Timberline: Polyethylene Repair System

SGN Lane Rental Industry Publication

Introduction

Polyethylene (PE) was introduced in the late 1970s as the mains replacement material for gas mains in the UK. The advantages of PE include its construction method and corrosion resistant properties, as it delivers a safer gas network requiring less maintenance. PE mains can only be permanently repaired by removing the damaged section and replacing it with a new section of pipe. This process is time consuming and requires a much larger excavation than the original. The work needed to complete this repair is time consuming and frequently results in extended works, increasing the length of disruption to members of the public and road users.

SGN have been exploring alternative means of completing PE repairs and have been in discussion with Timberline, a US company, which developed a system to repair PE mains using an electro-fused repair patch. Although the system has been trialed in the USA, its introduction to the UK would provide a revolutionary “repair and go” system where a permanent repair could be welded to the existing pipe without the need for longer timescales, specialist procedures or extended excavations, reducing disruption.

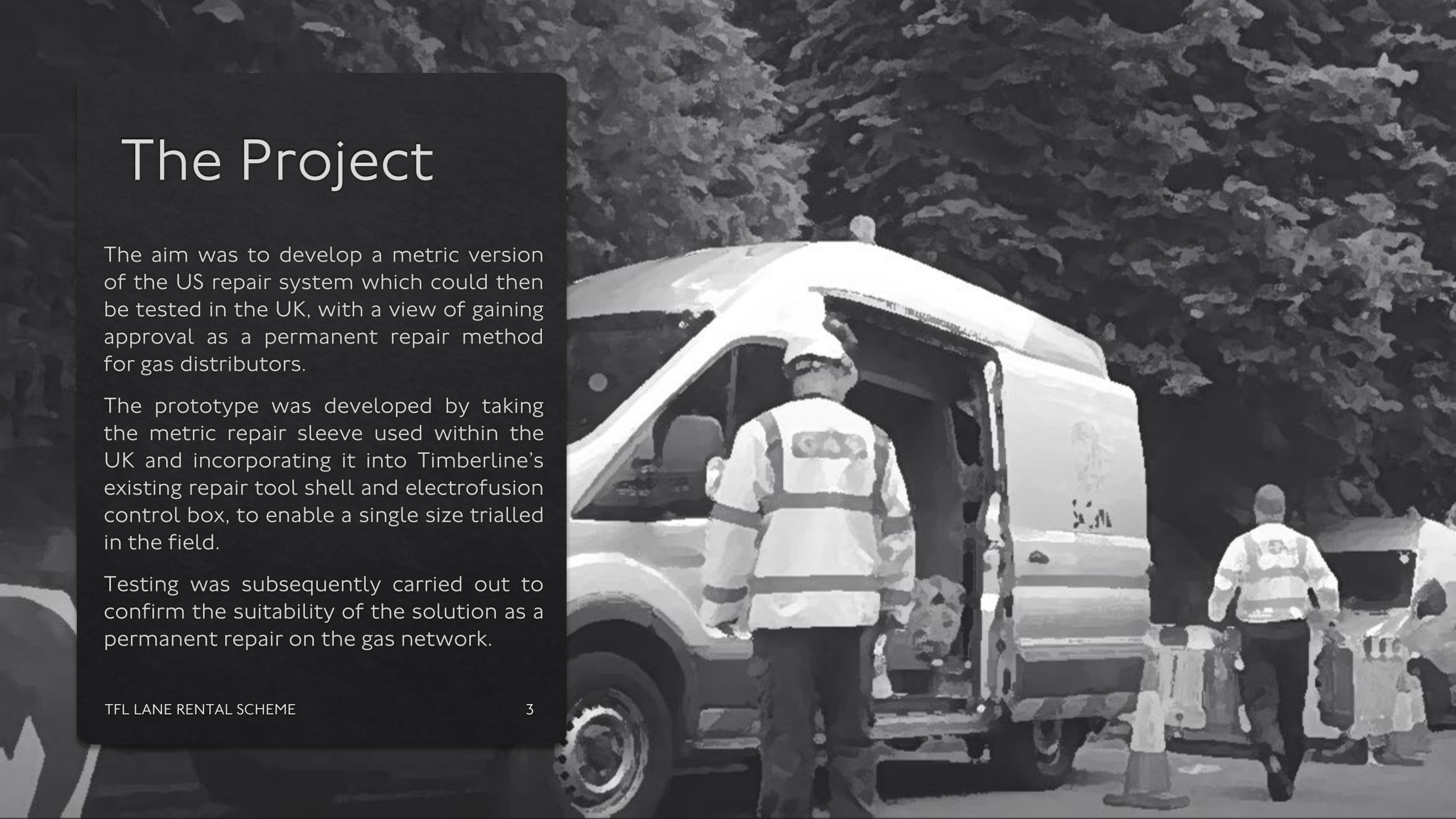
The project set out to determine if a similar solution could be developed for the UK gas network.

