



Gas supply code

NGS XX/2024

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1 Definitions and Interpretations

1.1 Scope and Objectives

- 1) This Code sets out the obligation of gas licensees to comply with the standards and procedures for the safe operation of the gas supply system. This Code also describes the rights and obligations of gas licensees in respect of the conveyance of gas and the provision of a gas supply.
- 2) This Code also sets out the technical, safety and procedural requirements to be met by those who intend to be or are connected to the gas transporter's gas supply system and the requirements for connection or turn-on, discontinuance or disconnection of gas supply and alteration and addition of pipe work to any premises downstream of the gas meter or gas service isolation valve.

1.2 Application

- 3) This Code is applicable to:
 - a) any person who is granted a licence under the Act;
 - b) any person whose gas installation/piping is connected or to be connected to a gas main of the gas transporter; and
 - c) any professional engineer and licensed gas service worker performing gas service work that are governed by the Act and its subsidiary legislation.
- 4) A person may be exempted from compliance with this Code, in whole or in part. Such exemption may be subject to such conditions or restrictions as URCA may determine.

1.3 Entry into effect

- 5) This Code or any amendment thereto shall come into force on the day on which URCA issued this Code or the day on which the amendment is issued, as the case may be.

1.4 Definitions

- 6) The following definitions shall apply in this Code unless otherwise specified or the context otherwise requires:

“**Act**” means the Liquefied Natural Gas Act

“**Code**” means this Gas Supply Code, as it may be supplemented, varied, modified or replaced from time to time;

“**Contingency Conditions**” means single failure contingency of equipment in the network;

“**Generating Station**” is as defined in the Electricity Bill;

“**Industry Practice**” means any of the practices, methods and acts engaged in or approved by a significant portion of the international gas industry during the relevant time period, or any of the practices, methods

or acts which, in the exercise of reasonable judgment in light of the facts known at the time the decision was made, could have been expected to accomplish the desired result at a reasonable cost consistent with good business practices, reliability, security, safety and expedition. Industry practice is not intended to be limited to the optimum practice, method or act to the exclusion of all others, but rather extends to acceptable international practices, methods and acts exercised generally by the gas industry under similar conditions;

“**Maintenance**” also includes any inspection, modification, repair, replacement, reinstatement, and/or rehabilitation;

“**Meter Installation**” is as defined in the Gas Metering Code; “meter owner” is as defined in the Gas Metering Code;

“**Normal Conditions**” means no supply disruptions and no curtailment curtailment;

“**Regulation**” means the Natural Gas Supply Regulation;

“**Retail Consumer**” means any consumer other than a direct access customer;

1.5 Interpretation

- 7) Unless the context otherwise requires or the term is otherwise defined in this Code, all terms defined in the Act shall have the same meaning when used in this Code.
- 8) Headings are for convenience only and shall not affect the interpretation of this Code.
- 9) A reference in this Code to any statute, subsidiary legislation, proclamation, ordinance, bylaw, resolution, rule, order, supplement, gazette notification or directive includes all statutes, subsidiary legislation, proclamations, ordinances, by-laws or resolutions, rules, orders, supplements, gazette notifications or directives varying, consolidating, re-enacting, extending or replacing it.
- 10) A reference in this Code to a document or provision of a document includes a modification or supplement to, or replacement or novation of, that document or that provision of that document, as well as any exhibit, schedule, appendix or other annexure thereto.
- 11) A reference in this Code to a body, whether statutory or not, which ceases to exist or whose
- 12) functions are transferred to another body includes a reference to the body which replaces it or which substantially succeeds to its functions, powers or duties.
- 13) A reference in this Code to the word “including” or grammatical variation thereof means “including but not limited to”.
- 14) Cross references are marked with an open parenthesis. It is expressly stated that the use of an open parenthesis in these cross references bears no legal interpretation. The sole legally pertinent element is the reference number.
- 15) A reference in this Code to the words “in writing” or a grammatical variation thereof includes any communications effected by facsimile transmission, e-mail or other means of communication.

- 16) This code is binding. Nothing in this Code shall be construed as affecting the obligation of the Licensee to comply with the provisions of relevant legislation or of its gas retailer's licence and, in the event of an inconsistency between the provisions of relevant legislation or of such gas retailer's licence and the provisions of this Code, the provisions of relevant legislation or of such gas retailer's licence shall govern to the extent of the inconsistency.
- 17) The Licensee shall ensure that its directors, officers, salespersons and other employees, agents, contractors, and representatives observe and comply with the requirements of this Code.
- 18) If any director, officer, salesperson or other employee, agent, contractor or representative of the Licensee does any act or refrains from doing any act that, if done or omitted to be done, as the case may be, by the Licensee would constitute a breach of this Code, such act or omission shall be deemed for the purposes of this Code to be the act or omission of the Licensee.
- 19) A reference to a contract between a gas licensee and a consumer shall be construed as being a reference only to a contract pursuant to which the gas licensee retails to the consumer.

