Energy Networks Association

Network Safety and Impacts Board – network project updates

06 July 2020
## Programme Update

### June 2020 Update

### Gas Transport Transition Pathways

**Roadmap to FutureGrid**
Pre work supporting the NGGT bid for the 2020 NIC fund. The project aims to build an offline test facility at DNV Spadeadam comprising of decommissioned NTS assets to test the impact of up to 100% hydrogen.

**Initial H2 Supply Strategy**
Review and report on how planning of hydrogen conversion of the distribution and transmission network will affect large scale end users. Make recommendations for any mitigation or further development of solutions required.

**H21**
Project in the contract negotiation stages with the lead network — NGN, re sanction needed due to 1 GDN leaving the project.

### Cadent

**Initial H2 Supply Strategy**
This project aims to examine the transition from CNG today towards a hydrogen future providing insight into the technical challenges and potential short-term policy asks that will enable a no regrets approach.

**Zero 2050**
To bring together utilities, industry, academia, SME, Government, regional experts to adopt a whole system view to design a pathway to meet South Wales net-zero target which delivers the best value to consumers.

### SGN

**HyScale**
A feasibility study that will examine the technical and commercial issues associated with the application of Liquid Organic Hydrogen Carriers (LOHC) to capture, store, transport and release hydrogen at bulk scale in the UK.

**Spatial GB Clean Heat Modelling**
Provide a coherent modelling framework for regional energy demand and supply mapping that captures competition between low carbon technologies and the impact on the national heat decarbonisation strategy.

### Zero 2050

**South Wales**
Locations of bulk hydrogen demand, infrastructure to transport hydrogen and carbon, and evaluation of hydrogen storage needs are being reviewed and refined.

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**Lead: Lloyd Mitchell**
**Lead: Dave Hardman**
**Lead: Suki Ferris**
**Lead: Emily Ly**
**Lead: Usman Bagdu**
**Lead: Suki Ferris**
**Lead: Suki Ferris**

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- **£662k [NIA]**
- **£9.4k [NIA]**
- **£25k [NIA]**
- **£42k [NIA]**
- **£356k [NIA]**
- **£62k [NIA]**

- **Jun 2020 until Mar 2021**
- **Apr 2020 until Jan 2021**
- **Apr 2020 until Oct 2020**
- **Jun 2020 until Mar 2021**
- **Sep 2019 until Dec 2020**
- **Nov 2019 until Aug 2020**
**Feasibility of H₂ in the NTS**

A feasibility study with the aim of determining the capability of the NTS to transport hydrogen. Includes a review of relevant assets, pipeline case study and draft scope for offline trials.

- **Cost**: £205k [NIA]
- **Duration**: Nov 2018 until Apr 2019
- **Lead**: Lloyd Mitchell

This project is now in Closure and a Final Technical Report is being reviewed by NGGT. Confirmed transporting hydrogen in the NTS is technically feasible, a summary of the challenges which would need to be addressed was presented including hydrogen embrittlement, increased hazard zones and changes to operational practices.

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**Hydrogen Injection**

To identify the requirements to enable a physical trial of Hydrogen injection into the NTS, identifying the gaps in the safety case and indicating the most suitable NTS location for a live small-scale trial.

- **Cost**: £200k [NIA]
- **Duration**: Sep 2019 until Aug 2020
- **Lead**: Dave Hardman

This project is now in Closure and a Final Technical Report is being reviewed by NGGT. Ultimately there were no ‘perfect’ locations to carry out a hydrogen injection trial on the NTS and so coupled with many outstanding questions regarding the assets we have decided to focus on building an Offline test facility (see Roadmap to FutureGrid).

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**Hydrogen Deblending**

To assess a variety of hydrogen recovery technologies and develop concept designs for selected options including a techno-economic review and identify the requirements for a demonstration project.

