The Mansfield Sustainable Flood Resilience Scheme

Combined Flow Control & NRV Chamber Development

By Kevin Price

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Contents

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Background

Who are Sel Environmental?

- Based in the Northwest
- Established in 1999
- 50+ Employees
- Turnover c.£10m
- Manufacturer of specialist & bespoke SuDS systems, rain gardens and drainage solutions
- Installer of attenuation tanks and membrane liner systems
- Turnkey contractor for provision of, rooftop and ground level sports facilities – Bramley Moore
- Contributor and steering group member of many CIRIA research projects and guidance publications

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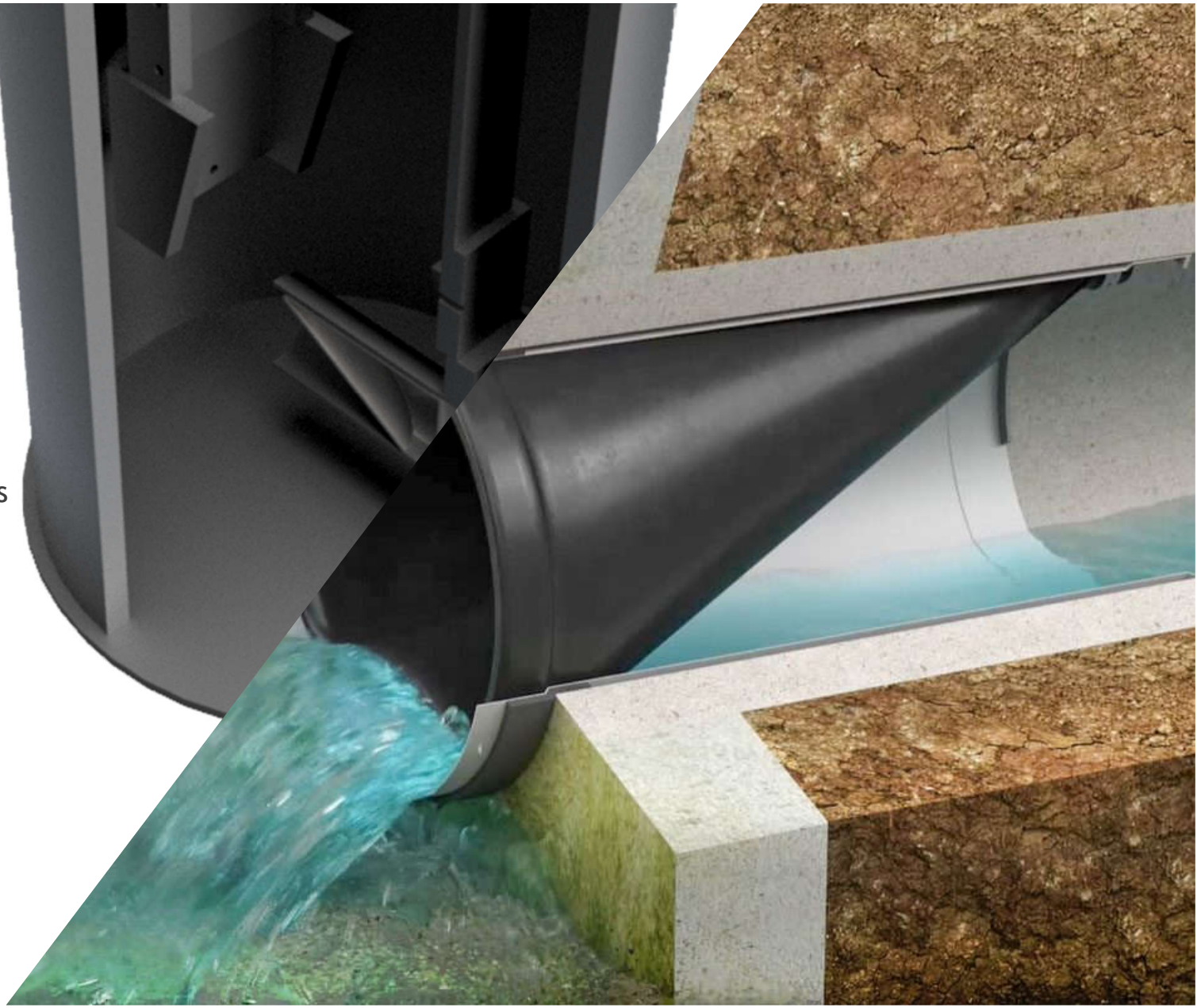
Background