1.6 Hierarchy of codes

- 20) The hierarchy of codes of practice is as follows:
 - a) Gas Supply Code
 - b) Gas Metering Code
 - c) Gas Retailer Code of Conduct
- 21) Except as may be otherwise provided in the Licensee's gas retailer's licence, in the event of any conflict between provisions contained in more than one code of practice, the provision in the higher code of practice shall prevail.
- 22) In the event that no gas transport pipelines exist and gas is transported via other means like trucking, equivalent provisions as set out in this Code that guarantee the adequate measurement of the gas delivered shall apply.

1.7 Modifications to this Code

- 23) URCA may, from time to time, modify this Code. This Code may be modified following URCA's established Standard Consultation procedures (URCA 05/2021).
- 24) Nothing contained in Clause 23) shall prohibit any gas licensee or any relevant Party from notifying URCA of suggested changes to this Code.

2 Application, connection and turn-on of gas supply

2.1 Application for Gas Supply

- 25) An application from a retail consumer for a supply of gas or an increase to an existing supply thereof shall be made to a gas retailer in accordance with part 2 of the Regulation and the procedures

stipulated in the relevant gas retailer's code of conduct.

2.2 Submission of plans for gas service works

26) A licensed gas service worker may submit plans for works on all retail consumers' internal pipes and meters. Where any the abovementioned works is meant for operating pressures above 30 mbars, plans for the gas service works shall be submitted by a professional engineer.

27) Gas retailer shall approve plans submitted by an applicant with respect to section 25).

2.3 Connection of Gas Supply

28) To connect the gas installation or gas fitting of any premises to a gas pipeline network, an application shall be made by the responsible person to the gas transporter together with a plan marking the connection point and setting out the specification of the gas installation or gas fitting of the premises together with such additional documentation or information relevant to the application as the gas transporter may require. No connection work for the supply of gas shall be carried out without the prior approval of the application by the gas transporter.

2.4 Gas Supply to Retail Consumers

29) The gas transporter shall ensure that:

- a) gas supplied to low-pressure natural gas retail consumers shall be maintained at a pressure between 17 mbars and 23 mbars (inclusive of both pressures) measured at the outlet of the gas service isolation valve; and
- b) gas supplied to medium or higher pressure retail consumer at other parts of the gas supply system shall be at a pressure agreed upon between the gas transporter and the gas retailer / retail consumer.

2.5 Admittance of Gas

30) Every application for admittance of gas shall be made in such form as may be required by the gas transporter and in accordance with section 17 of the Regulation.

31) Prior to the application, the applicant's designated representative shall carry out the appropriate tests for gas supplied on the gas installation or gas fitting from (but excluding) the gas service isolation valve to (but excluding) the meter installation. In addition, the designated representative shall ensure that all end points of the gas installation or gas fitting are securely sealed off with a cap, plug or blank flange to prevent any leakage of gas.

32) The designated representative shall certify to the gas transporter that the gas installation is installed in accordance with section 31).

33) Prior to the connection and admittance of gas to the gas installation or gas fitting, the applicant's designated representative shall conduct an appropriate proof test and certify to the gas transporter that the gas installation or gas fitting is leak-free.

- 34) Immediately after the final connection is made, the applicant's designated representative shall carry out and certify to the gas transporter that purging and commissioning of the gas installation or gas fitting from the gas service isolation valve have been carried out successfully.
- 35) Forthwith after admitting gas into the gas installation or gas fitting up to (but excluding) the meter installation, the gas transporter shall issue a statement of admittance of gas as prescribed in section 18 (d) of the Regulation.
- 36) The applicant shall ensure that no gas is taken from the gas supply system until he has received a statement of admittance of gas issued by the gas transporter.
- 37) If gas is not admitted to the gas installation up to (but excluding) the meter installation and the said portion of the gas installation or gas fitting is left unattended on completion of the tests referred to in section 34), any connection made to the gas installation shall be disconnected. The applicant's designated representative shall re- perform the appropriate test and re-certify to the gas transporter and follow the procedures as outlined in sections 32), 33) and 34).
- 38) The gas service isolation valve shall not be turned on except by the gas transporter pursuant to an application made under section 28).

2.6 Procedure for Turn On of Gas Supply

- 39) An application to turn on a gas supply at the meter control valve shall be made by the retail consumer or his designated representative to the gas retailer in accordance with the relevant gas retailer's Handbook on Gas Supply.
- 40) The gas retailer shall arrange for the installation of an appropriate meter at the retail consumer's premises.
- 41) The gas retailer shall ensure that appropriate tests, before and after the installation of the meter, are performed on the gas installation from and including the meter to the gas appliance before the gas supply is turned on at the relevant meter control valve. The tests shall be carried out by a licensed gas service worker or a professional engineer in accordance with applicable codes or international standards.
- 42) The gas retailer shall inform retail consumers of safety measures in case of gas escape and ensure that a sticker with the telephone number of the gas transporter's 24-Hours Call Centre is affixed to the meter or an accessible location near to the meter in such a manner that the telephone number is readable by the retail consumer.

