Opening up the Gas Market

Change Request

SGN

Version 2.0

Project number	SGNGN02
Report number	OGM_CR_02
Title	OPENING UP THE GAS MARKET CHANGE REQUEST
Author	Richard Mason
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No. 04958135

1. Contents

2. Glossary of Terms

Abbreviation	Term
CEP	Customer Engagement Plan
DECC	Department of Energy and Climate Change
EASEE	European Association for the Streamlining of Energy Exchange
F2F	Face to Face
GB	Great Britain
GDN	Gas Distribution Network
GIGG	Gas Innovation Governance Group
GS(M)R	Gas Safety (Management) Regulations
HHIC	Heating & Hotwater Industry Council
HSE	Health & Safety Executive
ICOM	Industrial and Commercial Energy Association
IGEM	Institution of Gas Engineers and Managers
LDZ	Local Distribution Zone
LNG	Liquefied Natural Gas
MD	Managing Director
MP	Member of Parliament
MSP	Member of Scottish Parliament
NIC	Network Innovation Competition
NBP	National Balancing Point (GB)
OGM	Opening up the Gas Market
PPR	Project Progress Report
RAG	Red/Amber/Green
SDRC	Successful Delivery Reward Criteria
SGN	Scotia Gas Networks
SIU	Scottish Independent Undertaking
WI	Wobbe Index
ZEE	Zeebrugge (Belgium)

3. Executive Summary

Following ongoing engagement with HSE, it has been identified the exemption to GS(M)R will only be granted during Stage 2 of the OGM project, rather than at the end of Stage 1, as originally anticipated in Clause 9 of the Project Direction. Therefore, this document is a Change Request that seeks to amend the wording of Clause 9 of the Project Direction which restricts access to funding for Stage 2 activities until an exemption from GS(M)R by HSE is received.

Clause 9 of the Project Direction details the necessity of an exemption by HSE from the GS(M)R for injecting higher WI gas into the Oban gas network. The existing wording of this clause means that SGN are unable to begin activities under Stages 2 and 3 of the project, without first securing the exemption from HSE. The clause also states that SGN may not access any funds for Stage 2 and 3 activities until this exemption is agreed. However, in order to provide the exemption, HSE require an evidence base which will be gathered by carrying out testing on a representative sample of properties during Stage 2 of the project.

SGN proposes to change the wording of Clause 9 to state that an *'agreement in principle'*, which SGN has already secured from HSE, will be necessary prior to beginning the activities in Stage 2, as per SDRC-3, which also requires such an agreement. 'Agreement in principle' is to be defined as a pre-agreed process whereby HSE provide terms with which SGN are to comply in order to secure the exemption. As the Clause in its current state prevents spending funds on activities that are necessary for the acquisition of the exemption, SGN also proposes to extend the current limitations on expenditure, to allow funding of the first 3 phases of Stage 2 to gather evidence from house to house testing to be used in the application for the HSE exemption. Upon completion of these phases, the exemption request will be submitted to HSE, and SGN will cover the costs of further testing during the consideration process at risk until the exemption is approved. Providing the exemption is approved, the funds for the remaining stages will be released and SGN will recover the costs spent during this consideration period from the Project Bank Account. To ensure customers are still protected against inefficient spend, the proposed change includes a cost breakdown of tasks required and the proposed caps on spend during Stages 2 and 3.

Stage 2 of the project involves the testing of all gas appliances in Oban and is scheduled to begin on 3rd November 2014. The results of phases 1-3 of the appliance testing will form the basis of the evidence presented to HSE to receive the exemption to GS(M)R, meaning that it is not possible to receive an exemption prior to Stage 2. A primary purpose of Stage 2 is to obtain the evidence that will be used to acquire the exemption. This Change Request grants SGN the flexibility to start the testing on 3rd November 2014, and meet the criteria required to obtain the necessary exemption to GS(M)R.

The delay to the project has impacted the overall project timeline and therefore the submission dates for the SDRC reports. Appendix 11 of this document details the proposed revised submission dates for these reports. Appendix 12 details the revised Project Plan.

This Change Request explains the background to the request, sets out the detail of the change requested and provides evidence to show that the change is in the best interests of customers.

4. Background

SGN has reached the end of Stage 1 of the project and is due to begin work on Stage 2. The Project Direction in its current state, however, prevents Stage 2 from beginning without an exemption to GS(M)R from HSE. The bullets below explain in brief, how SGN has reached the stage where a Change Request is required:

- The Project Direction, which details the need for the exemption, was written on the basis that the exemption would be needed prior to the commencement of Stage 2.
- SGN has been fully engaged with HSE since the project began, and has agreed that the exemption be based on evidence gathered during Stage 2.
- SGN need to expend funds to progress the project through Stage 2.
- As a result, the Project Direction requires amendments to allow Stage 2 to begin and funds to be spent.

SGN plans to submit the exemption request to HSE following the completion of testing in phases 1-3 of Stage 2, covering a representative sample of the total properties, not before this date as originally intimated in the Project Direction. SGN anticipates return from HSE within 4 weeks of submission of the exemption submission. The report to acquire the exemption will document the findings from the appliance testing (phases 1-3 of Stage 2), and detail the case for allowing the trial to go ahead. Once the exemption is secured SGN will complete the testing in Stage 2 and be able to inject the new LNG into the network and begin the trial (Stage 3). However, as the current wording of the clause prevents SGN from completing the appliance testing, it will not be possible to gather the necessary evidence without a change to the Project Direction that allows for SGN to begin Stage 2 of the project with an 'agreement in principle' as defined, rather than a full exemption, from HSE.

SGN have been in close contact with HSE throughout the project to date and will continue engagement with them via bi-monthly meetings during Stage 2. The interactions with HSE to date have included:

Contact Format	Date	Details
F2F Meeting	28/03/2014	Initial contact to discuss project detail and exemption process
Phone Call	08/05/2014	Creation of bi-monthly meeting/teleconference to discuss ongoing requirements of exemption
Email Exchange	20/05/2014	Exchange of Q&A on project
Phone Call	02/06/2014	Liaison between Project Manager and HSE project lead
Email Exchange	16/06/2014	Exchange of Q&A on project
F2F Meeting	August 2014	Planned bi-monthly meeting to discuss process towards exemption
Phone Call	14/08/2014	Call to confirm Teleconference details

Teleconference	18/08/2014	Evidence base discussion for GS(M)R Exemption
Phone Call	03/09/2014	Follow-up call to Teleconference
Email Exchange	24/09/2014	Sample Size discussion to GS(M)R Exemption
Phone Call	24/09/2014	Discussion of details of email exchange
Email Exchange	24/09/2014 – 01/10/2014	Written confirmation of specific requirements for GS(M)R Exemption to be successful

SGN have provided further supporting evidence to Ofgem of engagement with HSE and how this has informed the Change Request[1] and details of the proposed statistical approach to provide evidence for the exemption application[2]. As a result of discussions with HSE, as well as stakeholders and suppliers, the activities which need to take place prior to receiving the exemption include:

- Begin work on the quantified risk assessment;
- Stakeholder engagement;
- Development of vehicles and kit for use during the testing phase;
- Purchase of the gas for testing;
- Completing the testing of a representative sample of all appliances in Oban;
- Procurement and installation of appliances for replacement where tested appliance is not fit for trial or already unsafe and/or beyond repair.
- Procurement and installation of Gas Chromatograph, and the associated infrastructure, with an 18-20 week lead time. (SGN will fund this element at risk until the GS(M)R exemption is received. Should the exemption not be granted then SGN will not seek to recover this cost.)

The table below expands on these bullets, providing information on the forthcoming tasks required and why each is required prior to acquiring the HSE exemption, as well as the cost range attached to each and the projected learning outcomes. Please note that while a range is included in the table below, appendix 2 provides the *upper limit* only:

Category	**Cost**	**Why Required**	**Learning Achieved**
Quantified Risk Assessment	£15,000 - £20,000	The quantified risk assessment is to be carried out by GL Noble Denton. This will quantify, in absolute terms, the level of risk presented by widening the GS(M)R specification, and will be used as the foundation of the report submitted to HSE in support of the request to acquire the exemption. GL Noble Denton is an external contractor and will require payment for work undertaken as part of this assessment.	The risk assessment will be valuable for all gas distributers as it will research and provide information on the value of widening the GS(M)R and how it will benefit the GB consumer. This assessment will form part of dissemination activities that the project team will be leading.
Stakeholder Engagement	£100,000 - £200,000	Stakeholder engagement is a key element of Stage 2. Examples of	This will increase awareness of the

[1] Appendices 3- 7 detail SGN's interactions with HSE regarding securing the exemption and the necessary evidence.
[2] Appendix 8 details the documented correspondence between SGN and Ofgem throughout the Change Request consideration period. Appendices 9-10 details the Q&A process between SGN and Ofgem.

		the necessary engagement at this stage include consultation 'town hall' meetings, flyers, letters and YouTube videos. As Stage 2 necessitates entry to customer homes, stakeholder engagement is critical to ensure customers are aware of the process and are willing to allow us access to their property.	benefits of the project within Oban, and the learning about effectiveness of customer engagement techniques will be relevant to any future Network Licensee activities which require customer engagement. It will be shared in dissemination events across GB and Europe.
Vehicles and kit for Testing Phase	£20,000 - £30,000	Stage 2 involves the testing of appliances using three different compositions of gas. These will come in bottles that will need specifically kitted out vehicles/trailers to transport them between properties, as well as appropriate safety kit to ensure the hoses used are not a hazard to the general public.	Safety is paramount, and the report written on Stage 2 will document the measures carried out and learning acquired from using this specific equipment and these vehicles. This means other GDNs could use this data when making decisions on gas transportation requirements.
Purchase of Gas for Testing	£15,000 - £20,000	The primary activity during Stage 2 is the testing of appliances. This will be completed using bottled gases which represent the higher and lower end of the EASEE gas specification. The procurement of the bottled gas is crucial to this stage. It is the results taken from the testing of these appliances that will form the evidence to present to HSE, meaning the purchase of this gas is necessary prior to the full exemption.	This forms a primary learning point, as it provides real-life examples of the impact of using varied gas compositions on in-situ gas appliances. It aids calculation of replacement and repair figures and costs when scaled up to GB.
Conducting testing of all appliances	£95,000 - £105,000	As stated above, the testing of appliances is the main activity in Stage 2. The testing will be overseen by an on-site supervisor, and labour for the engineer teams working on the testing is also needed.	This is where the primary piece of learning is sourced, as this includes acquiring data on how GB appliances react when the three varying gas compositions are used. The report on Stage 2 will cover in detail how this works, and will form

			the main body of the submission to HSE to acquire the exemption.
Procurement and installation of replacement appliances	£100,000 - £300,000* *These costs are difficult to predict. The upper limit is based on the maximum replacement allowance of 40% of all appliances.	SGN are committed to replacing any appliances that are unsafe or do not meet the requirements needed for the trial. The cost of procuring and installing these appliances is provided for within the project budget, though an exact cost cannot be given as SGN will not know how many appliances need replacing until the testing takes place – this will be monitored regularly on a rolling basis. SGN has provided a conservative estimate of 40% of replacements being the maximum amount to allow the trial to go ahead, although the initial appliance survey has seen only 2% of replacements needed.	This creates a databank of appliances that are non-compliant with the differing gas compositions, as well as providing learning on installation, ventilation and repair issues that are faced. There is currently no data on this for GB meaning this task this information could create a precedent for future tasks similar in nature.
Ancillary costs of Gas Chromatograph	£15,000* SGN will cover the purchase and installation costs of the Gas Chromatograph, with such costs recovered following a successful exemption from GS(M)R.	The ancillary costs will be site-specific and will cover labour and equipment required to complete the installation.	Learning from use of the Gas Chromatograph can be transferred to use of small-scale sites, such as biomethane and coal-bed methane sites.

