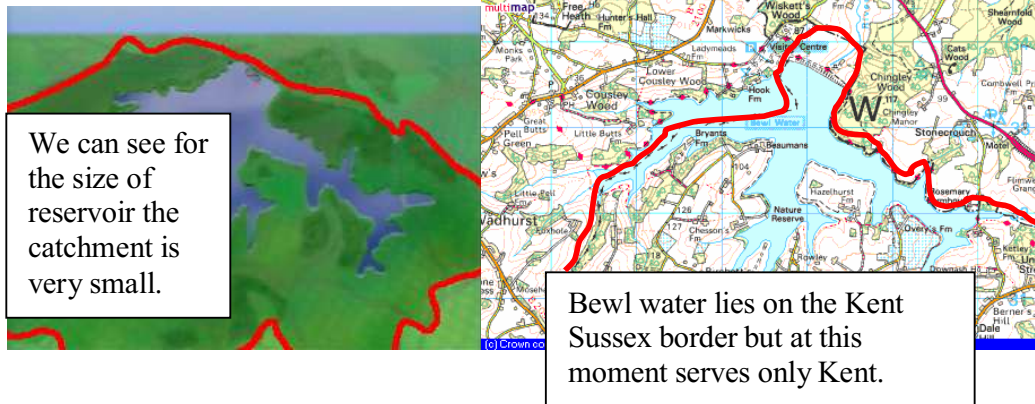


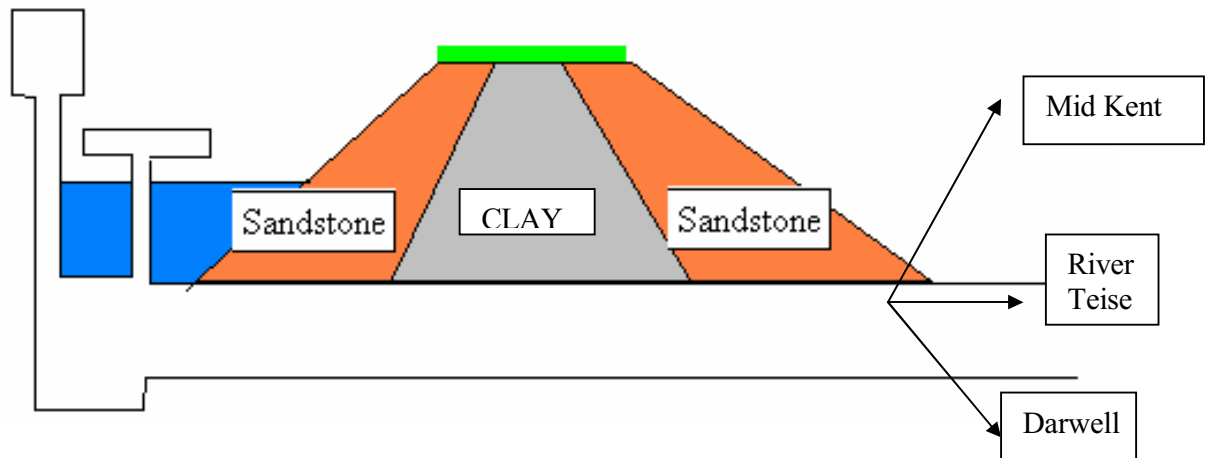
Bewl Water Management

Bewl Water Reservoir is a major water management scheme in the South East of England, a reservoir that is vital to the water scheme in this area. It is a 1200-acre site that began construction in 1973. Its geographical location meant that it wasn't selected due to a large catchment area, which usually is the case. Bewl actually has a very small catchment area for its size, meaning on paper it isn't very efficient at gaining water for storage.

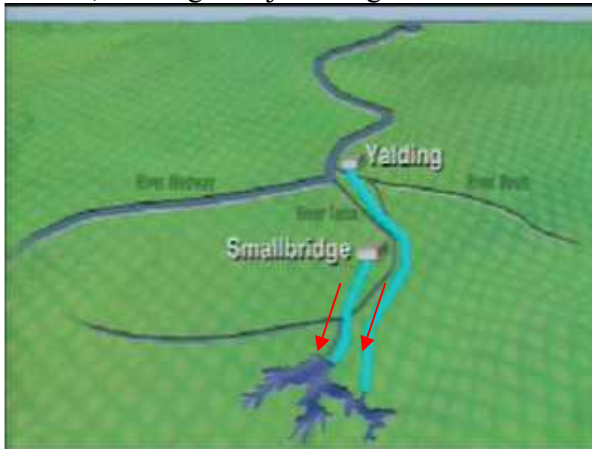


There were other factors complimenting the building of Bewl Reservoir. It was in a sparsely populated area where the potential disruption was limited meaning the added economic cost was minor. In all only two farmhouses were actually moved, so the social impact was limited too. The environmental impact was also limited due to the fact that the land was mainly farmland with small ecological diversity or rare species. The topography of the land was the major factor due to the contours of the land meaning the water collected will culminate in one area creating the reservoir. The construction would be relatively easy and the cost could be controlled due to the availability of local sandstone and clay. The mass amount of wealden clay in the area created a waterproof layer to the reservoir meaning little reservoir water will be lost to infiltration, and when conserving water was the major purpose this was an important fact.

