**19. Water Purification**

Learning objectives:

* Compare untreated water and purified water
* Understand the methods and processes of water filtration through experiment

Design a water filter

Using cotton, fine and coarse sand grains, activated charcoal and a plastic bottle, design a water filter in the space below. Mark the materials used.



Experimental results

P5 - Natural Resources: Water

The filtration lasted for seconds. After being filtered, the impure water looks（clearer / unchanged／dirtier）and smells（better／unchanged／worse）.

Analysis and conclusion

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The larger the gaps between the filtering materials (e.g. coarse sand grains), the（shorter／longer）the time needed for filtering, and（more／less）the filtering effect; the smaller the gaps between the filtering materials (e.g. fine sand grains), the（shorter／longer）the time needed for filtering and （more／less）the filtering effect.

The coarse sand grains should be placed on top and the fine sand grains on the bottom because impurities can be filtered off（on all layers／on one layer）, therefore the filtering effect is （better／worse）.

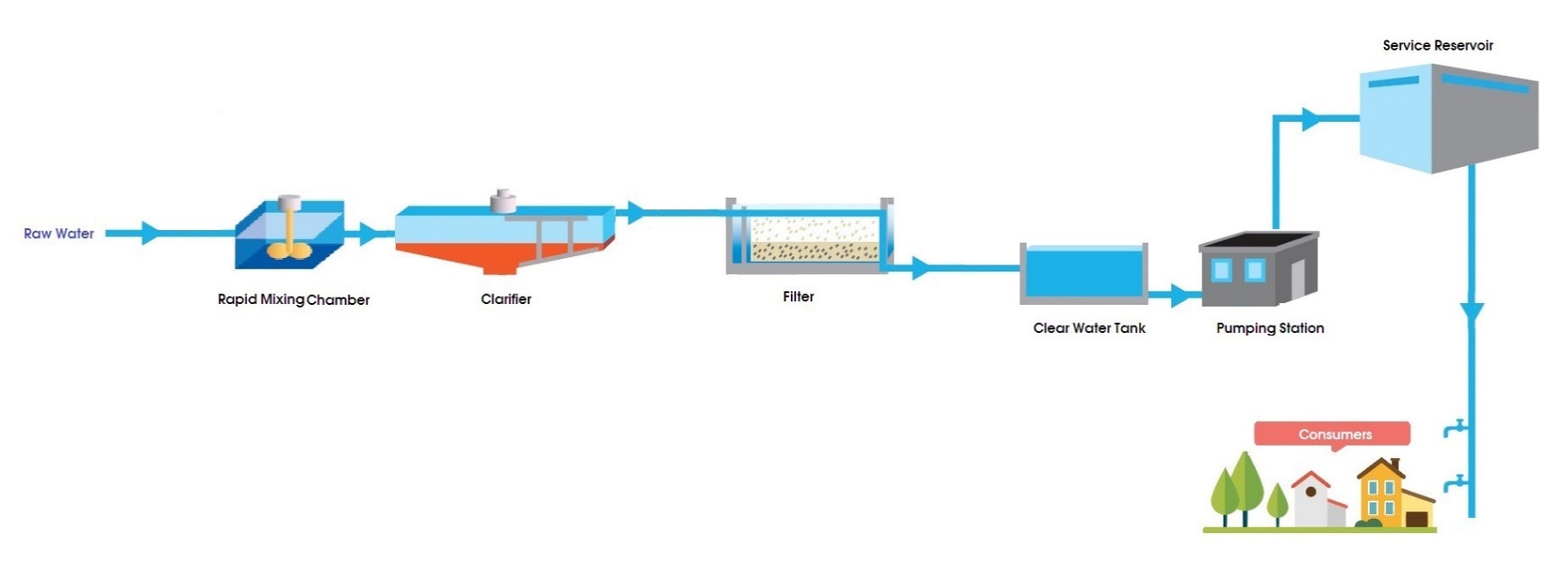
**19. Water Purification**

Learning objectives:

* Learn about the treatment processes of fresh water in Hong Kong

The water treatment process and infrastructure in Hong Kong

1. There are water treatment works in Hong Kong, where the largest one is   
    .
2. Raw water needs to go through a series of water treatment processes before becoming safe drinking water. Do you know how the process works? Fill in the correct numbers in the boxes.



②

④

③

①

P.5 - Natural Resources: Water

Inside the filters, the more finely divided suspensions are retained on sand and anthracite filters. Then, lime, chlorine and fluoride compound are added. Lime can neutralise the acidity of the alum in water, while chlorine is used for disinfection and fluoride compound is added for dental care.

After adding alum, suspended solids in raw water will coagulate into larger particles and settle on the floor of the clarifiers. The sludge will then be treated and collected in the form of cakes, and disposed of in landfills.

After the water becomes clean, it is directed to service reservoirs for the general public to use.

The raw water is directed from reservoirs to water treatment works through mains.

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