

NHRCP Turtle Pond Redesign Proposal



Prepared by Conservation Diver for
the New Heaven Reef Conservation
Program



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1 OVERVIEW



Top Down View (Dive School is on right, Koppee on Left)



View from Beach (With screen panels over turtle tanks for night security)



View from the road



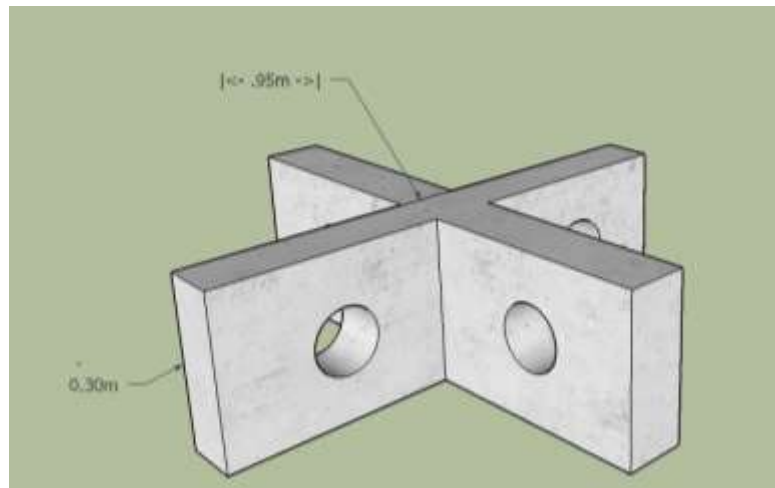
View from Koppee

2 RATIONAL

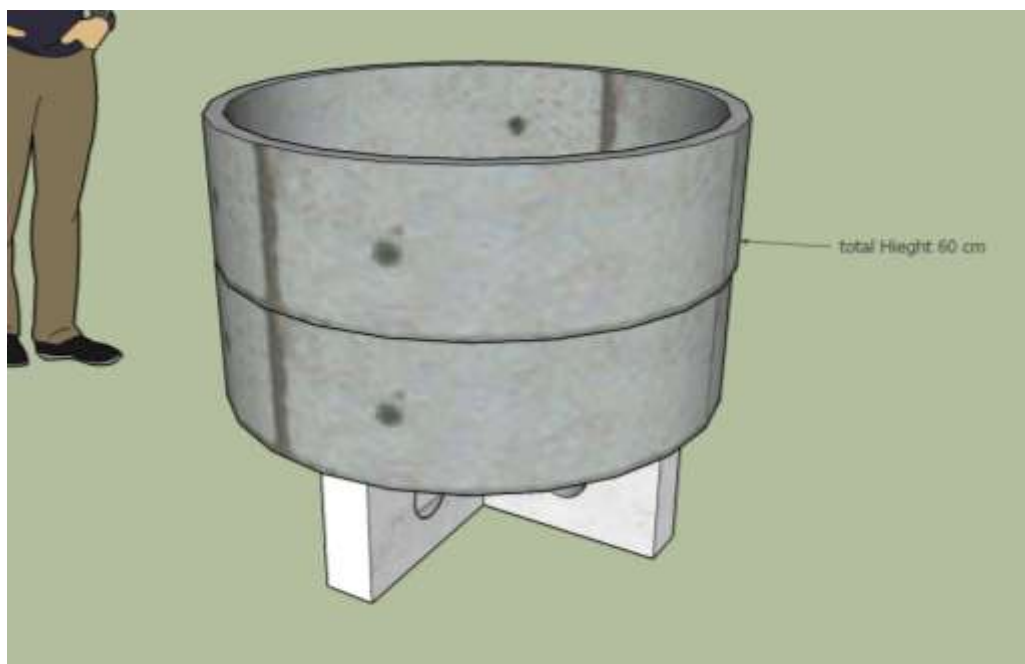
The current tanks design has several flaws, most saliently the lack of light which makes it ineffective for raising healthy sea turtles or being used for coral spawning, basically rendering the tanks useless. Other problems include:

- The electric lines are close to wet areas, causing a shock hazard
- The current pipe configuration means that when the in-sea line empties, the pump is no longer primed and it is very difficult to prime it
- The square design does not allow the turtles to swim in any direction continuously
- The size of the water in-flow and out-flow means that the tanks often overflow, are clogged, and do not adequately remove waste matter
- The tanks sit in a location which disrupts the flow of customers between the dive school and Koppee and blocks the view
- The in-sea line is flimsy, often becomes unburied, and is unsightly
- The one-way valve at the end of the in-sea line often comes off, or gets jammed with sand and fails to function
- There is no tank for growing macro-algae that can improve water quality and provide an alternative food source for the turtles
- Sand and other debris in the sump tank often clogs and damages the submersible pumps
- Spilled or overflowed sea water often ends up in P'Win's Garden
- The tanks are not secure at night

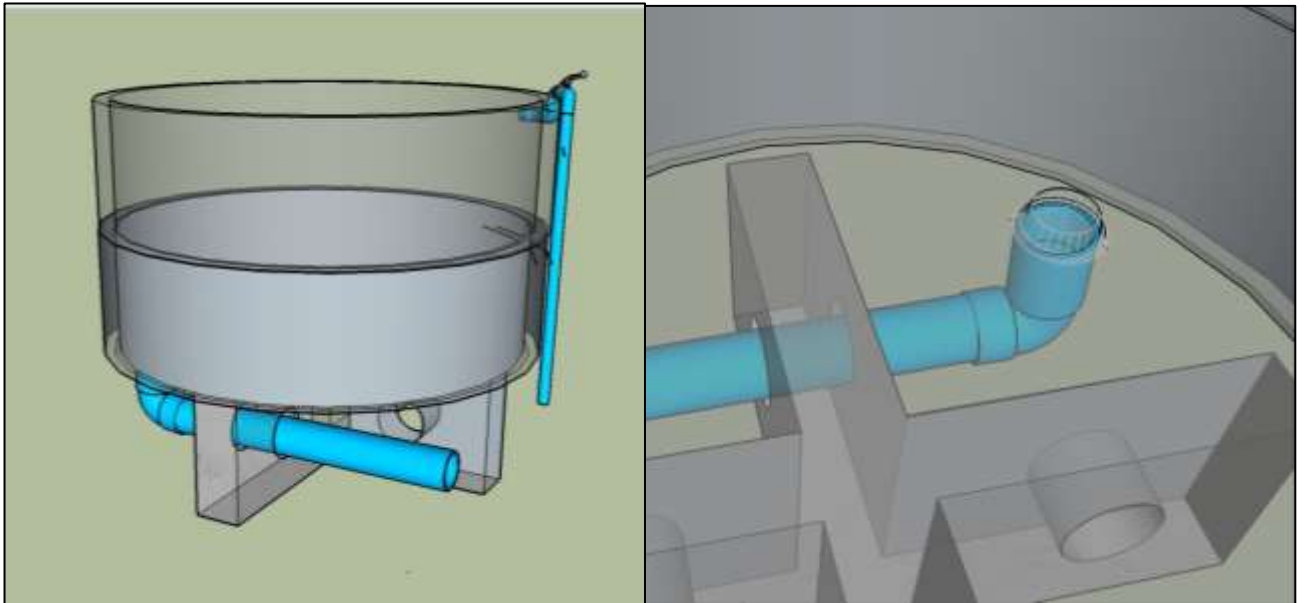
3 TANK DESIGN



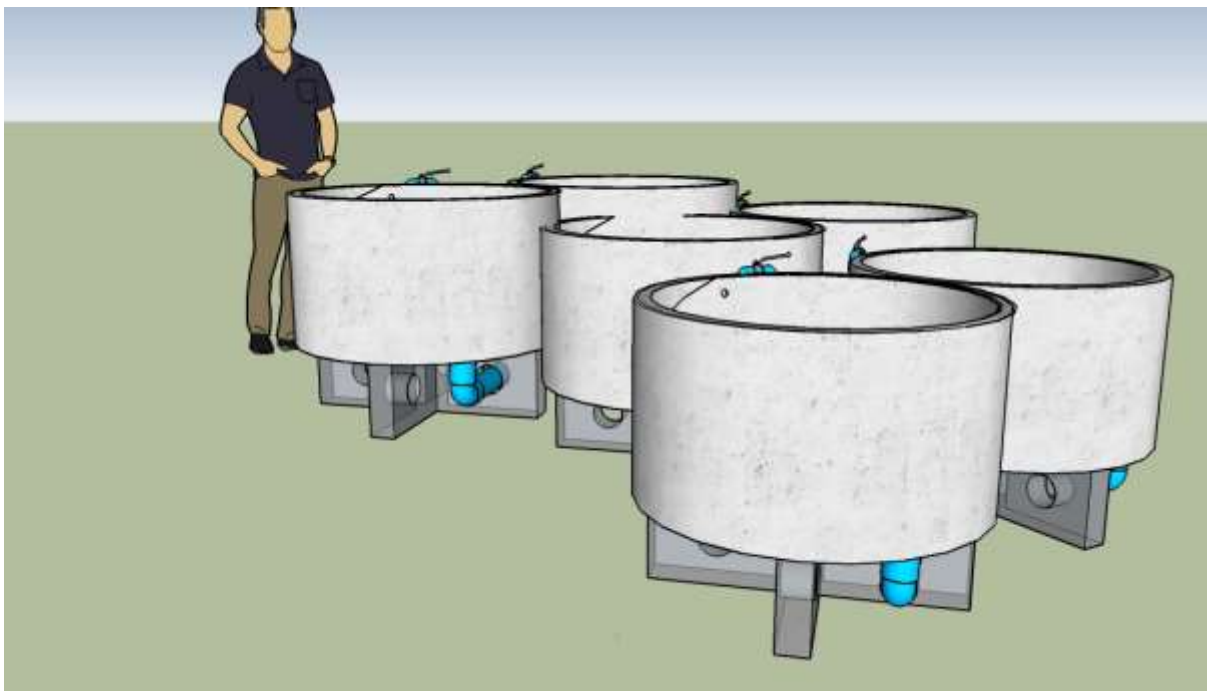
Tank Base (Holes are for options running piping)



Tank is made from two well rings

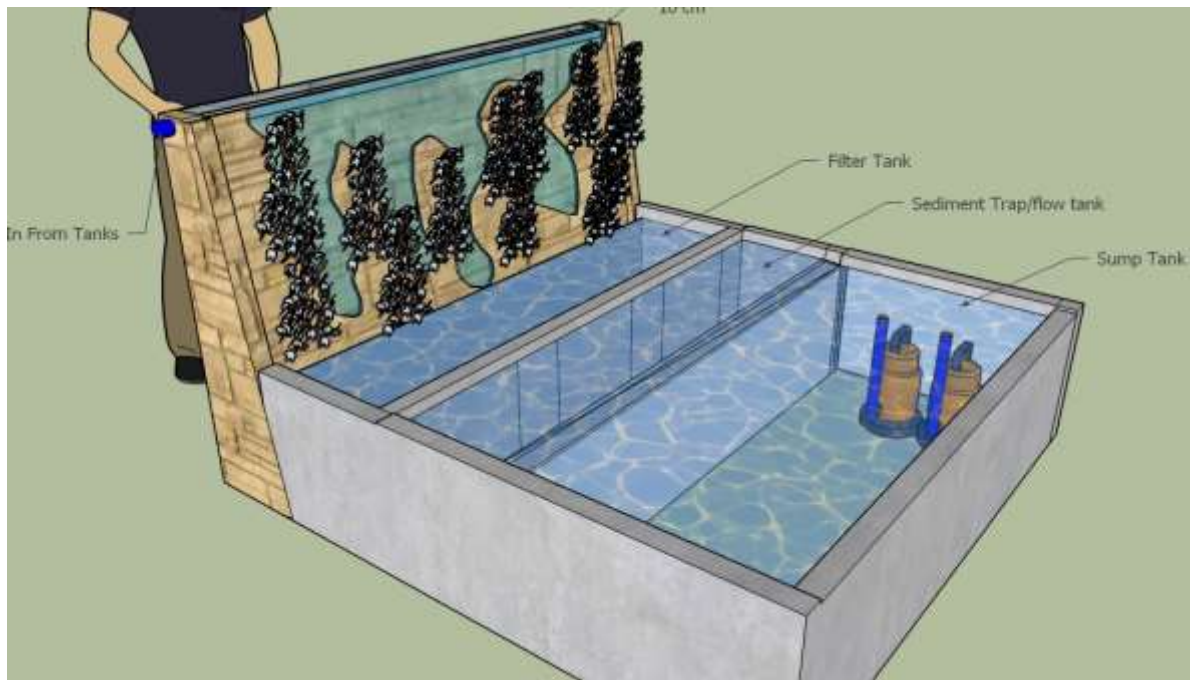


Pumping is simple, and should function much better than before, with 1/2" piping used for inflow, set up to circulate the water. water flows out easier, through 2" pipe on the bottom, and will automatically remove waste from the tanks (the bottom tap will be threaded, so it may be modified to work for coral spawning).

