UAP4W

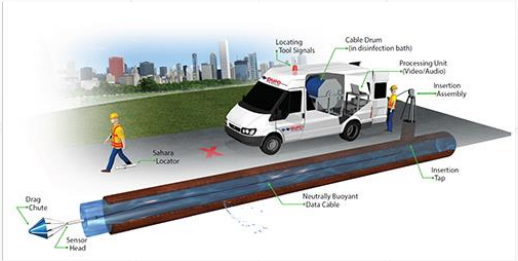
Universal Access Point for Water

Dr Leo Carswell, WRc

The Need and the Project Scope

Hydrant

Under pressure T



Custom solutions

The scope of the project was purely to develop a design for a UAP4W.

The project outputs used by manufacturers to develop prototypes.

Open innovation, with no intellectual property associated or claimed by the design.

Vision, Challenges and Specification

Our Vision of a Universal Access Point (UAP)

A ‘UAP system’ which is designed so that **additional functionality** can be added by users and suppliers. For example, specific fittings for sensors or solutions, systems to capture free flowing in pipe devices or technology to enable disinfection pre-deployment.

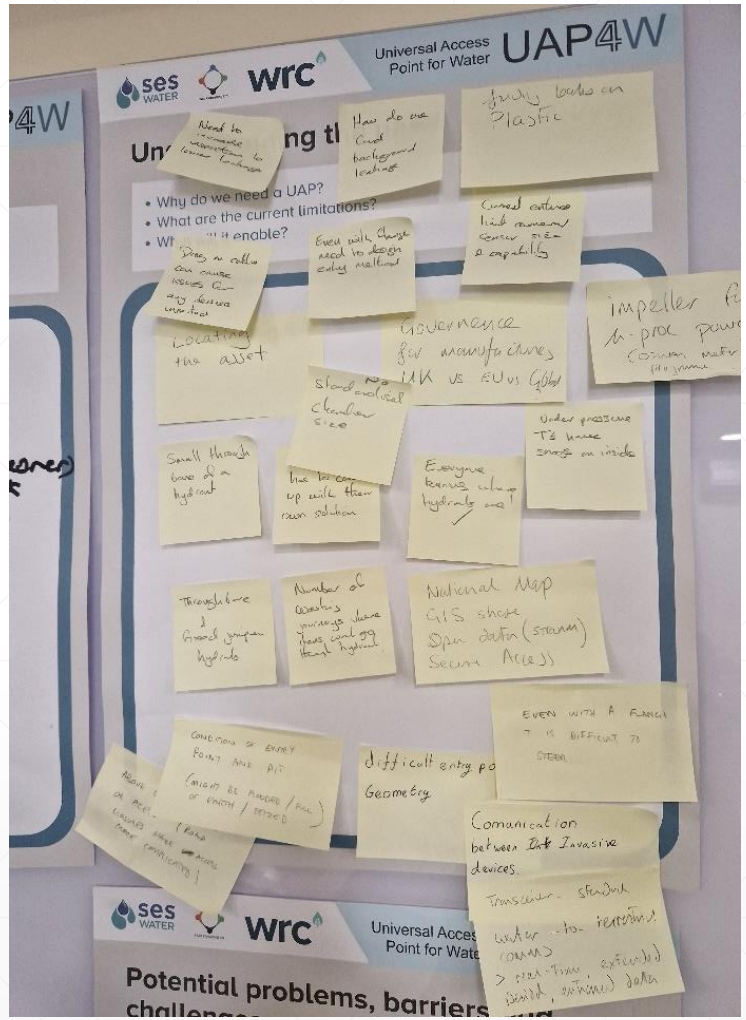
- Use for water company and their contractors only.
- Low maintenance and future-proof.
- Rapid installation of the UAP.
- For use on all common pipe materials.
- Standardised chamber size.
- Reducing future disruption for customers.

