

Southern Gas Networks Plc  
St Lawrence House,  
Station Approach  
Horley, RH6 9HJ

Direct Dial: 020 7901 7295

Email: [Marzia.Zafar@ofgem.gov.uk](mailto:Marzia.Zafar@ofgem.gov.uk)

Date: 4 April 2023

Dear Southern Gas Networks Plc,

**SIF Project Direction ref: SGN/Carnot Gas Plant/SIFADMED/Rd2 Discovery**

Southern Gas Networks Plc submitted Carnot Gas Plant (the Project) to be considered for SIF Funding in the round 2 Discovery Phase of the Strategic Innovation Fund (SIF). In our<sup>1</sup> SIF funding decision issued on 4 April 2023, we selected the Project<sup>2</sup> for conditional funding and as a result we are now issuing this SIF Project Direction to implement that decision.

Southern Gas Networks Plc must comply with the conditions contained in this SIF Project Direction as a condition of the Project receiving funding through the SIF. These conditions can be found in the Schedule to this document.

**Progression through SIF Phases and rounds**

The SIF consists of a multi-phase approach for Projects in order to mitigate the risk associated with innovations. The Discovery Phase focuses on feasibility, the Alpha Phase on experimental development, and the Beta Phase on deployment and demonstration. This Project Direction is for the round 2 Discovery Phase of the SIF.

**Role of UK Research & Innovation (UKRI)**

As per Chapter 1 of the SIF Governance Document<sup>3</sup> the role of UKRI is to deliver the SIF in line with the SIF Governance Document - administering the funding programme, monitoring the delivery of Projects, collating data from Projects on benefits, making recommendations to Ofgem on operational matters, supporting third-party innovators

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<sup>1</sup> The terms 'we', 'us', 'our' refer to the Gas and Electricity Markets Authority. Ofgem is the office of the Authority.

<sup>2</sup> Unless otherwise specified, defined terms in this SIF Project Direction have the meaning given to them in Appendix 1 of the SIF Governance Document.

<sup>3</sup> <https://www.ofgem.gov.uk/sites/default/files/2023-02/SIF%20Governance%20Document%20v2.1%20final%20clean.pdf>

and, where possible, successful Projects to become 'business as usual' activities. To support the success of the Projects and the SIF programme, we expect that the Funding Party and Project Partners collaborate with Ofgem and UKRI.

### **SIF Project Direction**

Paragraph 5.14 of the SIF Governance Document states that a SIF Project Direction will:

- Set out the Project-specific conditions, to which the Funding Party is committing in accepting SIF Funding.<sup>4</sup>
- Require the Funding Party to undertake the Project in accordance with the commitments made in the Application. Where appropriate, the SIF Project Direction may therefore include extracts from the Application or refer to specific sections of the SIF Application.<sup>5</sup>
- Where applicable, set out conditions (such as Project stage gates) linked to milestones and deliverables, which Projects must meet.<sup>6</sup>
- Set out the SIF Approved Amount for the Project, that will form part of the calculation contained in the SIF Funding Direction issued by the Authority under chapter 7 of the SIF Governance Document.<sup>7</sup>
- Set out the Project budget that the Funding Party must report against and how variations in the Project budget will be reported.<sup>8</sup>
- Where applicable, set out special information sharing requirements applicable to the Project.<sup>9</sup>
- Set out the mechanism for the Funding Party receiving the SIF Approved Amount as set out in the SIF Funding Direction.<sup>10</sup>

All SIF Project Direction requirements are detailed in the Schedule to this SIF Project Direction.

### **Decision**

Provided the Funding Party complies with the SIF Governance Document and with the Schedule to this SIF Project Direction, the Project is deemed to be an Eligible SIF Project<sup>11</sup>.

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<sup>4</sup> 'Project specific conditions' detailed under Point 3 – 'Condition President' of this SIF Project Direction.

<sup>5</sup> 'Project specific conditions' detailed under Point 3 – 'Condition President' of this SIF Project Direction.

<sup>6</sup> 'Project specific conditions' detailed under Point 3 – 'Condition President' of this SIF Project Direction.

<sup>7</sup> 'SIF Funding Amount' detailed under Point 5 – 'Condition President' of this SIF Project Direction.

<sup>8</sup> 'Annex 1 – Project Budget.

<sup>9</sup> 'Project specific conditions' detailed under Point 3 – 'Condition President' of this SIF Project Direction.

<sup>10</sup> 'SIF Funding Amount' detailed under Point 5 – 'Condition President' of this SIF Project Direction.

