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| Network Innovation Competition 2020 Supplementary Answer form | | |

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| Project Name | H100 Fife | | |
| Question number | #1 | Pro forma section | 2 |
| Question date | 20/08/20 | Answer date | 24/08/20 |
| Question summary | Please explain why H100 is "the first time 100% safety case will be demonstrated", if H21 was funded under the same justification. | | |

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

A project specific safety management framework (SMF) is being developed for H100 Fife that supports the construction of a new 100% hydrogen network. This is a ‘first of a kind’ construction and operation, that will provide critical network operational history and experience, which will support future construction of new hydrogen networks and future conversion of existing natural gas networks. Critical knowledge will be developed on many aspects, such as the behaviour and characteristics of 100% hydrogen in a network, the dosing requirements of odorant, the regulatory and commercial models for future operation of hydrogen networks, and a validation of the myriad of safety and technical components researched to date, contributed to by H100 NIA, H21 and Hy4Heat. Product development such as the hydrogen gas detection instrument and additional mitigations, such as the excess flow valve on the service, which are integrated into the H100 Fife demonstration, will be requirements for network conversion and feature as key considerations under the H100 Fife SMF. In addition, knowledge can be shared from local operating procedures for the project that can further inform the hydrogen knowledge base such as the H21 Phase 2 conversion operational procedures. The H100 Fife project aims to deliver a safe trial that validates the 100% hydrogen evidence base and set the operational precedent for hydrogen networks ahead of heat policy decisions, and act as a stepping-stone to mobilise conversion trials, pilots and full roll out in accordance with the scientific method.

The safety case being developed under H21’s previously funded submission focuses on conversion of the existing network and identification of interventions. Combined, the H100 Fife and H21 learning informs the overall collective understanding of risk and safety case for 100% hydrogen, which in turn could help to define a process for the HSE to assess SMFs. Paving a way for this process from a GB wide approach is currently in development.

We are working collaboratively with the other networks through the BEIS Hydrogen Programme Development Group (HPDG) to deliver a coordinated approach to hydrogen demonstrations. Under this programme, we are involved in the development of the Integrated Hydrogen Trials (IHT) programme which brings all network demonstrations/trials into one programme to ensure that duplication of work is avoided, and areas of necessary validation as well as remaining gaps are identifying and addressed. The IHT programme details the next stages of hydrogen conversion for H100 Fife (Ph2) and H21 Phase 3, both of which will follow on from H100 Fife.

In the submission, Figure 11 and Appendix H provides the detail on the H100 Fife SMF roadmap and associated milestone descriptions.