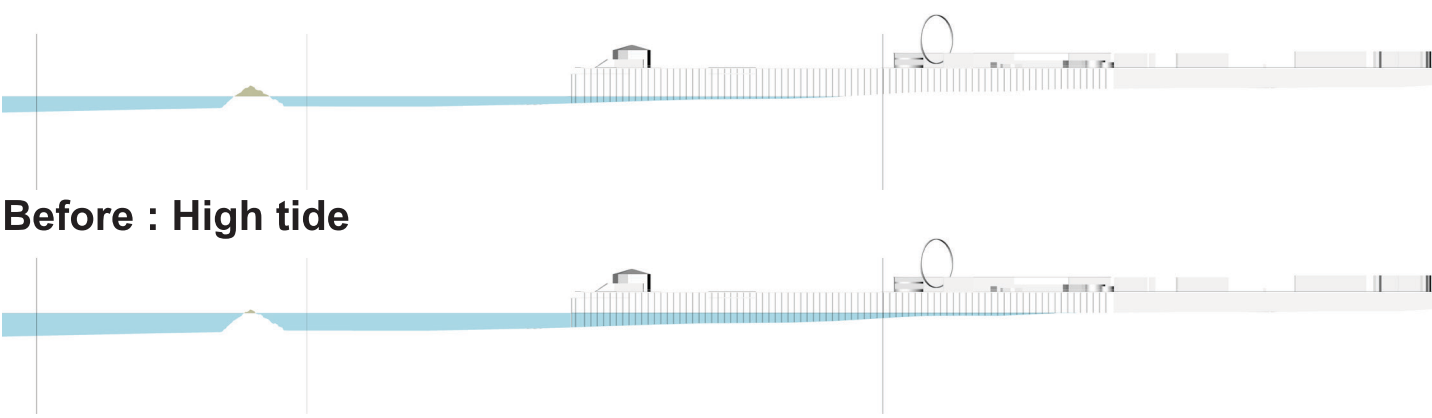
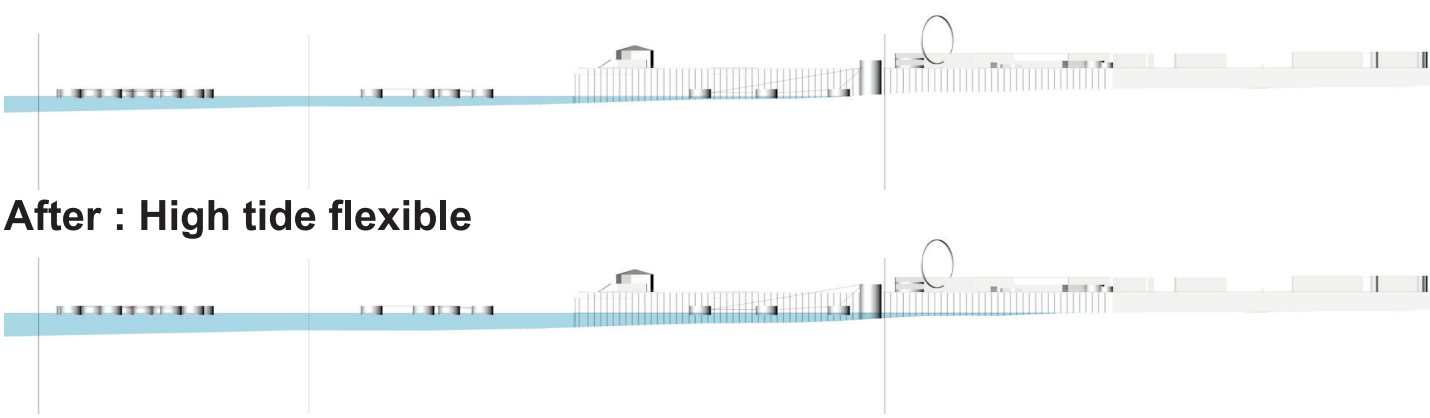