<sup>11</sup> The meaning 'Eligible SIF Project' is described in Chapter 2 of the SIF Governance Document.

This SIF Project Direction constitutes notice pursuant to section 38A (Reasons for decisions) of the Gas Act 1986.

**Marzia Zafar**

**Deputy Director of Strategy & Decarbonisation**

**For and on behalf of the Authority**

## Schedule to SIF Project Direction

### 1. PROJECT DETAILS

SIF Project Direction reference: SGN/Carnot Gas Plant/SIFADMED/Rd2\_Discovery

Application number: 10061608

Project title: Carnot Gas Plant

Innovation Challenge/Project Phase: Accelerating decarbonisation of major energy demands / Discovery Phase round 2

Project start date: 3 April, 2023

Project end date: 30 June, 2023

SIF Approved Amount for SIF Funding: £93,952

Total Compulsory Contribution<sup>12</sup>: £10,841

### 2. PREAMBLE

This SIF Project Direction is issued by the Gas and Electricity Markets Authority (the "Authority") to Southern Gas Networks Plc (the "Funding Party") pursuant to the SIF Governance Document issued pursuant to Special Condition 9.13 of the Gas Transporter Licence (the "Licence"). It sets out the conditions to be complied with in relation to Carnot Gas Plant (the "Project") as a condition of it being funded under the SIF Funding Mechanism.<sup>13</sup>

Unless otherwise specified, defined terms in this SIF Project Direction have the meaning given to them in the Licence or Appendix 1 of the SIF Governance Document.

References to specific sections of the Funding Party's Application in this SIF Project Direction are, for ease of reference, made by referring to the section number in the Funding Party's Application.

### 3. PROJECT SPECIFIC CONDITIONS

In accepting funding for the Project, the Funding Party is subject to the following Project-specific condition(s):

#### **Condition 1**

The Funding Party must not spend any SIF Funding until contracts are signed with the Project Partners named in Table 1 for the purpose of completing the Project.

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<sup>12</sup> The Compulsory Contribution is defined in the SIF Governance Document.

<sup>13</sup> The SIF Funding Return Mechanism is defined in the SIF Governance Document.

**Table 1. Project Partners**

IMPERIAL COLLEGE LONDON
UNIVERSITY OF BIRMINGHAM
VITAL ENERGI SOLUTIONS LIMITED
SGN COMMERCIAL SERVICES LIMITED
GLASGOW CITY COUNCIL
WEST DUNBARTONSHIRE COUNCIL

### **Condition 2**

The Funding Party must report on the financial contributions made to the Project as set out in its Application. Any financial contributions made over and above that stated in its Application should also be reported and included within the Project costs template.

### **Condition 3**

The Funding Party must participate in all meetings related to the Project that they are invited to by Ofgem, UKRI and DESNZ (formerly BEIS) during the Project Phase.

### **Condition 4**

Prior to the end of the Discovery Phase, the Funding Party must engage with the SIF Projects 'Full Circle', 'Heatropolis' and 'Net Zero Community Energy Hubs' to examine areas of commonality and potential overlap, and how the two Projects could inform each other on their findings and potentially work together in future Project Phases. Innovate UK can facilitate an introduction if necessary.

## **4. COMPLIANCE**

The Funding Party must comply with Special Condition 9.13 of the Gas Transporter Licence (the "Licence"), the SIF Governance Document and with this SIF Project Direction.

## **5. SIF APPROVED AMOUNT**

The SIF Approved amount of £93,952 (as detailed under Section 1: Project details of this Project Direction) will be recovered by National Gas Transmission from GB customers and transferred to the Funding Party. The Funding Party is responsible for notifying National Gas Transmission of the bank account details to which transfers must be made, in addition to completing Annex 2 of this SIF Project Direction. If a Funding Party is required to return funding to National Gas Transmission, the reverse applies.

The Funding Party must provide bank account details to National Gas Transmission within two weeks of accepting this SIF Project Direction.

## **6. PROJECT BUDGET**

The Project Budget is set out in Annex 1 of this SIF Project Direction.

The Funding Party must report on expenditure against each line under the category total in the Project Budget and explain any projected variance against each line as part of its detailed report which will be provided, in accordance with Chapter 7 of the SIF Governance Document. The Funding Party must report variations in the Project budget as outlined in Chapter 6 of the SIF Governance Document.