- **Cost**: £31k [NIA]
- **Duration**: Dec 2019 until May 2020
- **Lead**: Lloyd Mitchell

This project is now in Closure and a Final Technical Report is being reviewed by NGGT. Costain have identified a number of suitable technologies to enable the de-blending of hydrogen and natural gas on the NTS/TS. These technologies have been applied to a number of agreed case studies.

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**Hydrogen Flow Loop**

Offline test loop to evaluate metallurgy changes on existing NTS steel pipe and new MASIP pipe when exposed to 30% hydrogen, identifying next steps to assess the NTS’ suitability to transport hydrogen.

- **Cost**: £125k [NIA]
- **Duration**: Apr 2019 until Mar 2020
- **Lead**: Ed Timerick

This project is now in Closure and a Final Technical Report is being reviewed by NGGT. The project has completed adding pressure cycles to the X52 pipe section. The final samples for analysis have been sent off to Intertek.

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**Project Cavendish**

A review of the potential of the Isle of Grain region to use existing infrastructure to supply hydrogen to London & the South East including generation, storage, transport and CCS.

- **Cost**: £178k [NIA]
- **Duration**: Feb 2019 until Feb 2020
- **Lead**: Suki Ferris

This project is now in Closure and a Final Technical Report is being reviewed by NGGT. The outcomes of the Design & Modelling, Analysis, and Completion phases have been shared with all project partners ahead of discussions regarding taking this programme to the next phase.

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**Feasibility of H₂ in the NTS**

A feasibility study for the generation of hydrogen at St Fergus using the NTS (up to 2%) to supply the city of Aberdeen. Includes generation, injection, separation and transport.

- **Cost**: £116k [NIA]
- **Duration**: Dec 2018 until Sep 2019
- **Lead**: Lloyd Mitchell

Suggested a 200MW modular design would offer an optimised potential build and allow for cost savings through manufacture of multiple units. The analysis of the Tx and Dx networks in the area did not identify any major concerns around the injection of hydrogen.
Roadmap to FutureGrid
Pre work supporting the NGGT bid for the 2020 NIC fund. The project aims to build an offline test facility at DNV Spadeadam comprising of decommissioned NTS assets to test the impact of up to 100% hydrogen.

<table>
<thead>
<tr>
<th>Milestone</th>
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<th>Status</th>
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</thead>
<tbody>
<tr>
<td>Milestones to be confirmed once contract is signed</td>
<td></td>
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</table>

Key Project Dependencies
- Suitable test pipe

Overall Status
The project is currently in the contract negotiation stages although active discussions have started with the project team at NGGT and DNV GL. Initial focus is on the layout of the test facility and the master test plan.

<table>
<thead>
<tr>
<th>#</th>
<th>Top 3 Risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NGGT cannot find a suitable piece of test pipe</td>
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<tr>
<td>2</td>
<td></td>
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<tr>
<td>3</td>
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</tbody>
</table>

Progress & Next Steps
Progress this month:
- Kick off meeting
- Locate test piece of pipe and understand logistics for transport
- Support final submission
- Sign the contract

June 2020 Update

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Initial H2 Supply Strategy

Review and report on how planning of hydrogen conversion of the distribution and transmission network will affect large scale end users. Make recommendations for any mitigation or further development of solutions required.

Key Project Dependencies

- Support from WWU in the project
- Use of internal time as and when needed

Milestones

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<td></td>
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</tbody>
</table>

# Top 3 Risks

1. WWU pulls out of the project
2. 
3. 

Progress & Next Steps

Progress this month:
- Change control at GTIGG for the revised amount
- Contract negotiations and sign

Overall Status

Project in the contract negotiation stages with the lead network – NGN, re sanction needed due to 1 GDN leaving the project.
HyScale

A feasibility study that will examine the technical and commercial issues associated with the application of Liquid Organic Hydrogen Carriers (LOHC) to capture, store, transport and release hydrogen at bulk scale in the UK.

### Key Project Dependencies
- Support from the GDNs

### Milestones

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### Milestones to be confirmed once contract is signed

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<tr>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

### Progress & Next Steps

Progress this month:
- Kick off meeting occurred to bring the teams together and agree scope
- Legal comments from parties received and collated by SGN

### Overall Status

Project in the contract negotiation stages with the lead network – SGN.