UAP4W

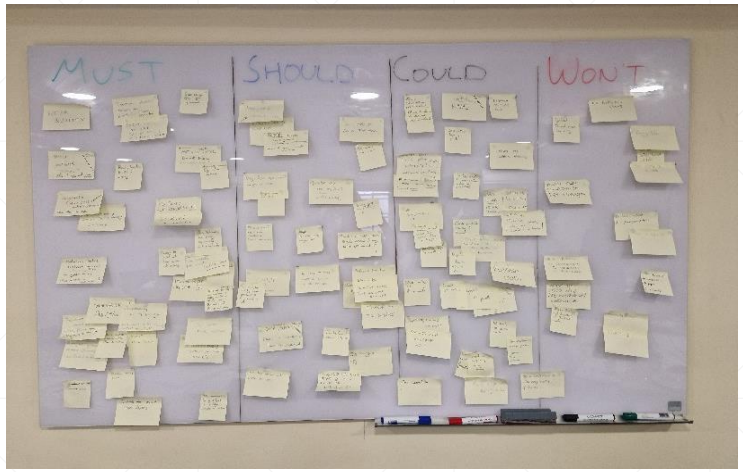
Universal Access Point for Water

Potential Barriers and Challenges

- **Water Quality**
- Getting **water companies** and/or **manufacturers** on board
- How do you get into the pipe without a 90° bend which is likely to **limit entry**?
- Designing a solution which can operate in **varying** pressures and flow rates
- Enforcing installation on **self-lay** sites
- **Familiarity** of the UAP
- How do you remove the barrier of making **time** for installation?
- What is the optimum **density** of installations?
- In **smaller mains** there will be a restriction due to the pipe diameter
- **Chambers** = extra cost and time
- The locations where pipes **fail**



Design Specification



28-line items developed from a MoSCoW analysis, with
either or both **preferred** and **minimum** requirements. Some examples….

Water quality - Reg31.

Design features - 100mm diameter standard entry point; 80mm is a minimum; no sharp edges…

Installation into the network - All pipe materials; 80-400mm pipe dimeter (min 100-300); time; skill; asset impact…

Operational use of the UAP - Number of people; skill; survey direction; insertion and removal; compatibility…

Maintenance - Minimum and a modular design…

Cost - Cost is less than the qualitative and quantitative benefits derived.

Health and safety - Operation is safer than the use of a hydrant.

Economic Assessment

Important Use Cases and Benefits of UAP

Benefits	Use Cases
Most Perceived Benefits	**Most Important Use Cases**
Facilitating the use of Innovative Technologies/Techniques to facilitate renewals/repair	Pipe Condition Assessment
Facilitating Non-Intrusive Repairs/Renewal Minimising Disruption/Costs	Access for Sensors/Robotic Devices
Improve Leak Detection	Network (DMA) Leakage
Least Perceived Benefit	**Least Important Use Case**
Easier Pipe Isolation for Repairs	New Developments

Demand Estimate

- A moderate estimate and market penetration (5% industry uptake)
- = 70,000 UAPs.
- At a high estimate (20% industry uptake)
- = 370,000 UAPs.
- If the UAP aligns with broader trends in innovation and infrastructure investment, uptake could extrapolate the upper-bound estimates
- = 1.3 million UAPs

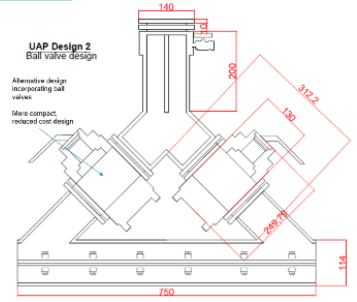
Development of Design Ideas

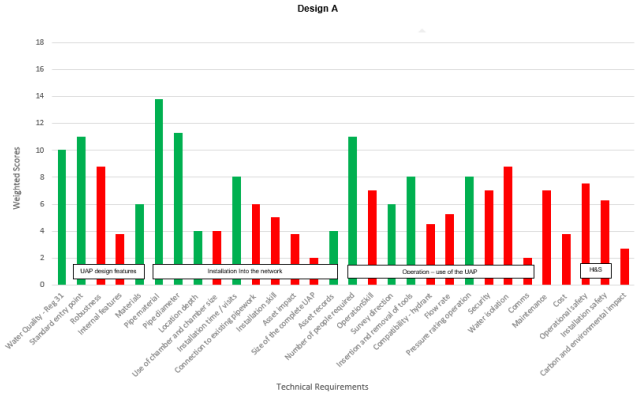
Our Objectives

- ***Develop design ideas based on the specification.***
- ***Engage with stakeholders to review, score and agree on the preferred aspects and design(s).***