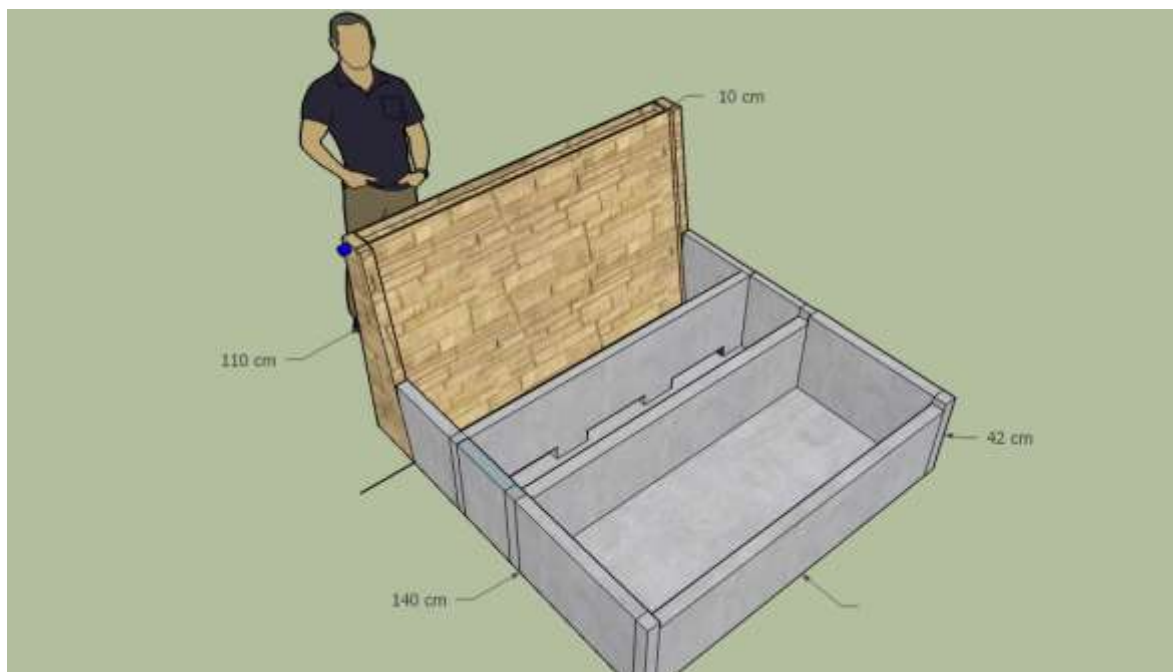


When rendered, the final set-up of 6 tanks is practical, allows better swimming, and is more attractive (note: bamboo is used to cover plumbing on bottom)

