

Towngate CSO

hiding new prefab CSO in a town centre roundabout

by David Bull, MEng

When the Environment Agency classified a number of CSOs in the area of Baildon, a busy small town situated on the edge of moorland surrounding Bradford, Yorkshire, as ‘Aesthetically Unsatisfactory Intermittent Discharges’ (AuID), requiring that they be addressed: ‘to ensure storm overflows are screened to the equivalent of 6mm in two directions; cause minimum impact to the wider community and improve current access arrangements to the chamber;’ it created a major problem. One of the CSOs needing replacement was located on the periphery of Towngate Roundabout at the very heart of Baildon, a vigorous community, already aggravated by previous disruption and inconvenience from gas and water mains renewal works. It was clear, therefore that further traffic disruption was going to be an emotive subject.



Baildon - Towngate: New CSO in roundabout

Photo: courtesy Mott MacDonald Bentley

Yorkshire Water raised a scheme with Mott MacDonald Bentley (MOB), its Capital Partner for the feasibility, design and construction of wastewater schemes in the north operational area.

Initially, three options were considered.

- * construct a new CSO chamber in a car park near the existing CSO;
- * construct a new CSO chamber at the Towngate Roundabout;
- * construct a new CSO chamber in a Taxi Rank on the road leading to the roundabout.

To summarise, the three outline solutions for the new Towngate CSO were:

New CSO in Car Park - discounted

To locate the new CSO in a car park downstream of the existing CSO and upsized the inlet pipework. This required a complete closure of the lower car park during the construction period. It also required a complicated temporary realignment of the roundabout to facilitate connection of the new CSO to the existing sewer network. This scheme would result in a permanent reduction of car parking spaces with consequent negative impact on local businesses.

Locate new CSO in central confines of the roundabout.

The roundabout is crossed by all major utility services, including HV cables, low and high pressure gas mains, telecommunication cables and clean water pipelines. There was a potential for high costs associated with service diversions, and consequent highway works, disruptions and loss of car parking facilities.

New CSO in a taxi rank - discounted

This required full road closure for several months, loss of car park facilities and relocation of the taxi rank.

Assessment

Initial Assessment was that all three of these options would cause significant impacts, particularly on local businesses. It was also felt that all three options would result in the loss of car parking facilities and a combination of roadworks ranging from single lane working to full road closures during construction. The loss of trade to local businesses due to the depletion of car park facilities was a major concern, with Yorkshire Water estimating potential compensation claims to the value of £80,000.

‘Drop-in’ Forum’

These three options were presented to the local community at a ‘Drop-in’ Forum held in conjunction with Yorkshire Water’s Clean Water Mains Renewal Contract Partner, who was also planning works in the same location.

Following the forum, the project team reviewed the potential options in depth and concluded the best way to minimise disruption was to locate the new CSO and all associated works WITHIN the confines of the Towngate Roundabout.

Preferred option - solution

Once this became the design team’s preferred option, the traffic management issues were discussed in depth and were agreed with Bradford Metropolitan Council Highways Department.

The final scheme design comprised:-

- * site establishment to be contained **within** the roundabout to avoid disruption to normal traffic flows;

- * remove the existing elevated roundabout and low level stone wall and excavate for the new chamber;
- * install a **prefabricated** CSO chamber and pipework to connect to the existing sewers;
- * backfill & surround the chamber with mass concrete;
- * reinstate the roundabout and rebuild the stone perimeter wall complete with an **integral** stone kiosk;
- * top soil, turf and create a central flower bed.