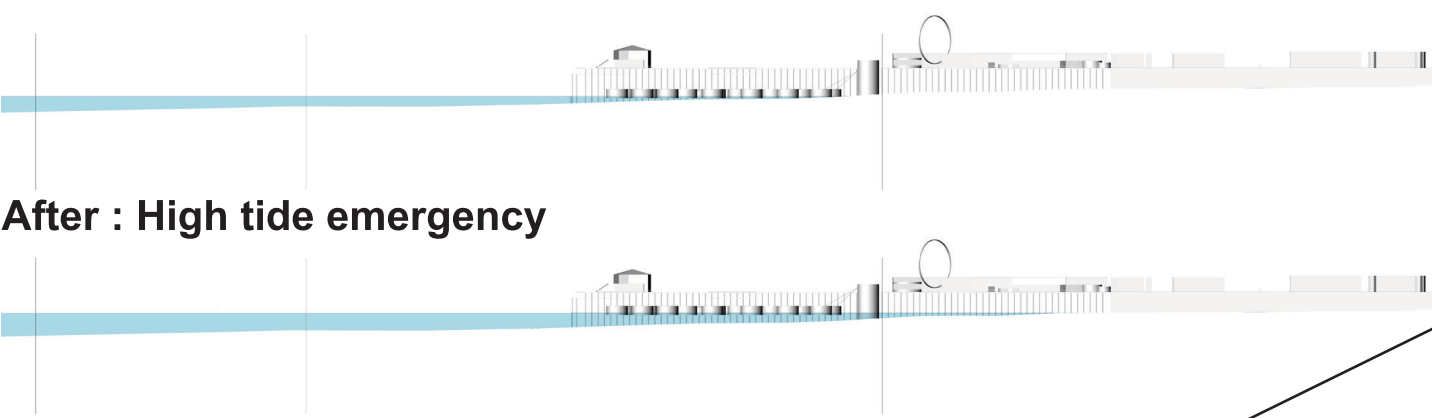
Before : Low tide



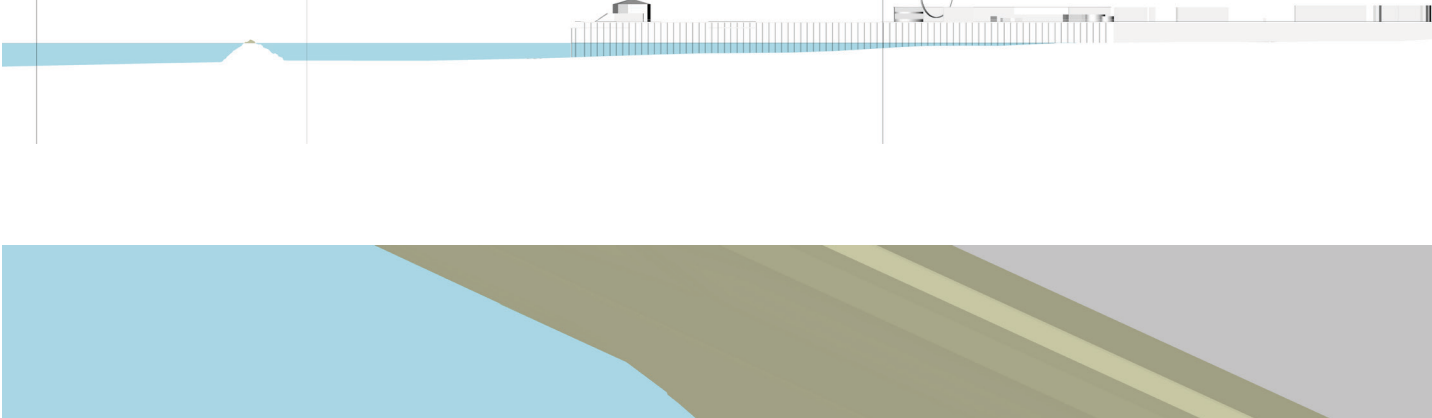
After : Low tide flexible



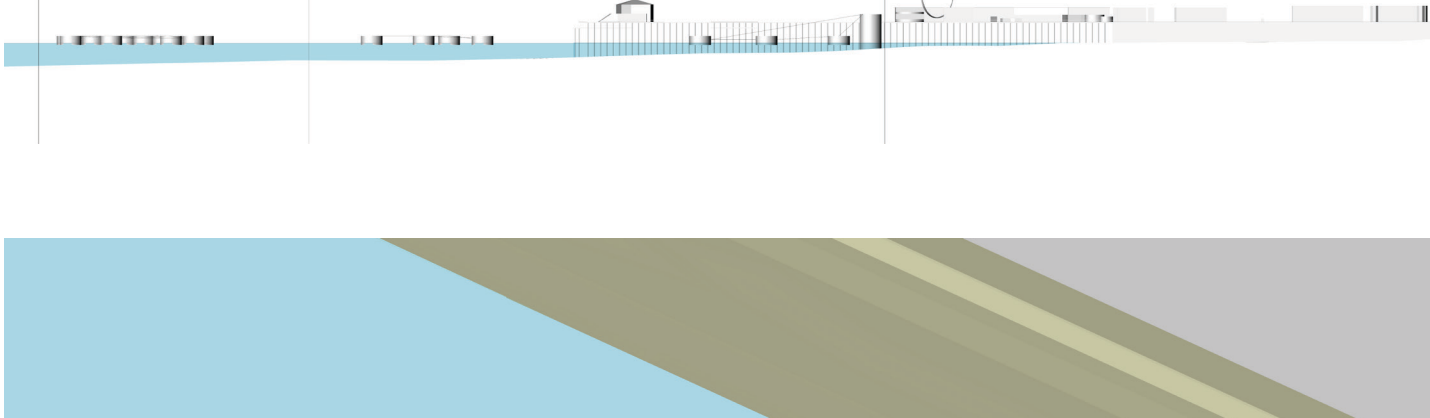