The Funding Licensee will minimise the total cost incurred against each of these categories.

5. Change Requested

Appendix 1 shows Clause 9 of the Project Direction as it currently reads. Appendix 2 details the proposed amendments to this clause.

The primary amendment is the inclusion of the term 'agreement in principle' which is to mean a pre-agreed process whereby HSE provide terms with which SGN are to comply in order to secure the exemption.

This amendment will allow SGN to begin Stage 2 of the project, the testing of appliances, on 3rd November 2014. The evidence gathered throughout phases 1-3 of Stage 2 will form the basis of the report submitted to HSE to acquire the full exemption ahead of Stage 3, due to begin in 2015. The report will be examined and a decision made within 4 weeks of the submission date. During this consideration period, SGN will continue with the testing, covering these costs, which would then be recoverable, should the exemption be granted.

Agreement in principle has already been sought from HSE, and they are engaged regarding the project and this proposed amendment. SGN are in regular contact with Inspectors from HSE regarding the project, and they have provided assurances that the exemption will be granted providing SGN meet the requirements as set out in Section 4 - 'Exemptions' - of the Safety Case Assessment Manual, which states that:

'Regulation 11 of GS(M)R enables HSE to exempt duty holders from any of the requirements or prohibitions imposed by the Regulations if it is satisfied that the health and safety of persons likely to be affected by the exemption will not be prejudiced in consequence of it.

Duty holders may also request to be exempted from certain sections of the requirements of GS(M)R while still having to comply with other parts of GS(M)R.'

From this we can see that to grant the exemption, HSE must have evidence that the trial will not prejudice the health and safety of persons affected by the exemption i.e. the customers within the Oban network. In order to satisfy this, SGN must complete a representative sample of the testing planned within Stage 2, as this is intended to provide that evidence.

The standard timescale for assessing an exemption request is up to three months; however during our discussions with HSE, we have secured assurances that providing we continue regular contact with them and answer any questions as the project progresses prior to our final submission, then this process may be expedited and a decision received within four weeks of submission (this is a commitment provided by HSE, though is not a guarantee).

SGN also proposes to add a section that mirrors the already included cost breakdown for Stage 1, but for Stages 2 and 3. This change to the clause allows SGN to authorise spend on defined Stage 2 and 3 activities to secure the exemption required, and allow the trial to proceed as planned in 2015. SGN proposes to use the upper range costs for each individual activity which will not be exceeded. The main component of the overall cost is the budget for replacement appliances. SGN has included a cost which covers replacements for 40% of appliances; however this is a conservative estimate which may not be needed in full. Results from Stage 1 suggest the repayment rates may be as low as 2%.

The learning that can be obtained from the activities detailed in the table above is worthwhile and will be of use to Network Licensees and other parties. SGN believes this section does not prejudice the clause's original aim of protecting customers from risk of inefficient spend, as the learning gained will be of considerable value in itself . In the event the evidence gathered from these activities shows that it is not appropriate for HSE to grant an exemption, this will be important new learning for the industry which can be used to inform any further work in this area.

6. Why is the change in the best interests of customers?

Without this amendment to the Project Direction, SGN are unable to complete the necessary testing required in order to obtain the HSE exemption, and therefore SGN are unable to begin the trial.

The objectives of this project are at risk of success should the wording not be amended. The change request is in the best interest of customers because:

- The changes proposed will allow SGN to deliver considerable learning of value to Network Licensees and other parties. The learning will not only provide the evidence base required by the HSE for the exemption but could be applied by other Licensees to a range of activities. Spend on these activities therefore provides customer benefits.

- It allows the project to continue and to achieve its objectives. At present the project is on hold pending approval of this Change Request. Were the change request not to be approved the project would be delayed indefinitely, thus slowing down the potential benefits the project aims to achieve for GB customers.

- It will ensure that the customer interest, engagement and trust generated through project activities to date is maintained, by enabling fulfillment of customer expectations. Selected customers have already received letters and leaflets detailing the basic project timeline. In addition, the project website is now live which can be accessed by all Oban residents. An indefinite delay to the project would be detrimental to SGN's customer relationship and introduces the risk that subsequent engagement required to access properties for testing would be more difficult and costly.

On a wider scale, the change request allows SGN to deliver its overall objectives for this project, which would potentially positively impact customers nationwide:

- To demonstrate that gas which meets EASEE gas specification but sits outside GS(M)R can be conveyed safely and efficiently in the GB gas network

- To demonstrate that all GAD compliant gas appliances are capable of safely and efficiently burning gas which meets EASEE Gas specifications but sits outside GS(M)R

- To demonstrate through the sample population what is required to ensure GB's appliance population is capable of operating safely and efficiently over a wider range of gas quality

- To capture and record all project learning to assist in a future full GB roll out

7. Conclusion

The proposed amendment to Clause 9 of the Project Direction has no impact on the expected benefits to customers. The change allows SGN to continue towards the project's ultimate goals, and SGN believes the extension is in the best interests of customers and has no adverse effect on the delivery of the project.

8. Appendices

Appendix 1 – Clause 9 in existing format

Clause 9 of the Project Direction currently reads as follows:

'The Funding Licensee must, prior to starting the activities of Stage 2 and 3 as described in the Full Submission, secure agreement from the Health and Safety Executive for the necessary exemption from the Gas Safety (Management) Regulations for injecting higher Wobbe Index gas into the Oban gas network.

The Funding Licensee may access £351,000 from the Project Bank Account to undertake the Stage 1 tasks associated with securing the HSE exemption. This funding is limited to the following:

- *(i) Stage 1.1 – review of previous studies (up to £15,000 may be spent);*
- *(ii) Stage 1.2 – detailed appliance population survey (up to £155,000 may be spent);*
- *(iii) Stage 1.3 – identify limits for gas testing (up to £3,000 may be spent):*
- *(iv) Stage 1.4 – establish supply chain and shipping arrangements for LNG (up to £3,000 may be spent);*
- *(v) Stage 1.5 – design field trial*
    - *a. Agree trial protocols internally (up to £4,000 may be spent);*
    - *b. Agree trial protocols externally (up to £11,000 may be spent);*
- *(vi) Other costs (up to £150,000 may be spent)*

The Funding Licensee may not access any other funds from the Project Bank Account for any other activities, including Stage 2 and 3 activities, until the HSE exemption and any additional HSE requirements have been agreed.

The Funding Licensee will minimise the total cost incurred against each of these categories. The Authority may audit these costs ex post to ensure that they have been incurred efficiently and only for the purpose of securing agreement for an exemption from the HSE.'

Appendix 2 – Clause 9 with proposed amendments[3]

'The Funding Licensee must, prior to starting the activities of Stage 2 and 3 as described in the Full Submission, secure agreement ***in principle*** *from the Health and Safety Executive for the necessary exemption from the Gas Safety (Management) Regulations for injecting higher Wobbe Index gas into the Oban gas network.*

The Funding Licensee may access £351,000 from the Project Bank Account to undertake the Stage 1 tasks associated with securing the HSE exemption. This funding is limited to the following:

(i) Stage 1.1 – review of previous studies (up to £15,000 may be spent);
(ii) Stage 1.2 – detailed appliance population survey (up to £155,000 may be spent);
(iii) Stage 1.3 – identify limits for gas testing (up to £3,000 may be spent):
(iv) Stage 1.4 – establish supply chain and shipping arrangements for LNG (up to £3,000 may be spent);
(v) Stage 1.5 – design field trial
  a. Agree trial protocols internally (up to £4,000 may be spent);
  b. Agree trial protocols externally (up to £11,000 may be spent);
(vi) Other costs (up to £150,000 may be spent)

The Funding Licensee may access £595,000 from the Project Bank Account to undertake the Stage 2 tasks and £15,000 for Stage 3 tasks necessary to take place prior to securing the HSE exemption. This funding is limited to the following:

(vii) Stage 2.1 – quantified risk assessment (up to £20,000 may be spent);
(viii) Stage 2.2 – stakeholder engagement (up to £120,000 may be spent);
(ix) Stage 2.3 – On-site appliance testing
  a. vehicles and kit for testing (up to £30,000 may be spent):
  b. conducting testing of all appliances (up to £105,000 may be spent);
  c. purchase of gas for testing (up to £20,000 may be spent);
(x) Stage 2.4 – procurement and installation of replacement appliances (up to £300,000 may be spent);
(xi) Stage 3.1 – construction of infrastructure;
  a. gas chromatograph site-specific ancillary work (up to £15,000 may be spent)

The Funding Licensee may not access any other funds from the Project Bank Account for any other activities, including Stage 2 and 3 activities, until the HSE exemption and any additional HSE requirements have been agreed. ***If the exemption from the HSE is not secured because it does not consider the approach or sample to be robust, the Authority may re-examine the appropriateness of the use of the funding released for stage two of the project and if deemed inappropriate, make use of the Funding Return Mechanism.***

The Funding Licensee will minimise the total cost incurred against each of these categories. The Authority may audit these costs ex post to ensure that they have been incurred efficiently and only for the purpose of securing agreement for an exemption from the HSE.'

