

# *Gas Network Innovation Competition Full Submission*

## *Supplementary Answer Form*

### **Project: H21**

Tick if this answer has been provided verbally: ☐

Project code	NGNGN05	Question Number	13																								
Question date	9 <sup>th</sup> Sept 2019	Answer date	12 <sup>th</sup> Sept 2019																								
Submission section question relates to	N/A																										
Topic	Outcomes/Outputs and Learnings																										
Question	What have been the outcomes/outputs from the first phase of the H21 project to date? How do these demonstrate readiness for phase 2 of the project and link into the proposals for phase 2? Also, have learnings from the phase 1 project informed wider operations within gas networks, such as asset replacement?																										
Notes on question																											
Answer	<p>The following is a list of outcomes/outputs to date:</p> <ul style="list-style-type: none"> <li>• Large scale facilities have now been built and commissioned at Buxton and Spadeadam.</li> <li>• Testing on both sites now well established.</li> <li>• At Buxton, early tests on 41 assets with 5 assets leaking with usable results – minor leaks (mostly less than 100 cc/min) and no noticeable pattern of leakage with respect to material/joint, testing will continue to identify if any areas of the network need to be considered specifically for upgrading to transport hydrogen.</li> <li>• Progress of testing at Spadeadam is as follows:</li> </ul> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="width: 40%;">Programme</th><th style="width: 15%;">No. of Experiments Planned</th><th style="width: 15%;">No. of Experiments Completed</th><th style="width: 30%;">% Progress</th></tr> </thead> <tbody> <tr> <td>WBS1 – Large Releases</td><td>324</td><td>6</td><td>2%</td></tr> <tr> <td>WBS2 – Large Releases</td><td>110</td><td>44</td><td>44%</td></tr> <tr> <td>WBS3 – Ignition Potential</td><td>130</td><td>48</td><td>40%</td></tr> <tr> <td>WBS4 – Explosion Severity</td><td>35</td><td>25</td><td>78%</td></tr> <tr> <td>WBS5 – Operational Safety</td><td>19</td><td>0</td><td>0%</td></tr> </tbody> </table>			Programme	No. of Experiments Planned	No. of Experiments Completed	% Progress	WBS1 – Large Releases	324	6	2%	WBS2 – Large Releases	110	44	44%	WBS3 – Ignition Potential	130	48	40%	WBS4 – Explosion Severity	35	25	78%	WBS5 – Operational Safety	19	0	0%
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	<ul style="list-style-type: none"> <li>• Significant progress has been made on developing a QRA to act as a credible tool to demonstrate relative risk.</li> </ul> <p>These outcomes/outputs are currently being incorporated in to the master test plan for phase 2 under the Field Trial NIA. The output of the NIA also includes a design for Phase 2a Network Operations ready to be built once this NIC project is awarded.</p> <ul style="list-style-type: none"> <li>• In order to confirm the readiness of the network for conversion evidence from Phase 1a and Phase 1b will need to be combined with evidence generated in Phase 2 on suitability of procedures.</li> <li>• Understanding what it will take for safe operation of the network is key to understanding the costs of conversion.</li> </ul> <p>The H21 team are liaising with the GD2 proposal team regarding two areas. The first is what future energy innovation funding will be required for the 5-year RIIO period. The second is reviewing the impact of the mains replacement project on potential pinch points on any future hydrogen conversion.</p> <p>The H21 team are currently completing a hydrogen modelling NIA with all the other GDN's. This NIA is modelling a range of city networks within each of the GDNs areas, to determine the effect on supply capacity/pressures of the conversion to 100% hydrogen. Potential pinch points including those resulting from proposed mains replacement projects are being identified along with suitable remediations and sectorisation programmes for the conversion of these cities are being developed.</p>
Attachments	