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Spatial GB Clean Heat Modelling

Provide a coherent modelling framework for regional energy demand and supply mapping that captures competition between low carbon technologies and the impact on the national heat decarbonisation strategy.

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<tr>
<th>Milestone</th>
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<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Inception</td>
<td>Oct-19</td>
<td>Completed</td>
</tr>
<tr>
<td>Model Framework Development</td>
<td>Oct-19</td>
<td>Completed</td>
</tr>
<tr>
<td>Data Collection</td>
<td>Nov-19</td>
<td>Completed</td>
</tr>
<tr>
<td>Component Model Development part 1</td>
<td>Mar-20</td>
<td>Completed</td>
</tr>
<tr>
<td>Component Model Development part 2</td>
<td>Apr-20</td>
<td>In Progress</td>
</tr>
<tr>
<td>Model Validation Scenarios</td>
<td>Apr-20</td>
<td>Completed</td>
</tr>
<tr>
<td>GB Heat Model Integration</td>
<td>Jun-20</td>
<td>In Progress</td>
</tr>
<tr>
<td>User acceptance and model handover</td>
<td>Aug-20</td>
<td>Not Started</td>
</tr>
<tr>
<td>Project Management</td>
<td>Aug-20</td>
<td>In Progress</td>
</tr>
</tbody>
</table>

# Top 3 Risks

1. Delays with development timelines
2. Lack of available data / available data of low quality on gas network repurposing costs
3. Model does not meet intended innovation aims

Progress & Next Steps

Progress this month:
- 12-15th meeting with embedded consultants held
- Bulk of code for module 5 (integration) written for cost optimal and consumer behaviour modes. Module running end to end.
- First version of User Interface presented to NG and a second version is in development
- Modules 1-4 code is being updated to be consistent with inputs from UI and module 5, as well as based on comments raised during embedded consultant meetings
- Contract for peer review signed
- User testing contracts sent and process planned

Next Steps
- Finalise the code for the whole model to run end to end
- Finalise the user interface
- Deliver the beta version of the model as well as instruction manual and video
- Start user testing and peer review phases
- Run demo days for advisory group’s user testing

Project is progressing well with regular input from all parties, data gathering has gone well and is all but completed, Model development has started.
### Zero 2050 South Wales

To bring together utilities, industry, academia, SMEs, Government, regional experts to adopt a whole system view to design a pathway to meet South Wales net-zero target which delivers the best value to consumers.

### Key Project Dependencies
- Integration with work packages (i.e. gaining data from all parties on future H2 demand)

### Overall Status

Locations of bulk hydrogen demand, infrastructure to transport hydrogen and carbon, and evaluation of hydrogen storage needs are being reviewed and refined. Data from other work packages (transport, city, industry and power generation hydrogen demand) is feeding into hydrogen analysis. The final data will be fed into the Pathfinder model to determine the optimal pathway to decarbonise South Wales.

### Milestones and Status

<table>
<thead>
<tr>
<th>Milestone</th>
<th>Due</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milestone (M) 1: Draft report on H2 demand by location</td>
<td>Jan-20</td>
<td>Completed</td>
</tr>
<tr>
<td>M 2: Draft report on sizing and siting of H2 supply infrastructure</td>
<td>Feb-20</td>
<td>Completed</td>
</tr>
<tr>
<td>M 3: Advanced H2 demand &amp; supply infrastructure report</td>
<td>Mar-20</td>
<td>Completed</td>
</tr>
<tr>
<td>M 4: Review of H2 report</td>
<td>Apr-20</td>
<td>Completed</td>
</tr>
<tr>
<td>M 5: Update H2 report</td>
<td>May-20</td>
<td>Completed</td>
</tr>
<tr>
<td>M 6: Integration with other work packages into Pathfinder Model</td>
<td>Jun-20</td>
<td>Completed</td>
</tr>
<tr>
<td>M 7: Continue integration into Pathfinder Model</td>
<td>Jul-20</td>
<td>-</td>
</tr>
<tr>
<td>M 8: Final H2 report on supply/demand</td>
<td>Aug-20</td>
<td>-</td>
</tr>
<tr>
<td>M 9: Final report from Pathfinder, including optimization</td>
<td>Sep-20</td>
<td>-</td>
</tr>
</tbody>
</table>