- Contacted by Severn Trent
- Restrict Flow from Rain Gardens
- Flow Control Chamber
- Maximise Attenuation
- Non-Return Valve Chamber
- Removable for Maintenance
- Limited Space
- 2 Chambers in 1



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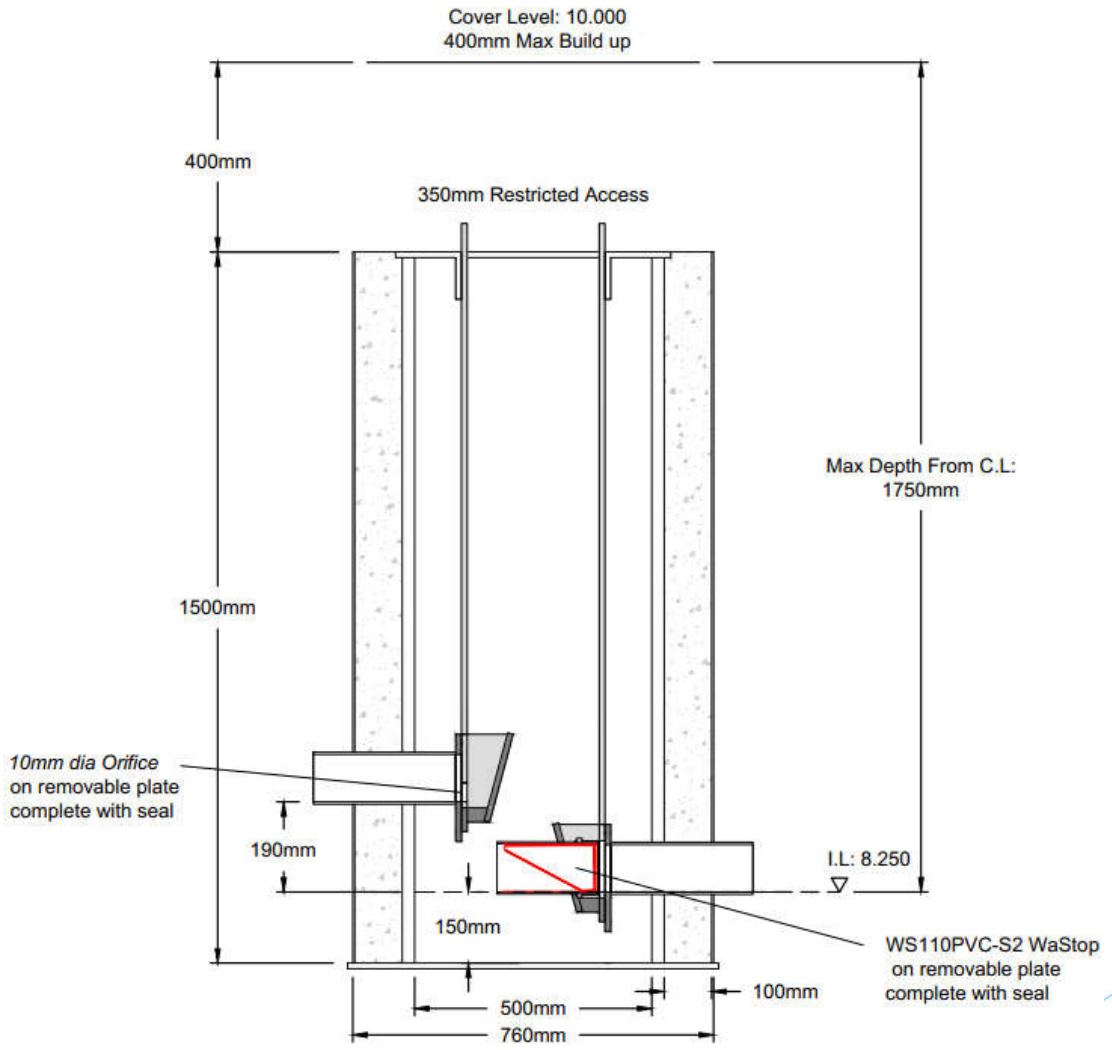
Background