The Project

The aim was to develop a metric version of the US repair system which could then be tested in the UK, with a view of gaining approval as a permanent repair method for gas distributors.

The prototype was developed by taking the metric repair sleeve used within the UK and incorporating it into Timberline's existing repair tool shell and electrofusion control box, to enable a single size trialled in the field.

Testing was subsequently carried out to confirm the suitability of the solution as a permanent repair on the gas network.

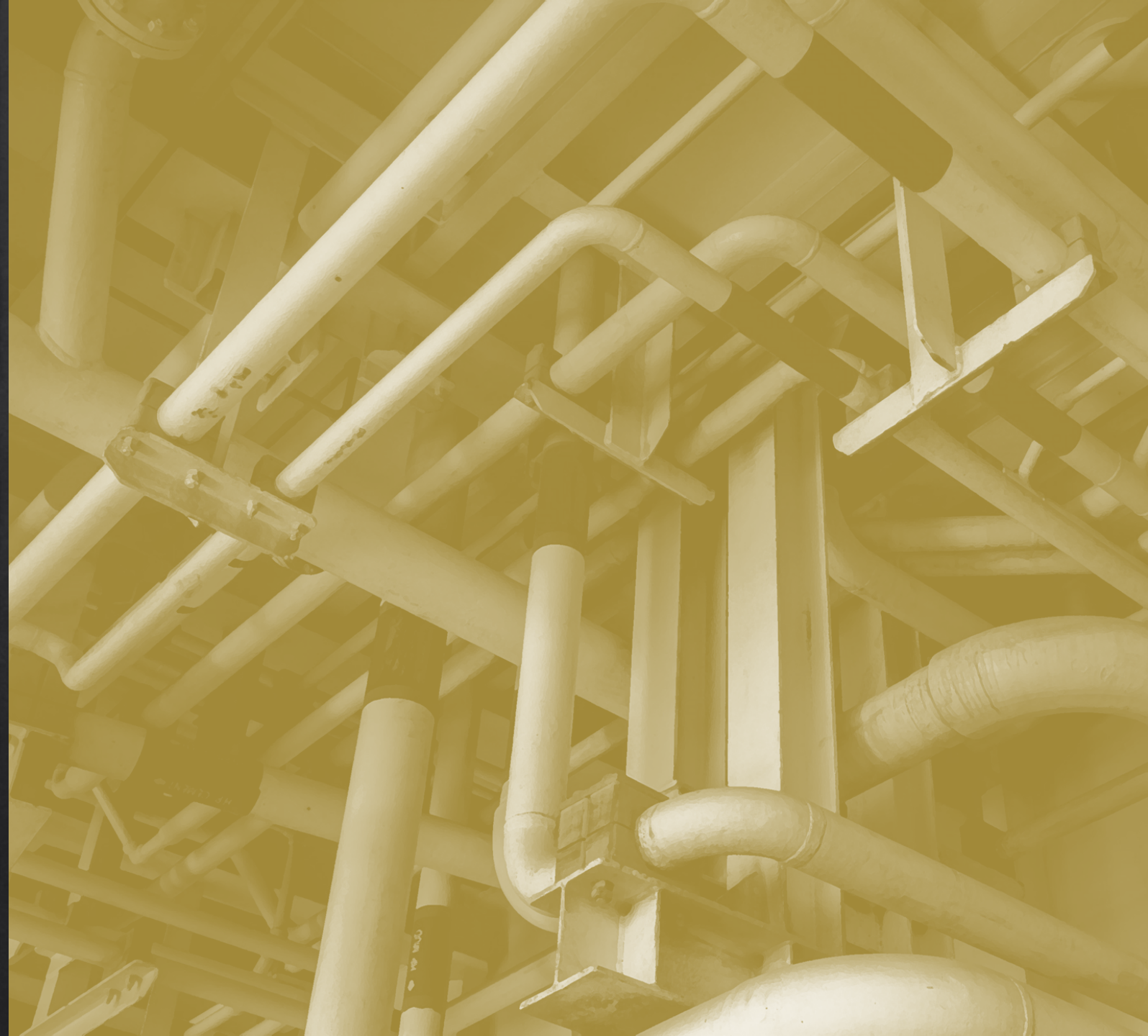


Outcomes

Initial batch samples were tested with results showing inconsistent data. Investigations found that the compression and sealing time for the sleeve needed to be altered, as the wall thickness of the initial US pipe was different to that used into the UK, skewing the results.

A subsequent second set of samples were produced for testing, with some minor modifications made to the sleeve design to account for the pipe wall difference.

However, when the second set were sent from the US to the testing house, there were still variations in performance which did not meet an acceptable standard.



Conclusion

Unfortunately, the repair system developed as part of this project was not considered suitable for use on the SGN network. Further work and discussion is needed to analyse the failed and inconsistent test results in order to progress further.

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Author

SGN

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Email: LaneRentalFunding@tfl.gov.uk