## **7. PROJECT IMPLEMENTATION**

The Funding Party must undertake the Project in accordance with the commitments it has made in the Application and with the conditions of this SIF Project Direction. These include (but are not limited to) the following:

- (i) undertake the Project in accordance with its Application,
- (ii) complete the Project on or before the Project completion date as detailed under section 1 of the schedule of this SIF Project Direction, and
- (iii) disseminate the learning from the Project at least to the level described in chapter 3 of the SIF Governance Document. Dissemination of learning must be carried out whether the Project was concluded successfully or otherwise.

## **8. REPORTING**

Ofgem and UKRI may issue guidance (and amend it from time to time) about the structure and content of the Project reporting required by Chapter 6 of the SIF Governance Document. The Funding Party must follow this guidance in preparing the reports.

Each Project not intending to submit an Application to the next Project Phase must submit an end of Project Phase report to the monitoring officer. Projects which are not successful at the next Project Phase must either retrospectively complete an end of Phase report and publish it on the Smarter Networks Portal, or publish their unsuccessful Application (redacted where necessary) and close out meeting slides for this Project Phase on the Smarter Networks Portal.

## **9. MONITORING**

The Funding Party must comply with any reasonable request for information by its monitoring officer at UKRI and related deadlines. Ofgem, with the support of UKRI, will together monitor Project delivery, impacts and benefits. Throughout the term of the Project, progress is monitored by UKRI through a monitoring officer. The monitoring officer is the first point of contact for official notifications, queries and correspondence with UKRI and the Authority, unless otherwise required by this SIF Project Direction.

As detailed in Chapter 6 of the SIF Governance Document, meetings with the monitoring officer will take place at regular intervals, as advised by Ofgem or the monitoring officer during the delivery of the Project, and at the end of each Project Phase.

## **10. EVALUATION**

The Funding Party has acknowledged when it submitted its Application for this Project, that reporting information and data gathered during the Project's timescales (as detailed in Section 1 of this SIF Project Direction) will be used to evaluate Project performance. In addition, the Funding Party may be required to provide requested information outside of the Project timescales and, in particular, for the period from the Project end date to the end of the SIF Programme. Further data and reporting information may be requested (frequency and method based on requirement) outside of standard monitoring and reporting requirements as deemed necessary. Further data and information requirements must be complied with by the Funding Party and Project Partners.

## **11. DATA SHARING**

As set out in Chapter 3 of the SIF Governance Document, the Funding Party must follow Data Best Practice Guidance with regards to all data gathered or created in the course of a Project. We expect the Funding Party to document any reasons, such as commercial sensitivities, for desensitising data. As defined by, and in accordance with, Data Best Practice Guidance, Funding Parties must have a data triage process. Where multiple Project Partners are collaborating on a Project, the consortium must adopt a consistent Open Triage Process for the data related to the Project. Ofgem may require that Project information and data is also shared with other specified parties, such as parties working on complementary innovation funding programmes (subject to redaction of sensitive data).

## 12. CYBER SECURITY

It is the responsibility of the Funding Party and all Project Partners to implement and maintain appropriate security measures to protect personal data in accordance with The GDPR (General Data Protection Regulation)<sup>14</sup> and DPA (Data Protection Act) 2018<sup>15</sup>. Protection of computer systems from unauthorised access or being otherwise damaged or made inaccessible must be in place alongside effective working practices. These must be maintained in line with the Funding Party's IT Management Strategies and policies.

## 13. PROJECT MILESTONES

The Funding Party must verify in its end of Project Phase meeting with the monitoring officer whether the Project milestones have been achieved or explain why they have not been.

Project milestones are outlined below in Table 3, based upon details contained within Question 7 and Appendix Question 9 in the Funding Party's.

**Table 3. Project milestone<sup>16</sup>**

Reference	Project milestone	Deadline	Evidence	SIF Funding Request (100%) <sup>17</sup>
Milestone 1	Work package 1: Project bid submission and support	June 30, 2023	Overall work package objectives: Co-ordinate project partners and liase with Ofgem.  Key tasks: 1. Co-ordinate programme and partner deliverables 2. Liase with Ofgem and administer the claims and supporting documentation  Milestone(s):	£1.00

<sup>14</sup> [https://ec.europa.eu/info/law/law-topic/data-protection/data-protection-eu\\_en](https://ec.europa.eu/info/law/law-topic/data-protection/data-protection-eu_en)

<sup>15</sup> <https://www.legislation.gov.uk/ukpga/2018/12/contents/enacted>

<sup>16</sup> As outlined in the Application or Project Plan appendix.

