Comparison of treatment capabilities and verification of treatment solutions

Type of Treatment	Description	Contaminants treated	Uses	Advantages	Disadvantages
Particulate Filters.	Filters of pleated papers, woven cartridges or ceramic candles.	Particulate matter (colour, turbidity)	To reduce discolouration and prepare water for further treatment	Simple, easy to use, no chemicals involved	Prone to blockage, can contaminate water with bacteria as bacteria can grow within the filters.
Activated carbon.	Utilisation of activated carbon to adsorb chemicals.	Colour, taste, odour, pesticides THMs. Will act as a physical filter to remove particles	Effective against target contaminants	Small, easy to use, no chemicals involved	Taste and odour from bacteria growth on the filter if not changed frequently enough.
Reverse osmosis units.	Physical filter	Usually used for chemicals which are difficult to remove with other treatments systems. Can be different pore size.	Usually used at point of use and blended with non-filtered water	Effective	Lots of waste water produced. Reduces minerals in the water to unacceptable levels. Can reduce pH to a level which corrodes pipework.
Ion exchange units.	Swaps target contaminants on a media for anions or cations. Typically used in domestic water softeners.	Normally hardness and nitrate but different resins can be supplied for specific contaminants.	Typically used for hardness or nitrate removal	Excellent system for removal of nitrates.	Requires periodic backwash to regenerate resin. Requires replenishment of the salts periodically
Chlorine disinfection	Killing of micro-organisms through timed exposure to a chlorine dose	Bacteria and other microorganisms	Good for large supplies or supplies with a long network where the presence of a disinfectant residual is beneficial	Well-understood technology	Requires storage and use of chemicals, pH might need to be adjusted, requires contact time with the chlorine.. May require a pre filtration stage.
Ultraviolet disinfection (UV).	The passing of the UV light through the water to kill micro-organisms.	Bacteria and other microorganisms	Widely used. Can be particularly effective at inactivating Cryptosporidium.	Effective for the killing of micro-organisms.	Requires regular cleaning and bulb replacement, and an electricity supply. May require a pre filtration stage as ineffective if water is turbid or highly coloured.
Iron and/or manganese removal	Oxidation of iron/manganese in water followed by filtration to remove it	Iron and/or manganese	Removal of iron/manganese	Often supplied as a single proprietary unit. Uses air for oxidation	Requires periodic backwash (although this may be automated)