[3] The proposed amendments to Clause 9 are in bold

Appendix 3 – Minutes of Meeting between SGN & HSE [18.08.2014]

Project name:	**Opening up the Gas Market**
Meeting reference:	OGM_HSE_02
Purpose:	Meeting with HSE
Date:	18/08/2014
Invited:	Jamie McAinsh (JM) - SGN, Angus McIntosh (AM) - SGN, Dave Lander (DL) - DLC, Andrew Cooke(AC) - HSE, John Hodges (JH) - HSL, Phil Hooker (PH) - HSL
Apologies from:	
Time / Location	10:30 – 12:00 via teleconference

Agenda Item		**Presenter**	**Key decisions**
1	Welcome and Introductions	AC	Opened meeting and introduced everyone.
2	Background to the project	JM	Provided overview of project details for all present on call. Value, learning and benefits of project was discussed. **Action 18-08-14_01: JM to send HSE link to project film**
3	External specialist resource	JM	Discussed recruitment and roles of Dave Lander, DNVGL, Kiwa Gastec. Also discussed external stakeholder steering group members as well as purpose and objectives.
4	100 property survey	JM	Summarised the purpose, method and results of the survey. Discussed the use of representative sampling to select these appliances.
5	Laboratory Testing	JM	Discussed the selection of appliances for on-site testing at Kiwa Gastec labs in Cheltenham. Explained what is being tested, the gases being used in the tests and those appliances selected for specialised testing. Explained that some appliances are from customer homes and some are bought-in commercial appliances. **Action 18-08-14_02: JM to send HSE list of lab tests undertaken**
6	In-situ Testing	JM	Explained the process for the planned in-property tests to take place in Stage 2 of the project, including length of time in a property, test method statement and how the testing feeds into the Quantified Risk Assessment. Representativeness of testing was discussed and SGN confirmed that testing would be representative of GB appliance population. Error margin and confidence levels will be defined by DNVGL and feed into the QRA.

			The phasing of the tests were discussed. AC stated that the exemption request would be strengthened by as much in-situ test results as possible. AC confirmed that in order to grant exemption, HSE need to be satisfied that the testing is extensive enough to give a realistic picture. JM stated that SGN plan to submit exemption request in December 14, after test phase 3 (approx 600 tests). All agreed that this seemed a reasonable time to submit exemption request. 'No access' properties were discussed and the approach to management of this. Although 100% access is preferred, this is unrealistic and was acknowledged that the risk assessment was an appropriate approach to managing these properties. AC explained that without a robust evidence base, HSE would not have a sufficient evidence base to process the exemption. AC stated that the higher the volume of appliances tested, this makes a stronger case for HSE granting the exemption. AC was satisfied that the testing is robust enough to provide a realistic platform for GB roll-out.
7	Development of appliance replacement criteria	JM	Existing unsafe appliances were selected, as were those considered most at risk of failing with the test gases. A statistically representative example of GB appliances was also taken.
8	DNVGL – Quantified Risk Assessment (QRA)	AM	It was explained how stage 2 is required to feed into QRA. QRA was explained and how it is essential to support the case for GB GSMR change. Risk assessments for no access properties were discussed and how it will feed into overall QRA and exemption request. AC agreed that SGN's proposed approach to no access properties appeared reasonable.
9	Exemption to GS(M)R	DL	To satisfy GS(M)R exemption requirements, HSE confirmed that SGN must prove there is no enhanced risk to the citizens of Oban as a result of the project. HSE confirmed that SGN's proposed approach seemed reasonable to ensure exemption is granted. AC confirmed that usual timeline for exemption requests is 3-6 months but that this can be expedited providing that SGN provides HSE with regular updates and information. DL suggested submitting the exemption 12 weeks from the date of this meeting, December, allowing a 4 week float for turnover. AC commented that the more tests completed before the exemption application the better and that without a robust evidence base HSE would not have enough data to process the exemption. All agreed that exemption request should be made in December at the earliest. DL agreed with AC to issue a draft report conditional on the results of the testing in September. HSE will identify any gaps in this report and SGN will amend accordingly.

			AC committed to engage more when the data becomes available, and regular meetings were agreed. AC suggested that the outline process for exemption should roughly be: September: SGN to submit draft exemption (excluding test data) October: HSE feedback any gaps in draft exemption October: SGN to redraft exemption and populate with real test data November: HSE and SGN to discuss draft exemption, results to date and any gaps December: SGN to Submit formal exemption request **Action 18-08-14_04: AC to send SGN form of words to satisfy Ofgem requirements** **Action 18-08-14_04: DL to send HSE draft exemption report in September**
Next Meeting:		**Date: Mid-September 2014 (TBC)** **Location: Via teleconference**	

Appendix 4 – Email Correspondence between SGN and HSE [01.10.2014]

Angus

As discussed collegues in HSL have now reviewed the information provided regarded the OBAN in-situ testing, and have commented as follows:

1. The proposal is to sample 54% of properties in Oban. It is not clear how the nominal and minimum sample sizes for each cohort, nor how the final sample size of 594 were derived. Nevertheless if over 50% of properties are successfully sampled, this is a high proportion of the total population.

2. The areas selected for sampling have not included most of the commercial tourism properties although "sufficient" commercial properties are located within the sampling areas. This strategy should help to increase the heterogeneity of the properties (and associated characteristics) of the sample.

3. Random sampling is the main strategy employed in surveys to avoid bias and to ensure representativeness. Random sampling is not possible in this survey, and consequently it is likely that there will be some degree of bias in the sample.

4. By sampling over half of the properties and by avoiding those areas with high concentrations of commercial tourism properties, the survey design is increasing its chances of being representative. However, it is not possible to conclude that the final sample will be representative assuming that the sample is intended to represent the Oban population in terms of the characteristics listed in the report you sent us, including demographics, socio-economic status, gas usage, etc.

5. Provided the data collected are statistically robust, it would be possible to weight the survey results to be representative of the Oban population.

As far as the supporting the statement

'We confirm that we have discussed the sampling methods and approach that SGN will follow in order to support the GS(M) R exemption request . On the basis of our discussions so far we consider the approach to be appropriate providing the thresholds set by DNV are met. However we retain unfettered discretion to review the appropriateness of the evidence base in the context of the data presented as part of the formal exemption assessment process."

There are limitations to the methodology, but I would be happy to support the statement that the approach is appropriate.

Regards

Andrew Cooke

HM Inspector of Health and Safety - Gas & Pipelines Unit | Energy Division

Health & Safety Executive | The Council Offices, Station Road East, Oxted, Surrey RH8 0BT

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Appendix 5 – Email Correspondence between SGN and HSE [24-25.09.2014]

From: Andrew.Cooke@hse.gsi.gov.uk <Andrew.Cooke@hse.gsi.gov.uk>
Sent: 25 September 2014 10:16:24
To: Mcintosh, Angus
Subject: RE: The Oban Gas NIC Project

Gus

Thank you for the clarification.

The method used to determine the appropriate sample size will be reviewed as part of the formal Oban Exemption assessment process, however it is noted that SGN employed a specialist third party consultancy (DNV GL) to undertake this work.

In situations such as this, where high levels of assurance are required the use of competent independent external specialist resource does provide a prima facia demonstration that matter has been addressed with the appropriate degree of rigour; but this will (as indicated) above be tested during the assessment process.

Regards

Andrew Cooke
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Appendix 6 – Email Correspondence between SGN and HSE [18.08.2014]

From: <Andrew.Cooke@hse.gsi.gov.uk>
To: <angus.mcintosh@sgn.co.uk>, <jamie.mcainsh@sgn.co.uk>
Date: 18/08/2014 14:23
Subject: Proposed OBAN GSMR Exemption Application

Angus / Jamie

As discussed this morning, HSE needs to be confident that there is no increase in risk to the Oban residents in order to approve to any exemption application, under regulation 11 of the Gas Safety (Management) Regulations 1996. Regulation 11 requires that:

The Executive (HSE) shall not grant any such exemption unless, having regard to the circumstances of the case and in particular to –

(a) the conditions, if any, which it proposes to attach to the exemption; and

(b) any other requirements imposed by or under any enactment which apply to the case;

it is satisfied that the health and safety of persons likely to be affected by the exemption, will not be prejudiced in consequence of it.

We feel that the evidence base in support of the exemption for Oban will be strengthened if it includes some in situ testing and have discussed this with yourselves (SGN) at our regular interface meetings. We need to be satisfied that the testing is extensive enough and representative to give a realistic picture.
It is noted that a range of relevant stakeholders (including appliance manufacturers) are being engaged with and that this engagement is contributing to the overall evidence base for the project. Based on our engagement so far we are satisfied that the proposed approach to evidencing an exemption for Oban is reasonable, but note that the test results may well result in further questions to being generated.

It is recognised that the learning's from the Oban project will provide a useful contribution to the developing evidence base with regards to any future consideration of GB gas composition.

The outcome of the innovation project is of course uncertain, but as discussed we will continue to engage with you and to review information as it becomes available.

Whilst not specifically discussed this morning the matter ofr network integrity (eg the impact of non GSMR spec gas on pipework and associated equipment will also need to be addressed).

Regards

Andrew Cooke

HM Inspector of Health and Safety - Gas & Pipelines Unit | Energy Division

Health & Safety Executive | The Council Offices, Station Road East, Oxted, Surrey RH8 0BT

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Appendix 7 – Email Correspondence between SGN and HSE [15.08.2014]

From:	Jamie Mcainsh/DUN/SGN
To:	<Andrew.Cooke@hse.gsi.gov.uk>, angus.mcintosh@sgn.co.uk, dave@davelanderconsulting.co.uk, jamie.mcainsh@sgn.co.uk, Philip.Hooker@hsl.gsi.gov.uk
Date:	15/08/2014 17:00
Subject:	Re: HSE / SGN Teleconference 18 August (Proposed OBAN GSMER Exemption Opening Up the market)

Dear all,

Please see below an outline agenda for our call Monday 18 Aug.

1. Welcome / Introductions
2. Background to the project
3. External specialist resource engaged
4. 100 property survey
5. Laboratory testing (selection of appliances, tests undertaken, findings)
6. In-situ testing
7. Development of appliance replacement criteria
8. GL Nobel Quantified Risk Assessment - scope (what's being RA's)
9. GSMR Exemption- requirements that need to be met in order to grant exemption

    - What constitutes a sufficient evidence base
    - Timescales
    - Process

9. AOB
10. Date of next meeting

Please feel free to comment / add to agenda.

Kind regards,

Jamie McAinsh | Innovation Project Manager | T: 0131 469 1899 | M: 07891 565 828 l Int: 31899

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Appendix 8 – Email Correspondence between SGN and Ofgem [4-5.09.2014]

Rhianne,

please find note from DNVGL as requested earlier today. I hope this now provides sufficient confidence in our approach.

KR

Gus

Angus McIntosh | Innovation & New Technology Manager | T: 0131 469 1823 | M: 07966 105 362

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Or @sgnSouthern

Smell gas? Call 0800 111 999
Carbon Monoxide can KILL - get an alarm

From: Brown, Martin (Loughborough) [mailto:martin.j.brown@dnvgl.com]
Sent: 05 September 2014 08:25
To: Mcintosh, Angus
Cc: Kimpton, Sarah Karen; McAinsh, Jamie
Subject: RE: Statistical Representativeness of Oban QRA

Gus

Nicely worded responses covering all the aspects that our Statistical Analysis team raised.

