

Designer Liner

Dr Katrina Flavell – Yorkshire Water

Dr Joseph Sanders – RPS



Designer Liner – Leakage Conference update

We'll cover...

- AMP7 and AMP8 clean water lining landscape
- Overview of Designer Liner to-date, including technical updates
- What's next

The takeaway...

- ✓ Water companies have scope for more lining work to deliver AMP8 plans, and beyond
- ✓ Designer Liner is working to support this need

Designer Liner overview

Challenges & opportunities

Investment

Project

Solution

Regulation

Testing

Ambition

Cost

Ofwat
Innovation
Fund



Defining a new lining solution(s)
and route to market

Additional benefits



Environmental



Less disruption



Cost effective



Designer Liner
Phase 2

Project partners



AffinityWater



Dŵr Cymru
Welsh Water



**Scottish
Water**
Trusted to serve Scotland

**Materials
Experience**



**NATIONAL
COMPOSITES
CENTRE**

Bristol
Composites
Institute



Domain Expertise



independent | trusted | innovative



TETRA TECH



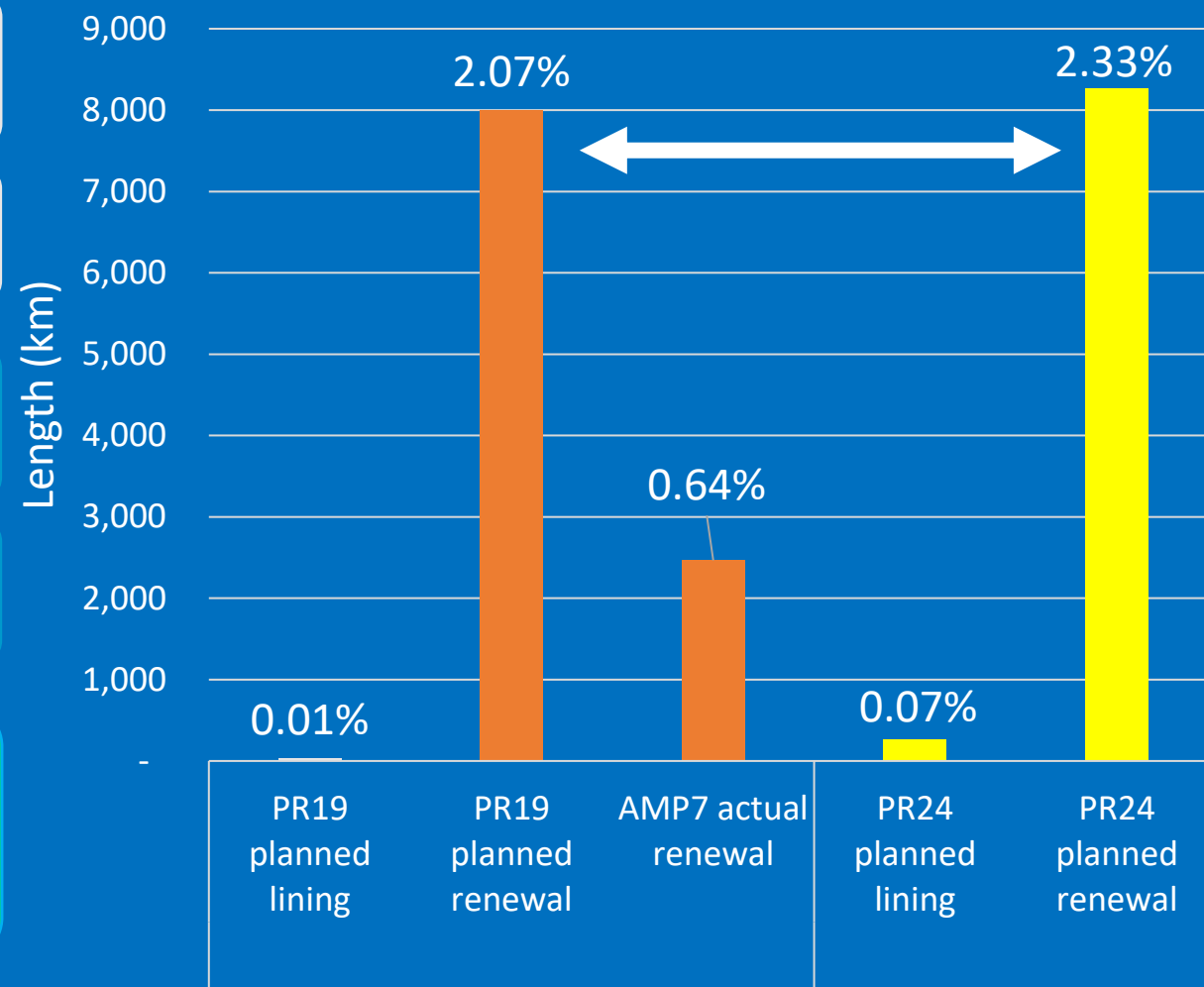
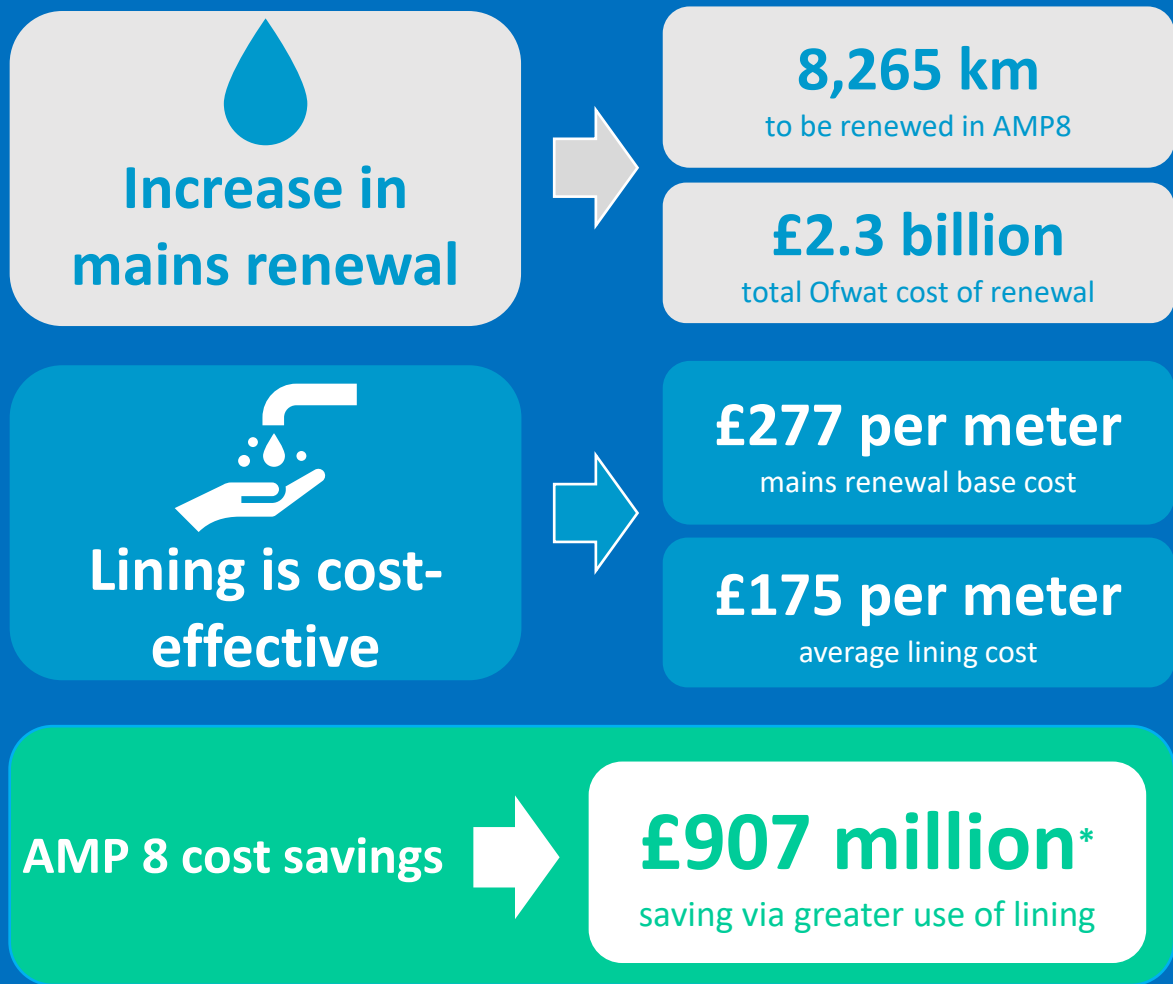
A TETRA TECH COMPANY