After : Low tide emergency



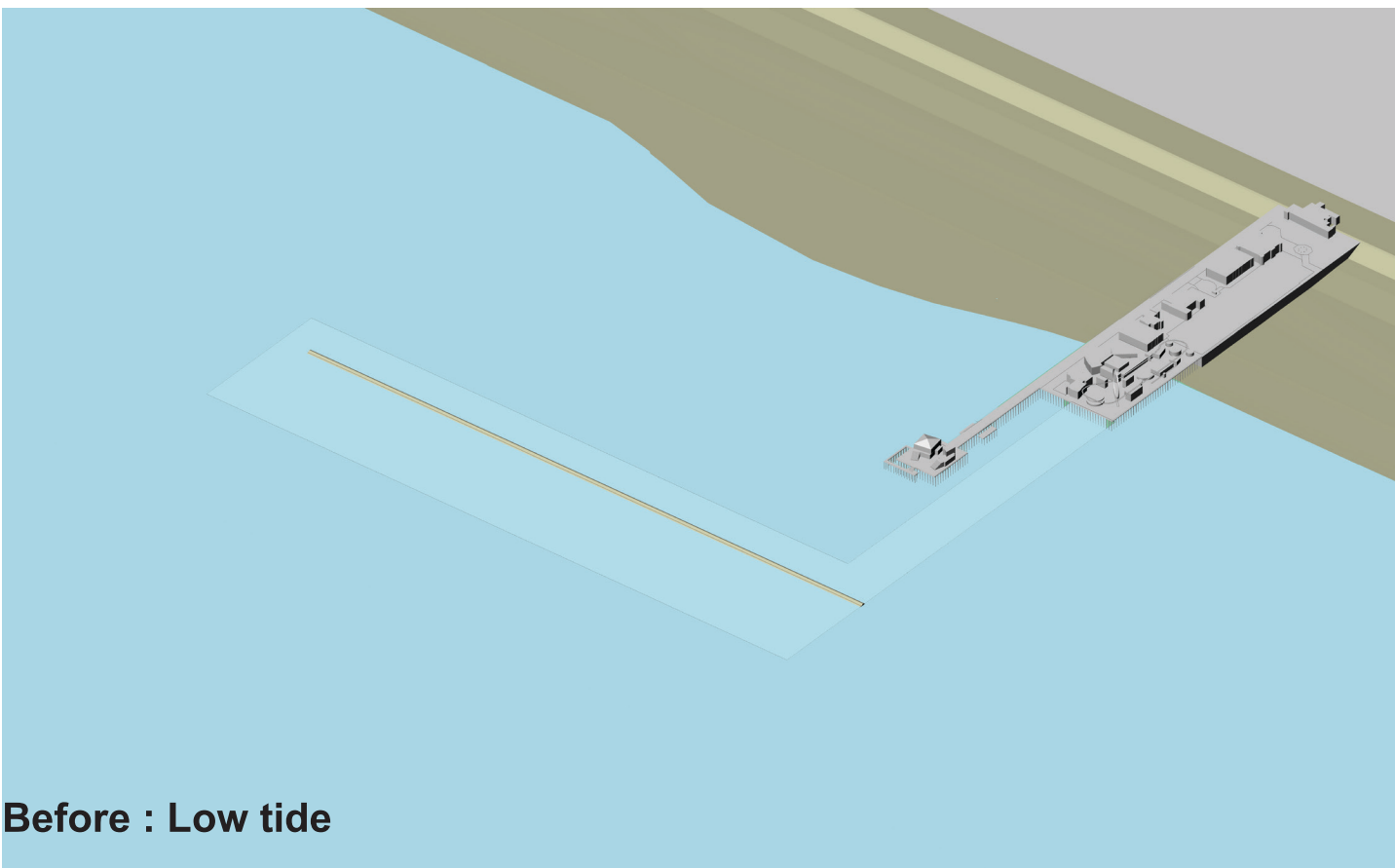
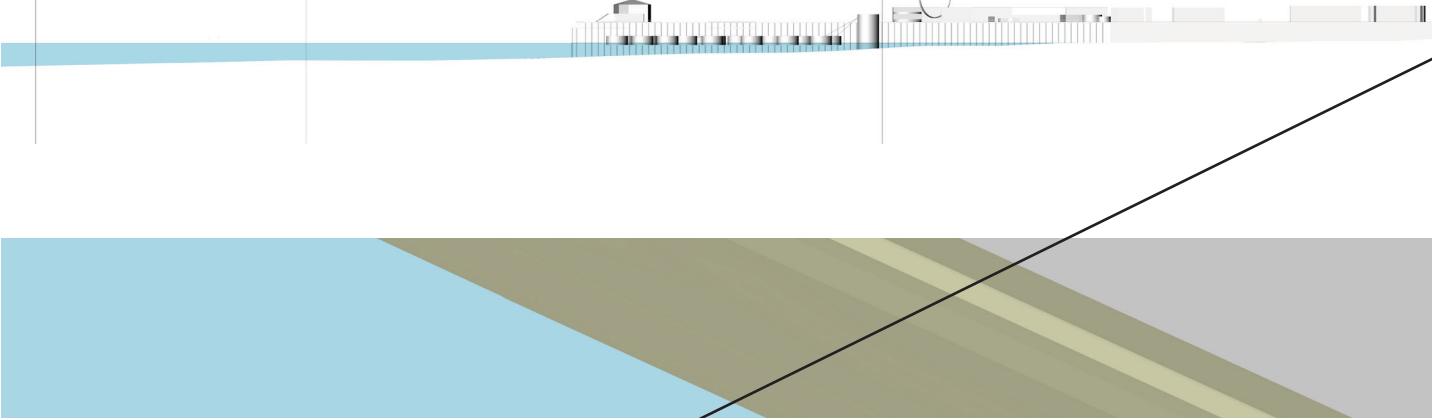
Before : High tide



