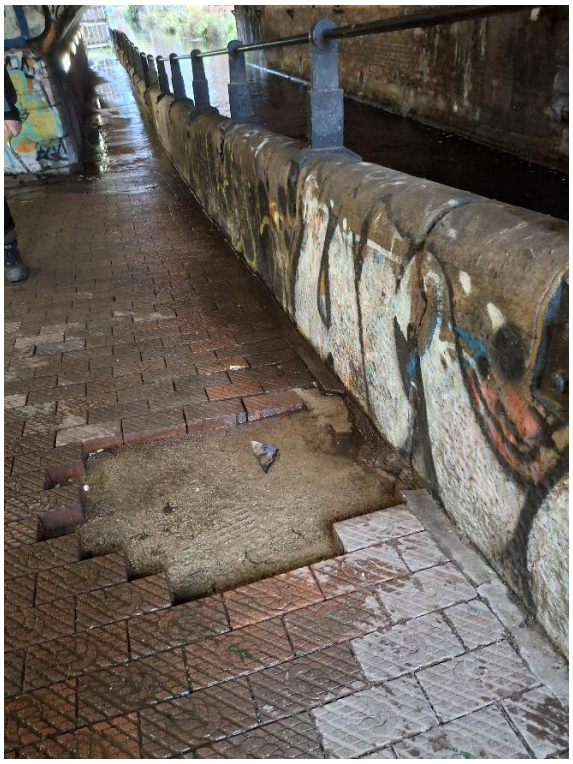
Rochdale Canal Lock No. 88 to East of Oxford Street

Grade II listed; Whitworth Street Conservation Area

Design and Access Statement



Rochdale Canal Lock 88 towpath-side lock chamber wall



Rochdale Canal Lock 88 towpath leaks (towpath closed to the public)

Nature of works

There are significant leaks to the Rochdale Canal Lock 88's towpath-side lock chamber. The leaks are out-letting on the towpath downstream and at Lock 90 (there is a disused gas main in the towpath and the water from Lock 88 is tracking down this, causing damage further down the canal at lock 90), flooding the towpath and making it unsafe for members of the public (towpath closed). Survey has found a substantial void beneath the towpath.

The leakage pathway is in the fill material behind the stone lock chamber walling. To just repoint the entry/exit points on the lock wall would be in effect wallpapering over the cracks and not fixing the problem. This would result in the leakage pathway re-opening and over time the void would increase in size and potentially compromise the structural integrity of the lock wall.

It is proposed that a specialist contractor drill horizontally in the towpath side chamber wall and then insert Polyurethane (PU) grout to seal the leaks. Drilling is restricted to mortar joint intersections (i.e. to sacrificial fabric with no damage to stone arrises) in a c. 500mm x 500mm grid. The exact location of drill holes (wide joints preferred) will be established by the contractors on site.

On contact with water, the polyurethane grout changes from a liquid to a soft closed cell foam that expands into any voids and should stem the leakage. Any grout residue left on masonry can be easily removed with a stiff brush leaving no residue on the surface of the masonry.

Method Statement for Polyurethane Resin Injection

Drill ~10-12mm holes through the mortar joints within the chamber walls, where it is identified or suspected there is a leak location or void behind the lock wall. In this case, the treatment of the whole of the towpath-side chamber wall is necessary.

Insert 'packer' and inject polyurethane resin at low pressure; the resin flows along the course taken by the water behind the lock walls and turns into a solid leak sealing foam when it comes into contact with water – this seals any leakage present. Packers will incorporate a non-return valve that may not be closed until injecting through the packer. The packer may be left open to provide an escape of air or water, that otherwise may become trapped. Clean potable water shall be injected using a single component pneumatic piston pump, ensuring that subsequent injected resin will react. Pumping will be observed with both pressure and volume monitored by the injection engineer.

Remove packers and reinstate drill holes using lime mortar (natural hemp is also used during the process to block excess resin flow as required).

Grout injected horizontally into the wall joints from inside the lock chamber.

Used extensively across locks nationwide (including numerous listed structures). There are few / no alternatives which can match the typical reductions in leakage achieved.

Drilling and grouting equipment

Injection holes will be drilled using rotary/percussion drills capable of achieving the drill depth required for the works. Drilling and grouting horizontally into the lock walls may be carried out from floating plant situated within the lock chamber. Resin will be injected using a single component pneumatic piston pump.

Conclusions

The grouting works are proposed to address lock wall leaks and ensure the proper preservation of the listed building (to stem the creation of voids in the fill below the towpath and behind the stone chamber walling which could compromise the structural integrity of the lock wall), conservative water management, public safety and the prevention of further damage to Lock 90. The PU grouting works have been used successfully by the Trust across the network over a long period of time and avoid the need for more intrusive interventions to historic fabric.

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