

THE BENEFITS OF EACH INITIATIVE HAVE BEEN SCORED ON FIVE KEY CRITERIA

Level of improvement <small>(e.g. to supply/ demand/ capacity)</small>	Level of investment required <small>(Cost to United Utilities but will impact on customer bills further down the line. The higher the cost, the greater the likelihood this will impact customer bills)</small>	Environmental impact <small>(e.g. pollution, biodiversity etc)</small>	Level of Disruption <small>(e.g. roads or building works)</small>	Carbon emissions impact

EACH WILL RECEIVE A SCORE ON THE BELOW SCALE



Increase capacity (sewers and wastewater treatment)

- These options reduce the risk caused by climate change and population growth by building more capacity.
- This could be in the form of increasing the size of existing sewers, constructing storage tanks, adding new treatment technologies to existing sites or replacing existing assets.
- When cleaning wastewater and sludge we can do so in ways which have additional benefits, for example recovering materials to recycle or harvesting gas for energy production.

Why is this option being considered?

These options are being considered in order to increase the amount of wastewater that we're able to transport and treat and reduce the likelihood of sewers flooding or overflowing

What we think the benefits are

- High confidence that these measures will deliver a benefit to capacity
- Whilst there are short term negative impacts to the environment from construction, over the long term this solution would have high environmental benefit as the risk of pollution is reduced.

What we think the drawbacks are

- This option involves investing in new infrastructure, often requiring complex engineering input with a possible corresponding impact on customer bills.
- In the short term this could cause some disruption to customers with noise and roadworks whilst new infrastructure, such as pipes, are installed.
- Due to the construction involved, this option has a high carbon footprint and in the short term construction can have environmental impacts which would need to be mitigated.

CAPACITY

Making sure we can cope with the sewage produced and send it back safely to rivers

Level of improvement

VERY HIGH

Level of investment required

FAIRLY HIGH

Environmental impact

FAIRLY POSITIVE

Level of disruption

VERY HIGH

Carbon emissions impact

VERY NEGATIVE

Managing the land to improve water quality

- Water quality in rivers and lakes can be badly affected by other sources, for example, water flowing into them from farms and factories. This water can contain pesticides and chemicals which have a negative impact on rivers and lakes.
- There are a number of actions that could be taken to improve the quality of water in rivers and lakes. There are many organisations whose work has an impact on rivers and lakes, such as farmers and highways drainage, so these options work best when we work in partnership with others to deliver them.
- One example of this is nutrient management. Phosphorous is a nutrient that is present in sewage. Too much phosphorous can be bad for aquatic creatures in rivers and lakes as it reduces the levels of oxygen in the water.
- Rather than use chemicals to remove phosphorous at sewage works as is currently done, United Utilities can work with local environmental bodies, businesses and landowners to reduce phosphorous pollution at source. For example, working with farmers to improve the way farmyard slurry is stored to prevent it entering rivers and lakes. There are many chemicals which could be managed 'at source' in this way.

Why is this option being considered?

To improve environmental quality in rivers and lakes whilst reducing overall level of investment required.

What we think the benefits are

- This should improve water quality in rivers and lakes at a lower cost overall.
- There may also be additional environmental benefits, for example reduced carbon, reduced use of chemicals, supporting biodiversity.
- By delivering in collaboration with other partners the costs can sometimes be shared.
- There is little or no disruption resulting from road and building works.

What we think the drawbacks are

- It may be harder for us to measure the benefit being delivered by this kind of solution.
- These options often require collaboration with a range of stakeholders and could take time to see the benefits.

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Level of improvement

FAIRLY HIGH

Level of investment required

FAIRLY LOW

Environmental impact

VERY POSITIVE

Level of disruption

NO IMPACT

Carbon emissions impact

VERY POSITIVE

Seasonal adaptation of wastewater treatment

- We could adapt our treatment processes depending on the season instead of having a fixed approach to treating wastewater.
- This would involve less treatment when rivers and lakes are more healthy (e.g. higher water levels, good water quality) and more treatment when rivers and lakes are less healthy (e.g. low water levels and poor water quality).

Why is this option being considered?

This option allows us to test innovative wastewater treatment approaches which could achieve a better outcome for the environment, whilst making more of the treatment capacity we have in place.

What we think the benefits are

- This option could give overall benefits to water quality in rivers, lakes and the sea at times in the year they are most sensitive.
- This could reduce the cost to operate our wastewater treatment works at some times of the year.

What we think the drawbacks are

- When testing innovative approaches there is a risk that the expected benefit isn't delivered, we would continuously review this.