### Progress & Next Steps

**Progress this month:**
- June progress report received and reviewed
- Monthly conference call to go through progress of all projects and to understand potential gaps in analysis. Positive to see how work packages are beginning to feed information into each other to align results.

**Next Steps**
- Upcoming conference call to discuss further alignment between work packages.

### Top 3 Risks

1. There is a risk to the findings launch, as the project was initially planned to be launched at COP 26 in the UK.
2. There is a risk other low carbon gases such as biomethane and green hydrogen are not as fully considered.
3. There is a risk there are too many ‘optimal pathways’, i.e. both Progressive and Arup are developing potential solutions.

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**ARUP**

**Progressive energy**

**NGET Lead, WWU & WPD**

**Lead:** Suki Ferris

**£63k NIA Funding**

**Nov 2019 until Aug 2020**

### Locations of bulk hydrogen demand, infrastructure to transport hydrogen and carbon, and evaluation of hydrogen storage needs are being reviewed and refined. Data from other work packages (transport, city, industry and power generation hydrogen demand) is feeding into hydrogen analysis. The final data will be fed into the Pathfinder model to determine the optimal pathway to decarbonise South Wales.

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**Status Report**

June 2020 Update

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**Overall Status**

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**HyNTS**

**South Wales**

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**Zero 2050**

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**June 2020 Update**

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**nationalgrid**
### Hydrogen Programme Update

**HyDeploy 1&2**

- **HyDeploy 1** is exploring the viability of blending up to 20% on a private gas network.
- **HyDeploy 2** is then exploring the path to deployment by trialing on the public gas network.
- **£22.5m (NIG)**
- **April 2017 to March 2023**
- **Distribution H2 BLEND up to 20%**
- **Lead:** Andy Lewis

H2 Blending commenced into the Keel network on 31 Oct 19. Maximum blend rate has now been reached. The trail is likely to be extended until Sept 2020. All network related findings are inline with the HSE exemption submitted. Work has begun on the HyDeploy2 trial with trials now brought forward to sept 2020 inline with BEIS request.

### HyNet

- The project combines Industrial fuel switching, CCUS and blending to offer decarbonisation to the Liverpool and Manchester areas.
- **£1.7M (NIA)**
- **May 2017 to 2026**
- **H2 Transmission and Distribution**
- **Lead:** Andy Lewis

New work packages have commenced on Fuel Switching and Hydrogen Supply as a result of being successful awarded BEIS Innovation funding. BEIS CCUS Innovation project is now coming to close (April 2020). Work is being done on H2 pipeline pre-teed ahead of potential IDG bid being submitted.
Hydrogen Status Report

HyDeploy 1 & 2

HyDeploy 1 is exploring the viability of blending up to 20% on a private gas network. HyDeploy 2 is then exploring the path to deployment by trialing on the public gas network.