In 1975 the newly built dam was flooded at a total cost of £6.9m meaning, for the time being the reservoir was complete. But at this stage its management wasn't very effective as the only output it possessed was via the River Teise. Therefore the plans to physically connected Bewl to the River Medway's influence went ahead. A 22km pipeline from Bewl to the Yalding pumping station at a cost of £23m. This combated the problem of the limitations of the Bewl Catchment area. As mentioned earlier Bewl's catchment is very small, this means that the water collected through precipitation is very limited. The pipeline would allow 386 million litres of water to be pumped to Bewl per day through the 1.5m diameter pipe. This meant that the stability of the Bewl scheme was under threat as in the long run it wouldn't be able to support itself due to the lack of inputs to the reservoir.



This pipeline combated this problem really effectively as increasing the inputs to the reservoir kept water levels high and stability remained. But recently there has been more change to Bewl reservoir. The Bewl to Darwell water transfer scheme was created, creating a major change to events at Bewl.



This shows the simplified version of the water system created by the Bewl – Yalding and Bewl – Smallbridge pipelines. As you can see both pipelines provide Bewl with water. This would usually occur in the winter months where volume of water in both the Teise and Medway increases, creating excess. This excess is stored at Bewl where, in the summer months can be put back into the system to replenish the rivers.



The Bewl-Darwell Water Transfer Scheme is a £25 million project being carried out by Southern Water and South East Water to help safeguard water supplies. The companies are installing a 29km pipeline to Darwell Reservoir. From here it will connect to Hazard's Green Water Supply Works at Ninfield.

It will enable water from the Medway area of Kent to be used in the Hastings and Bexhill areas, which are extremely vulnerable to the effects of drought conditions because adequate resources are not available locally. A scene at Bewl only years ago showed lorries transporting water out of Bewl to transport it to

Hastings, that's how serious the shortages were. This scheme would combat future occurrence of drought problems.

The scheme is nearing completion and when finished it will be possible to transfer up to 35 million litres of water a day between Southern Water's Bewl and Darwell reservoirs to ensure there is enough water for the future.



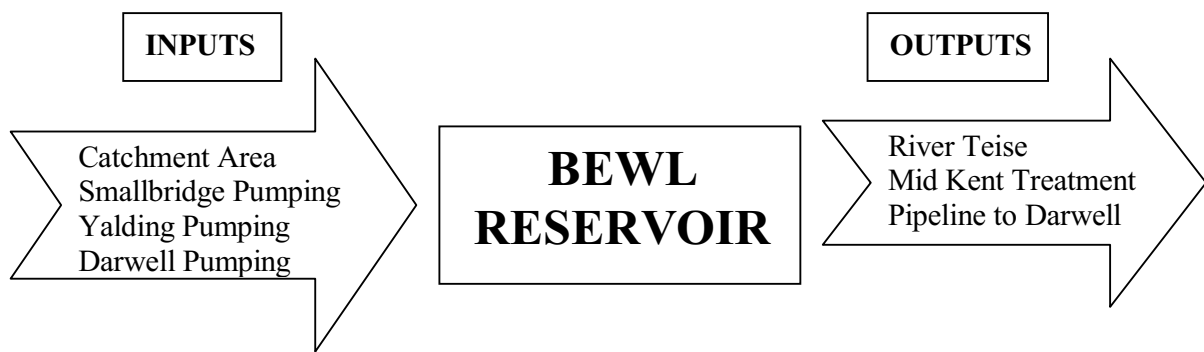
Although there is heavy construction it is carefully managed.

The water companies had already realised the problems of water shortages in the Hastings area. The result is an existing pipe between Bewl and Darwell. This has the capacity to transfer up to 10 million litres of water a day. But the trouble occurs during periods of drought. This is because the pipe is too small in diameter to provide the volume of water required in the Hastings area. The construction is adding a second 17km-long pipeline, which will be able to add a further 25 million litres of capacity between Darwell and Bewl. The advantage of this pipeline over the Yalding pipeline is that it is two way, meaning that in the event of Darwell drying up water could be diverted from Bewl, and vice versa.

