

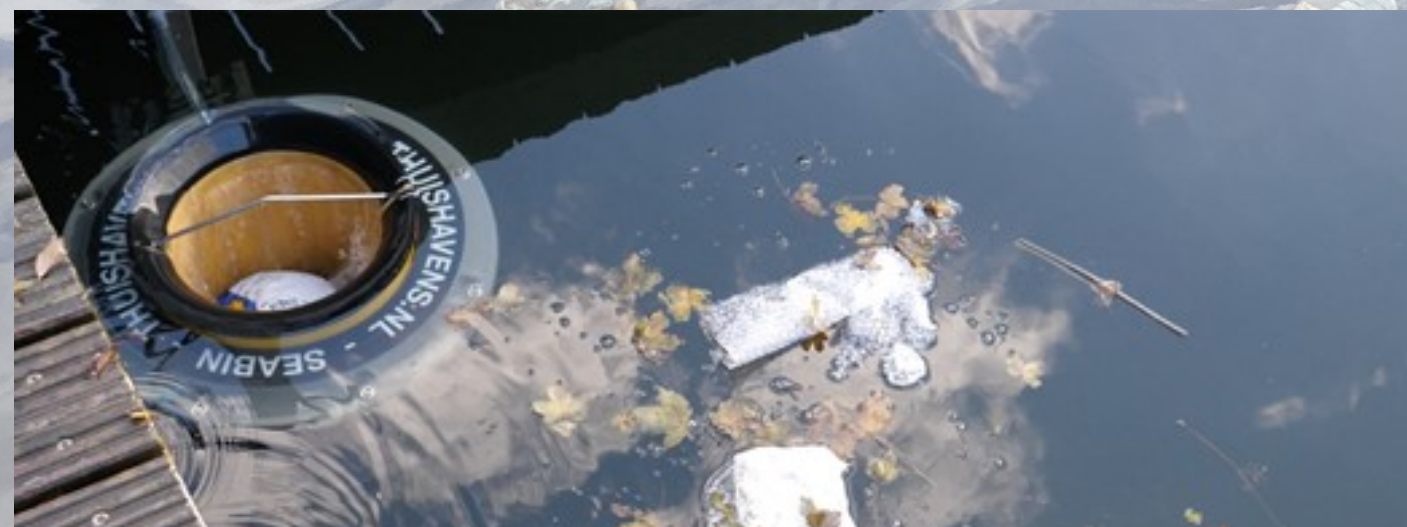
# Marine Plastic Collection Vessel

Alex Yarnall 3rd Year BEngTech Project, 2020

## The Problem of Pollution.

Plastic Pollution is becoming an extensive problem in the modern day with an estimated 8 million tonnes of new plastic pollution making it into the ocean every year on top of an already estimated 150 Million tonnes circulating our marine environments (OceanConsevanacy,2020).

With growing public awareness of the issues surrounding plastic pollution there has been not only personal commitments to reduce the amount of plastic consumed but moves by governments to bring a curb to plastic pollution. Examples such as the New Zealand Government introducing a plastic bag ban in July 2019 which takes away one of the many throw away plastics from circulation.



The Seabin Project. (2020).