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Environmental impact

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Level of disruption

NO IMPACT

Carbon emissions impact

NO IMPACT

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Educating customers to change behaviour

- Customer behaviour can have positive and negative effects on our ability to provide services.
- Flushing anything other than the '3 P's' (pee, poo and paper) and pouring fats and oils down the drain causes fatbergs to form and prevents the sewer from transferring your wastewater.
- Promoting behavioural change includes educating customers about the impacts of unflushables and sewer flooding.
- It may involve giving away 'fat traps', educating on the '3 P's' and working with business customers in restaurants and takeaways to reduce fats, oils and grease entering the sewer network.
- This option might involve working more with schools to educate future customers about the environmental impacts associated with water and wastewater.

Why is this option being considered?

80% of our sewer flooding incidents are not caused by capacity problems, instead these are caused by things such as blockages and sewer misuse.

Fats, oils and grease being poured down the sink causes fatbergs to form in sewers which block the sewers and cause sewers to flood.

What we think the benefits are

- Reduced risk of sewer flooding in the home and risk of pollution caused by blockages.
- Reduced risk of flooding and pollution would have a positive environmental impact.
- These options are low cost and low carbon footprint.

What we think the drawbacks are

- Customer behaviour changes are difficult to guarantee.

DEMAND

Understanding how customers use water and how we can make this more sustainable

Level of improvement

FAIRLY HIGH

Level of investment required

VERY LOW

Environmental impact

VERY LOW

Level of disruption

NO IMPACT

Carbon emissions impact

NO IMPACT

Fees, Tariffs and charges

In order to reduce demand, fees and tariffs could be introduced to influence customer behaviour. These could take a number of forms and impact both domestic and business customers. Examples include:

- Time of Day tariffs (e.g. water cheaper at off-peak times)
- Reduce bill by an agreed amount if the property has water efficient products fitted.
- Introduction of special fees – charge special (additional) fees on households who use garden sprinklers, hosepipes, outside taps or swimming pools.
- Reduction in charges for properties which don't connect surface water (e.g. from gutters) to the sewer network
- Incentives for property developers to develop low water footprint developments (disconnect surface water, rainwater)

Why is this option being considered?

Reducing demand means we might be able to treat wastewater to the right standard without having to invest in making sewers and wastewater treatment works larger.

What we think the benefits are

- These fees and tariffs could result in your bill decreasing if you are water efficient and on a water meter.
- Overall this puts less demand on both the water and wastewater systems.
- This benefits the environment and reduces the likelihood of sewer flooding and storm overflows.

What we think the drawbacks are

- Some customers could face higher bills if their water practices remain the same.

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FAIRLY POSITIVE

Water efficiency

Promoting water efficiency involves educating customers of the benefits of saving water and may include giving away or selling water saving devices like showerheads, water butts or services to reduce water losses such as fixing leaky toilets.

Why is this option being considered?

Effective way of managing demand and can bring bill benefits to customers.

What we think the benefits are

- If the customer has a water meter there will be cost savings on bills.
- Water efficiency devices reduce demand for water and therefore also reduces the amount UU has to take from the environment (e.g. rivers), potentially helping wildlife.
- It also reduces the amount of wastewater being sent for treatment potentially reducing capacity constraints.

What we think the drawbacks are

- Water efficiency devices might have costs associated with them.
- Customer behaviour changes are difficult to guarantee.
- Water efficiency measures can sometimes increase blockage risk in the sewers. If there isn't enough water coming into the sewer then wipes and other 'unflushables' are even more likely to build up and cause a blockage.

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Transferring sewage to other areas

- In order to deal with capacity issues we can consider transferring wastewater from one area to another.
- This option could involve moving part of the wastewater network to a different area where there is more capacity, or closing down a smaller wastewater treatment works and transferring all the flows to be sent to a larger wastewater treatment works.
- Another option is breaking down larger sewer networks into smaller ones and building new wastewater treatment works to treat the wastewater before returning it to the environment.

Why is this option being considered?

To increase the amount of wastewater we can treat, this may be to prevent flooding, storm overflows and pollution.

What we think the benefits are

- There is high confidence that transfers will deliver an increase in the available capacity in the area it is being transferred from.
- Sometimes these options have wider benefits, for example transfers could prevent sewer flooding and benefit water quality.

What we think the drawbacks are

- This option involves investing in new infrastructure, often requiring complex engineering input with a possible corresponding impact on customer bills.
- In the short term, this could cause some disruption to customers with noise and roadworks whilst new infrastructure, such as pipes, are installed.
- Due to the construction involved, this option has a high carbon footprint and construction can have environmental impacts which would need to be mitigated.

