community of Telchac Puerto

Designer and Contractor:
CCell Renewables Ltd.

Installed since:
August 2021



CHALLENGE

This project successfully addressed four key challenges:

1. Coordinating the interests of local and regional government entities to obtain permits for our novel technology.
2. Designing the structure with a controlled degree of porosity to allow sediment flow and aligning it parallel to the shore to minimise disruption to longshore sediment movement, thus preventing collateral effects downstream.
3. Implementing a cost-effective method for burying a 150m underwater cable from the control room to the installation site to power the reef for electrolysis.
4. Swiftly installing 106 sand anchors using a small crew without heavy machinery or large boats within just 5 days, minimizing the impact on the coastal community, local businesses, and the near-shore ocean environment.

PROJECT SPECIFICATIONS

Structure:
CCell Arch Reef 1.0

Anchoring:
CCell Sand Anchors

Reef Dimentions:
120m long reef: 3 segments 1.5m high x 2.2 wide x 40m long

Installation:
1.7m depth, 80m from shore

Design Life:
40 years

SOLUTION

Following a comprehensive simulation of the site's wave and current dynamics, CCell installed a 150-meter reef system meticulously designed to safeguard a 120-meter stretch of beachfront.

This reef structure is composed of three 40-meter segments, interspersed with two 10-meter openings to facilitate unobstructed boat traffic. approximately 80m from the shore and 1.7m below mean tide level. Sand anchors were embedded 1.2m below the

leaving approximately 0.5m between the crest of the reef and the surface.

To ensure safe navigation around the structure, it was demarcated with buoys.

An underwater armoured cable was installed to power the rock growth process, buried 1m into the sand, running from a central control unit in one of the houses, 150m away from the structure. The power is driven by solar panels.