June 2020 Update

<table>
<thead>
<tr>
<th>Milestone</th>
<th>Due</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>HyDeploy 1 – trial underway</td>
<td>December 2019</td>
<td>In progress</td>
</tr>
<tr>
<td>HyDeploy 2 – initial trial site chosen</td>
<td>November 2019</td>
<td>Completed</td>
</tr>
<tr>
<td>HyDeploy 2 – evidence for exemption for initial trial area</td>
<td>May 2020</td>
<td>In progress</td>
</tr>
<tr>
<td>HyDeploy 2 – submission of the exemption for initial trial area</td>
<td>May 2020</td>
<td>In progress</td>
</tr>
<tr>
<td>HyDeploy 1 – closure report</td>
<td>Mar 2021</td>
<td>In progress</td>
</tr>
<tr>
<td>HyDeploy 2 – trial commences in Winlaton</td>
<td>September 2020</td>
<td>In progress</td>
</tr>
<tr>
<td>HyDeploy 2 – area 2 trial evidence collection</td>
<td>Begins September 2020</td>
<td>In progress</td>
</tr>
<tr>
<td>HyDeploy 2 – area 2 exemption submission</td>
<td>TBC</td>
<td>In progress</td>
</tr>
<tr>
<td>HyDeploy 2 – trial area 2 begins blending</td>
<td>TBC</td>
<td>In progress</td>
</tr>
</tbody>
</table>

Overall Status

- HyDeploy 1 currently in trial.
- HyDeploy 2 first trial gathering data ready to submit the exemption.

Top 3 Risks

1. HyDeploy 2 Trial accelerated upon request of BEIS putting pressure on project timelines
2. New GEU and method of H2 production needs to be available for HyDeploy2
3. Public acceptance continues at Keele University

Key Project Dependencies

• HyDeploy 2 Winlaton exemption being awarded
• Build for H2 production and GEU being on time for start of project
• Successful completion of trial at Keele University

Progress & Next Steps

Progress this month:
- Trial continues at Keele University although it was ceased for 2mths due to C19 lockdown
- HyDeploy 2 Winlaton trial has been brought forward due to request from BEIS surrounding COP26.
- HyDeploy 2 exemption pack submitted
- HyDeploy at Keele is likely to be extended
- Partner with BEIS IFS programme

Next Steps

- Extending Keele site
- Oct 2020 Winlaton site is commissioned
- Sept 2020 Keele site is decommissioned
- 3rd Network is identified and safety case is submitted
Hydrogen Status Report

HyNet

The project combines Industrial fuel switching, CCUS and blending to offer decarbonisation to the North West of England

HyNet

HyDepl0 1&2 being completed
Exemption for the whole of the North West Network agreed.
Sufficient H2 and CCUS policy being in place.

June 2020 Update

H2 Transmission and Distribution H2 and BLEND

Lead:
Andy Lewis

£1.7M
NIA
May 2017 until 2026

Overall Status

Members of the Consortium have been awarded £7.5M of Government funding to undertake a ‘FEED’ for hydrogen production. £5.3M of Government funding to undertake detailed design and practical demonstration of conversion of three sites from natural gas to hydrogen. Hydrogen transmission pipeline FEED is being funded via NIA.

<table>
<thead>
<tr>
<th>Milestone</th>
<th>Due</th>
<th>Status</th>
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</thead>
<tbody>
<tr>
<td>Completion of CCUS Innovation Funding</td>
<td>April 2020</td>
<td>In progress</td>
</tr>
<tr>
<td>Initiation of Fuel Switching Programme</td>
<td>March 2020</td>
<td>In progress</td>
</tr>
<tr>
<td>Initiation of Hydrogen Supply Programme</td>
<td>March 2020</td>
<td>In progress</td>
</tr>
<tr>
<td>Completion of Hydrogen Distribution Optimisation NIA</td>
<td>July 2020</td>
<td>In progress</td>
</tr>
<tr>
<td>IDC bid to UKRI</td>
<td>Oct 2020</td>
<td>In progress</td>
</tr>
<tr>
<td>IDC bid determination</td>
<td>Dec 2020</td>
<td>In progress</td>
</tr>
<tr>
<td>FEED Study for H2 pipeline and CCUS components of HyNET</td>
<td>To follow on</td>
<td>TFO</td>
</tr>
</tbody>
</table>

# Top 3 Risks

1. IDC is delayed which means that FEED is subsequently delayed
2. Slow progress from government on delivery of H2 policy mechanism
3. Outcome of RIIO GD2 decision on supporting decarbonisation projects