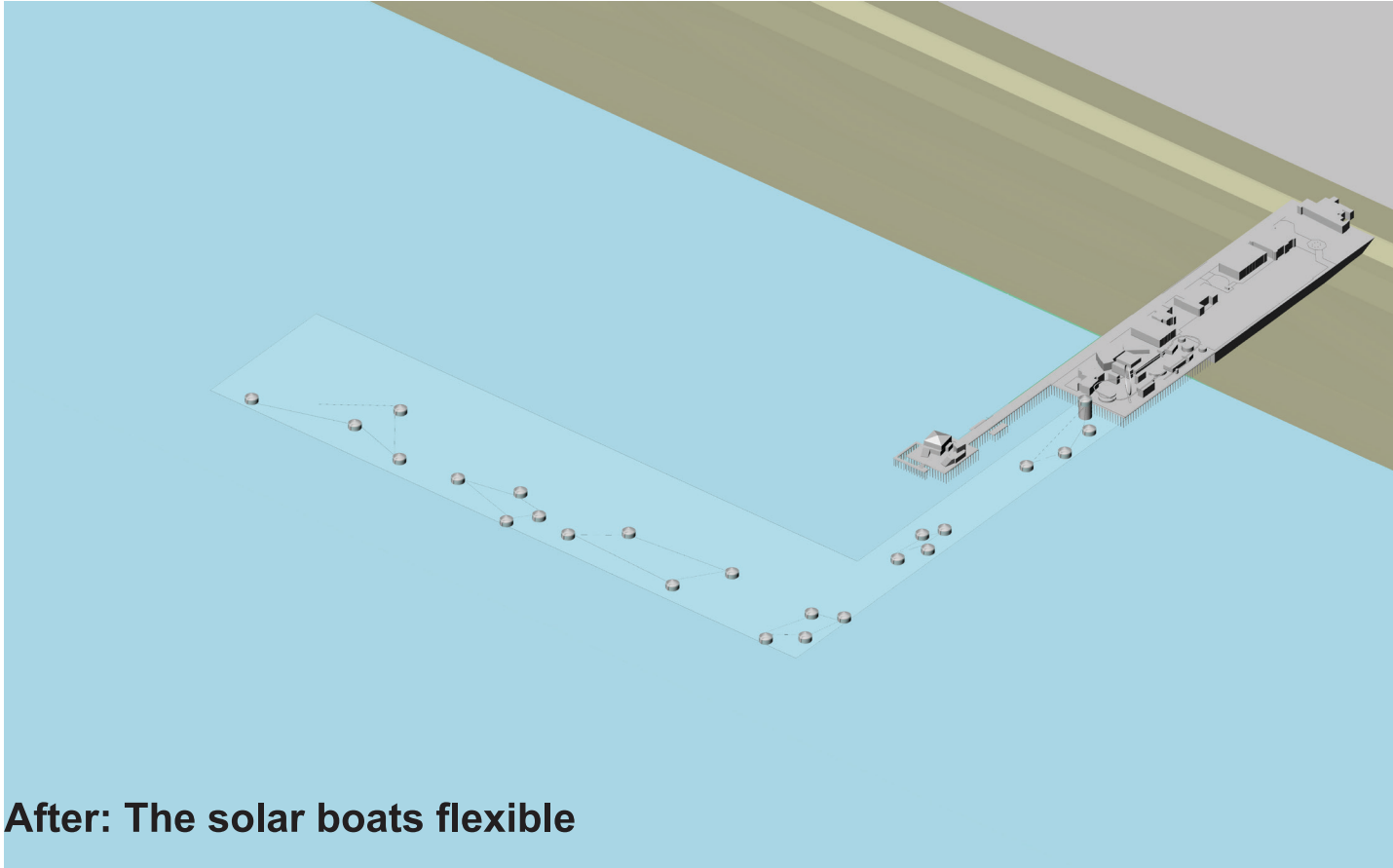
After : High tide flexible



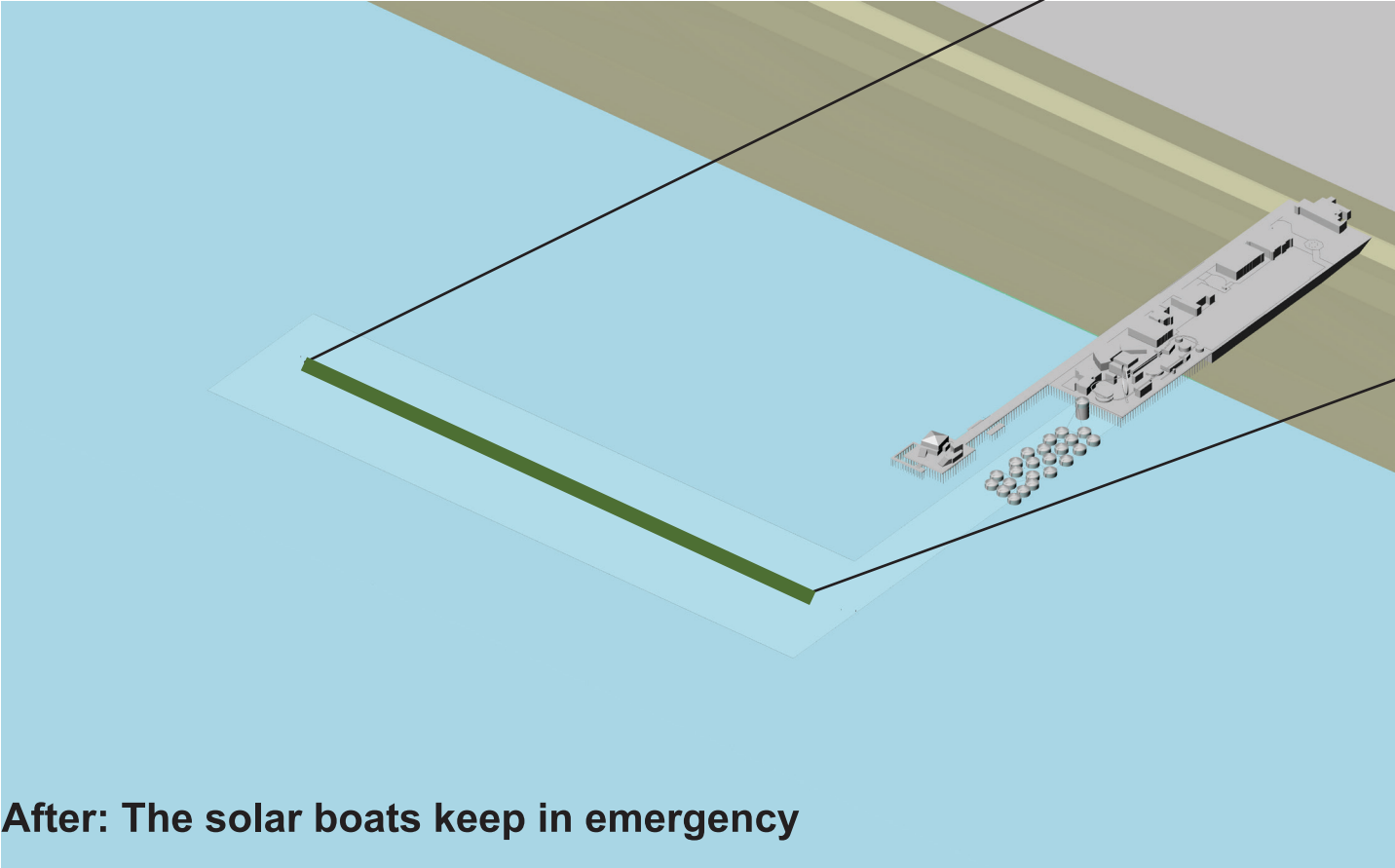