- Prototype
- Flow Control
- Non-Return Valve
- Removable



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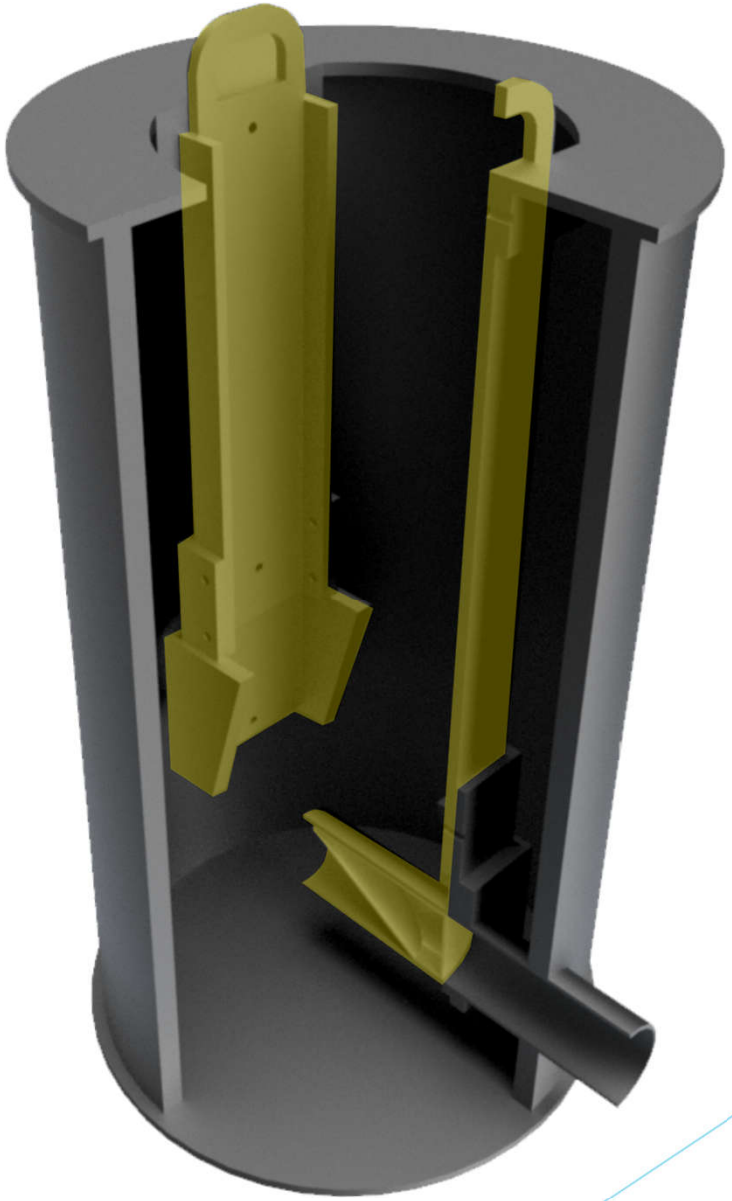

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1. Make Sure it was Fit for Purpose
2. Test watertightness (weepage)
3. Characterise orifice discharge behaviour
4. Evaluate WaStop operational consistency

