

Edale STW

'doing more for less' to reduce the impact of a large tourist population whilst ensuring that discharge consent was not compromised

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Edale is a small Derbyshire village in the High Peak area of the Peak District. It is a very popular area best known to walkers as the start (or southern end) of the Pennine Way, and to less ambitious walkers as a good starting point for evening or day walks, accessible by public transport from Sheffield or Manchester and with two pubs supplying real ale and food. During peak tourist times throughout the year the small sewage treatment plant suffers from high ammonia levels. Severn Trent Water required a cost effective solution to reduce the impact of the incoming tourist population on the existing works and meet the Environment Agency's consent.



Installation of the GRP storage tank - Courtesy of NMCNomenca

Solution

The initial proposed solution involved chemically dosing and tankering away from site during and after busy tourist days. This has a high operational cost (OPEX) and during off-peak times, much of this treatment capacity is redundant but cannot be switched off as it is a biological process. The site access is positioned on a blind bend and has a steep access road down to the existing rotating biological contactors (RBCs) making tankering and chemical deliveries a health & safety issue.

A number of options were reviewed which included a trial to speed up the RBC motors to increase treatment of the high ammonia levels and install an antiskid surface to the sewage works access track. However, the team from NMCNomenca and Severn Trent Water came up with an alternative solution to provide temporary storage for the additional flows that could be transferred to a nearby works.

Innovation

During 2012 a solution was developed to provide the chemical dosing plant and a new access road to the site. However, this

coincided with the closure of the public toilets from March until September. The impact this had on the sewage works was dramatic.

The team noted that whereas in previous years the works had suffered from effluent failures during this period, tankers only had to be deployed once at the end of May to reduce the load on the works. During this period, chemical usage reduced by 25% and it was only when the public toilets were re-opened in September that the high ammonia levels returned immediately to Edale STW.

The team reassessed the original solution and came up with a radical proposal to provide on-site storage to capture all flows from the public toilet block which would then be tankered to a nearby works for treatment.

This solution would remove the need for tankering from the sewage works, and reduce the 1,000 litre IBC (intermediate bulk container) chemical deliveries and so address the health & safety issues surrounding the access/egress. The revised solution consisted of a modular cesspit storage tank being installed.

Sustainability

The revised solution has led to a massive reduction in the number of tanker movements and the subsequent effect on the carbon footprint. The latest data supplied by Severn Trent Water indicates that the level monitoring within the tank shows that it is 65 days between emptying; equivalent to one tanker visit every two months compared with the previously, when two tankers were required most Monday mornings to keep the site within its consent.

There has also been a significant reduction in deliveries of chemical IBCs. There is insufficient data to quantify the new requirements but previously there was a delivery per week whereas an assumption was made in the cost benefit analysis that the proposed solution will only require three IBC deliveries per year.

Project management

Key to the success of the project was the management of the expectations of the local population. The solution involved close liaison with the High Peak Borough Council as the location of the cesspit storage tank would be installed within the public car park and concern was raised that this would lead to odour issues to the detriment of the area.

The local council requested that the car park remained open throughout the construction phase as parking within the village is extremely limited and many businesses are reliant upon the tourist trade.

Working in a small rural village such as Edale the team built up a close working relationship with the local population with the development of a detailed stakeholder management plan and a customer care focus in both the planning of the works and the construction stage.

In particular was the local village hall which was used daily by many groups and situated immediately adjacent to the site. The entrance to the hall was located within only four metres of a five metre deep excavation. The team went out of their way to talk to the hall users to help them understand and feel connected to the project.

The NMCNomenca project manager recognised the importance of minimising the volume of waste water and in liaison with the High Peak Borough Council (HPBC) the team replaced the existing auto cancelling taps for modern units within the public toilet block. This made the following cost savings:

- It reduced tankering requirements for Severn Trent Water.
- It reduced HPBC hot water costs. The taps previously ran for 90 seconds. This was restricted back to 9 seconds.

The storage reduction was considerable. On a busy weekend it would be quite possible for 12 taps to be in use 8-10 hours per day.

Application of engineering principles and judgement

The team have shown that by taking a step back and reviewing the available options more can be achieved by doing less:

- The option for the provision of a cesspit storage tank rather than providing additional treatment at the sewage works has enabled Severn Trent Water to reduce their OPEX and the health and safety risks associated with the access for the tankers on the blind bend in the road.
- Capturing the sewage at source rather than treating at the works has reduced the carbon footprint of the works and reduced the number of tanker movements in the village.

The project team considered three options for the storage tank; GRP, precast concrete and in situ concrete. GRP was found to be the most cost effective and could be positioned with minimal impact on the operation of the car park.



Maintaining access for the general public - Courtesy of NMCNomenca



Maintaining access to the Village Hall - Courtesy of NMCNomenca



Completed works - Courtesy of NMCNomenca

Summary

This project has demonstrated the importance of reviewing the original 'Intention of Need' and applying engineering judgement.

The resulting solution has reduced the impact of the incoming tourist population on the existing treatment works without the need for costly chemical dosing whilst ensuring that the effluent remains within the Environment Agency consent.

It has engaged the local residents of Edale and made OPEX savings for both Severn Trent Water and the High Peak Borough Council.

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