Progress & Next Steps

Progress this month:
- Work continues on preparing for FEED and DCO for HyNet pipeline
- UKRI have announced the deadlines for the IDC funding
- Work continues on formulating consortium partners.
- Early formulation work on HyNet Homes
- KO of HyTechnical – Risk Assessment on TD/1 and TD/13

Next Steps
- Continued work on the Hydrogen Distribution Optimisation and HyNet Extension (NIA)
- Preparation of the IDC submission paper and subsequent submission
- Continued interaction with the CCUS Advisory Group on H2 business models

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Next Steps
- Continued work on the Hydrogen Distribution Optimisation and HyNet Extension (NIA)
- Preparation of the IDC submission paper and subsequent submission
- Continued interaction with the CCUS Advisory Group on H2 business models
## H21 NIC Phase 1
H21 NIC Phase 1 will provide critical safety evidence on leakage and consequences of leakages within a 100% hydrogen.

- **Budget:** £10.3m [NIC]
- **Timeline:** Jan 2018 until Aug 2020
- **Lead:** Mark Danter

A report detailing the Leakage Tests has been issued to DNV GL for peer review and comment. Final QA checks on Consequence Tests are being undertaken by experts from HSE and DNV GL. Results will continue to be fed into the 100% H₂ Quantitative Risk Assessment. Final report detailing all results is due to be released in August 2020.

## H21 NIC Phase 2
The project continues the work to build the safety evidence started in Phase 1. In this phase testing on Network Operations and an Unoccupied Trials site will be undertaken to ensure that the network can be maintained safely.

- **Budget:** £7.5M [NIC]
- **Timeline:** Jan 2020 until Dec 2021
- **Lead:** Mark Danter

Contracts with project partners have been issued. Contract for the build of the Phase 2a rig is being finalised. HSE are continuing workshops on each of the key topic areas. The second phase of the social sciences research has commenced with workshops being held online.

## H21 Strategic Modelling
The project seeks to extend the principle of hydrogen conversion as established in the H21 Leeds City Gate report, across key UK urban centres.

- **Budget:** £444k [NIA]
- **Timeline:** Apr 2017 until Mar 2020
- **Lead:** Mark Danter

The report is being finalised and will be issued to the various GDN stakeholders for comment. After comments have been received and incorporated into the report it will be issued.

## H21 Field Trials
The Field Trials project is acting as an enabler to the H21 NIC Phase 2 project. During this project a detailed design of the Phase 2a test rig and Mater Test Plan will be produced and a location for Unoccupied Trials will be secured.

- **Budget:** £585k [NIA]
- **Timeline:** June 2018 until July 2020
- **Lead:** Mark Danter

Redcar and Cleveland Borough Council approved the lease of the site identified for Phase 2b Unoccupied Trials. The lease is now being finalised and planning permission sought for a change of use on the site.
Hydrogen Status Report

Phase 1 H21 NIC Phase 1 will provide critical safety evidence on leakage and consequences of leakages within a 100% hydrogen.

Milestone | Due | Status
--- | --- | ---
Contractual agreements signed | 28/02/18 | Complete
Phase 1A contract award of Phase 1A site build (Buxton) | 02/04/18 | Complete
Phase 1A/B Completion of Master Testing plan | 01/06/18 | Complete
Phase 1A Completion of build works | 01/09/18 | Complete
Phase 1B Completion of testing WBS 1 to 4 | 20/05/18 | Complete
QRA and modelling completion | 20/12/20 | Due 30/06/20
Report and Results | 01/06/20 | Due 01/09/20

Top 3 Risks

1. Further delay to the project due to COVID 19 restrictions and possibility of staff illness
2. Knock-on effect of delayed testing is the delay to review the results to input to the QRA
3. Social Sciences: Launch event for the closeout report was held via a webinar in June and the report is now publicly available via the H21 website

Overall Status

A report detailing the Leakage Tests has been issued to DNV GL for peer review and comment. Final QA checks on Consequence Tests are being undertaken by experts from HSE and DNV GL. Results will continue to be fed into the 100% H2 Quantitative Risk Assessment. Final report detailing all results is due to be released in August 2020.