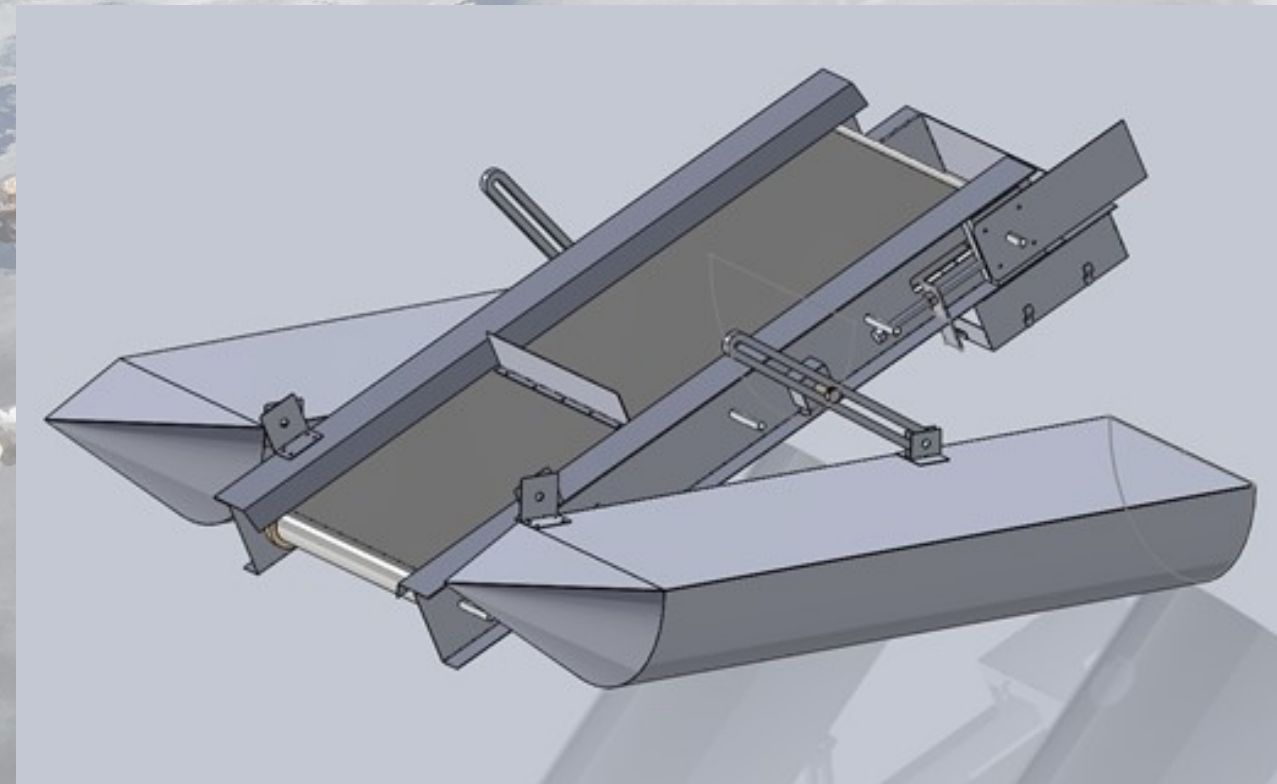
Plastics gather in our lakes, rivers, and harbourfronts before they're eventually swept to sea. Many companies have been created to help collect this plastic both in the ocean and before it gets there.

An example being the SeaBin pictured above.

## The Concept

My Project concept was to design and build a remote control vehicle able to pick up floating rubbish and take it back to shore. This would be a tool for environmentalists, councils, and other do-gooders to easily collect rubbish out of reach of the shore and unable to get a boat into the water.

The project had to be able to drive in a shallow body of water, collect plastic, be controlled by a person on shore, contain the plastic collected, and be able to be transported easily between places of use.



CAD Drawing of the Remote Control Vehicle

The design above was made. Utilising a conveyor to lift rubbish out of the water into a bag or bin, the catamaran design allowed for the drone to tackle shallow water areas while funneling debris into itself.

## The Final Product



Final Prototype Construction



Final Prototype Collecting Plastic

The final prototype pictured above was made. Sheetmetal was chosen as the main material as it could be made light and would not soak up the water. The hulls on either side were propelled using hobby boat motors bought online with a controller linked to a receiver in the vehicle. The conveyor powered separately by an old windshield wiper motor and a battery pack.

The design moved around well while tested picking up all types and shapes of plastics adding to the tools we need to tidy up the world's mess.

### References:

TheOceanCleanUp. (2020). *The Largest Cleanup In History*. Retrieved from TheOceanCleanUp.com.

The Seabin Project. (2020). *Seabin V5*. Retrieved from <https://seabinproject.com/>: <https://seabinproject.com/the-seabin-v5/>

