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| Network Innovation Competition 2020 Supplementary Answer form | | |

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| Project Name | H100 Fife | | |
| Question number | #21c | Pro forma section | 6 |
| Question date | 10/09/20 | Answer date | 14/09/20 |
| Question summary | If HyStreet has not concluded, is H100 premature to the safety case of hydrogen homes being proven? | | |

## Answer (please retain document formatting and do not exceed 2 pages unless otherwise agreed with Ofgem)

We’ve worked closely with the Hy4heat programme and the partners involved since its inception. Characteristic and consequence testing of Hydrogen was undertaken under the H100 NIA project that considered worst case scenarios for hydrogen leaks in domestic buildings reflecting minimum ventilation allowed under the building regulations. Following this testing, the requirement for additional safety devices (for example Excess flow valves) was identified to mitigate the consequences of large leaks of hydrogen in the home. Two of these mechanical devices, one developed under SGN NIA[[1]](#footnote-1) and one developed under the Hy4heat programme (in the meter) will be employed. Testing of outlet pipework and associated fittings under H100 NIA confirmed the suitability of the pipework for safe installation.

As part of the opt-in process an assessment for suitability of the property will be carried out using the manufacturers guidance and associated industry standards developed, with upskilled operatives trained through the EU Skills Work Package funded by Hy4heat.

Appliances have been designed to be certified under existing UK gas safety legislation in accordance with guidance in PAS4444. This includes safety features currently absent on a significant percentage of the existing connected appliances, for a breakdown see the Oban report[[2]](#footnote-2).

The Hystreet is an unoccupied trial of appliances within a domestic type home, that is demonstrating safe operation under idealised conditions. The large majority of incidents on the existing gas network are due to human factors. These will not be present at HyStreet, rather potentially under our trial. In order to mitigate these human factors, we will construct and install a new gas network, additional safety features and new within home system.

A detailed quantified risk assessment (QRA) has been undertaken for the end to end construction of a new hydrogen system. This shows that the risk associated with the new network is similar to the risk associated with the existing gas network. Without confidence gained through the safe and controlled trial proposed, we do not believe you can evidence the same position for going straight to conversion without any operating experience. While, we do not require HSE approval for this demonstration, rather non-objection, we will for conversion. Notwithstanding the HSE’s approval, we believe our approach to safe trial is the right thing to do from a technical, safety and customer perspective.

Considerable effort has gone into capturing evidence of the existing outlet installations beyond the ECV and downstream of the gas network by the GDNs. The Oban project provided statistically representative data on latent failure, we collected and provided a further 7000 customer samples under the SIU Gas Quality rollout project[[3]](#footnote-3) and all networks carried out additional data capture while responding to PREs. Hy4heat continues to complete the safety case work and QRA for conversion of existing downstream installations, with the conclusions report due imminently. This will determine whether there is currently sufficient confidence in the safety of existing installations to repurpose downstream pipework. Based on our regular interface and the work we have done under H100 NIA, there is no indication of any potential issue with our proposed solution. Our network will comprise new pipework and additional safety features installed with additional quality assurance, and therefore is not dependent on there being sufficient evidence for repurposing, rather evidence that the appliances safely comply with PAS4444 guidance and that failure modes are mitigated by the additional safety features proposed.

1. SGN (2020) Hydrogen Excess Flow Valve. Available at: <https://www.smarternetworks.org/project/nia_sgn0154> [↑](#footnote-ref-1)
2. SGN (2016) *Opening up the Gas Market*. Available at: <https://sgn.co.uk/about-us/more-than-pipes/investing-in-innovation/oban-project> [↑](#footnote-ref-2)
3. SGN (2017) SIU Gas Quality report [↑](#footnote-ref-3)