Fit for Purpose

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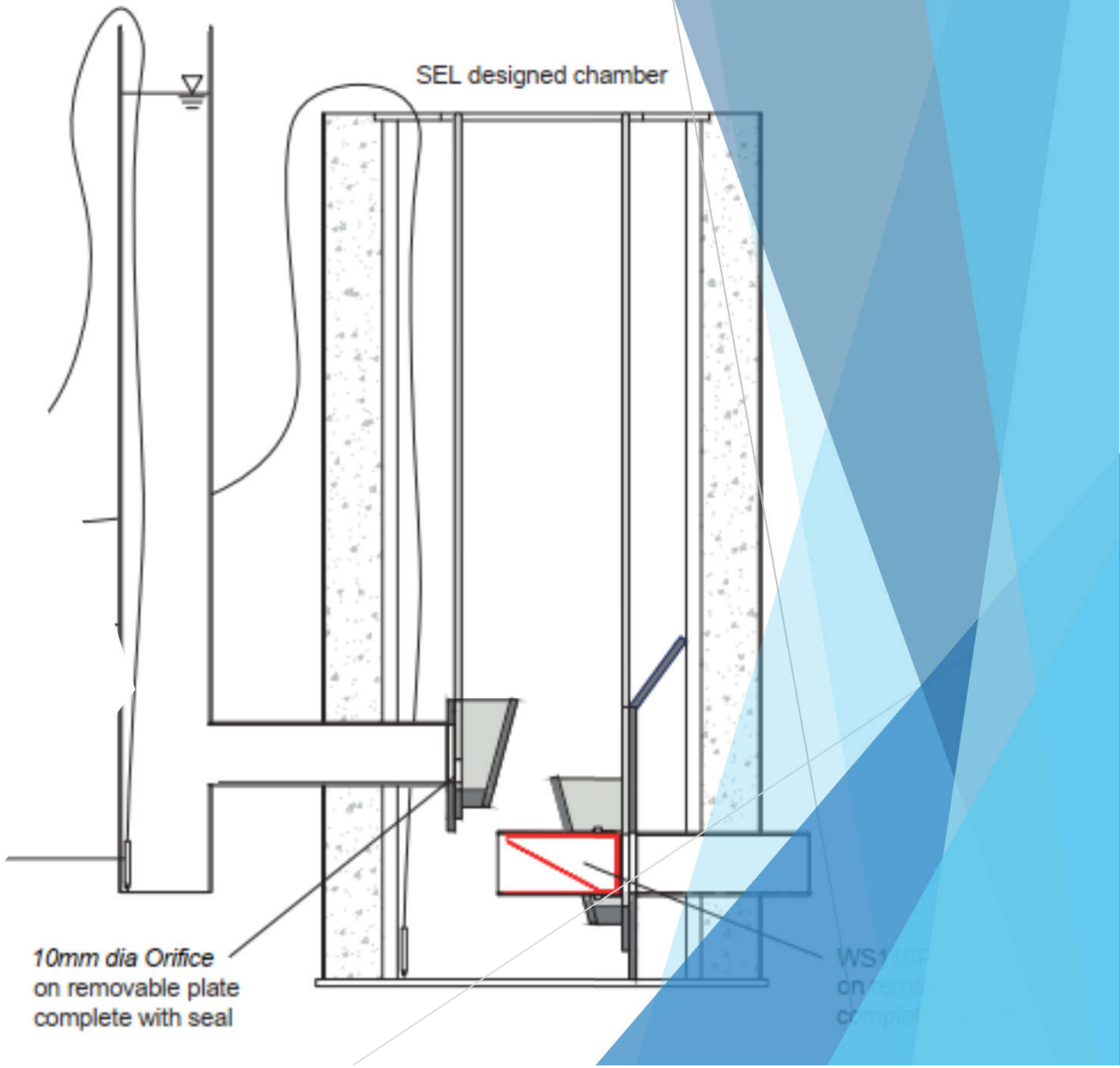
Methods

- University of Sheffield water lab test rig
- 18 orifice plates tested (various orifice design profiles)
- 4 WaStop valves tested
- Measurements: pressure transducers, flow rates, weepage observations