Industry Partner(s)

**Designer Liner
Phase 2**

The lining landscape



Designer Liner
Phase 2

Progress – Fundamentals

Existing Product Level Analysis

Requirement Capture &
Concept Down-selection

Design Intent Document

Load Case

Ferrules

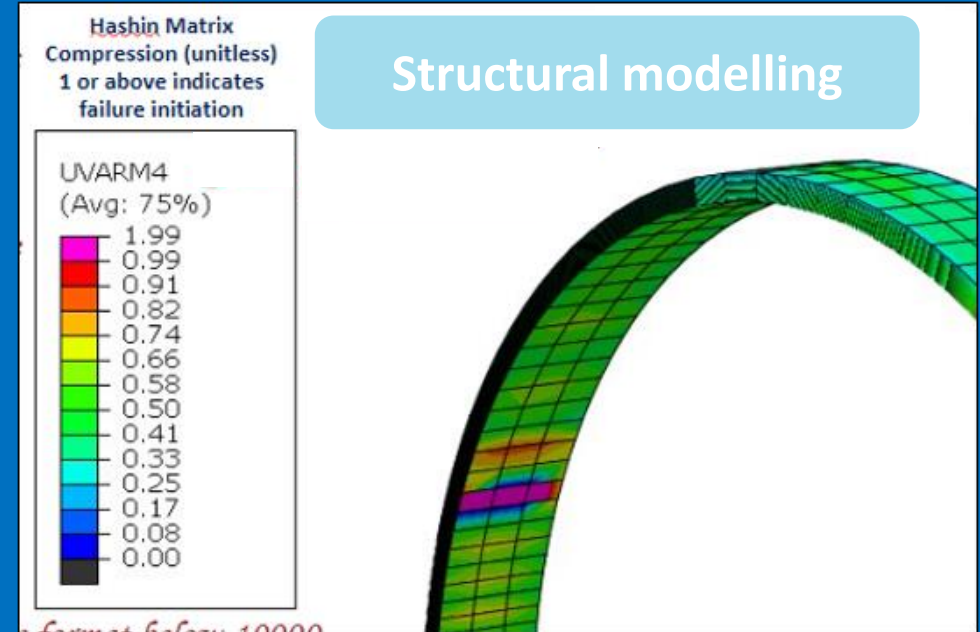
Materials

Host Pipe Details

Bridging of Defects

Ground Movement

Structural modelling

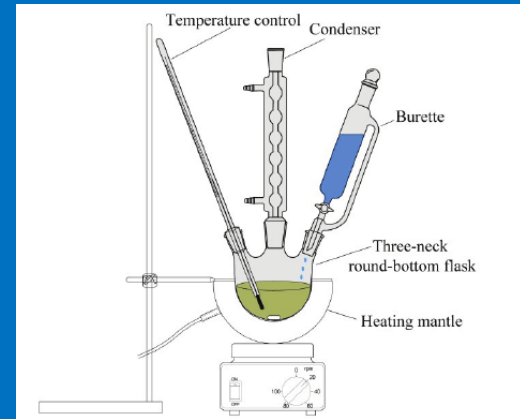


Designer Liner
Phase 2

Testing Matrix

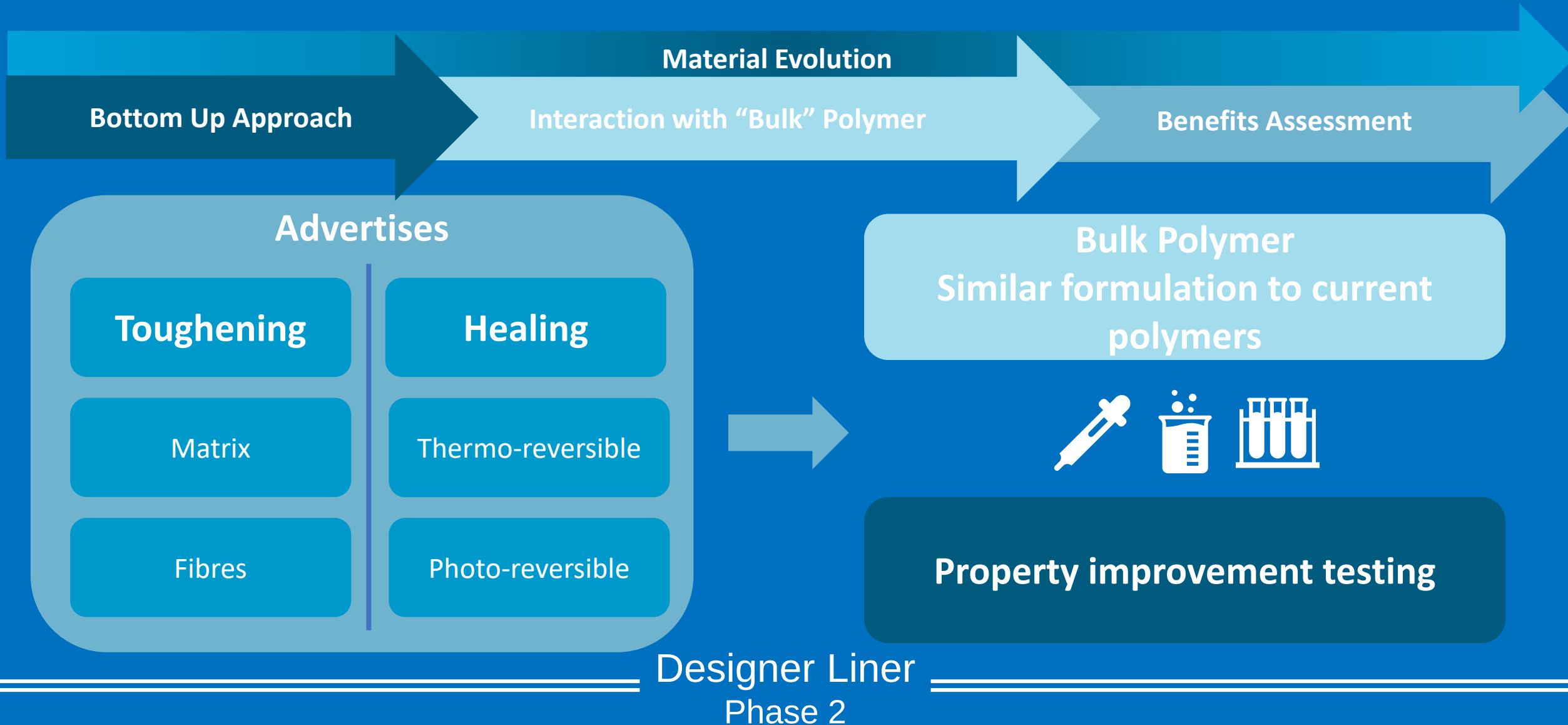
Several tests (both mechanical and chemical) are needed

Test	Standard	Properties	Orientation	Standard Coupon Geometry (mm)	Aging	Test Temperature	# Coupons
Hardness	ASTM D2240-15(2021)	Shore D hardness	N/A	TBD	None	Ambient	3+ 1 spare
Abrasion resistance	ASTM D4060-19	Abrasion resistance	N/A	TBD	None	Ambient	3+ 1 spare