Progress & Next Steps

Progress this month:
Phase 1a Buxton: A report detailing the findings has been produced by the HSE. This is now being peer reviewed and commented upon by DNV GL, it is due to be formally released in line with the end of project report.
Phase 1b Spadeadam: WBS 5 testing has commenced. WBS 1-4 tests are now being QA checked and detailed in reports, which are being issued to the HSE for peer review and comment.
QRA: The team are currently reviewing the test results from Spadeadam and comparing them to their various models.
Social Sciences: Launch event for the closeout report was held via a webinar in June and the report is now publicly available via the H21 website

Next Steps:
Phase 1a Buxton: Handover of the site to HSE is due to take place early July.
Phase 1b: Spadeadam QA of results and writing of closeout reports to continue.
QRA: continue to review the results and update their models.
## Hydrogen Status Report

### Field Trials NIA

The Field Trials project is acting as an enabler to the H21 NIC Phase 2 project. During this project a detailed design of the Phase 2a test rig and Mater Test Plan will be produced and a location for Unoccupied Trials will be secured.

### June 2020 Update

#### Overall Status

Redcar and Cleveland Borough Council approved the lease of the site identified for Phase 2b Unoccupied Trials. The lease is now being finalised and planning permission sought for a change of use on the site.

### Milestones

<table>
<thead>
<tr>
<th>Milestone</th>
<th>Due</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final design of the micro-grid for Spadeadam</td>
<td>06/04/20</td>
<td>Completed</td>
</tr>
<tr>
<td>Finalise negotiations with local authority for the use of land for unoccupied trials</td>
<td>30/06/20</td>
<td>On-going</td>
</tr>
<tr>
<td>Report on the review of the NGN procedures</td>
<td>31/03/20</td>
<td>Completed</td>
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</tbody>
</table>

### Top 3 Risks

1. Delays on securing planning permission for change of use of the site due to a backlog of planning applications post-covid 19
2. Local community raising issues/blockers for the unoccupied trial site
3. 

### Key Project Dependencies

- Liaison with Local Authority

### Progress & Next Steps

**Progress this month:**
- HSE work on Phase 2a is now continuing and completed the Master Test Plan work commenced under this project.
- Design of the micro-grid now continuing under Phase 2a. Design issued to DNV GL for completion and due to be issued.
- Lease of the use of the site approved at the Redcar and Cleveland Borough Council Cabinet Meeting.

**Next Steps**
- Lease of the land to be formalised and approved by both parties.
- Planning permission for a change of use of the site to be applied for.
- Liaison with the local community to commence to ensure that they are fully aware and up to date on the project and what is happening in their area.
Modelling NIA

The project seeks to extend the principle of hydrogen conversion as established in the H21 Leeds City Gate report, across key UK urban centres.

<table>
<thead>
<tr>
<th>Milestone</th>
<th>Due</th>
<th>Status</th>
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<tbody>
<tr>
<td>Network wide training</td>
<td></td>
<td>Complete</td>
</tr>
<tr>
<td>Each of the Networks model 2 urban areas</td>
<td></td>
<td>Complete</td>
</tr>
<tr>
<td>Network wide close out meeting</td>
<td>25/02/20</td>
<td>Complete</td>
</tr>
<tr>
<td>Close-out Report</td>
<td>31/03/20</td>
<td>On-going</td>
</tr>
</tbody>
</table>

**Overall Status**

The report is being finalised and will be issued to the various GDN stakeholders for comment. After comments have been received and incorporated into the report it will be issued.

**Top 3 Risks**

1. Available time to complete and review the final report
2. 
3. 

**Progress & Next Steps**

Progress this month:
Closeout report being finalized, this will be issued out to all GDNs for comment.

Next Steps:
Complete the close out report and release via the H21 website.
Hydrogen Programme Update

**Aberdeen Vision**
To assess the feasibility of blending and injecting 2% hydrogen into the National Transmission System at St Fergus entry point.