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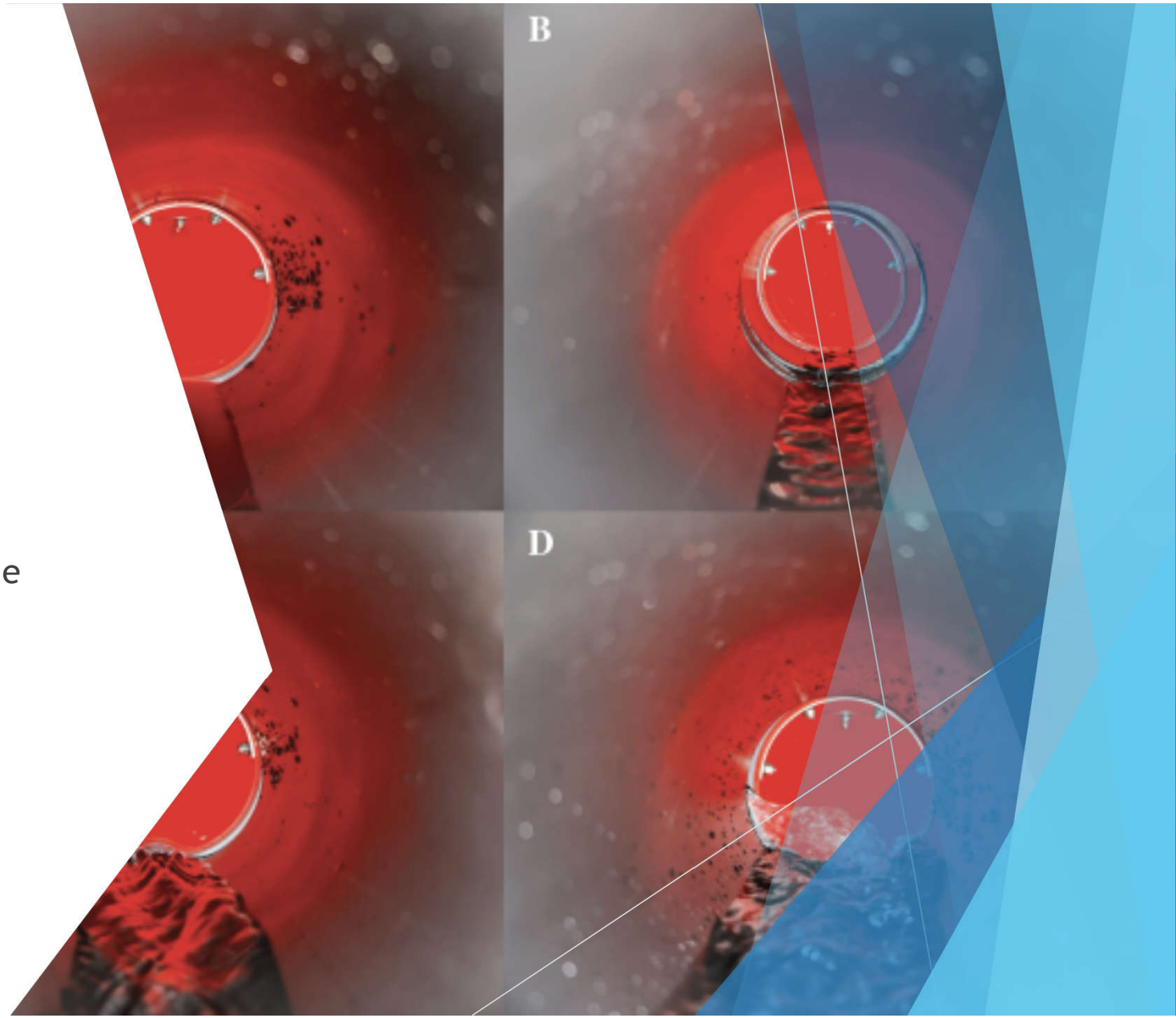
Key Findings: Orifice Gates

- • Modular stepped orifices: stable, predictable CD ≈ 0.61
- • Removable plate seating design developed to prevent leakage and ease of locating
- • Best option: 10 mm upstream stepped orifice

Key Findings: WaStop Valves

- Orifice inlet set higher than outlet invert to accommodate the breaking head of the Wastop valve
- Consideration given to ensure sealing and ease of locating the removable plate housing the Wastop valve



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Conclusion

- Compact chamber, easily handled on site
- Integral shutter
- Small footprint
- Sealing removable plates
- Predictable flow rate performance
- Removable and maintainable NRV
- Futureproof, as orifice and Wastop valve can be easily replaced / updated

Thanks for Listening
Any Questions

For more information on this and other chambers in our range please visit:

www.selsource.co.uk

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