



Making a positive difference  
for energy consumers

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## **Greenhouse Gas Investigation Mechanism decision to direct an award pursuant to Special Conditions 3D and 8J of National Grid Gas' Gas Transporter Licence**

Under Special Condition (SC) 3D and 8J of the Gas Transporter Licence, National Grid Gas plc (NGG) is required to submit a final statement explaining the outcomes of the Greenhouse Gas Investigation Mechanism (GHGIM) project to detect fugitive gas emissions. We<sup>1</sup> received this statement on 22 December 2017 that requested an award of £207,815 to cover the project's costs.

In this letter, we set out our decision to direct the recovery of £207,815.

### **Background**

We introduced the GHGIM in the Gas System Operator (SO) Incentive Review 2015-18. This was a new measure, additional to other incentives targeting Greenhouse Gas (GHG) emissions to incentivise NGG as the SO to undertake Greenhouse Gas (GHG) investigation activities relating to venting<sup>2</sup> on the National Transmission System (NTS). Under this incentive, we can award NGG up to £500,000 for undertaking GHG investigation activities that ensure long-term value for consumers.

SC 8J sets NGG's obligations in respect of the GHGIM activities.

Firstly, NGG is required to submit a business plan to us for approval setting out details of activities it will undertake in relation to the understanding, measurement and mitigation of venting. In particular:

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<sup>1</sup> The terms "the Authority", "Ofgem", "we" and "us" are used interchangeably in this letter. The Authority is the Gas and Electricity Markets Authority. Ofgem is the office of the Authority.

<sup>2</sup> Where venting is the release of natural gas from a Relevant Compressor (as defined in Section F, paragraph 3D.39 of National Grid Gas Plc (NTS) Gas Transporter Licence Special Conditions) as a result of starting a compressor, purging a compressor, depressurising a compressor, or the leakage of gas through a seal around the shaft of a compressor.

- increase the understanding of venting (including the causes and driving factors of venting) which are within and outside of the Licensee's control
- identify ways to increase transparency through accurate measurement of venting
- identify ways to deliver long-term carbon benefits through cost effective mitigation of venting within NGG's control.

NGG submitted the business plan to us on 26 July 2016 that we subsequently approved on 27 September 2016.<sup>3</sup>

Secondly, SC 3D<sup>4</sup> sets obligations on NGG to submit a final statement to us before 31 December 2017 setting out how it has fulfilled the obligations pursuant to SC 8J through completing the activities described in the approved business plan and how the GHG investigation activities will ensure long-term value for money for consumers. NGG submitted this report on 22 December 2017. SC 3D also obliges us to assess the extent long-term value will be delivered for consumers and make a decision on how much to award NGG for the GHGIM activities by 31 March 2017.

### **The GHGIM project – NGG's business plan**

The business plan described a project to monitor and control fugitive emissions from above ground NTS installations. This would be an improvement to the current monitoring system that uses a rolling four yearly program of emission surveys that only provide a 'snap-shot' of emissions and are limited to ground level accessible parts of the network.

The project's planned deliverables were:

- increased understanding of the source of methane emissions from the test installation(s) and quantification of those emissions
- validation of the operational use of a near real-time methane monitoring system on the NTS
- validation of the portability of the equipment to ensure it can be utilised across the NTS
- production of quantified methane emission maps for the test installation(s)
- production of a costed remediation report that can be used to inform investment strategy.

This emission monitoring system had a number of novel features. Methane sensors would be located around an above ground NTS installation. In combination with weather data and the application of a dispersion model, these would process continuous methane sampling to produce daily emission maps. This would enable the production of a near real-time methane monitoring system for vent and leak detection. The emission monitoring system would be portable between NTS sites. The National Physical Laboratory (NPL) were project partners and provided measurement and modelling expertise.

NGG considered the emission monitoring system could create a number of benefits related to the accurate identification and mitigation of fugitive emissions from compressor stations. The

<sup>3</sup> A copy of the decision letter can be found on our website: <https://www.ofgem.gov.uk/publications-and-updates/decision-approve-national-grid-gas-plc-s-greenhouse-gas-emissions-investigation-mechanism-business-plan>

<sup>4</sup> SC 3D.46- 3D.48

business plan estimated around 109 tonnes of controllable methane emissions per annum that could be reduced across 23 compressor sites if environmental performance improved.

NGG estimated total project costs of £197,679; this would allow 11 months of testing.

### **The GHGIM project – final statement outcomes**

The final statement submitted on 22 December 2017 confirmed NGG developed an emissions monitoring system pursuant to the business plan and in partnership with the NPL. We have uploaded a copy of the final statement to our website.<sup>5</sup>

NGG tested the emissions monitoring system at two NTS sites we have called ‘Test Site 1’ and ‘Test Site 2’ for confidentiality and safety reasons. During testing, positive results were achieved which led to an 82% reduction in total fugitive emissions from NGG’s assets at Test Site 1. Due to the limited operating period and topography challenges, significant reductions in fugitive emissions were not achieved at Test Site 2. However, the emissions monitoring system did locate the source of fugitive emissions at Test Site 2.

A cost benefit analysis of controlling fugitive emissions from NTS compressor stations based on the results of operating the emissions monitoring system was also included. This analysis estimates that around 265 tonnes of fugitive emissions could be avoided per year across all NTS compressor sites; this is an increase from the estimate of 109 tonnes per year contained in the business plan.