<sup>17</sup> Where Project Applications were not explicit on milestone(s) as a percentage of total SIF Funding Request, milestone(s) as a percentage of total project costs were applied to the SIF Funding Request. In some circumstances where the information needed to complete this table was not available in an Application, Funding Parties were requested to provide this information separately.



			<ul style="list-style-type: none"> <li>- Milestone payments submitted: confirmation of payment application</li> <li>- Application submitted: Payment received</li> </ul>	
Milestone 2	Work package 2: Project Management	June 30, 2023	<p>Overall work package objectives: Ensure the project remains on time and on budget.</p> <p>Key tasks:</p> <ol style="list-style-type: none"> <li>1. Disseminate the partner deliverables</li> <li>2. Assemble final report for submission</li> </ol> <p>Milestone(s):</p> <ul style="list-style-type: none"> <li>- Meetings: Completion of bi-monthly meetings</li> <li>- Project Manage delivery: Project Complete</li> </ul>	£11,151.00
Milestone 3	Work package 3: Modelling	June 30, 2023	<p>Overall work package objectives: Use an example profile of a CHP feeding a heat network and model and run sensitivities to identify to optimum relative sizing of components.</p> <p>Key tasks:</p> <ol style="list-style-type: none"> <li>1. Identify representative DH scheme</li> <li>2. Collate half hourly heat and power demand data</li> <li>3. Review market pricing &amp; develop scenarios</li> <li>4. Create Baseline Plexos model</li> </ol>	£18,000.00

			<p>5. Iterative analysis to establish optimum component sizing</p> <p>6. Write up findings</p> <p>Milestone(s):</p> <ul style="list-style-type: none"> <li>- Model: Operating model covering all core scenarios.</li> <li>- Completion: Report submitted.</li> </ul>	
Milestone 4	Work package 4: Major Component Specification	June 30, 2023	<p>Overall work package objectives: Specify the key equipment to produce indicative layout and pricing information.</p> <p>Key tasks:</p> <ol style="list-style-type: none"> <li>1. Use outputs of WP3 to produce outline design</li> <li>2. Review physical sizing and associated constraints</li> <li>3. Produce indicative CAPEX</li> <li>4. Produce indicative OPEX</li> <li>5. Write up findings</li> </ol> <p>Milestone(s):</p> <ul style="list-style-type: none"> <li>- Design: Costed design produced.</li> <li>- Completion: Report submitted.</li> </ul>	£36,000.00
Milestone 5	Work package 5: Gas Use and Hydrogen Conversion	June 30, 2023	<p>Overall work package objectives: Review of gas demands and savings versus current technology and ability to convert to hydrogen.</p> <p>Key tasks:</p> <ol style="list-style-type: none"> <li>1. Review gas consumption volume and profile from WP3</li> </ol>	£9,500.00

			2. Review the CO2 savings vs equivalent gas peaking plant 3. Review conversion to hydrogen and options for importing 4. Write up findings  Milestone(s): <ul style="list-style-type: none"> <li>- Completion: Report submitted.</li> </ul>	
Milestone 6	Work package 6: Review of impact	June 30, 2023	Overall work package objectives:  Key tasks: 1. Create baseline model 0% concept deployment 2. Model 10%, 25% and 50% concept deployment scenarios 3. Estimate cost savings to energy system of each scenario 4. Write up findings  Milestone(s): <ul style="list-style-type: none"> <li>- Models: Outputs available from all models.</li> <li>- Savings: Results of savings.</li> <li>- Completion: Report submitted.</li> </ul>	£19,300.00

#### 14. USE OF LOGO

The Funding Party and the Project Partners, External Funders and Project Supporters or subcontractors<sup>18</sup> must not use the Innovate UK/UKRI and/or Ofgem logo for purposes associated with the Project in any circumstances.

As an alternative for use of both Ofgem and UKRI logos, all external Project communications must include the following standard form of wording:

<sup>18</sup> As detailed in the Application.

- (i) “this project is funded by network users and consumers under the Strategic Innovation Fund, an Ofgem programme managed in partnership with UKRI.”

For additional guidance, refer to the communications and media guidelines for competition winners, detailed as part of your delivery pack. These guidelines are designed to help with some suggestions and encourage you to take a proactive approach to communicating about your Project.

## **15. SHARING OF LESSONS LEARNED**

The Funding Party is required to ensure that the sharing of lessons learned and the facilitation of knowledge transfer is conducted as effectively as possible, to ensure that all parties, and therefore all consumers including future consumers, can benefit from Projects.