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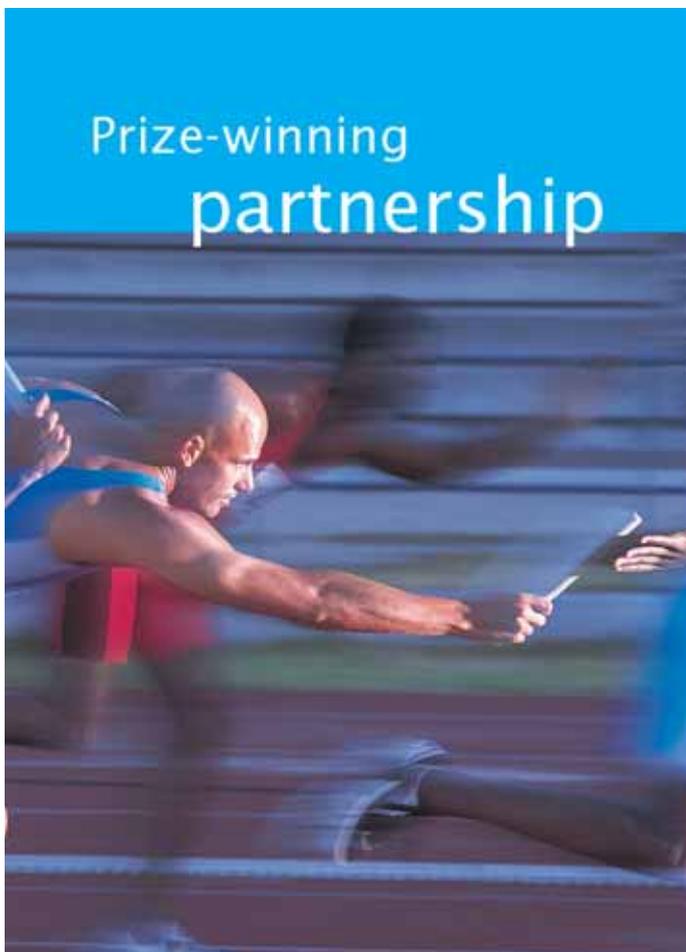
The most obvious solution had been to locate the new chamber in a nearby car park. However, this would have reduced parking space, have a negative impact on local businesses and given accessibility problems for Yorkshire Water.

By locating the new CSO in the confines of the roundabout, the scheme virtually eliminated traffic disruption and had no impact on local businesses

To reduce the construction period, and achieve value, a **prefabricated chamber** with a pre-installed mechanical screen was proposed. This provided time savings, increased quality assurance and minimised the number of site operatives required.

This scheme was the first time a prefabricated CSO chamber had been used by Mott MacDonald Bentley. This type of chamber has subsequently been used on a number of other schemes.

Mechanical storm screens require an operating panel with power supplies to operate the screen. The operating panel is normally housed in a GRP kiosk which is usually positioned near, or adjacent to, the CSO. For this scheme, the kiosk was built into the stone perimeter wall.



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This provided a safe working area, which was not visually intrusive in relation to the roundabout and surrounding area,

Being a highly visible local landmark, the quality of reinstatement of the stone perimeter wall was critical to the public perception of the project. A stone mason, employed directly by *J N Bentley* was able to rebuild the wall to a very high standard.

On completion, the roundabout was turfed, with a new flower bed positioned in the centre.

Safety

- * off-site prefabrication of the chamber minimised time on site, reducing time in excavations and exposure to safety risks;
- * construction work was isolated from traffic and pedestrians and contained within the roundabout;
- * off-line construction of the new tank eliminated requirement for over pumping of sewage flows whilst on site;
- * CSO access was moved from within the highway to inside the roundabout, allowing safer maintenance access;
- * the control kiosk was built into the roundabout wall, recessed away from the road, providing a safe working area, close to the CSO and away from interference & traffic;
- * no accidents or pollution incidents were encountered during construction period.

Customer care

The Towngate CSO scheme was always going to be high profile, mainly because it was at the heart of the town. High quality customer service is an essential part of Yorkshire Water's

corporate vision and influences its corporate decision making process.

Following completion, a forum of more than 150 people applauded the scheme and complimented the work. In addition, a number of complimentary letter and e-mails were received from local people praising the scheme, particularly the quality of reinstatement and the absence of disruption.

Final result

Yorkshire Water's Clean Water Mains Renewal Partner (Balfour Beatty), Mott MacDonald Bentley, and Yorkshire Water, worked closely together to co-ordinate construction programmes in the area to minimise disruption to local residents.

This collaboration allowed early discussions to facilitate a water main diversion to free up space for the new CSO chamber. This was added to Balfour Beatty's mains renewal programme and completed before work started on the CSO chamber. This diversion was critical to the scheme, as it provided sufficient space to install a chamber of the correct proportions utilising a double sided weir in accordance with the chamber design requirements.

On a broader level, the programme of works to improve river Quality, by screening intermittent discharges, has improved the amenity of the River Aire that receives discharges from Towngate CSO - AND a local angler has reported an improvement in fish stocks to Yorkshire Water. ■

Note: *The author of this article David Bull, is Project Leader, Mott MacDonald Bentley.*



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