

In-Situ Lining at Yorkshire Water

Talk by:

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Overview of Lining Programme

The six worst performing DMAs were promoted for mains renewal/replacement by Service Delivery. Three DMAs within this programme were identified for semi-structural in-situ spray lining.

The objective of the lining programme was to renew 9km of clean water mains by using the Resiline 320 product.

The mains diameters that was targeted span 3" – 12" throughout the lining programme.

Vortex by Air

**Uses granite or flint
aggregate.**

**High volume high velocity
low pressure air.**

**Stones break off
encrustations.**

Goes around bends.

**Produces warm air which
helps to dry the pipe.**



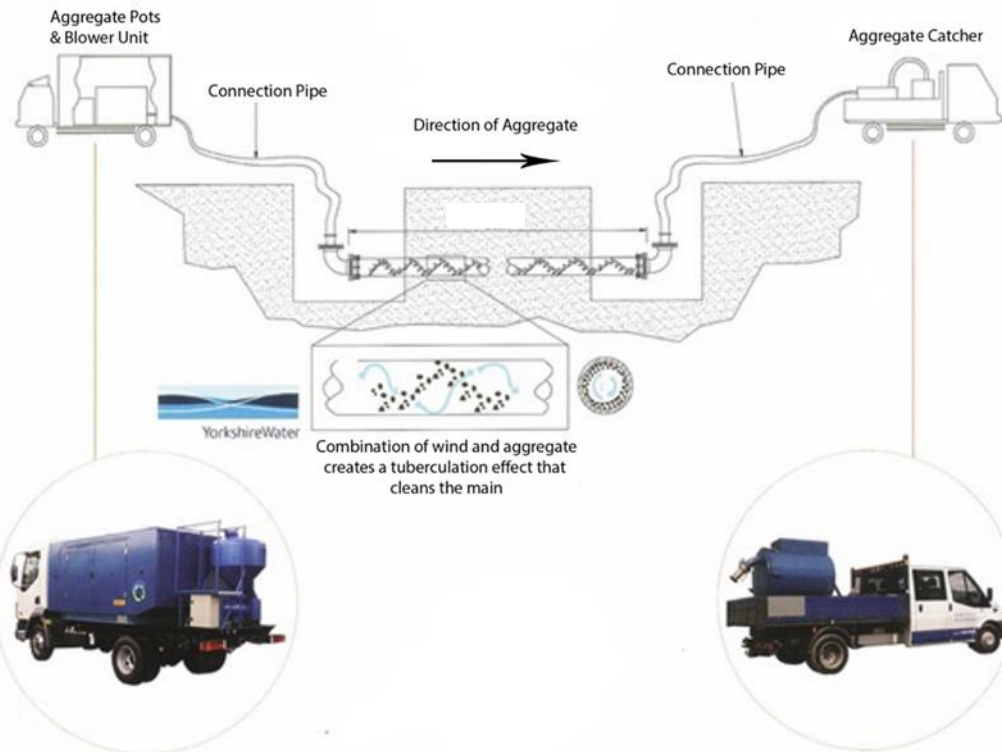
Vortex by Air

Diameters 3" – 8"

Wind and aggregate

300m of 6" mains.

Cleans and dries <1hr



Lining Train – Part 1

- Weight Checks
- Spin up
- Dip cards – Pre-Lining
- Lining



Lining Train – Part 2

- Exit Dip Cards
- CCTV
- Chlorination
- Commissioning



Skids 3"+



Carbon 3D printed 3" Skids



Dip Cards

CCTV Pre and Post Lining

Snig Hill, West Bar Green
4" AC

Cleaning



Lining



Cleaning



Lining



**Chestnut Avenue,
Stockton Lane**
3" CI

Lining Documentation

The following documentation is required for every lining carried out:

- CCTV Cleaning
- CCTV Lining
- CCTV Report
- Quality Assurance Document
- Dip Cards
- Rig Print Out
- Non-Conformance Record

The Work Mobile app is used for the CCTV report and Audit Forms is used for the QA and Non-Conformance record with all documentation saved virtually on a Yorkshire Water SharePoint site.

Outcomes/ Highlights of Lining Programme

Over 9km of water main has now been successfully renewed by using the semi-structural lining over the three projects.

West Bar Green is beneficially complete with the final sections of open cut being completed on Fulwood and Stockton Lane.

Semi-structural lining provided a cost saving of £560k on West Bar Green due to method of renewal being chosen over replacement.

Selecting Semi-structural lining also outlined a 40% carbon expenditure saving in comparison to the works being delivered by traditional methods.

Key Learnings

The key learnings from the lining process on the basket of works completed is:

- Reducing the cleaning time on the project with the 2hrs 59mins shut off period.
- The methods used to prepare ferrules before lining to prevent blockages (ferrule sucking)
- The manufacturing of carbon fibre lining skids for 3" host pipes.

Thanks for listening!

Questions?



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