After : High tide emergency



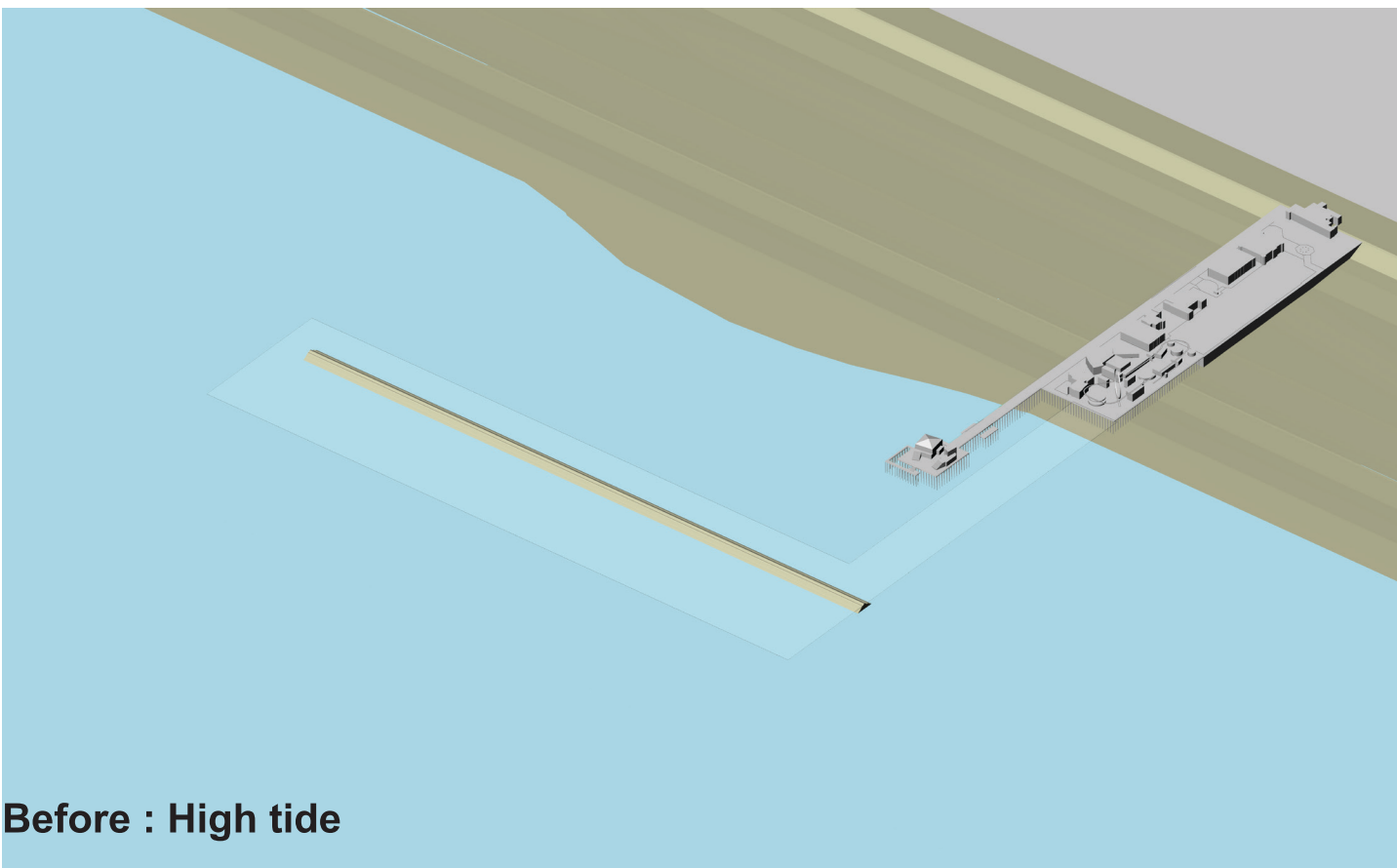
Before : Low tide



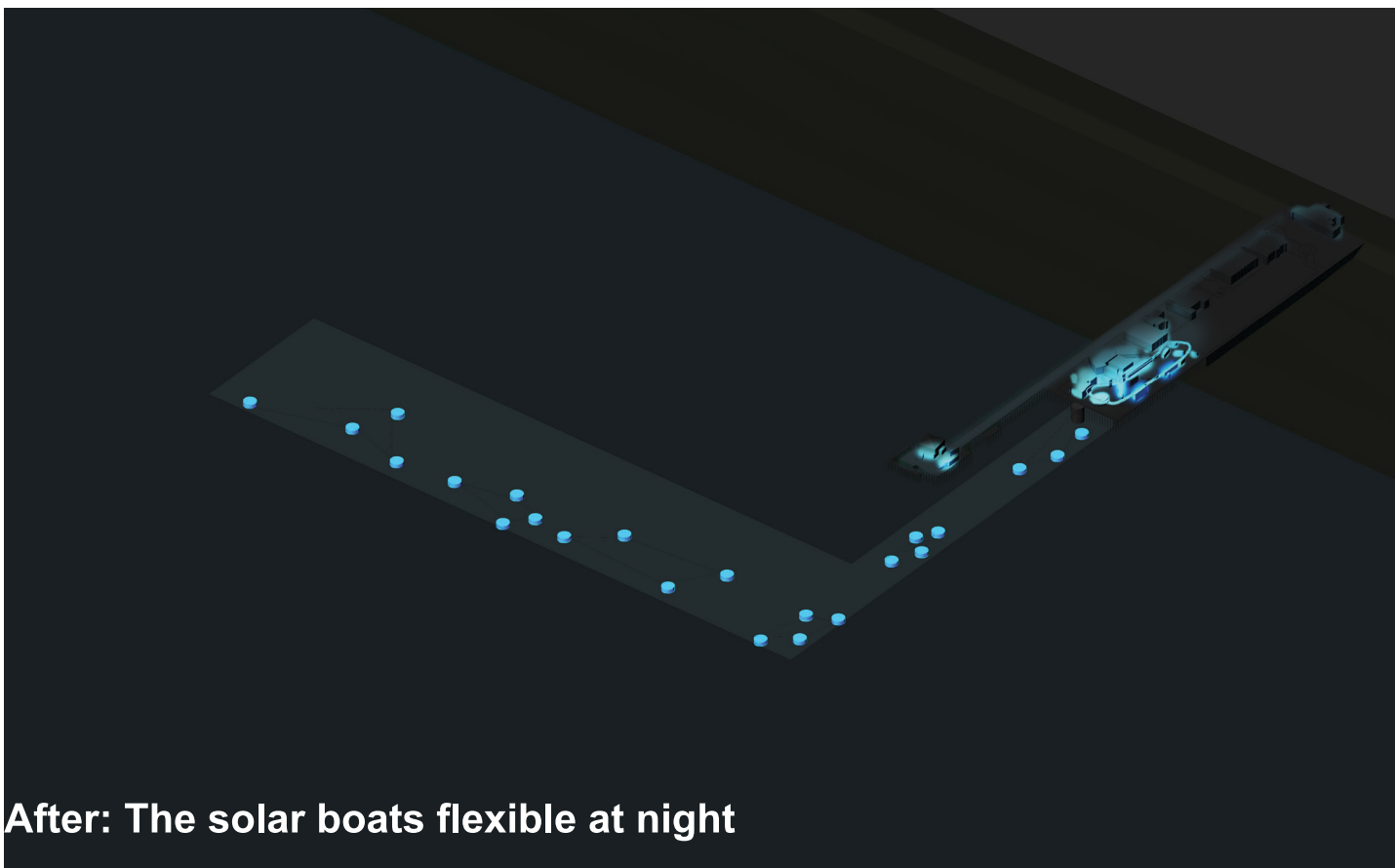
