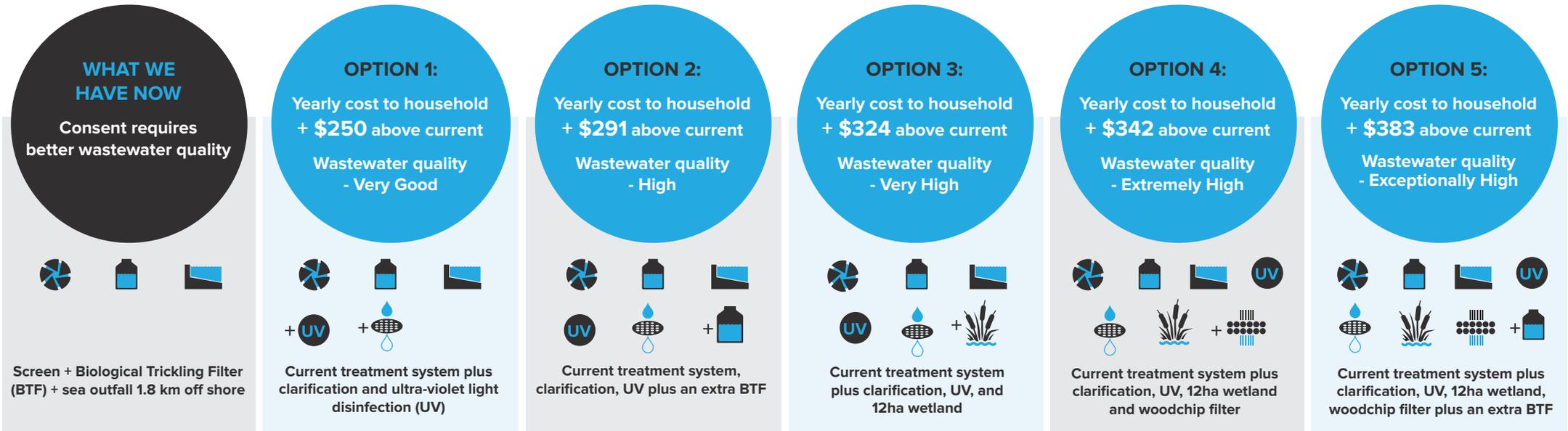
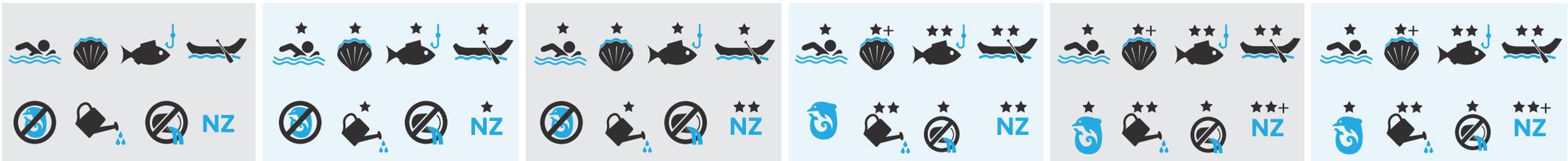


Wastewater Management Options

Options for improvement in the next 10 years



Outcomes at a Glance



What the options do and don't achieve

<p>Key benefit:</p> <ul style="list-style-type: none"> - First stage in improving wastewater quality <p>Key outcomes not being achieved:</p> <ul style="list-style-type: none"> - Wastewater quality does not achieve consent standards - Does not meet the cultural aspects of the consent - Does not provide for beneficial use of treated wastewater - Is not good at removing 'other pollutants' such as pharmaceuticals and other difficult to treat harmful substances 	<p>Key benefits this option adds to what we have now:</p> <ul style="list-style-type: none"> - Wastewater quality is much better and achieves consent standards - Removal of other pollutants that are solid particles <p>Key outcomes this option doesn't achieve:</p> <ul style="list-style-type: none"> - Doesn't meet cultural aspects of the consent - Doesn't remove other pollutants that are dissolved - Does not comply with the consent requirements on inputs into the treatment plant - Does not provide for beneficial use of treated wastewater 	<p>Key benefits this option adds to Option 1:</p> <ul style="list-style-type: none"> - Improved transformation of wastewater into natural substances - Improved operation of treatment plant - Complies with the consent requirements on inputs into the treatment plant <p>Key outcomes this option doesn't achieve:</p> <ul style="list-style-type: none"> - As for Option 1 	<p>Key benefits this option adds to Option 2:</p> <ul style="list-style-type: none"> - Improved treatment of wastewater and removal of other pollutants that are dissolved - Increases the potential for beneficial use of treated wastewater - Meets cultural aspects of the consent <p>Key outcomes this option doesn't achieve:</p> <ul style="list-style-type: none"> - Does not remove the wastewater outfall into the bay <p>This is the preferred option of Council's Wastewater Management Committee</p>	<p>Key benefits this option adds to Option 3:</p> <ul style="list-style-type: none"> - Increases the removal of other pollutants - Further increases the potential for beneficial use of treated wastewater <p>Key outcomes this option doesn't achieve:</p> <ul style="list-style-type: none"> - Does not remove the wastewater outfall into the bay <p>This option is also supported by Council's Wastewater Management Committee</p>	<p>Key benefit this option adds to Option 4:</p> <ul style="list-style-type: none"> - Improved operation of treatment plant <p>Key outcomes this option doesn't achieve:</p> <ul style="list-style-type: none"> - Does not remove the wastewater outfall into the bay <p>This option is also supported by Council's Wastewater Management Committee</p>
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To give your opinion on which option the city should build, fill out our survey at: <http://www.gdc.govt.nz/wastewater-management-potential-options/>