Stakeholder Assessment – *Against the Design Specification*

A





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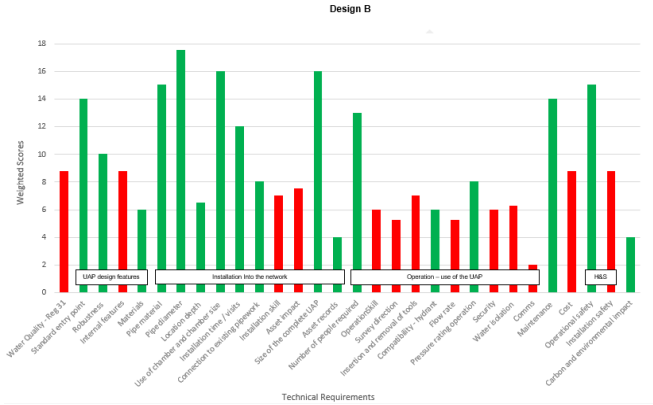

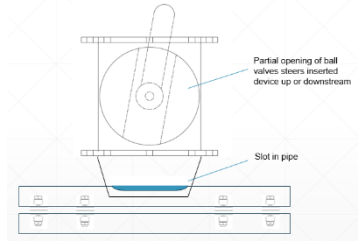

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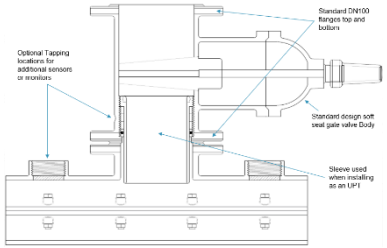

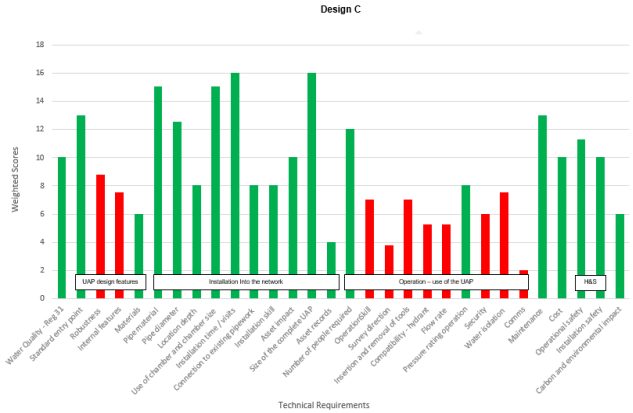

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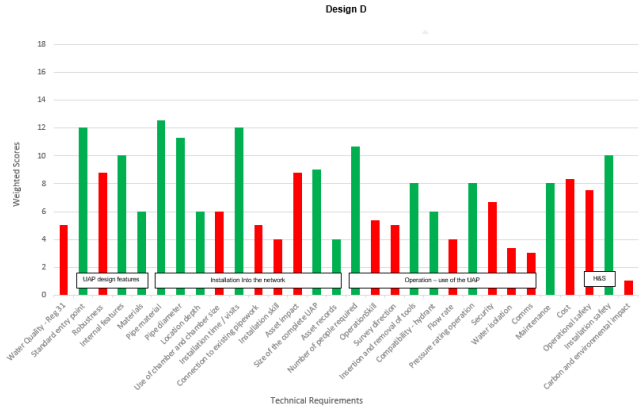
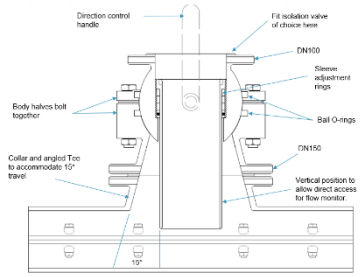


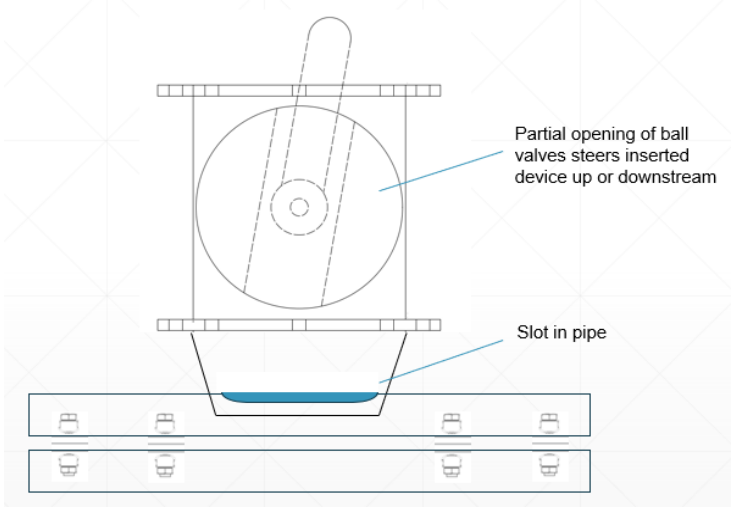


Design Refinement and Supply Chain Engagement

Our Objective

- ***Refine options down to a single 'preferred design' to take forward and consider manufacturing method.***