4 FILTER AND SUMP DESIGN

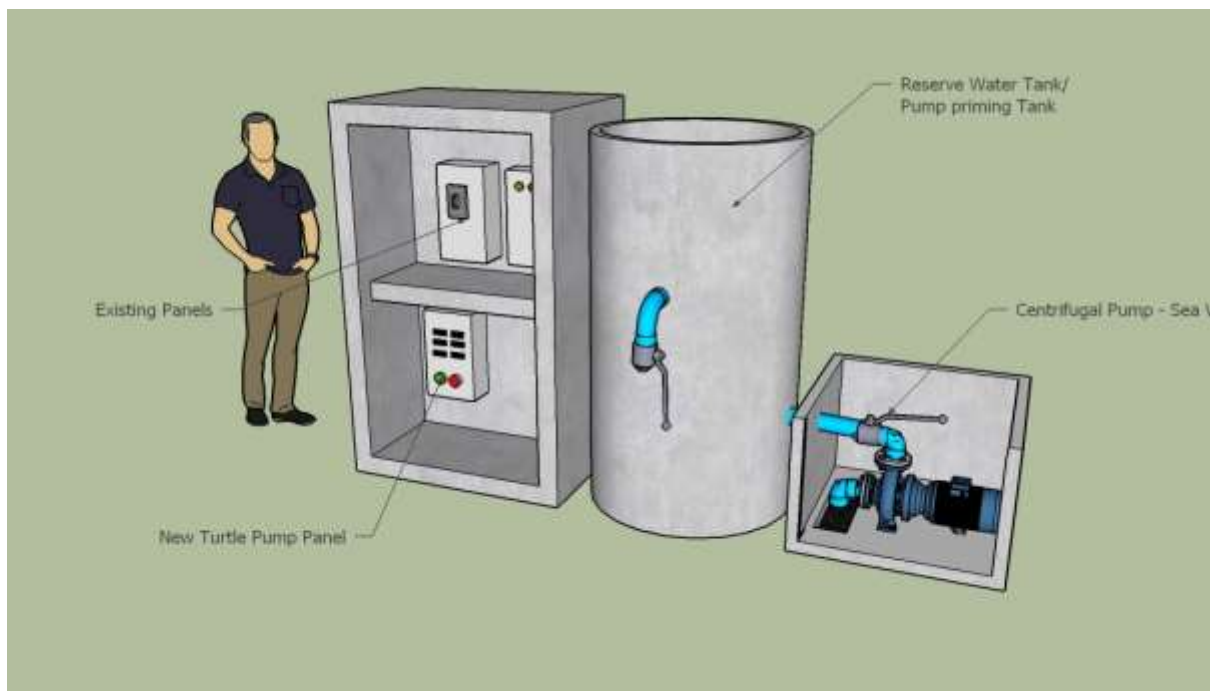


The new sump acts as the standpipe (preventing the other tanks from going low), has algae growing area to remove nutrients and improved aesthetics, and also has improved water flow design. If overfilled, water will overflow and run down the beach steps.