Water absorption	BS EN ISO 62:2008	Water absorption	N/A	TBD	Aged in water at 23 °C until saturation	23 °C	3 + 1 spare



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Phase 2

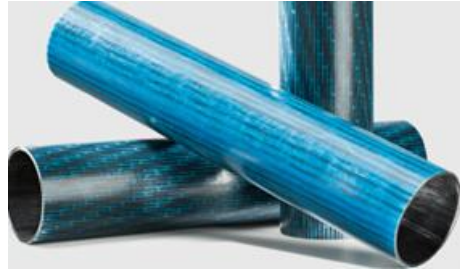
Materials Science Progress



Timeline



Partner Water
Company Support



Requirements
Capture &
Technology review



Future technology
cost benefit analysis

Material & process
qualification



Demonstration &
Exploitation



Phase 2 bid
submission

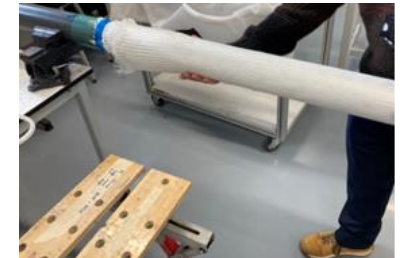
Materials &
manufacturing
research

Identify partners

Mechanical &
design testing

Market support

Engagement &
dissemination



Designer Liner
Phase 2

Takeaways...



First Phase 2 dissemination paper now available



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Katrina Flavell
Yorkshire Water

Joe Sanders
RPS, a Tetra Tech company

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Phase 2