B



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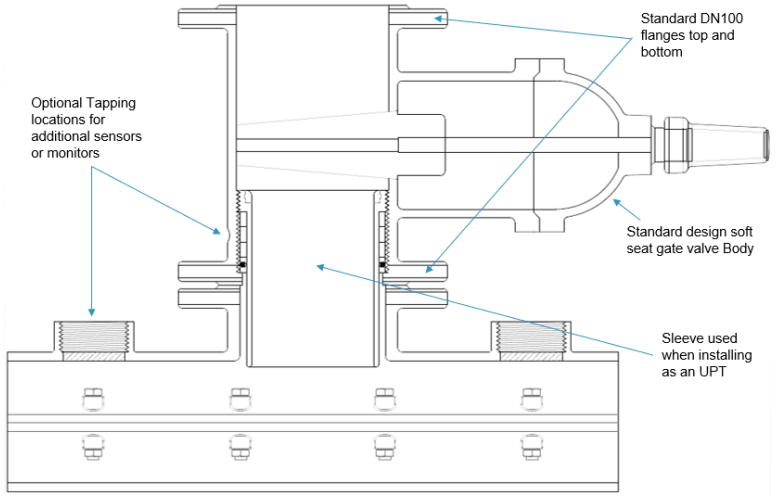
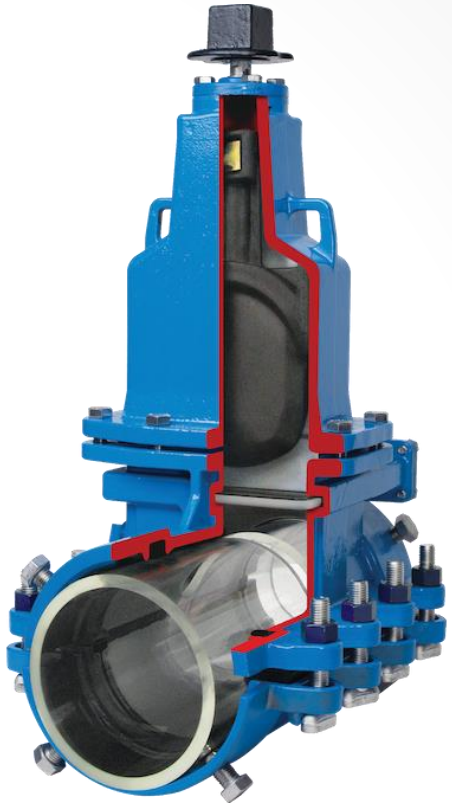
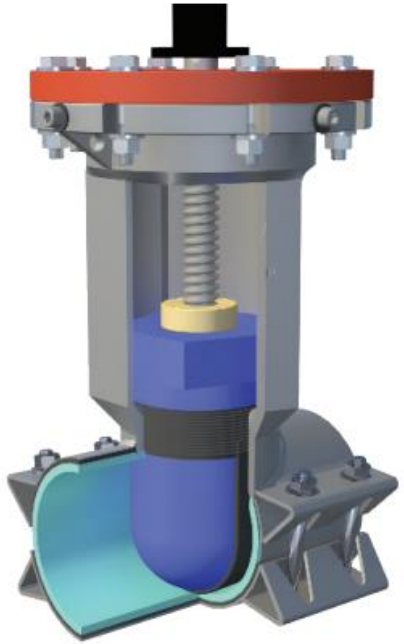






Live coring within a valve body that allows the full diameter of the pipe to be removed.

Live slot milling via rotated tool. 120º narrow slot around the pipe.

