

Method of Work

RevA

Bury Aesthetic Screens – Sewer Overflow Structure

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Bury Aesthetic Screens – Construction of Outlet Structure

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Method of Work

This Method of Work documentation is the property of Bethell Construction Ltd. It has been developed based upon known activities and information available at the time of preparation, in association with the contract documents, including those produced for tender purposes, and is complementary to our Health & Safety, Environment and Quality (HSEQ) Management System.

This document has been produced alongside Bethell Construction Ltd.'s temporary works designers who are delivering this particular scheme with Bethell Construction Ltd.

Description of The Work

The works comprise the construction of the outlet structure as part of the new Combined Sewer Overflow system to tie to the River Roch. The works are part of the BRY0021 Bury Aesthetic Screens for United Utilities.

The outlet channel will discharge directly into the River Roch. The outlet structure works fall within 8m of the watercourse and protection measures will be implemented to segregate the works from the River Roch.



Summary of works to be undertaken

OUTLET STRUCTURE

1. Set up perimeter fencing.
2. Install Working platform.
3. Install bulk bag cofferdam to divert flows away from works area.
4. Install outlet sheet pile cofferdam, excavate and install tank bracing structure.
5. Install concrete blinding within cofferdam.
6. Install 6N Material.
7. Install PCC Outlet Structure.
8. Construct outlet structure concrete steps and landing.
9. Install 750Ø pipework away from outlet.
10. Complete backfill to structure & pipework.
11. Remove sheet pile cofferdam.
12. Complete embankment reinstatement.

Location of the Scheme



Activity - Setting up stank system

All works to take place within a November to February working window. A 35tonne excavator will lower bulk bags filled with river gravel into the channel to form the stank. The bulk bags will be wrapped in visqueen to form a seal and will be set a 1m in height, this is below the top of the rivers normal range to minimise risk if the river floods and allows continuous flow. See plan & section view below. The stank will be positioned approx. 2m into the river from the embankment.

Prior to draining the channel, a fish rescue will take place. A net will be placed across the channel at both upstream and downstream extents of the works and a fish rescue undertaken with trained ecologists.

A silt screen and oil boom will be erected downstream of the works.

Once the stanks are in place and the fish rescue is completed additional pumps will be used to dry out the channel.

Activity – Reduce level dig & installation of working platform

Bethell engineers will set up a laser level to assist the 35t excavator with the dig to formation level. All excavated material will be loaded into a 9t dumper and stored in a designated area of site.

Once at the required formation level and removal of excess material from the riverbed within the stank has happened a temporary working platform will be installed consisting of 6N material to allow the installation of the sheet pile cofferdam and outfall structure.

Activity – Installation of cofferdam

A 3 walled sheet pile cofferdam will be installed using a dig and push method with a 35tonne excavator operating from the working platform. The cofferdam will come in flush to the existing embankment.



Excess material will be removed from the cofferdam using a 35tonne excavator and loaded into a 9tonne dumper to be tipped in the designated area and stockpiled. The stockpiled material will be used to backfill around the finished outfall structure prior to extracting the sheet pile cofferdam.

When the cofferdam excavation is at a suitable level to enable the bracing frame installation team to work at a comfortable level (not exceeding 1m as specified by the temporary works design) the bracing frame will be installed. The components will be lifted into location using the 35tonne excavator.

This will enable the deeper, stilling basin, level of the cofferdam, to be excavated. A smaller excavator might be used at this stage for excavating under the bracing structure and cleaning out sheet pile pans.

The structure will have a stone foundation constructed from a minimum of 300mm thick compacted 6N material. A 75mm thickness of blinding will be poured to allow the PCC headwall to be placed at the designed level and orientation. This pour will be undertaken using a concrete skip and will enable (when structural strength achieved) the bracing frame to be removed as per the temporary works design. All concrete wagons will be required to wash off in a concrete washout facility away from the working area.

When the 6N material and blinding has been completed to the satisfaction of the temporary works design the bracing frame can be removed using the 35tonne excavator.

A lead trench will be excavated by the 35tonne excavator from the back of the cofferdam towards the proposed manhole 06, as per the diagram below to allow for the installation of the 750mm pipework.

Activity - Outlet structure installation

A Precast Concrete outfall structure will be delivered to site ready for installation to eliminate the risk of pollution that constructing in situ with FRC. The structure consists of 3 separate components: a headwall, landing platform and access steps. All precast have been made to 3t and below to allow for installation by the 35t excavator.



All 3 components will be lifted into position using a 35t excavator to the levels set out by a Bethell engineer. All 3 components are to be tied into each other using dowels to form 1 complete structure.

Metalwork including handrails and safety grill will be lifted into location for fixing using the 35tonne excavator or alternative methodology determined by the specialist subcontractor.

Activity – Installation of rock bags

Rock bags will be lifted into position using the 35t excavator and installed at the front of the structure. These will be tied into the existing riverbed and installed at the required depth of 450mm below the riverbed to reduce any potential erosion of the outfall and embankment.

Activity – Installation of rip rap & reinforced soil slope

Bethell Operatives will install the 6N material up to the designed level and a 300mm minimum layer of Rip Rap apron will be installed to suit the existing levels. Bethell engineers are to set a laser level and staff with incremental heights for each layer of aggregate and fill. The 35t excavator will be used to mass fill the area and shape the slope to requirement. Once the Rip Rap has been completed, the soft landscaping will be installed. The Salix Bionet C125BN system will be utilised and installed prior to the placement of the Coir pallets and the Brushwood Faggots. All landscape reinstatement materials will be installed and maintained as per the manufacturer's instructions.

Activity – Removal of cofferdam & stank system

The sheet piled cofferdam will be removed using the 35t excavator as the reinstatement progresses to allow the 6N and Rip Rap to tie into the existing embankment. Once sufficient reinstatement has been completed away from the river and the need for the use of the excavator in this area has been completed, the stank system will be removed with the 35t excavator so that full reinstatement can be completed.



OUTLET STRUCTURE RISK MITIGATION

- *Ensure there's no increase to flood risk or impact on drainage* – This element of the work does not directly impact on the river or cause any flood risk.
- *Minimise sediment being disturbed and moving downstream* – The main element of the work does not directly impact on the river to disturb or affect sediment. The well pointing extracted water will be processed through settlement tanks and be tested in accordance with the discharge permit. A Sedimat will be placed to minimise disturbance or erosion of the riverbank and bed.
- *Minimise the impact on biodiversity* – Minimal impact due to limited footprint of works.
- *Ensure careful storage and disposal of waste* – Any material that is surplus will be removed from site and disposed of correctly at a licensed facility.
- *Prevent pollution of watercourses, for example from construction debris or contaminated land* – Any excavation material temporarily stockpiled will be profiled and compacted to minimise any run-off in heavy rain. If required a sediment barrier will be erected around the bund to prevent run-off silt from reaching the watercourse. Any stockpiled material will only be stored long-term in an area that cannot result in run-off silts reaching any of the watercourses. Concrete wagons will be washed off in a dedicated washout facility that will be in a location to minimise the risk of any washout reaching any watercourse.
- *Prevent pollution from static plant, mobile machinery, refuelling and material storage* – Designated refuelling area to be used away from the watercourse on hard standing and all static plant and machinery to have plant nappies under. All plant to use bio-oils.
In the event of a spill into the river the site team will contact the EA hotline immediately.
- *Prevent or minimise impacts on habitats and wildlife* – The area will be checked by the ecologist prior to commencing construction of the piling/crane platform.
- *Prevent the spread of invasive non-native species or plant or animal diseases* – None known in this location.