**Water treatment: Checking for understanding**

Refer to the following flow chart representing the steps in water treatment:

Untreated water is pumped from source, through a trash screen to remove leaves and sticks.

Coagulant added to make organic matter, clay and silt clump together or flocculate.

Floc sinks to bottom and is vacuumed out.

Air pumped in and bubbles attach to fine floc particles still in the water, causing them to float to the surface.

Floating floc ‘blanket’ is skimmed off the top.

Water passes through fine sand filter layers to remove any remaining fine particles.

Sand filter is cleaned.

Chlorine and lime added to disinfect and adjust pH of water. Water sent to storage reservoirs.

Waste water treatment: Mud and residue in wastewater is thickened and allowed to settle on bottom. Water flows off the top and is piped back into treatment plant for reuse. Thickened mud is pumped into centrifuge to extract more water. Solid waste is allowed to dry before being spread on surrounding land.

Further disinfection and fluoridation occurs before water is made available in homes and industries.

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1. With reference to the treatment process represented above, what do the following terms mean?

Coagulation, Aeration, Flocculation, Chlorination, Disinfection

1. Explain how and why particular separation techniques are applied in the water treatment process.

Filtration, Sedimentation, Decanting

1. Outline ways in which different areas of science contribute collaboratively to the production of safe drinking water through treatment processes.
2. Justify why high-quality water treatment is essential to communities across the globe. What impact does poor water quality have on communities?
3. Describe how science and technology have influenced the ways in which water is cleaned for human consumption and use.