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Environmental impact

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Level of disruption

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Carbon emissions impact

VERY NEGATIVE

Reducing stormwater from getting into the sewer

- Most of the sewers in the North West are combined, this means we collect both the dirty water from your home (which we call wastewater) and the rainfall from gutters and roads (which we call surface water).
- We can invest in technology that will mimic natural drainage (like rain gardens and trees which filter and soak up water) to prevent this surface water from going into the sewers.
- This will reduce the likelihood of sewage flooding homes and streets, as well as reducing the environmental impact of storm overflows releasing dilute sewage to rivers.

Why is this option being considered?

To improve environmental quality in rivers and lakes and reduce risks of flooding.

What we think the benefits are

- These options solve the root cause of the problem by stopping surface water (rainfall from gutters and roads) getting into the sewer.
- These options have a lower carbon footprint, provide more green spaces in urban areas and can improve biodiversity by creating habitats for animals.
- By delivering in collaboration with other organisations, the costs can sometimes be shared.

What we think the drawbacks are

- It may be harder for us to measure the benefit being delivered by this kind of solution.
- These options often require collaboration with a range of stakeholders and could take time to see the benefits.
- There is less certainty about the cost of these options.
- In urban areas these options could require roadworks, but this would be for a short period.

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VERY POSITIVE

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FAIRLY HIGH

Carbon emissions impact

VERY POSITIVE

Using technology to control sewers and monitor for problems

- We can invest in the latest technology to get more from our existing sewers and treatment works.
- Across the whole wastewater system there are many pipes and pumps involved in transporting and treating the wastewater from sink to sea.
- There are opportunities to improve the way we operate the whole system using new innovative technologies to optimise processes and use existing assets to their maximum potential.
- This could include monitoring the wastewater system remotely to identify faults and proactively fix them, using artificial intelligence.

Why is this option being considered?

This option reduces risk of pollution events and structural damage to the sewers.

What we think the benefits are

- This allows us to proactively identify risks and resolve them before any issues such as pollution occur, this delivers a benefit to the environment.
- As this option doesn't involve major construction, the associated carbon footprint is lower.

What we think the drawbacks are

- Increased cost of operating the system.
- Technologies to monitor are expensive and there are 72,000km of sewers in the North West.

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Install sewer flooding protection at homes

- Where we know a property is at risk of sewer flooding from storm events causing sewers to be overloaded, we can install flood protection measures such as flood gates and valves in the sewer to protect properties from sewer flooding.
- This would only be done where there is repeated sewer flooding caused by overloading.

Why is this option being considered?

This option is only available where the flooding is caused by the sewer being overloaded. This type of flooding accounts for 20% of sewer flooding in the North West.

What we think the benefits are

- Customers' properties have increased protection against sewer flooding, therefore customers are less likely to experience flooding in their property.

What we think the drawbacks are

- Whilst this option protects properties from some sewer flooding, it doesn't resolve the root cause of the problem, it also doesn't protect against all forms of sewer flooding, for example this option isn't suitable where flooding is caused by blockages and sewer misuse (people putting items other than pee, poo and toilet paper down the toilet).
- This option involves investing in new infrastructure, this requires engineering input with a possible corresponding impact on customer bills.
- In the short term this could cause some localised disruption to customers with noise and roadworks.
- Due to the construction involved, this option has a medium carbon footprint.

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Environmental impact

NO IMPACT

Level of disruption

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Carbon emissions impact

FAIRLY NEGATIVE

Working with other organisations

We could work with local councils and developers to support the development of low water footprint housing, reducing demand for water and reducing pressure on the sewer system by stopping surface water from gutters and roads getting in the sewer.

We could also work with others to understand the source of pollutants in rivers and seas e.g. from industry and reduce them at the source.

Why is this option being considered?

By working with others to reduce surface water coming into the sewers the risk of sewer flooding, storm overflows and poor water quality could be reduced.

What we think the benefits are

- This option looks to tackle the root cause of some of the risks we face.
- There could be benefit to sewer flooding, storm overflows and water quality in rivers and lakes.

What we think the drawbacks are

- There could be high costs associated with finding new ways to reduce water footprints in houses and to divert surface water to rivers or ground.
- It may be harder for us to measure the benefit being delivered by this kind of solution.
- These options often require collaboration (for example with developers and councils) and could take time to see the benefits

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Level of disruption

FAIRLY HIGH

Carbon emissions impact

FAIRLY POSITIVE