Good luck with OFGEM, but please get back to us if you need additional support.

Regards

Martin

Martin Brown
Senior Consultant - Combustion and Emissions
Energy Measurement and Compliance
DNV GL – Oil & Gas

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Direct Telephone: +44 1509 282468
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From: Mcintosh, Angus [mailto:angus.mcintosh@sgn.co.uk]
Sent: 04 September 2014 21:35
To: Brown, Martin (Loughborough); McAinsh, Jamie
Cc: Kimpton, Sarah Karen
Subject: RE: Statistical Representativeness of Oban QRA

Hi Martin,

please see attached proposed response to Rhianne below. Could you please confirm you are comfortable with my summary. It reflects the discussion we had with the HSE and previous corespondence to ofgem. I'll call you in the morning.

Thanks

Gus

Rhianne,

following our call, please find expanded responses to your questions below:

1. **Why the need to complete 3 test phases before applying for the exemption?**

- The larger the sample size, the greater the representativeness of the data.
- Testing all 1104 properties before applying for the exemption would give 100% confidence level (CL) and 0% margin of error (MoE) for the additional data requested by the HSE from the in situ testing - And from HSE's perspective this would be the ideal scenario as this would mean the test results are 100% representative.
- However, testing every property prior to exemption request is not practical in terms of logistics, time and cost.
- As the sample size is directly proportional to the cost, there has to be a trade-off between 'representativeness' and 'cost' and a balance struck.
- Therefore, SGN and HSE have agreed that best approach would be to carry out enough tests so that the in situ data gathered is statistically significant, ie representative of the entire Oban population.
- Test phases have been identified following a comprehensive review with key stakeholders, influenced particularly by local businesses (the tourist season i.e. the peak holiday period for B&B's and hotels), the requirement for customer communication (clustering of participation), operational logistics (access with the

testing equipment in streets and efficiency of programme of appointments). The testing has been split up into 6 geographical phases as seen on the Oban Test Phase Map (attached previously).

- Each phase is made up of a cluster of property types and socio-economic factors. However it should be pointed out that most of the commercial tourism properties (hotels and B & B's) are located in phase 4, 5 and 6 – this is why they are in the later phases. It is believed there are sufficient commercial properties of varying types in phase 2.
- As this area sampling method is non-random, there is considered a risk that the additional in situ data collected will have homogenous characteristics, therefore in order to achieve representativeness a larger sample size is required.
- We have referred this to our project partner, DNVGL, who are the experts preparing the QRA and controlling the statistical aspects. Referring to the original report produced by DNV GL ("Demographic Analysis of Oban for Gas Testing") the following characteristics will be identified during the in situ trials and could impact upon emissions and subsequent effects:

Characteristics	**Subset**	**Designations**	**Cohort Count**
Appliance Type		Boiler, Fire, Cooker	
Appliance	Age	Old or New	2
Ventilation	Room Size	Small, Medium, Large	3
	Mechanical Ventilation	High or Low	2
Gas Usage	Based on affluence, employment etc.	High or Low	2
		Number of Cohorts (Product):	24

The cohorts listed above provide a minimum number of designations – in some cases more would be recommended (e.g. age of appliance).
A nominal statistical sample size would be 30 for each cohort. As an absolute minimum DNVGL would recommend a sample size of 10 for each cohort (Minimum Sample = 240 households).
If an assumption is made that each residence in Oban has, on average, 2 different appliances, then a minimum sample size should be 360 households.

However, it is not expected that access will be granted to every property visited, at least not in the sampling phase period. This needs to be taken account of. Also even if 360 households were visited, it is unlikely that each of the strata would reach the minimum sample size of 10 when we factor in the lack of randomness highlighted above.

In summary, DNVGL considers that the absolute minimum sample size to ensure representative results of the in situ testing is 360 properties. Given the likelihood that not all properties will be accessible, and the requirement to reach the minimu sample size of 10, a total of 594 properties (equivalent to the total of phases 1, 2 and 3) should be visited.

2. **Why do the earlier test phases cost more than the latter?**

- This is simply due to the start-up / mobilisation payments which will be made to project contractors.

3. **Why the need to continue to attempt to test every property in Oban after the exemption is requested?**

- After the exemption request has been made it will still be necessary to complete remaining test phases.
- A key outcome from the project will be to take the results generated in Oban and look how they can be extrapolated and applied to GB.
- The larger the sample size, the more representativeness of GB.
- If the testing was to cease after the exemption request is made, there would not be enough statistically significant data to make a case for a GB change to GS(M)R.

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Appendix 9 – First Responses to Ofgem questions from initial Change Request Submission [24.07.2014]

1. Please provide the exact terms that the HSE have said need to be met before you can receive the exemption.

Following various engagement with the HSE, as detailed in the change request, HSE have advised SGN that an exemption will be granted subject to satisfying the criteria set out in their Safety Case Assessment Manual (PM/Permissioning/03), Section 4. An extract is provided below:

> *Regulation 11 of GSMR enables HSE to exempt duty holders from any of the requirements or prohibitions imposed by the Regulations if it is satisfied that the health and safety of persons likely to be affected by the exemption will not be prejudiced in consequence of it. Duty holders may also request to be exempted from certain of the requirements of GSMR (such as the duty to produce a safety case) while still having to comply with other parts of GSMR.*

The HSE Case Manager will asses SGN's exemption request to determine

- *whether or not the operation described by the duty holder is suitable for exemption;*
- *whether or not the information provided by the duty holder is sufficient to demonstrate that the risks arising from the operation are adequately controlled and that an exemption certificate can be issued without compromising safety standards.*

HSE have clarified that a request for exemption should be submitted as a report which for ease of assessment may use the same headings and basic content as a standard safety case. SGN needs to explain how the aspects that would have normally been covered in a safety case, but for which exemption is requested, are covered adequately elsewhere in their safety management system.

HSE state that the process of assessing a request for an exemption is essentially no different than for assessing a safety case and the arrangements described elsewhere in this manual should be followed.

2. What is your view of the probability that the HSE's terms will be met through the further work that you want to undertake? What evidence do you have to support that view?

At the time of the agreement of the Project Direction, SGN's engagement with HSE was limited to their simple clarification that they were legally bound to assess any exemption request and grant the request upon receipt of a sound evidence base. As such, a contingent deliverable was placed into the Project Direction by Ofgem to ensure that the HSE exemption would be granted prior to commencing stage 2. However, following recent engagement with HSE it is clear that SGN will need to use the results from stage 2 in order to produce a sound evidence base. Upon completion of stage 2, SGN views a high probability of the exemption being granted because:

- The results generated from stage 2 Oban appliance tests will help SGN '*demonstrate that the risks arising from the operation are adequately controlled',* and therefore strengthen the case for an exemption.
- The results generated from stage 2 laboratory appliance tests will help SGN '*demonstrate that the risks arising from the operation are adequately controlled',* and therefore strengthen the case for an exemption.

The evidence that we have to support this view is as follows:

- Survey results from stage 1 supports the view that the majority of appliances in Oban will be able to safely and efficiently burn gas outside of GS(M)R but within our proposed exemption limits. Project partner Kiwa Gastec confirmed that based on the results of the survey, they anticipate the risk of an amendment to the WI to be low.

- Early laboratory test results have been positive, showing no real adverse affects on the function of appliances at extreme WI. The full report on these findings will feed into the exemption request.

- A previous GS(M)R exemption for an increase in Wobbe Index (WI) to 53.41 MJ/m³ was granted by HSE to Transco in 2000 for the SIUs (including Oban) based on work carried out at the time which demonstrated that the exemption would impose no increase in risk to the general public. This demonstrates a precedent that HSE have granted exemptions for an increase to the WI with a lesser evidence base.

- SGN are working with the HSE to produce the exemption request to ensure their criteria is satisfied. Regular meetings are planned and SGN will be notifying HSE of the progress made as the testing stage continues. As there is no defined criteria beyond that dictated in Section 4 of the Safety Case Assessment Manual, these meetings are useful to help determine if we are on the right path to securing the exemption.

In summary, further work is necessary to generate the sound evidence base for the case for exemption, and SGN is confident that this work will result in an exemption being forthcoming.

3. What risks have you identified to meeting the HSE's requirement? How are you planning to mitigate those risks?

Whilst SGN is confident of meeting the HSE's requirements, we have identified some potential risks and planned appropriate mitigation measures as required:

Risk	Mitigation
Evidence base not sufficient	Rather than submit the exemption request at the end of the stage 1 survey, submit request after stage 2, as the lab test and Oban test results will provide a stronger evidence base.
High volume of appliance test failures	If this is encountered, SGN may recommend a more suitable WI range to ensure the HSE criterion is met. This range would be set at an appropriate limit above GS(M)R and incorporating headroom below the limit where the WI becomes a risk. The Project Direction, at section 11 'Appliance Replacements' states that *'any revisions [SGN] wishes to make to the maximum and minimum acceptable Wobbe Index values used... must be notified to Ofgem at the earliest opportunity'* and SGN would follow this instruction.
Delayed decision response from HSE	Set up bi-monthly meeting with HSE to help build exemption request. SGN to submit draft request to HSE for early review prior to submitting full request in December 2014.
The request is not suitable for an exemption	SGN have discussed with HSE and confirmed that request is eligible for exemption. HSE advised that previous WI exemption granted to Transco.
Quantified risk assessment not deemed adequate evidence for HSE to grant exemption	Set up bi-monthly meeting with HSE and other key stakeholders and duty holders to help build and shape QRA. SGN to submit draft QRA to HSE for early review prior to submitting full request in December 2014.

4. How will customers be protected against stranded costs if the exemption is not granted? And has this risk to consumers changed since the decision on funding was made last year?

SGN will minimise the costs incurred against each activity detailed in the change request to meet the requirements of the HSE. SGN also proposes to put in place measures to protect customers against stranded costs if the exemption is not granted. These include:

- **'Go/No Go' Stage Gates;** These stage gates will help control the risk to customers by providing set points whereby the project can pause to assess the benefits of moving forward. If moving forward is in the best interests of customers, and provides value for money, then SGN will move onto the next stage. If it is not, then the project will cease spend, and assess what the best next steps are. The first gate will be after review of final laboratory test results. Subsequent gates will be after each Oban test phase (see appendix 10a for test phase map) based on appliance failure rates. The value of each stage gate is detailed in the table in appendix 10b.