- **£135k**
- **Nov 2018**
- **SGN & National Grid**
- **Lead:** Phil Bradwell

The initial draft of the final report shows there are no critical obstacles that would prevent the injection of 2% hydrogen into the NTS at St Fergus and its distribution through the system into the gas distribution network.

**The Future of LTS**
To assess the feasibility and safety of the Local Transmission System (LTS) for storage and transport of pure and blended hydrogen and CO2.

- **£205k**
- **Jan 2019**
- **SGN & HSE**
- **Lead:** Nancy Thomson

The first phase of this project was to assess the scientific and regulatory feasibility of repurposing the LTS. This has included a feasibility study to establish if an existing decommissioned 30km LTS pipeline from Granton, in Edinburgh, to Grangemouth could be revaluated in the context of a decarbonised gas grid.

**Real Time Networks**
Develop the world’s first real-time gas demand model capable of energy modelling, will enable the modelling of a wider variety of gases in the network.

- **£7,998k**
- **April 2016**
- **SGN & DNV GL**
- **Lead:** Alexander Webb-Brown

All sensor sites and weather stations have been installed and commissioned. Our customer data collection period has recently completed which was used to train the demand model. Full training of the demand model will be completed by end of Summer 2020 with results and findings disseminated soon afterwards.

**Hydrogen Excess Flow Valves**
Develop an excess flow valve and new specification suitable for low pressure hydrogen networks.

- **£130k**
- **Sept 2019**
- **SGN, HSE, IGEM, AV-UK**
- **Lead:** Mark Wheeldon

A review of the current Gas Industry Standard has been completed and a gap analysis has been done. This was used as the basis for a new IGEM standard for a 32mm low pressure Hydrogen EFV that is currently going through the final stages of approval. The project partner is currently producing prototypes for independent testing by the HSE.

**Hydrogen Gas Detection**
Develop a gas detection instrument that can be used to detect hydrogen gas in levels ranging from ppm to 100% gas in air.

- **£158k**
- **Oct 2019**
- **SGN & WWU**
- **Lead:** Mark Wheeldon

Testing and selection of the sensor technology is now complete, development of the user interface is underway and the first prototypes are currently being built for testing and certification.
Hydrogen Status Report

**Feasibility & FEED study to assess a suitable site location for a hydrogen production and distribution network**

**100% Hydrogen Injection**

**Lead:** Mark Wheeldon

**£3.6m NIA**

**Due:** 2017 until 2021

### Milestone | Due | Status
--- | --- | ---
Feasibility & FEED Studies | 30/03/20 | Complete
Review & approve H100 NIA technical evidentiary reports | 30/06/20 | In progress
ISP Submission | 06/04/20 | Complete
NIB bid submission | 31/07/20 | In progress

### Top 3 Risks

<table>
<thead>
<tr>
<th>#</th>
<th>Risk</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Lack of funding to progress with Pre-Construction &amp; construction activities</td>
</tr>
<tr>
<td>2</td>
<td>Long lead items delaying construction and hence operational phase of the project</td>
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<tr>
<td>3</td>
<td>License exemptions &amp; derogations not granted by Ofgem</td>
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### Progress & Next Steps

**Progress this month:**
- Drafting H100 Fife NIC submission

**Next Steps**
- Submit NIC application to Ofgem for 2021 NIC funding
- Develop site specific QRA
- Progress with H100 Safety Management Framework
- Draft H100 NIA Final Report

**Overall Status**

H100 NIA coming to completion & progressing with H100 Fife – NIC bid for construction of the hydrogen production facility, demonstration facilities and network

**Key Project Dependencies**

- NIC bid to construct the hydrogen production and distribution network
- Hy4Heat developing hydrogen appliances in time for H100 demonstration
- Hy4Heat QRA and Safety case

KIWA, ERM, HSL, NPL, Arup, Wood, Costain, Providence Policy, University of Edinburgh, DNV GL