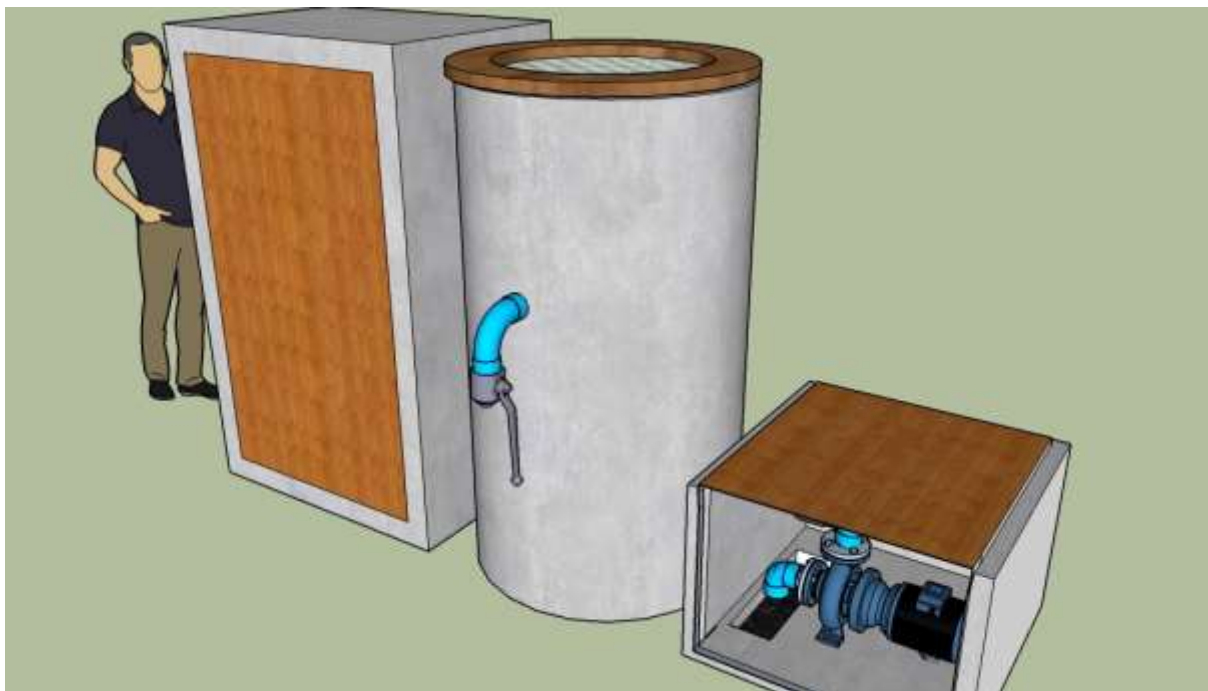


Water flowing from the top goes over the plants, down through the filters, then out through the bottom of the first tanks, it then flows over the wall of the second tanks (called over-under filtration) which removes more sediment and prevents the pumps from breaking. Together with the tanks, the total capacity is 3.22 m³, compared with the existing tanks at 4.3 m³.

5 PUMP ASSEMBLY

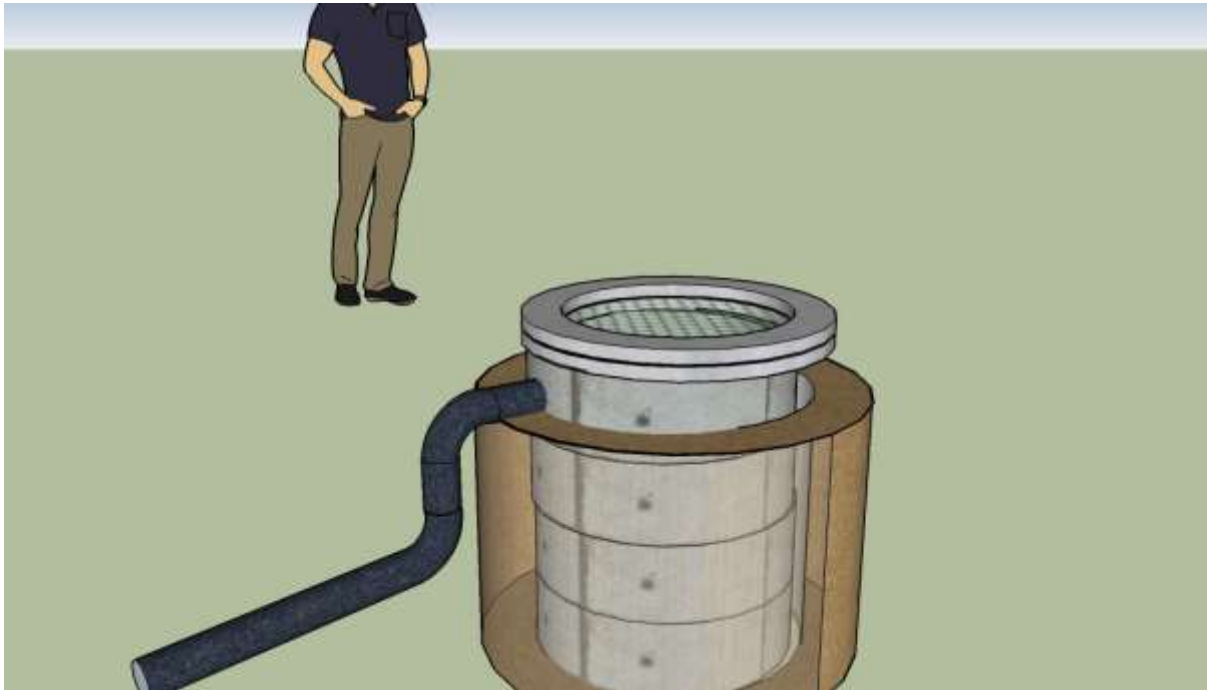


The new pump assembly will separate all electricity and water. The same centrifugal pump is used, however a water reservoir tank has been added, this will act as a sediment trap for water before it goes to the tanks, allow half the reserve to be used to fill the tanks when needed, and the other half used to prime the pump when necessary. The total volume of the reserve water tank is 1.3 m³.



Bamboo doors are used to improve look and safety

6 IN-SEA TERMINUS



A better in sea filter will reduce problems, ensure easy filling, and also allow for filtration of water and filling in low tide/summer season. Buried HDPE pipe is used so that nobody sees/damages the pipeline. (note: level of one way valve is about half way down tanks)