

## ***Interactive comment on* “The influence of soil on the impacts of burst water mains on infrastructure and society: A mixed methods investigation” by Timothy S. Farewell et al.**

**Timothy S. Farewell et al.**

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K. Mertens

Thank you for the thoughtful and thorough comments and suggestions you have made. We will aim to revise the manuscript taking on board all your comments.

General Comments:

We agree with your comment about testing two hypotheses, so, as you suggest we will revise the manuscript to focus on the core objective of investigating how different soils influence the impact of burst water on society. We will make the objectives / research

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questions explicit in the manuscript.

Methods:

We will expand the discussion on the data we have used to provide more detail as requested. Sand map – it was a re-classification of existing maps combining a number of data layers, and we will make this clear in the manuscript. Depth: other depths were investigated in the initial exploratory analysis, but we quickly settled on the 80 cm depth as this is most representative of water pipe depth in the UK. We will remove reference to the other depths in this paper for clarity. Lincolnshire Roads: We only had road data for the one county, so this is why it was limited to this area. Repair: Yes, road surface quality can improve after a burst as it can force remediation of the surface. We will clarify our writing in this area to improve communication. Common cause / cascading failure: Agreed. The data says nothing about cause of the failure, so we are using a mixture of knowledge of system failure mechanisms and data to support our comments in this section. We will clarify this. Workshops: we will describe the workshop design, approach, and analysis in more detail, as requested.

Results and Discussion:

We will consider revising the results approach as you suggest, to consider each method individually, before integrating our discussions. We will move the section as appropriate. Scales of methods: different scales were used due to different data availability. Repairs of Roads / Road Quality: we will clarify our descriptions here. Because we were analysing the road quality in proximal areas which had, and had not been influenced by a burst, the change in RCI, if higher in sandy soils, might reflect that more damage was inflicted on the road, thus requiring more substantial remedial work (rather than a standard cut / replace just to access a burst main.) We will clarify this in our manuscript. We will elaborate / clarify these issues as requested. Implications: Quantitative / qualitative: yes, that could be true. We used quantitative and qualitative methods, but the integration of these does come to a more qualitative conclusion.

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## Minor Comments:

Title: we will address this. Thank you. Siloed: Siloes are a grain store – the term means “isolated from each other” or reflects a lack of communication between parties. We will rephrase. Other comments: many of these remaining comments are minor, and we will address them all in the revised manuscript.

Many thanks for your helpful comments. We will revise the manuscript and upload it for review.

Thank you,

Tim Farewell, Simon Jude, Oliver Pritchard

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