Key: Management Options



Rotating Drum Screen: Wastewater is passed through a rotating drum screen to remove solid material and then through a further grit removal chamber. The removed solids are pressed to remove water and disposed of to landfill.



Biological Trickling Filter (BTF): The BTF is a large tank filled with plastic media. The wastewater trickles over the media and through a natural biological process it is broken down and treated. This creates an ecology in the BTF which grows on the wastewater as a food source - similar to slime on rocks in streams. The BTF is efficient in converting the waste, but it does not remove enough of contaminants such as harmful bacteria and viruses. It also produces solids in the form of natural organic material which needs to be flushed through the system periodically.



Sea Outfall: Treated wastewater is pumped to a submerged marine outfall, 1.8km out to sea in Poverty Bay.



Clarifier: Wastewater that has gone through the BTF still contains organic material. Clarification of the wastewater is required to make the water clear enough for disinfection by ultra-violet light.



Ultra Violet Light Disinfection: This is the process to remove most of the remaining pathogens and viruses (those things harmful to human health) from the wastewater.



Wetlands: These are natural systems that treat wastewater contaminants by means of physical and biological processes in plants, plant roots, and within the soils in the wetland. Wetlands enable the removal of a wide range of contaminants (including nutrients, bacteria, heavy metals and other contaminants found in human sewage). They also provide for water storage, ecosystem goods and services, and social benefits.



Woodchip Filter: These filters use woodchips to remove nitrate and nitrogen – a nutrient that can cause algal blooms and other effects. They also help filter out any remaining solids and bacteria/viruses, and can reduce other contaminants found in human sewage.

Key: Outcomes



***Swimming/surfing:** Beach is generally suitable for swimming with low health risk. Risk associated with some tide/wind directions and heavy rain – which brings pollutants from other sources



Beach is suitable for swimming with very low health risk. Residual risk associated with heavy rain – which brings pollutants from other sources such as urban stormwater and rural runoff



Beach is suitable for swimming with minimal health risk. Residual risk associated with heavy rain – which brings pollutants from other sources



***Shellfish gathering:** May be affected by domestic wastewater from the marine outfall, but hardy pathogens and other contaminants pose a small risk. Shellfish may be affected by other sources including urban stormwater and rural runoff



Highly unlikely to be affected by domestic wastewater from the marine outfall, and hardy pathogens and other contaminants pose a much smaller risk. Shellfish may be affected by other sources including urban stormwater, overflows and rural runoff



Not affected by domestic wastewater from the marine outfall. Shellfish may be affected by other contaminant sources including urban stormwater, overflows and rural runoff



Fishing: Fishing is not recommended next to outfall because of domestic wastewater from the outfall. Fish could possibly be affected by other sources including urban stormwater, overflows and rural runoff



Low risk of getting ill from catching and eating fishing from next to the outfall. Fish could possibly be affected by other sources including urban stormwater, overflows and rural runoff



Not affected by wastewater from the outfall. Fish could possibly be affected by other sources including urban stormwater, overflows and rural runoff



Waka-ama/kayaking in bay: Moderate risk of getting ill associated with waka ama/kayaking in bay in vicinity of marine outfall



Low risk of getting ill associated with waka ama/kayaking in bay in vicinity of marine outfall



Minimal risk of getting ill associated with waka ama/kayaking in bay in vicinity of marine outfall



Cultural: From a cultural perspective, this option is not supported by Turanga iwi representatives



From a cultural perspective, this option is supported by Turanga iwi representatives as a minimum requirement



From a cultural perspective, this option is preferred by Turanga iwi representatives



Potential for other uses: Current quality of treated wastewater means it cannot be used for other purposes



Improved water treatment means treated wastewater could be available for other purposes



Improved water treatment and water storage means most wastewater should be available for other purposes



Removal of outfall: Option will not make it possible to stop any flows out of the marine pipe



The wastewater pipe into the bay is not removed. Option is a step towards removing sea outfall



Sea outfall is removed



National comparison: Significantly below average wastewater treatment and disposal system



Average or above average treatment and disposal system



Significantly above average treatment and disposal system – national leader

* Near shore water quality can be affected by other discharges. These are being addressed through other programmes.