- **Cost recovery;** SGN will purchase some equipment for the project (trailers and chromatograph), however if the exemption is not granted SGN will seek to at least partially recover these costs. Any recovered costs would be returned to gas customers via the prescribed mechanism in the project governance document[4].

- **Significant learning;** The expenditure required as set out in the change request has been reviewed to ensure it delivers value in terms of learning. There remains a significant level of learning that will be achieved regardless of whether the exemption is granted, which are detailed in the Change Request. This additional learning ensures that customers will still be getting value for money from their investment in the project.

Since the decision on funding was made last year, the risk level has reduced and SGN is now even more confident of securing the exemption as a result of the ongoing discussions with HSE and the positive results from stage 1.

5. What do you infer from the HSE's exemption requirements for the possible wider rollout of the method?

DECC and HSE, are both fully engaged on this project. Should OGM produce a compelling evidence base to widen the GS(M)R WI range then both have confirmed they will use the results in Oban and analyse how the project, and the quantified risk assessment, might be scaled up to represent GB as a whole.

However, this project will only be the first step which may lead to the potential widening of GS(M)R WI across GB. Based on using Oban as a representative sample, the OGM project will propose the widest practical Wobbe range based on ensuring safe and efficient appliances at the lowest possible cost to GB. A more likely short-term outcome from the project would be to widen GS(M)R WI for embedded entries on a case by case basis.

A Technical Stakeholder group has been set up which includes key industry stakeholder in relation to gas quality such as DECC, Heating and Hotwater Industry Council and appliance manufacturers. The project has also been presented at the EU Gas Quality Working Group and is sharing learning and best practice with other EU pilot studies.

[4] Project Governance Document – p.53 para 8.26.

6. When the project was proposed, the initial appliance survey was intended to gather information for the HSE exemption. What has changed since full submission that means stage 2 of the project must be undertaken before an exemption is granted? Why wasn't this anticipated?

At the time of the agreement of the Full Submission, SGN's engagement with HSE was limited to their simple clarification that they were legally bound to assess any exemption request and grant the request upon receipt of a sound evidence base. Following more detailed engagement with HSE, it has been recognised that SGN will require the evidence gathered during Stage 2 to secure the exemption.

Therefore SGN's understanding of the exemption has changed since the project was initially proposed. During the submission stage, SGN believed that the evidence from Stage 1 would be sufficient to warrant the granting of the exemption. This belief was based upon the evidence provided in the Didcot project, where an exemption was granted using evidence from theoretical studies. However, discussions with HSE since the project began have shown that making an application for the exemption with the added evidence of the testing stage, would provide a stronger evidence bank and an increased likelihood of the exemption being granted. As this project is reliant upon this exemption, SGN are keen to ensure that every precaution, and all advice from HSE, is taken to secure it.

If SGN can evidence that the appliance tests and replacements present no increase in overall risk or as low as reasonably practical (ALARP), HSE will grant the exemption.

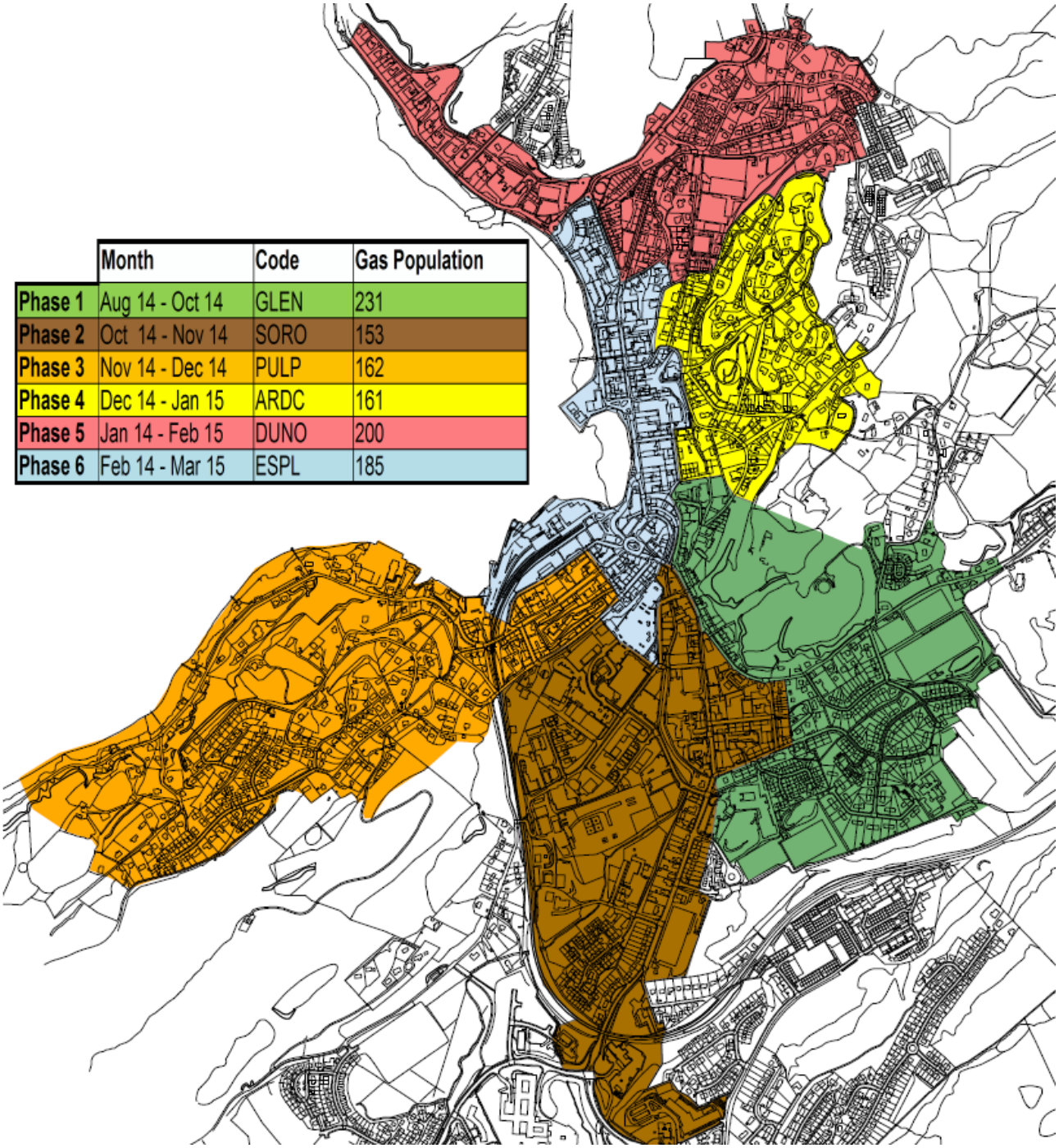
7. What learning would come from the project if the work goes ahead but the HSE does not grant the exemption? And what value would this learning provide without the HSE exemption?

There is a great deal of learning that will come from this project, even if HSE were to decline the exemption request. This is provided in the Change Request itself, and is summarised in the following table:

Task		Why Required for HSE Exemption	Value of Learning Achieved
Quantified Risk Assessment (QRA)		The QRA will quantify, in absolute terms, the level of risk presented by widening the GS(M)R WI specification, and will be used as the foundation of the report submitted to HSE.	The risk assessment will be valuable for all Network Licensees as they could apply the findings of the QRA to their networks and decide whether to seek a change in WI for a local embedded network. The QRA will investigate frequencies and probabilities of appliance faults and the consequences. Other contributing factors such as network pressures, properties types and air exchange ratios will also be researched. All this information can be used by Network Licensees, Appliance Manufactures and policy makers for future work on issues such as CO in properties.
Stakeholder Engagement		Stakeholder engagement is a key element of Stage 2. Examples of the necessary engagement expenditure items at this stage include consultation 'town hall' meetings, flyers, letters, stands etc. As Stage 2 necessitates entry to customer homes, stakeholder engagement is critical to ensure customers are willing to allow us access to their property for the test, the results of which will feed into the HSE exemption request.	SGN have put a significant emphasis on stakeholder engagement. The learning about effectiveness of engagement techniques and best practices will be shared with other Network Licensee. The learning points from the OGM project can then be applied to future Network Licensee activities which require customer engagement / participation / access to premises. It will be shared in dissemination events across GB and Europe. Our engagement plan has already won an industry award.
On-site appliance testing	Vehicles and kit for Testing Phase	Stage 2 involves the testing of appliances using three different compositions of gas and using the results to apply for the HSE exemption. These gases will be in cylinders. The gas cylinders will be transported in specially kitted trailers to transport them between properties, as well as appropriate safety kit to ensure the hoses used are not a hazard to the general public.	The on-site appliance testing is a primary piece of learning, as this includes acquiring data on how GB appliances react when the three varying gas compositions are used. The testing report produced will detail the results for every appliance tested and will feed into submission to HSE to acquire the exemption. An added benefit of this is that the Oban appliance population which will be established can be scaled up to represent the condition, makes, models and age of gas appliances in GB. This data is valuable to other Network Licensees, Appliance Manufacturers and policy makers as it does not exist at present. It also provides real-life examples of the impact of using varied gas compositions on in-situ gas appliances and aids calculation of replacement and repair figures and costs when scaled up to GB.
	Conducting testing of all appliances	As stated above, the testing of appliances is the main activity in Stage 2, the results of which will for the basis of the exemption request. The testing will be carried out by two teams consisting of two engineers, overseen by an on-site supervisor.	
	Purchase of Gas for Testing	The testing of appliances using bottled gases which represent the higher and lower end of the EASEE gas specification. The procurement of the bottled gas is therefore required. It is the results taken from the testing of these appliances that will form the evidence to present to HSE, meaning the purchase of this gas is necessary prior to the full exemption.	

Procurement and installation of replacement appliances	SGN propose to replace any appliance that is unsafe or does not meet the requirements needed for the trial. The cost of procuring and installing these appliances is provided for within the project budget, though an exact cost cannot be given as SGN will not know how many appliances need replacing until the testing takes place – this will be monitored regularly on a rolling basis. *These costs are difficult to predict. The upper limit is based on the maximum replacement allowance detailed within the bid.	This task will create a databank of appliances that are non-compliant with the differing gas compositions, as well as providing considerable learning on installation, ventilation and repair issues that are faced. There is currently no data on this for GB meaning this task this information could create a precedent for future tasks similar in nature. At SGN's early meetings with Ofgem, it was highlighted that as there was currently no databank, this alone was a highly worthwhile piece of learning.
Procurement and Installation of Gas Chromatograph	The Gas Chromatograph measures the WI of the gas injected into the network and is critical to ensure the safety of the project. An 18-22 week lead time has been quoted for the Gas Chromatograph and associated equipment. The order for the Chromatograph will need to be placed in July, prior to the HSE exemption, in order for it to be fully installed ahead of the commencement of Stage 3 – the LNG injection.	Learning from use of the Gas Chromatograph can be transferred to emerging small-scale sites, such as biomethane and coal-bed methane and shale gas sites.