NGG estimate avoiding 265 tonnes of fugitive methane emissions could provide a benefit to consumers of £54,251 per year based on the wholesale value of gas.<sup>6</sup> The value of the avoided emissions also equates to a non-traded carbon benefit to consumers of around £424,000 per year.<sup>7</sup> NGG state these savings assume the maximum possible fugitive emission reductions and would be difficult to achieve in real world operating conditions.

We note that the total costs of delivering the project were around £10,000 higher than estimated in the business plan. This was largely due to materials and equipment being more expensive to purchase. We consider the increase in costs is justified and is not a material difference.

#### *Future work*

The final statement proposes further development of the emissions monitoring system. It notes that the equipment remains in place at Test Site 2 and requests that NGG can access the balance of the £500,000 maximum award set out in SC 3D to undertake further testing.

We discussed this request with NGG on 5 March 2018. We cannot award any further money pursuant to SC 3D and 8J. The Special Conditions make it clear that we can only award up to £500,000 for activities related to the business plan approved in 2016. This work has now

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<sup>5</sup> This is a redacted copy with information such as site names removed for safety and confidentiality reasons. A copy can be found here: <https://www.ofgem.gov.uk/publications-and-updates/decision-greenhouse-gas-investigation-mechanism-award>

<sup>6</sup> Based on a system average price of 38.7 pence

<sup>7</sup> The full calculations can be found on section 4.4 of the final statement

concluded. Any work additional to the activities in the business plan would require a new source of funding. We will continue discussions with NGG about how it considers it can access additional funding. For the avoidance of doubt, we will assess any request for additional funding on its merits and the offer of further dialogue is not an indication we would agree to such a request.

## **Our decision**

We are satisfied the final statement demonstrates long-term value for money for consumers and meets the requirements of SC 3D and 8J of the Gas Transporter Licence, the business plan and the Guidance on Submissions<sup>8</sup>. Therefore we have decided to direct the reward of £207,815 from 1 April 2018 pursuant to SC 3D. We explain our reasons for this decision against the deliverables agreed to in the business plan which was submitted pursuant to the licence objectives set out in SC 8J.

### *Increased understanding of the source of methane emissions from the test installation(s) and the quantification of those emissions*

We are satisfied the emissions monitoring system has increased the understanding of methane emissions. In particular, the system allows NGG to locate emissions from above ground assets (such as vent stacks) that existing mechanisms cannot identify and enables NGG to quantify those emissions.

The final statement contains evidence that the emissions monitoring system identified the volume and location of emissions at Test Site 1 with a high degree of accuracy. This allowed NGG to reduce the volume of fugitive emissions at Test Site 1.

The emissions monitoring system did not perform as well at Test Site 2. It did locate emissions from above ground installations within the boundary of Test Site 2 but these were less accurate than Test Site 1 due to topography challenges and limited testing time. However, we consider the time spent at Test Site 2 increased NGG's understanding of the source of methane emissions and identified useful information on the topographical challenges that could be encountered at other sites.

We note that around three months less time was spent testing the emissions monitoring system than set out in the business plan. This was due to delays procuring equipment and site outage issues at Test Site 2. We do not consider these issues materially affected the outcomes of the project.

### *Validation of the operational use of a near real-time methane monitoring system on the NTS*

We are content NGG demonstrated the operational use of the emissions monitoring system on the NTS. In particular, the emissions monitoring system identified successfully the location and volume of a number of fugitive emission sources at Test Site 1. The results at Test Site 2 were

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<sup>8</sup> The Greenhouse Gas Investigation Mechanism: Guidance on Submissions, September 2015 can be found on our website: <https://www.ofgem.gov.uk/publications-and-updates/greenhouse-gas-investigation-mechanism-guidance-submissions-0>.

less accurate due to the limited testing period and topography challenges described in the final statement but still identified possible emission locations

*Validation of the portability of the equipment to ensure it can be utilised across the NTS for both installation and operation monitoring and assessment*

We are satisfied that NGG has sufficiently tested the portability of the equipment by moving the emissions monitoring system between Test Sites 1 and 2. We note that it was not possible to transport all the equipment used in the emissions monitoring system including sample pipe material. This meant NGG purchased and installed additional sample pipe material at Test Site 2. We are satisfied this approach was reasonable and the best cost option.

*Production of quantified methane emission maps for the test installation(s)*

The Technical Annex submitted alongside the final statement contains emission maps. The Annex explains the process to create the maps and shows the location of fugitive emissions.

*Production of a costed remediation report that can be used to inform investment strategy*

The final statement contains an estimate of the wholesale and non-traded carbon cost benefits achievable by better controlling fugitive emissions. While these figures represent a best-case scenario, we consider they demonstrate consumers could benefit from better control of fugitive gas emissions from NTS assets. The methodology contained in the final statement could also be used by NGG to inform future investments in assets which have the potential to emit significant volumes of natural gas.

## **Next Steps**

We have directed NGG to recover £207,815 for activities related to the Greenhouse Gas Investigation Mechanism.

This letter constitutes notice for the reasons for our decision pursuant to section 38A of the Gas Act 1986.

Please contact James Thomson on 0141 331 6012 or [james.thomson@ofgem.gov.uk](mailto:james.thomson@ofgem.gov.uk) if you have any questions about this decision.

Yours sincerely

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