As contained within Chapter 3 of the SIF Governance Document, we require the Funding Party to work collaboratively to maintain the ENA Smarter Networks Portal so that all reporting and dissemination of learnings on Projects (as required by chapter 6 of the SIF Governance Document) is available via the ENA Smarter Networks Portal.

## **16. COLLABORATION**

The Funding Party must collaborate with third-party innovators as Project Partners, as well as work closely with other parties in the energy supply chain, as set out in Chapter 3 of the SIF Governance Document.

The Funding Party must collaborate with other parties and with UKRI to organise an annual conference in a format appropriate to enabling the building of consortiums and disseminating learning widely. The conference may be a single event for gas and electricity, or more than one event, as appropriate.

## **17. AMENDMENT OR REVOCATION**

As set out in Chapter 7 of the SIF Governance Document, this SIF Project Direction may be amended or revoked under the following circumstances:

- (i) if the Funding Party considers that there has been a material change in circumstance that requires a change to the SIF Project Direction, and the Authority agrees; or
- (ii) to reflect amendments made to the Licence.

## **18. HALTING OF PROJECTS**

This SIF Project Direction is subject to the provisions contained in Chapter 7 of the SIF Governance Document relating to the halting of Projects. By extension, this SIF Project Direction is subject to any decision by the Authority to halt the Project to which this SIF Project Direction relates and to any subsequent relevant SIF Funding Direction issued by the Authority pursuant to Special Condition 9.13 of the Gas Transporter Licence (the "Licence").

Further to the requirements in Chapter 7 of the SIF Governance Document, in the event the Authority decides to halt the Project, to which this SIF Project Direction relates, to which this SIF Project Direction relates, the Authority may issue a statement to the Funding Party clarifying the effect of that halting decision as regards to the status and legal force of the conditions contained in this SIF Project Direction.

### **NOW THEREFORE:**

In accordance with the SIF Governance Document issued pursuant to Special Condition 9.13 of the Gas Transporter Licence (the "Licence") of the Licence the Authority hereby issues this SIF Project Direction to the Funding Party in relation to the Project.

This constitutes notice of reasons for the Authority's decision pursuant to section 38A (Reasons for decisions) of the Gas Act 1986.

Failure to comply with the conditions of this SIF Project Direction means that Ofgem may treat all or part of the SIF Approved Amount received by the Funding Party as SIF Disallowed Expenditure.

## ANNEX 1: PROJECT BUDGET

SIF Project Direction costs	
Cost Category	Total Project costs (£)
Labour	103,263.44
Materials	0
Subcontracting	0
Travel and subsistence	1,528.53
Other costs	1
<b>Total</b>	<b>104,793</b>

Project finances				
Project Partner	Total project costs (£)	Project Compulsory Contribution (%) <sup>19</sup>	Project Compulsory Contribution (£)	Total SIF Funding requested (£)
SOUTHERN GAS NETWORKS PLC	653	65200%	652	1
IMPERIAL COLLEGE LONDON	19,360	0%	0	19,360
UNIVERSITY OF BIRMINGHAM	15,900	0%	0	15,900
VITAL ENERGI SOLUTIONS LIMITED	43,700	13%	5,000	38,700
SGN COMMERCIAL SERVICES LIMITED	22,440	21%	3,950	18,490
GLASGOW CITY COUNCIL	1,500	0%	0	1,500
WEST DUNBARTONSHIRE COUNCIL	1240	123900%	1239	1
<b>Total</b>	<b>104,793</b>	<b>12%</b>	<b>10,841</b>	<b>93,952</b>

<sup>19</sup> The Project contribution is calculated as percentage of the SIF Funding requested per Project Partner and for the Project.

**ANNEX 2 TO SCHEDULE: TEMPLATE OF BANK ACCOUNT DETAILS TO BE  
PROVIDED TO NGT ([BOX.GSOSETTLEMENTS@NATIONALGRID.COM](mailto:BOX.GSOSETTLEMENTS@NATIONALGRID.COM))**

**Company name:**

**Primary Contact Details (only one contact permitted)**

First Name:

Last Name:

Email address:

Mobile phone number:

Work phone number:

**Address details**

Address name:

Street address:

City:

State / region:

Post code:

PO box: (if applicable)

PO box post code: (if applicable)

**Banking details**

These should be evidenced in non-editable format. The evidence provided must show company name and bank details and it should be dated within the last 6 months.

Any of the below documents will suffice:

- Bank statement (scanned document)
- Void cheque
- Paying in slip
- Screenshot of online banking (showing a logged in account with bank account and sort code, with browser visible)