There are four construction bases storing plant and materials along the route at Bewl Water, Ticehurst, Etchingam and Robertsbridge. This way the water remains uncontaminated and the efficiency of the pipes will be high. With over 2,500 pipes being used the scale of this construction is huge.

In addition, a new 12km-long pipeline is being laid from Darwell Reservoir to South East Water's Hazard's Green Water Supply Works. This means that along with a better supply of water, more water will be purified meaning a more efficient water system in the area.

Looking at these changes from a management point of view we can see the inputs and outputs will change. This is because now, at the north end of Bewl Water, near the dam, new pumps will be installed in the buildings housing the pumping and control equipment. Therefore Bewl will now have another output along with another inputs, increasing the influence Bewl has on the water management of the area.

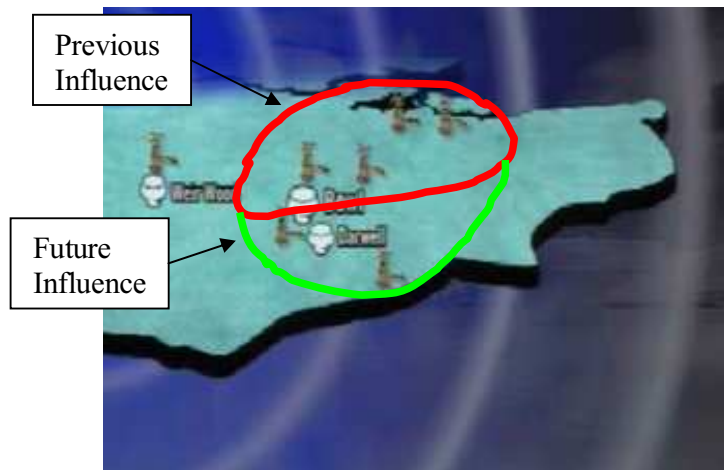


Being on such a large scale much environmental consideration has been taken. The major concerns of construction are flora and fauna, water quality and hydrology. The scheme design includes measures to mitigate any effect on the environment including careful route planning and siting of structures installation of fencing. They also realised the importance to protect newts at specific areas along the pipeline route by using “no-dig” techniques in sensitive areas

Bewl Reservoir is renowned for the nature present in its surroundings. Therefore the construction programme has taken into account of the safety of wild animals and bird. To minimise any disruption to them the pipes are being laid during the summer so not to affect breeding or births. This care for the nature of the construction area was present through the course of the pipeline as hedges were selectively removed to minimise loss of habitat to nesting birds. There are nearly countless locations along the route where the habitats of protected animals could be disturbed, both southern and midkent water have taken extra care.

Even though the importance of this pipeline is great both companies have taken great care, using techniques that are very friendly to the environment:

- Incorporating variable speed pumps at Bewl Water to avoid having to build a new tank at Ticehurst. These pumps will now move water only when there is spare capacity in the pipe
- Routing the pipeline around the second tee at Dale Hill Golf Course in Ticehurst rather than across it
- Rerouting the pipeline to minimise disruption to reptiles at Darwell.
- Routing the pipeline around Holmans Wood to avoid a section of ancient woodland
- Using “no-dig” techniques for construction in some areas.
- Aligning the pipeline south of Penhurst to minimise sections in the floodplain of the Ashbourne Stream.
- Aligning the route at Kitchenham Farm so that the effect on Kitchenham Forge, an area of archaeological importance, is minimised



This picture shows the adding connection to the water system of the area. Bewl used to only affect Kent, East Sussex being excluded from the scheme. But with the Darwell pipeline East Sussex is now an integral part of the water system. But this means that the resources that Bewl will have to act upon are increased. With the responsibility to help water management in Hastings will the water at Bewl be able to stretch that much.

As stated above, does Bewl have the capacity to manage the water supply and storage of large sections of two counties? Management have realised the possible problem of this and ideas have been thrown around to combat this problem

An idea, only years ago deemed ridiculous is now under careful consideration. The idea is to increase the height of the dam and effectively flood the floodplain once more. This would increase the capacity of the reservoir hugely making the task of management much more attainable. Especially with evidence of dryer summer the task of providing the millions of people in the Medway and coastal towns in Kent and Sussex is a huge task.



As you can see from the above the effect of increasing the dam by 5m has a major effect on the size and capacity of the river. This would have negative effects such as the relocation of homes and businesses. The nature reserve to the south of the reservoir would be affected meaning the rehabilitation of wildlife in the area. |but as we have seen through the construction of the Darwell pipeline the Bewl Management are careful in construction creating minimal damage to the environment.

If this plan goes ahead Bewl influence and importance to the south east will further increase. We have learnt that Bewl is an asset to water management, preserving nature and even tourism.