After: The solar boats flexible



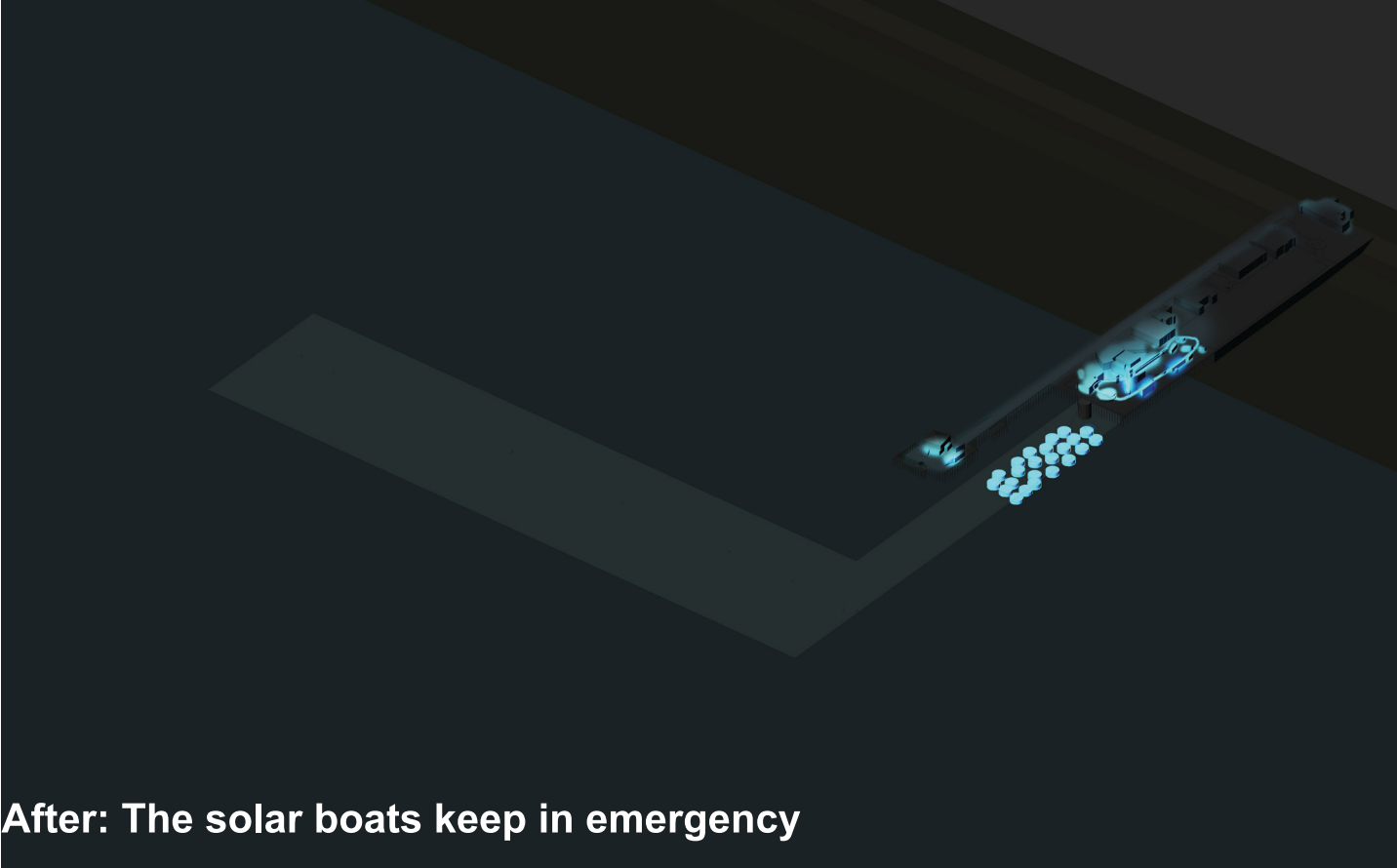
After: The solar boats keep in emergency