APPENDIX 9a - ORIGINAL OBAN TEST PHASE MAP



APPENDIX 9b – 'GO/NO GO' STAGE GATES

Stage Gate	Criteria	Expenditure
Completion of laboratory tests	Kiwa Gastec to confirm satisfactory results from tests	up to £365,000
Completion of Testing Phase 1	Appliance replacement rate of < 40% due to test failures	up to £285,000
Completion of Testing Phase 2	Appliance replacement rate of < 40% due to test failures	up to £285,000
Completion of Testing Phase 3	Appliance replacement rate of < 40% due to test failures	up to £145,000
Completion of Testing Phase 4	Appliance replacement rate of < 40% due to test failures	up to £135,000
Completion of Testing Phase 5	Appliance replacement rate of < 40% due to test failures	up to £130,000
Completion of Testing Phase 6	Appliance replacement rate of < 40% due to test failures	up to £120,000

Task		Total Task Costs (£k)	Gate 1 Spend (£k)	Gate 2 Spend (£k)	Gate 3 Spend (£k)	Gate 4 Spend (£k)	Gate 5 Spend (£k)	Gate 6 Spend (£k)	Gate 7 Spend (£k)
Quantified Risk Assessment		**20**	5	5	5	5	0	0	0
Stakeholder Engagement		**120**	40	20	20	15	10	10	5
On-site appliance testing	Vehicles and kit	**30**	30	0	0	0	0	0	0
	Conducting tests	**205**	40	30	30	30	30	25	20
	Purchase of gas	**40**	10	5	5	5	5	5	5
Procurement and installation of replacement appliances		**600**	60	90	90	90	90	90	90
Procurement and installation of gas chromatograph		**450**	180	135	135	0	0	0	0
	Total	**£1,465**	**£365**	**£285**	**£285**	**£145**	**£135**	**£130**	**£120**

Appendix 10 – Second Responses to Ofgem questions from initial Change Request Submission [06.08.2014]

1. **In your change request, you say that "'Agreement in principle' is to be defined as a pre-agreed process whereby HSE provide terms with which SGN are to comply in order to secure the exemption". Have HSE provided these terms to you? Will these terms be specific to your case? For example, have HSE said how many appliances you will have to test to provide a sound evidence base for your exemption? What is driving the need to complete the entirety of stage 2 before seeking an exemption?**

We have carried out extensive engagement with relevant stakeholders in the fields of gas quality, gas appliances and Carbon Monoxide. A list of these is appended. This engagement has and continues to inform what evidence we will provide and in what format. We have also completed the review of prior work as part of this project, engaging with all the previous participants in the GASQUAL study.

In this engagement, both prior to the bid submission and since, it is clear that there has not been enough empirical data on ageing appliance performance to allow a change to the gas composition. This is a key aspect of this project, to gather statistically representative appliance and socio economic data through a series of appliance testing, both in the laboratory and in the field to inform a Quantified Risk Assessment that will be the evidence base to support the exemption for Oban, but also a potential amendment to GSMR.

In order to grant exemption from GS(M)R, the HSE will review to evidence bank provided. The strength of the evidence base, including the quality of engagement with industry experts, will increase the likelihood and speed with which an exemption is granted.

We may be able to apply for an exemption for Oban before the end of the testing process, assuming that we have established a sufficient evidence base for Oban. However, in order to support any decision to scale up to GB we require as strong an evidence base as possible, and the burden of proof higher.

There are precedents of previous exemptions. The Partington exemption[5], for example, was granted based entirely on theoretical evidence, whereas our evidence base will be in the form of practical testing on the actual appliances impacted in our trial.

Our work completed to date provides us with a high level of confidence that we will meet the criteria to grant the exemption. Our initial survey has a low replacement rate[6] and our laboratory testing has been positive with no appliances to date failing at the WI level we expect to use. As this means no increased risk to health and safety, we will meet the criteria

[5] Certificate of Exemption from GS(M)R 1996 – Feeder 4 between Partington LNG Storage Site and Warburton and Partington AGIs – 11/01/2001.
[6] 2 replacements from 169 appliances surveyed.

should this trend continue as expected. By carrying out a property to property testing process, we are significantly reducing any pre-existing risks within appliances.

The statistically representative appliance testing data is essential information that informs QRA both for Oban and for consideration for GB rollout.
In addition to our continued communication with HSE, our stakeholder engagement has been far-reaching. We have shared our work to date and progress with gas quality experts at dissemination events and at industry panels. This has included engagement with:

- Heating & Hot Water Industry Council (HHIC)
- Downstream Gas (Gas Consultancy Experts)
- European Commission Gas Quality GSE/4 Workshop[7]
- Department of Energy and Climate Change (DECC)
- Industrial and Commercial Energy Association (ICOM)
- CEN Working Group
- Energy Networks Association
- Worcester Bosch
- British Gas
- National Grid

We have also set up an internal Project Steering Group with significant stakeholders across SGN, and a Technical Stakeholder Group which is attended by industry experts and appliance manufacturers:

- DECC
- Department of Business, Innovation & Skills
- HHIC
- Dave Lander Consulting
- Kiwa Gastec
- DNV-GL

2. **How explicit have HSE been in requiring evidence from stage 2? Have HSE said that the exemption would not be granted based on stage 1 evidence alone? If you conducted the Quantified Risk Assessment, would this along with evidence from Stage 1 be enough for HSE to grant the exemption?**

HSE are duty bound to assess every exemption request and make a judgement based on the evidence presented. This means that we would be able to submit a case based on stage 1 evidence alone. However, from our discussions with HSE, SGN understand that this evidence would be unlikely to be sufficient to grant an exemption. Notwithstanding that we would not be able to make a case for rollout to GB without carrying out the remainder of the project and gathering the evidence.

[7] A full list of delegates can be found at http://ec.europa.eu/energy/gas_electricity/gas/gas_quality_harmonisation_en.htm

We are committed to ensuring this project provides information that can inform a potential change to GSMR, and as securing this exemption is critical to that success, we want to make the submission to HSE with a greater evidence base to increase the likelihood of the exemption being granted.

3. **HSE guidance suggests that the exemption assessment process could take between 3-6 months, have HSE confirmed they could progress your exemption quicker?**

Yes. HSE have confirmed that providing we set up regular interface meetings leading up to the exemption submission, and if they get early sight of the request before it is formally submitted, the process can be expedited. We have arranged monthly meetings with HSE in lieu of this request to do everything we can to support the process.

Appendix 11 – Updated SDRC Submission Dates

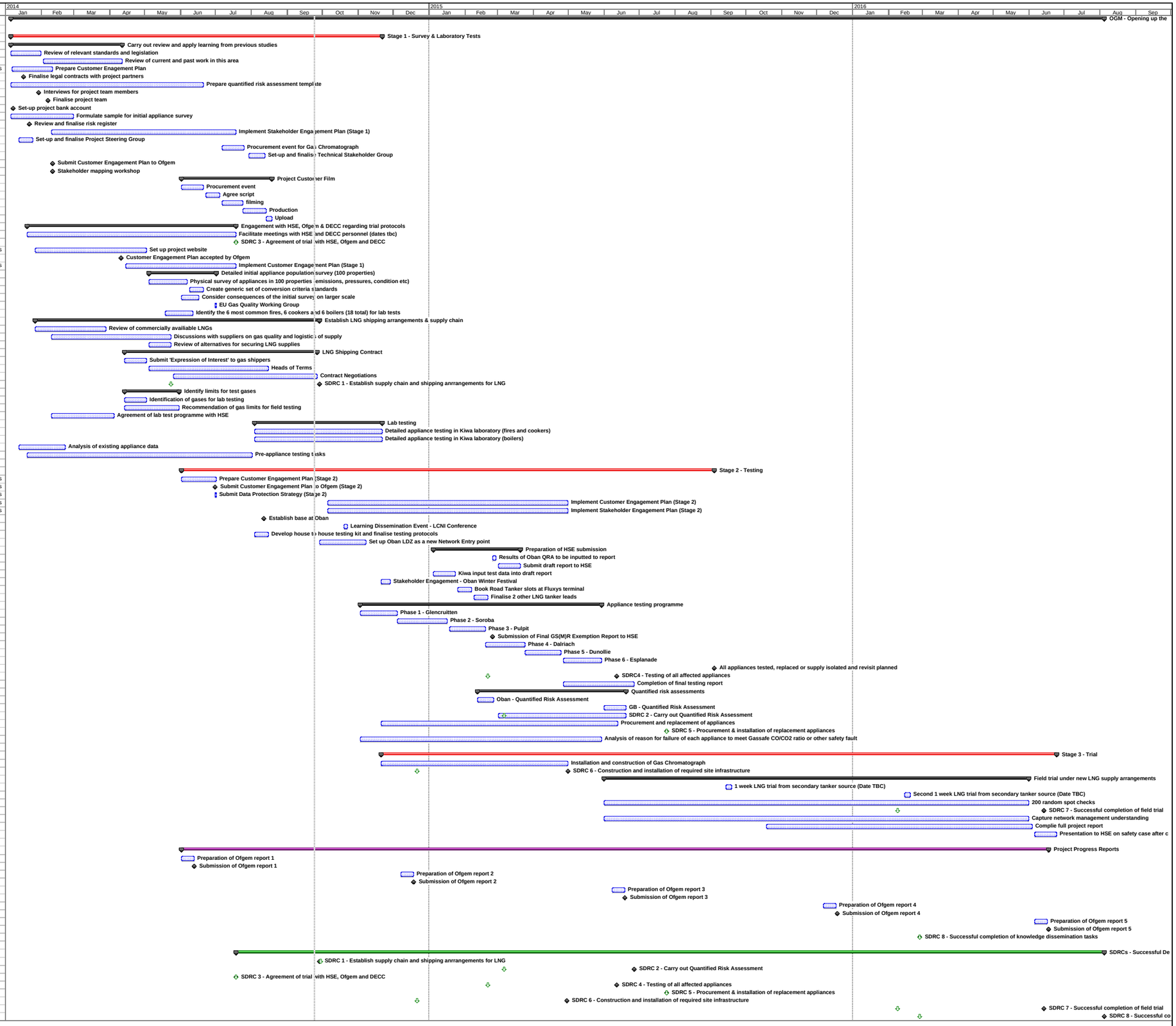
Report	Report Title	Submission Date
SDRC1	Establish Supply Chain and Shipping Arrangements for LNG (v2)	29/09/2014
SDRC2	Carry out Quantified Risk Assessment	26/06/2015
SDRC3	Agreement of Trial with DECC, HSE and Ofgem	18/07/2014
SDRC4	Testing of all affected appliances	12/06/2015
SDRC5	Procurement and installation of replacement appliances	24/07/2015
SDRC6	Construction and installation of required site infrastructure	30/04/2015
SDRC7	Successful completion of field trial	14/06/2016
SDRC8	Successful completion of knowledge dissemination task	05/08/2016

The aforementioned delay to the Project Plan has consequently affected the delivery dates for the SDRCs. The revised SDRC dates are contained in the table above.