Live tapping technologies – *how this fits in and what it enables*

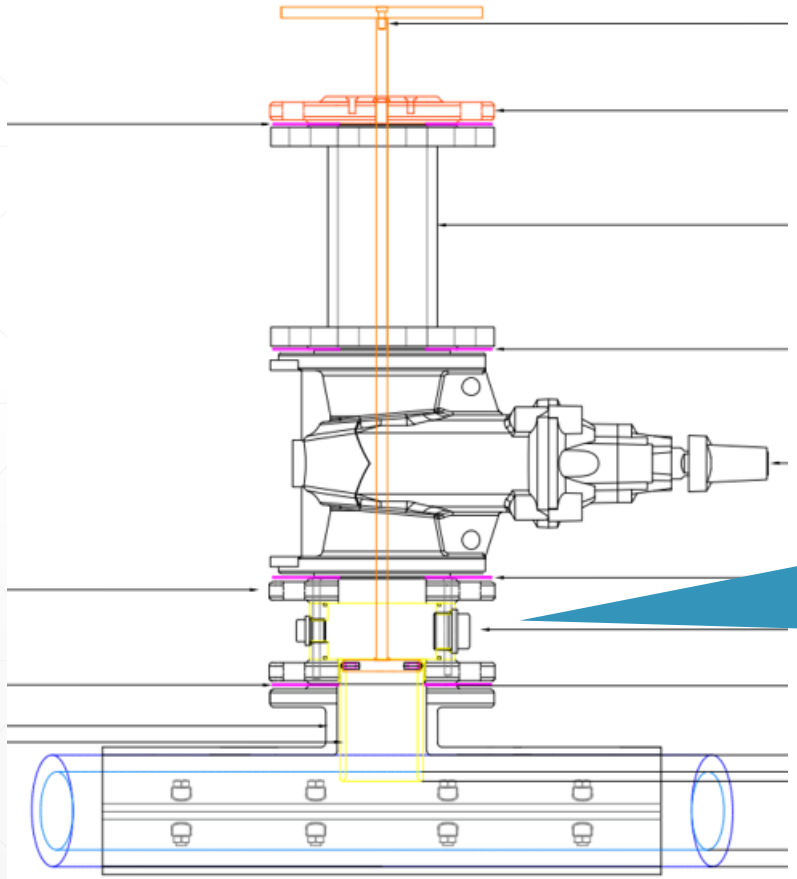
A range of live insertion line stop technologies available.

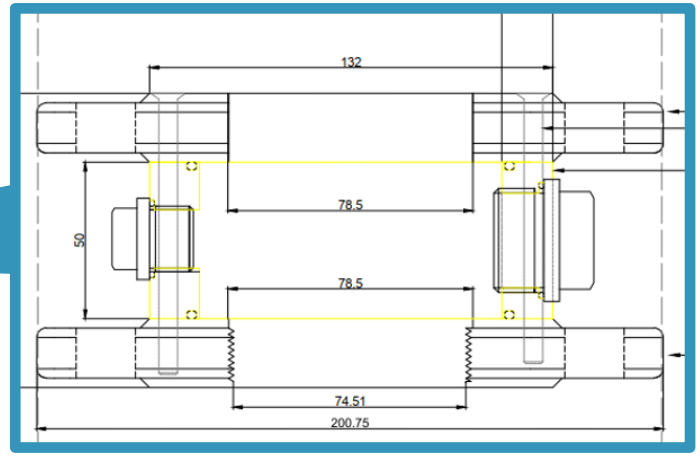
They are interesting to the project because they address two aspects:

a) live coring/milling

b) full-bore/pipe diameter material removal

Design C: Full entry, flexible fit valve with cut edge protection

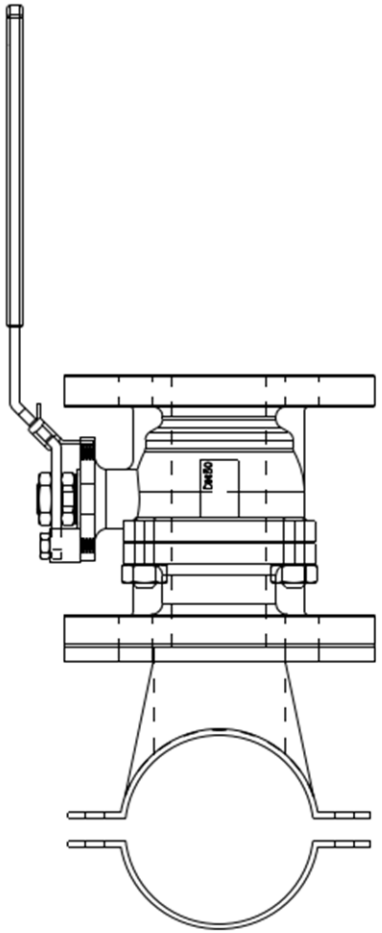


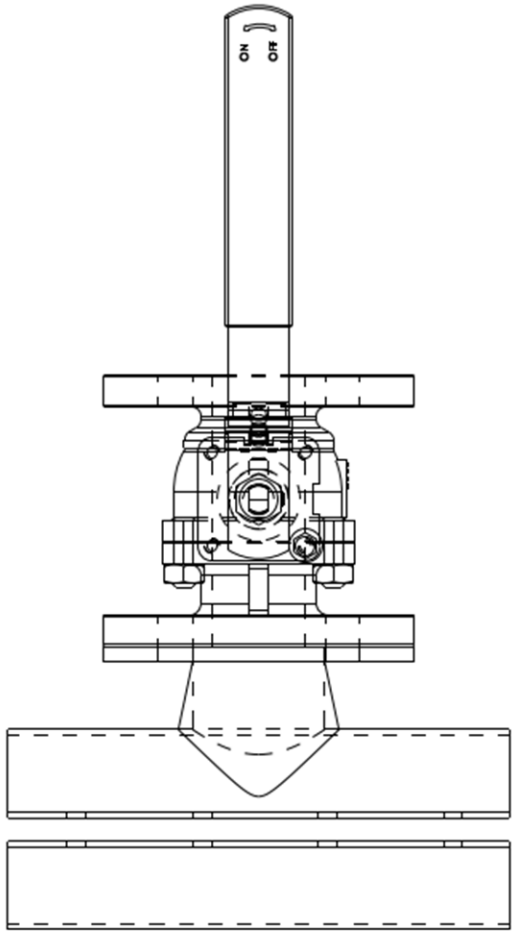


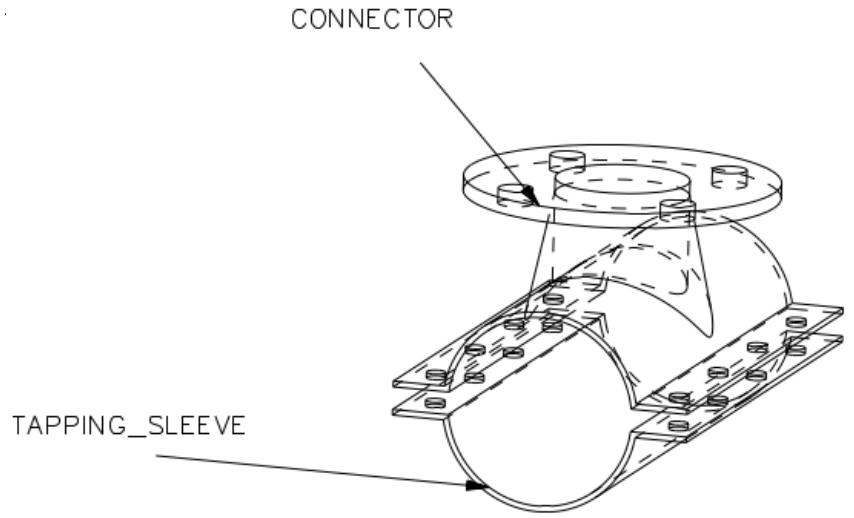
Item	Variable	Material
A	Sleeve Installation TeeBar	Mild Steel
B	Sleeve Installation flange	Standard Blank Flange Machined to take Tee and gland plate
C	Gasket	Nitrile Rubber
D	Installation Housing	Bought off shelf (WRAS Approved)
E	Standard DN PN10/16 resilient rubber isolation valve	Bought off shelf (WRAS Approved)
F	Sleeve Housing	Bespoke housing using the same materials as a normal flange
G	Standard Collar appropriate for the pipe material with Standard DN PN 10/16 Tee	Bought off shelf to suit pipe material (WRAS Approved)
H	Pipe	In Situ

Item	Variable
I	Tee Height (from crown of pipe to flange of Tee)
J	Pipe wall thickness
K	Sleeve projection into pipe

Design B: Over-sized ball valve







Supplier Ready *- Output*

Two different UAP designs – developed and documented to a stage where **a manufacturer can pick the idea up** and start their own design refinement and commercialisation.

Two other designs - developed to an early stage

spring

Dissemination event held – 15 Oct 2025
Ongoing water company and supplier engagement

What Next - We recognise any manufacturer will have their own way of taking forward the UAP

- Further detailed design & design for manufacture driven by cost and market size
- FEA and other tools
- Prototypes
- Testing
- Refinement
- Approvals
- Development of the project economic / market review