Effluent Reuse

Summary of current ICE position

The UK must invest in new water and reclaimed water resources to ensure a dependable and long-term secure supply and meet increasing water demand.

Effluent reuse has the potential to become a much larger part of a long-term solution to balancing supply and demand and water companies should actively promote effluent reuse as a significant part of the basket of measures needed to secure future water supplies. Investment and research into treatment methods must continue, as should the exploration of practices in other countries such as the USA, Australia and Israel, where effluent recycling is taking place successfully for a number of agricultural and industrial uses.

In addition there are opportunities for developers and home owners to further investigate domestic water reuse in new and existing housing.

We acknowledge that when recycled effluent is fed into the drinking water supply, even indirectly via rivers, it can stir public concern. For effluent to be a reliable and safe supply of water it must be treated to appropriate standards according to purpose, which will be higher for human consumption than alternatives such as industrial use.

A. Principles – water supply and demand

1. Government and the water industry must ensure that:

   - Sufficient drinking quality water is available for all households
   - Sufficient water, though not necessarily of drinking water quality is available to meet other reasonable demands

2. These goals should be achieved whilst:

   - Minimising the environmental impacts of water abstraction, storage and distribution
   - The nation should recognise the value of water and accept the need to meet the cost of its supply

3. In the context of rising demand and falling supply, ICE advocates:

   - Updating of the Environment Agency's water resource strategy for England and Wales, taking account of the latest demand forecasts and reduction in existing supplies
   - Investment in new water resources and the existing network
   - Measures to reduce demand including incentives to consumers to reduce water usage and higher performance standards for homes and appliances

4. Decisions between options for new water resources should be made on the basis of whole life economic, environmental and social costs

B. Background and key issues

1. What is Effluent Reuse?

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Effluent is the product from household wastewater, sewage and industrial discharges which has been treated in some manner and returned to the water cycle.

Effluent reuse has in fact been indirectly practised for many years and covers the reclamation of wastewater for residential, agricultural and industrial purposes. The most widespread application of effluent reuse is from sewage treatment works back to watercourses and rivers, improving river flows and allowing re-abstraction downstream.

2. Why is effluent reuse an important issue? – water supply, health and sustainability concerns

Water companies nationwide, particularly those in the south, are seriously considering water reuse as part of their long-term water resource plans to be implemented over the next 10 years. There is however concern among the public and within the water industry over schemes that are specifically designed to treat sewage and return it to rivers for immediate re-abstraction into the potable water supply system.

The reuse of effluent does carry potential risks that need to be fully addressed. For instance, pathogens, biological agents that cause disease and illness, may be present in effluent that is reused. There are also potential impacts on fish and the river environment.

Companies are looking at sewage treatment processes and technologies for the future that may make it acceptable for the effluent to be passed more deliberately back into the water supply system. This could include pumping effluent directly into a watercourse upstream of a water supply intake or directly into a surface water reservoir. The costs of application of tighter trade discharge consents will be a factor in the viability and sustainability of such schemes.

Effluent recycling can involve high energy use in advanced wastewater treatment and pumping. The impact of recycling schemes on green-house gas emissions will therefore need to be compared with other water supply options. This is an area where further research will be required.

3. What is currently happening in the field of water reuse?

There are many examples in the UK and internationally of successful effluent reuse:

Effluent is currently being directly or indirectly used for commercial crop irrigation. For example in Israel 70% of municipal wastewater is treated and reused, mainly for agricultural irrigation of non-food crops. Such uses are typically subject to meeting high water quality standards to avoid public health issues. The World Health Organisation has also established guidelines defining acceptable microbiological limits for reclaimed water.

Effluent can also:

- be passed to other industrial users for commercial purposes, such as cooling water
- when treated be diverted to specific areas to replenish groundwaters or watercourses to help refill reservoirs

In addition, water is being recycled in other ways including:

- rainwater harvesting already takes place on small and large scales employing water butts and tank systems
- grey water from domestic properties (e.g. baths, sinks, showers) is already being reused for flushing toilet cisterns and watering the garden

4. What are the drivers for increased interest in effluent reuse?

There are a number of issues that are pushing the water industry towards greater effluent reuse. A key factor is the growth in demand, particularly in the South East of England and the subsequent need to bridge the gap between supply and demand. This issue is discussed in more detail in ICE's Policy Position Statement *Water Supply and Demand.* In addition:

- water companies are in the process of producing long-term water resource and asset management plans

- the accelerating effects of climate change and the resultant low levels of water are spurring action to find an alternative, reliable source
- sustainability is firmly on the political and public agenda
- the provisions of the EU Water Framework Directive are encouraging companies to investigate these options

C. ICE recommendations for action

1. Government and regulators

To help allay public concerns, government and regulators must ensure that effluent is treated to an appropriate standard for end purpose, in particular when there is a need to protect public health and the environment.

To provide greater certainty, a consistent view and a clear set of responsibilities should be established between DEFRA, the Environment Agency, Drinking Water Inspectorate and the Water Industry.

Water saving measures, including effluent reuse, should be incorporated into standards for new housing development via the Code for Sustainable Homes.

2. Water companies

The water industry, and industry in general, need to consider the opportunities for wider reuse of effluent, taking into account economic and sustainability considerations.

Development and research should continue into the treatment and reuse of effluent and lessons should be learnt from other countries and communities.

Companies should be more active in promoting water saving measures and efficiencies.

Current initiatives by the Water Industry (and Environment Agency), such as the harvesting of rainwater (water butts) and the reuse (grey water) by domestic customers should continue.