Appendix 12 – Updated Project Plan

This document is submitted overleaf.

ID	Task Name	Duration	Start	Finish	Resource Names
1	**OGM - Opening up the Gas Market**	**678 days?**	**Mon 06/01/14**	**Fri 05/08/16**	
2					
3	**Stage 1 - Survey & Laboratory Tests**	**231 days?**	**Mon 06/01/14**	**Fri 21/11/14**	
4	**Carry out review and apply learning from previous studies**	71 days?	Mon 06/01/14	Fri 11/04/14	DLC
5	Review of relevant standards and legislation	20 days?	Mon 06/01/14	Fri 31/01/14	DLC
6	Review of current and past work in this area	51 days?	Mon 03/02/14	Fri 11/04/14	DLC
7	Prepare Customer Enagement Plan	26 days?	Tue 07/01/14	Mon 10/02/14	SGN Comms
8	Finalise legal contracts with project partners	0 days	Fri 17/01/14	Fri 17/01/14	SGN
9	Prepare quantified risk assessment template	121 days?	Mon 06/01/14	Fri 20/06/14	GL
10	Interviews for project team members	0 days	Thu 30/01/14	Thu 30/01/14	SGN
11	Finalise project team	0 days	Fri 07/02/14	Fri 07/02/14	SGN
12	Set-up project bank account	0 days	Wed 08/01/14	Wed 08/01/14	SGN
13	Formulate sample for initial appliance survey	41 days?	Mon 06/01/14	Fri 28/02/14	All
14	Review and finalise risk register	0 days	Wed 22/01/14	Wed 22/01/14	All
15	Implement Stakeholder Engagement Plan (Stage 1)	115 days?	Mon 10/02/14	Fri 18/07/14	SGN
16	Set-up and finalise Project Steering Group	10 days?	Mon 13/01/14	Fri 24/01/14	SGN & DLC
17	Procurement event for Gas Chromatograph	15 days?	Mon 07/07/14	Fri 25/07/14	SGN
18	Set-up and finalise Technical Stakeholder Group	10 days?	Wed 30/07/14	Tue 12/08/14	SGN
19	Submit Customer Engagement Plan to Ofgem	0 days	Mon 10/02/14	Mon 10/02/14	SGN
20	Stakeholder mapping workshop	0 days	Mon 10/02/14	Mon 10/02/14	SGN
21	**Project Customer Film**	**56 days?**	**Mon 02/06/14**	**Mon 18/08/14**	
22	Procurement event	15 days?	Mon 02/06/14	Fri 20/06/14	
23	Agree script	10 days?	Mon 23/06/14	Fri 04/07/14	
24	filming	14 days	Mon 07/07/14	Thu 24/07/14	
25	Production	14 days	Fri 25/07/14	Wed 13/08/14	
26	Upload	3 days	Thu 14/08/14	Mon 18/08/14	
27	**Engagement with HSE, Ofgem & DECC regarding trial protocols**	131 days?	Mon 20/01/14	Fri 18/07/14	DLC
28	Facilitate meetings with HSE and DECC personnel (dates tbc)	131 days?	Mon 20/01/14	Fri 18/07/14	DLC
29	SDRC 3 - Agreement of trial with HSE, Ofgem and DECC	0 days	Fri 18/07/14	Fri 18/07/14	DLC
30	Set up project website	71 days?	Mon 27/01/14	Fri 02/05/14	SGN Comms
31	Customer Engagement Plan accepted by Ofgem	0 days	Fri 11/04/14	Fri 11/04/14	Ofgem
32	Implement Customer Engagement Plan (Stage 1)	69 days?	Tue 15/04/14	Fri 18/07/14	SGN Comms
33	**Detailed initial appliance population survey (100 properties)**	42 days?	Mon 05/05/14	Tue 01/07/14	Kiwa
34	Physical survey of appliances in 100 properties (emissions, pressures	25 days?	Mon 05/05/14	Fri 06/06/14	Kiwa
35	Create generic set of conversion criteria standards	10 days?	Mon 09/06/14	Fri 20/06/14	Kiwa
36	Consider consequences of the initial survey on larger scale	11 days?	Mon 02/06/14	Mon 16/06/14	Kiwa
37	EU Gas Quality Working Group	1 day?	Tue 01/07/14	Tue 01/07/14	SGN
38	Identify the 6 most common fires, 6 cookers and 6 boilers (18 total) fo	18 days?	Mon 19/05/14	Wed 11/06/14	Kiwa
39	**Establish LNG shipping arrangements & supply chain**	176 days?	Mon 27/01/14	Mon 29/09/14	DLC
40	Review of commercially available LNGs	46 days?	Mon 27/01/14	Fri 28/03/14	DLC
41	Discussions with suppliers on gas quality and logistics of supply	75 days?	Mon 10/02/14	Fri 23/05/14	DLC
42	Review of alternatives for securing LNG supplies	15 days?	Mon 05/05/14	Fri 23/05/14	DLC
43	**LNG Shipping Contract**	**120 days?**	**Mon 14/04/14**	**Fri 26/09/14**	**SGN**
44	Submit 'Expression of Interest' to gas shippers	15 days?	Mon 14/04/14	Fri 02/05/14	SGN
45	Heads of Terms	75 days?	Mon 05/05/14	Fri 15/08/14	SGN
46	Contract Negotiations	90 days?	Mon 26/05/14	Fri 26/09/14	SGN
47	SDRC 1 - Establish supply chain and shipping anrrangements for LNG	0 days	Mon 29/09/14	Mon 29/09/14	DLC
48	Identify limits for test gases	35 days?	Mon 14/04/14	Fri 30/05/14	Kiwa
49	Identification of gases for lab testing	15 days?	Mon 14/04/14	Fri 02/05/14	DLC & Kiwa
50	Recommendation of gas limits for field testing	35 days?	Mon 14/04/14	Fri 30/05/14	DLC & Kiwa
51	Agreement of lab test programme with HSE	40 days?	Mon 10/02/14	Fri 04/04/14	Kiwa
52	**Lab testing**	**80 days?**	**Mon 04/08/14**	**Fri 21/11/14**	**Kiwa**
53	Detailed appliance testing in Kiwa laboratory (fires and cookers)	80 days?	Mon 04/08/14	Fri 21/11/14	Kiwa
54	Detailed appliance testing in Kiwa laboratory (boilers)	80 days?	Mon 04/08/14	Fri 21/11/14	Kiwa
55	Analysis of existing appliance data	31 days?	Mon 13/01/14	Fri 21/02/14	Kiwa
56	Pre-appliance testing tasks	141 days?	Mon 20/01/14	Fri 01/08/14	Kiwa
57					
58	**Stage 2 - Testing**	**331 days?**	**Mon 02/06/14**	**Fri 04/09/15**	
59	Prepare Customer Engagement Plan (Stage 2)	22 days?	Mon 02/06/14	Tue 01/07/14	SGN Comms
60	Submit Customer Engagement Plan to Ofgem (Stage 2)	1 day?	Tue 01/07/14	Tue 01/07/14	SGN Comms
61	Submit Data Protection Strategy (Stage 2)	1 day?	Tue 01/07/14	Tue 01/07/14	SGN Comms
62	Implement Customer Engagement Plan (Stage 2)	151 days?	Mon 06/10/14	Thu 30/04/15	SGN Comms
63	Implement Stakeholder Engagement Plan (Stage 2)	151 days?	Mon 06/10/14	Thu 30/04/15	SGN Comms
64	Establish base at Oban	1 day?	Tue 12/08/14	Tue 12/08/14	Kiwa
65	Learning Dissemination Event - LCNI Conference	3 days?	Mon 20/10/14	Wed 22/10/14	SGN
66	Develop house to house testing kit and finalise testing protocols	10 days?	Mon 04/08/14	Fri 15/08/14	Kiwa
67	Set up Oban LDZ as a new Network Entry point	30 days?	Mon 29/09/14	Fri 07/11/14	SGN
68	**Preparation of HSE submission**	**56 days?**	**Mon 05/01/15**	**Fri 20/03/15**	**DLC**
69	Results of Oban QRA to be inputted to report	3 days?	Wed 25/02/15	Fri 27/02/15	GL
70	Submit draft report to HSE	15 days	Mon 02/03/15	Fri 20/03/15	DLC
71	Kiwa input test data into draft report	15 days?	Mon 05/01/15	Fri 23/01/15	Kiwa
72	Stakeholder Engagement - Oban Winter Festival	6 days?	Fri 21/11/14	Fri 28/11/14	SGN
73	Book Road Tanker slots at Fluxys terminal	10 days?	Mon 26/01/15	Fri 06/02/15	SGN
74	Finalise 2 other LNG tanker leads	10 days?	Mon 09/02/15	Fri 20/02/15	SGN
75	**Appliance testing programme**	**152 days?**	**Mon 03/11/14**	**Fri 29/05/15**	**Kiwa**
76	Phase 1 - Glencruitten	24 days?	Mon 03/11/14	Thu 04/12/14	SGN
77	Phase 2 - Soroba	32 days?	Fri 05/12/14	Fri 16/01/15	SGN
78	Phase 3 - Pulpit	24 days?	Mon 19/01/15	Wed 18/02/15	SGN
79	Submission of Final GS(M)R Exemption Report to HSE	3 days?	Wed 25/02/15	Fri 27/02/15	SGN & DLC
80	Phase 4 - Dalriach	24 days?	Thu 19/02/15	Tue 24/03/15	SGN
81	Phase 5 - Dunollie	23 days?	Wed 25/03/15	Fri 24/04/15	SGN
82	Phase 6 - Esplanade	25 days?	Mon 27/04/15	Fri 29/05/15	SGN
83	All appliances tested, replaced or supply isolated and revisit planned	0 days	Fri 04/09/15	Fri 04/09/15	Kiwa
84	SDRC4 - Testing of all affected appliances	0 days	Fri 12/06/15	Fri 12/06/15	Kiwa
85	Completion of final testing report	45 days?	Mon 27/04/15	Fri 26/06/15	Kiwa
86	**Quantified risk assessments**	**92 days?**	**Thu 12/02/15**	**Fri 19/06/15**	**GL**
87	Oban - Quantified Risk Assessment	10 days?	Thu 12/02/15	Wed 25/02/15	GL
88	GB - Quantified Risk Assessment	15 days?	Mon 01/06/15	Fri 19/06/15	GL
89	SDRC 2 - Carry out Quantified Risk Assessment	80 days	Mon 02/03/15	Fri 19/06/15	GL
90	Procurement and replacement of appliances	148 days?	Fri 21/11/14	Fri 12/06/15	SGN
91	SDRC 5 - Procurement & installation of replacement appliances	0 days	Fri 24/07/15	Fri 24/07/15	SGN
92	Analysis of reason for failure of each appliance to meet Gassafe CO/CO2	152 days?	Mon 03/11/14	Fri 29/05/15	Kiwa
93					
94	**Stage 3 - Trial**	**419 days?**	**Fri 21/11/14**	**Fri 24/06/16**	
95	Installation and construction of Gas Chromatograph	117 days?	Fri 21/11/14	Thu 30/04/15	SGN
96	SDRC 6 - Construction and installation of required site infrastructure	0 days	Thu 30/04/15	Thu 30/04/15	SGN
97	**Field trial under new LNG supply arrangements**	**263 days?**	**Mon 01/06/15**	**Tue 31/05/16**	**SGN**
98	1 week LNG trial from secondary tanker source (Date TBC)	5 days?	Mon 14/09/15	Fri 18/09/15	SGN
99	Second 1 week LNG trial from secondary tanker source (Date TBC)	5 days?	Mon 15/02/16	Fri 19/02/16	SGN
100	200 random spot checks	263 days?	Mon 01/06/15	Tue 31/05/16	SGN & Kiwa
101	SDRC 7 - Successful completion of field trial	0 days	Tue 14/06/16	Tue 14/06/16	SGN
102	Capture network management understanding	263 days?	Mon 01/06/15	Tue 31/05/16	SGN
103	Complie full project report	166 days?	Mon 19/10/15	Fri 03/06/16	All
104	Presentation to HSE on safety case after change over to EASEE Gas (date	15 days?	Mon 06/06/16	Fri 24/06/16	Kiwa
105					
106	**Project Progress Reports**	**538 days**	**Mon 02/06/14**	**Fri 17/06/16**	
107	Preparation of Ofgem report 1	9 days	Mon 02/06/14	Thu 12/06/14	SGN
108	Submission of Ofgem report 1	0 days	Fri 13/06/14	Fri 13/06/14	SGN
109	Preparation of Ofgem report 2	9 days	Mon 08/12/14	Thu 18/12/14	SGN
110	Submission of Ofgem report 2	0 days	Fri 19/12/14	Fri 19/12/14	SGN
111	Preparation of Ofgem report 3	9 days	Mon 08/06/15	Thu 18/06/15	SGN
112	Submission of Ofgem report 3	0 days	Thu 18/06/15	Thu 18/06/15	SGN
113	Preparation of Ofgem report 4	9 days	Mon 07/12/15	Thu 17/12/15	SGN
114	Submission of Ofgem report 4	0 days	Fri 18/12/15	Fri 18/12/15	SGN
115	Preparation of Ofgem report 5	9 days	Mon 06/06/16	Thu 16/06/16	SGN
116	Submission of Ofgem report 5	0 days	Fri 17/06/16	Fri 17/06/16	SGN
117	SDRC 8 - Successful completion of knowledge dissemination tasks	0 days	Sat 27/02/16	Sat 27/02/16	SGN
118					
119	**SDRCs - Successful Delivery Reward Criteria**	**537 days**	**Fri 18/07/14**	**Fri 05/08/16**	
120	SDRC 1 - Establish supply chain and shipping anrrangements for LNG	0 days	Mon 29/09/14	Mon 29/09/14	DLC
121	SDRC 2 - Carry out Quantified Risk Assessment	0 days	Fri 26/06/15	Fri 26/06/15	GL
122	SDRC 3 - Agreement of trial with HSE, Ofgem and DECC	0 days	Fri 18/07/14	Fri 18/07/14	DLC
123	SDRC 4 - Testing of all affected appliances	0 days	Fri 12/06/15	Fri 12/06/15	Kiwa
124	SDRC 5 - Procurement & installation of replacement appliances	0 days	Fri 24/07/15	Fri 24/07/15	SGN
125	SDRC 6 - Construction and installation of required site infrastructure	0 days	Thu 30/04/15	Thu 30/04/15	SGN
126	SDRC 7 - Successful completion of field trial	0 days	Tue 14/06/16	Tue 14/06/16	SGN
127	SDRC 8 - Successful completion of knowledge dissemination tasks	0 days	Fri 05/08/16	Fri 05/08/16	SGN