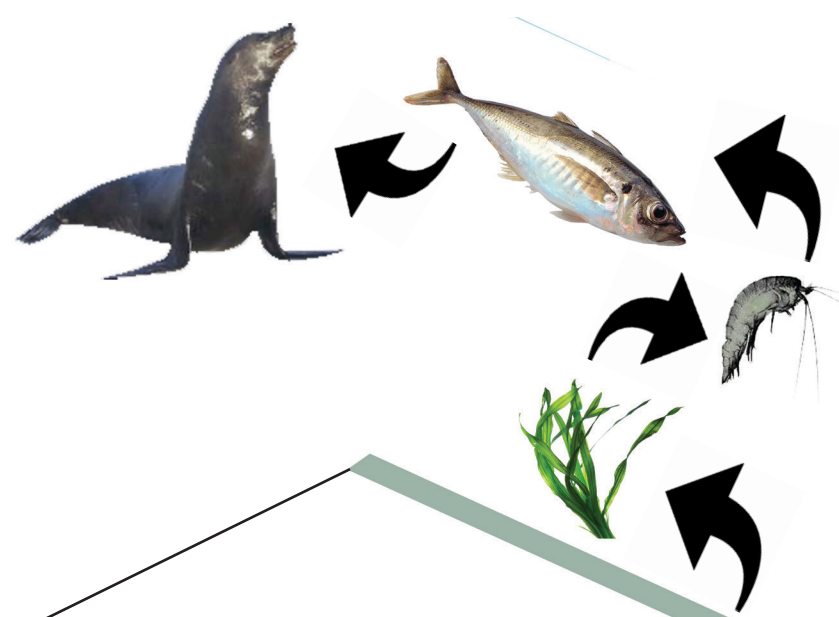
Before : High tide



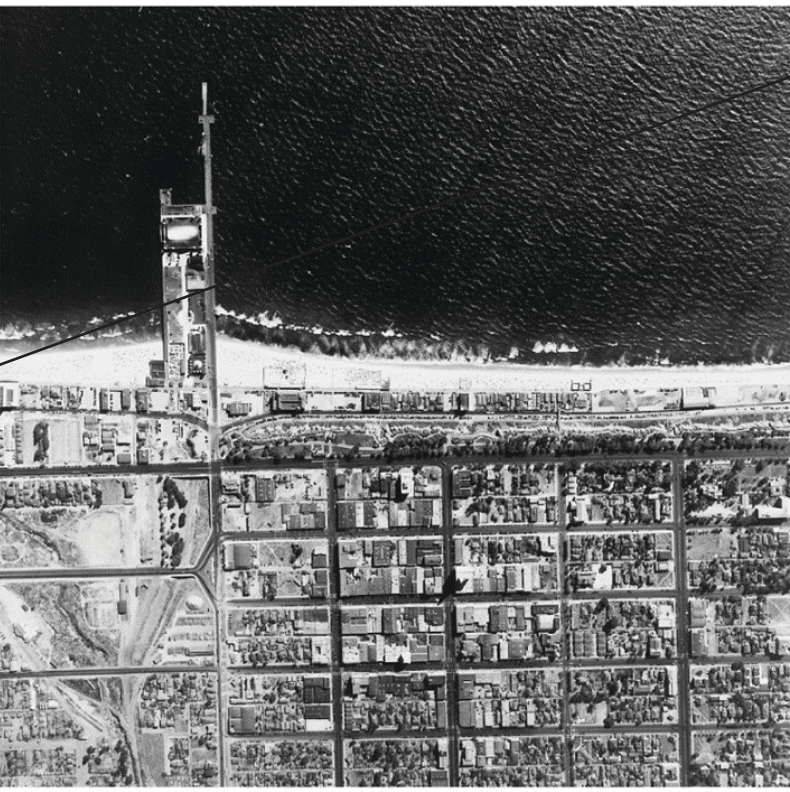
After: The solar boats flexible at night



After: The solar boats keep in emergency



Foodchain from seaweed



(a) No breakwater



(b) Sediment increase from breakwater

**Removal of breakwater**

By removal of breakwater area around 25,675 sq.meters to generate potential energy of life around 0.13 Mw/year but create more wellness of beach ecology.