Project: OutGM Project Plan (Sep 201
Date: Wed 24/09/14

Task | Progress | Milestone | Summary | Rolled Up Task | Rolled Up Milestone | Rolled Up Progress | Split | External Tasks | Project Summary | Group By Summary | Deadline

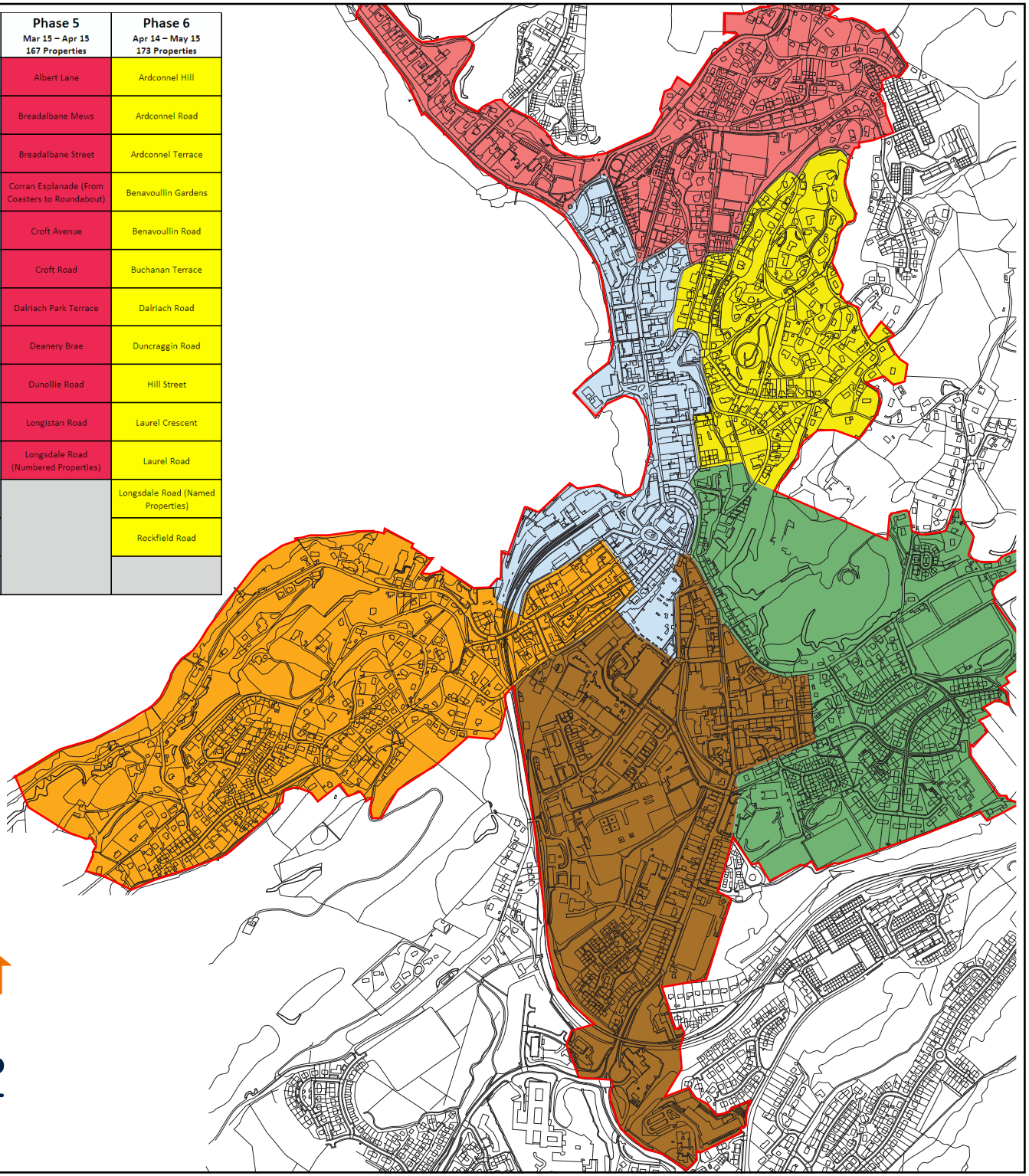
Appendix 13 – Updated Project Testing Map

This document is submitted overleaf.

TESTING PHASING

Oban

Phase 1 Nov 14 – Dec 14 235 Properties	Phase 2 Dec 14 – Jan 14 152 Properties	Phase 3 Jan 14 – Feb 14 207 Properties	Phase 4 Feb 15 – Mar 15 190 Properties	Phase 5 Mar 15 – Apr 15 167 Properties	Phase 6 Apr 14 – May 15 173 Properties
Angus Terrace	Combie St (Evens)	Albany Street (Evens)	Airds Crescent	Albert Lane	Ardconnel Hill
Combie Street (Odds)	Lochavullin Drive	Crannaig-a-Mhinister	Albany Street (Odds)	Breadalbane Mews	Ardconnel Road
Glencruitten Court	Miller Road (Odds)	Drimvargie Road	Argyll Square	Breadalbane Street	Ardconnel Terrace
Glencruitten Road	Quarry Road	Gallanach Road	Argyll Street	Corran Esplanade (From Coasters to Roundabout)	Benavoullin Gardens
Glencruitten Drive	Sinclair Drive	Glenmore Road	Corran Esplanade (From Columba Hotel to Coasters)	Croft Avenue	Benavoullin Road
Knipoch Place	Soroba Road	Glenshellach Road	Craigard Road	Croft Road	Buchanan Terrace
Miller Road (Evens)		Glenshellach Terrace	George Street	Dalriach Park Terrace	Dalriach Road
Mossfield Avenue		Pulpit Hill	High Street	Deanery Brae	Duncraggin Road
Mossfield Drive		Shore Street	Nursery Lane	Dunollie Road	Hill Street
Rockfield Road		Villa Road	Stafford Street	Longistan Road	Laurel Crescent
Stevenson Street			Station Road	Longsdale Road (Numbered Properties)	Laurel Road
			Stevenson Street		Longsdale Road (Named Properties)
			Tweeddale Street		Rockfield Road
			William Street		



SGN | OPENING UP THE GAS MARKET