This method is not create or build something to generate electricity. The point of this is to create more web and base of food chain by letting seaweed grow in after and it will cut of cost of using energy to maintenance a cumulative of sediment on beach estimating 350,000 m3 per year.

Also breakwater goal in history of Santa Monica pier is to let a boat park in this area. Later it failed by broken and improved few times. Finally this area is not appropriate to have breakwater.

It will clear sea view horizon of Santa Monica to be clean and beach to be clean. No more rigid rock structure obstructs the view. Let a wave come to beach in natural way of ecology.

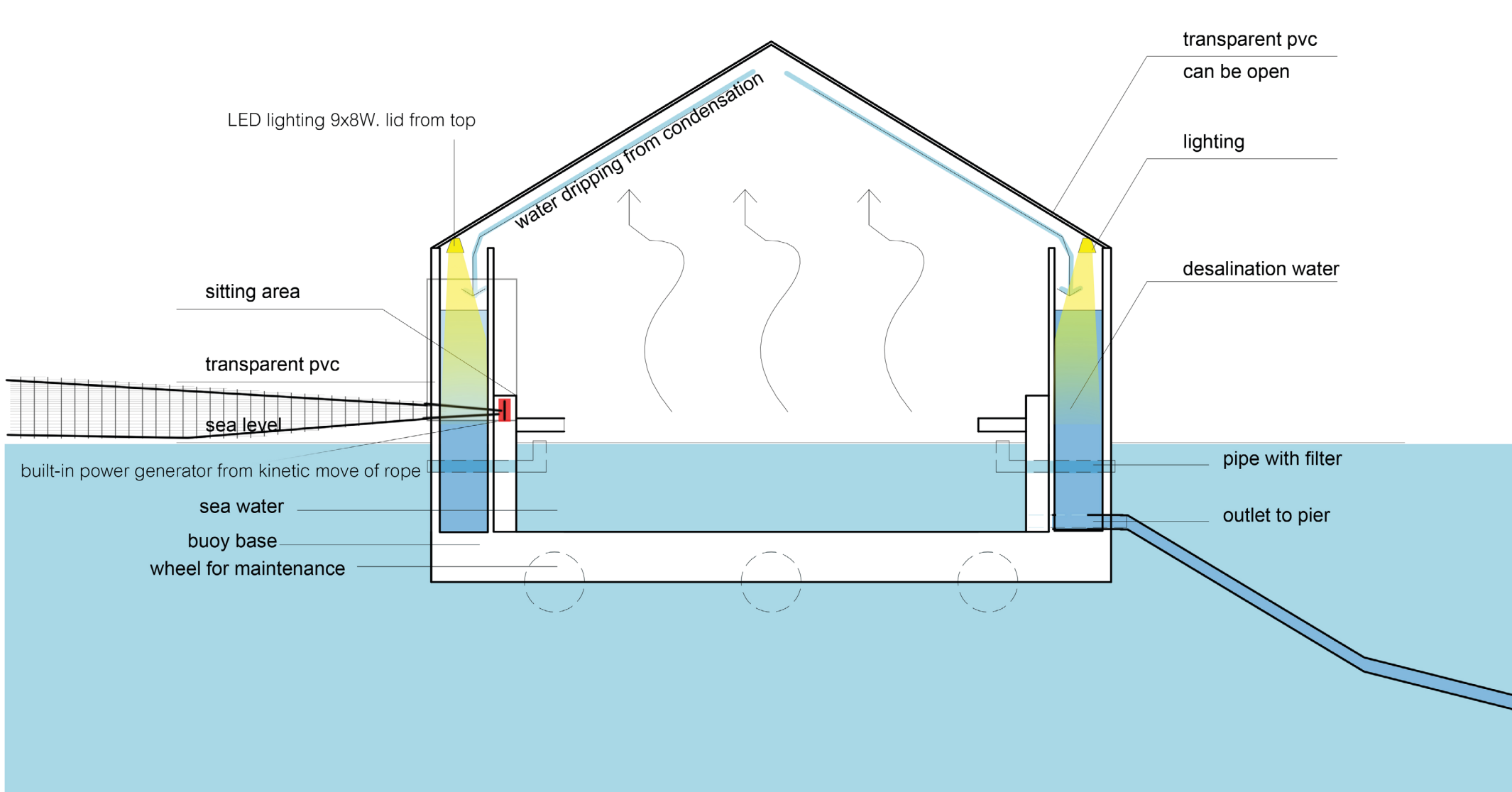
Conclusion of removing breakwater instead of construction more rigid or long structure no matter how big or small will be best thing for ecological and aesthetic. We have learn how violent the nature from past that you will see that Santa Monica pier was build enormous and uncountable concrete pile today to resist natural cause.

For electricity production by wave energy from this area, the area has only maximum depth between low tide and high tide of 6 to 10 meters. This depth is not enough for current technology to be effective and efficiency. CETO requires 15-50 meters depth. Oyster wave requires 10-15 meters depth. Also current devices in market have to build tube underground or on ground to send seawater back to above water generator station which in this site not appropriate to do.

For another production such as wind turbine requires wind speed of 50 km/h which from Santa Monica data is around 15 km/h. Solar cell on water is interesting but it requires a lot of space to run it efficiency and worth building cost. Plus solar cell plane will conceal organic life under sea water.

So this method is an answer because seaweed most commonly inhabit the part of a sea that is close to the shore (the littoral zone). This kind of generating of "Life" is maybe more or equally importance to generate only energy. There is just a cost to remove breakwater but forever not to use energy continuous dredging beach again.

**The Solar boat : Section**



**The Solar boat : Plan**