2.7 Facilitation for Change of Gas Retailer

- 43) A gas retailer shall not be permitted to own any gas installation notwithstanding that such gas installation may have been paid partially or fully by the gas retailer.
- 44) A retail consumer may, subject to the terms and conditions of the supply contract with the relevant gas retailer, arrange to change the gas retailer for the supply of gas to his premises. The new gas retailer shall, within ten calendar days, inform the gas transporter in writing of the change and information required by the gas transporter to enable the gas transporter to update such records as

the gas transporter may require.

2.8 Record Keeping for Application of Gas Supply

45) The gas retailer shall maintain a register to record all gas supply applications.

46) The gas retailer shall upload specified data online to URCA's information system at such intervals as may be required by URCA.

2.9 Connection Charges

47) Upon receipt of an application complete with all requisite information, the gas transporter shall determine the required connection charge in a non-discriminatory manner and inform the applicant of the charge accordingly.

48) The gas transporter shall provide the applicant with an itemised breakdown for the connection charge if so requested by the applicant.

3 Disconnection or discontinuation of gas supply

3.1 Application for Disconnection of Gas Supply

49) An application to disconnect a gas installation or gas fitting from a gas pipeline network shall be made by the responsible person to the gas transporter in the following instances:

- a) when the gas supply to the premises has been discontinued; or
- b) when the supply of gas is no longer required; or
- c) when the premises are undergoing renovation or demolition and gas supply has to be disconnected for safety reasons.

3.2 Termination of Gas Supply Requested by Retail Consumer

50) The gas retailer shall, with the co-operation of the gas transporter, establish the procedures for the discontinuation of gas supply at the meter installation.

51) The gas retailer shall arrange for the removal of gas meter from the gas installation within ten calendar days and inform the gas transporter of the discontinuation of gas supply at the meter installation.

52) The gas transporter shall notify the responsible person to apply for the disconnection of gas supply if any gas installation or gas fitting is no longer being used to supply gas to any consumer.

3.3 Maintenance of Records of Gas Installation and Gas Fitting

53) The gas transporter shall maintain records of premises and all gas installations or gas fittings, whether connected to or disconnected from a gas supply system so that it can establish in a proactive manner the inspection programme as required in part 7 and the leak survey programme in accordance with

part 9.4.5 of this Code.

4 Alteration of gas installation or gas fitting

4.1 Alteration of Gas Installation between Gas Service Isolation Valve and Meter

- 54) When a supply of gas needs to be shut off for the replacement of or addition or alteration to the gas installation from the gas service isolation valve to (and including) the meter, the designated representative shall make the necessary arrangement with the gas transporter to shut off the gas service isolation valve.
- 55) In the case of a gas installation operating at pressures of above 30 mbars, the replacement of or addition or alteration to such gas installation shall be designed by a professional engineer and such work shall be performed by or under the supervision of a professional engineer.
- 56) The re-admittance of gas, where applicable, shall comply with the relevant provisions of part 34)2.5 on the admittance of gas.

4.2 Alteration of Gas Installation after Meter

- 57) The gas retailer shall establish in the relevant gas retailer's Handbook on Gas Supply, the procedures for retail consumers to apply for the replacement of, addition or alteration to a gas installation located between the meter installation and the gas appliances.

5 Response arrangements for gas incidents

5.1 Gas Escapes and Gas Related Incidents

- 58) The gas transporter shall provide appropriate technical and human resources to enable attendance at all reported gas escapes or gas related incidents, with the purpose of making the situation safe as follows:
- a) to attend to all uncontrolled gas escapes in accordance with the key performance indices proposed by the gas transporter and approved by URCA; and
 - b) to attend to all gas escapes which have been isolated by shutting the meter control valve in accordance with the key performance indices proposed by the gas transporter and approved by URCA.
- 59) The gas transporter shall inform the relevant party/parties as soon as possible upon the receipt of such reported gas escapes or gas related incidents.
- 60) A "controlled gas escape" is defined as a leak from an appliance or the gas installation that has been isolated by shutting off the meter control valve.
- 61) An "uncontrolled gas escape" is defined as a gas escape in a gas installation or the gas supply system that cannot be controlled or contained by shutting off the meter control valve.

- 62) In the event of an uncontrolled gas escape, the gas transporter shall arrange to:
- a) identify all properties or other confined areas that are or will be affected by the escaping gas;
 - b) ventilate all affected properties, as required, and evacuate all persons immediately until gas concentrations reach a level assessed by the gas transporter to be safe;
 - c) continuously monitor the concentrations of gas within all affected properties until the source of the gas escape has been located and made safe;
 - d) investigate whether gas is escaping from pipework within any of the affected properties and confirm by temporarily isolating the gas supply to individual properties in a systematic manner; and as soon as gas concentrations stabilise and begin to diminish, conduct gas soundness testing to identify the source of the gas escape from any internal pipework;
 - e) where isolating gas supply to the affected properties does not result in a reduction in gas concentrations, investigate the surrounding area, excavate as necessary and establish the source of all external gas escapes;
 - f) make the site safe and carry out permanent repairs, as necessary;
 - g) purge, as required, and re-establish all gas supply that has been temporarily isolated; and
 - h) wherever possible, establish the cause of the failure that resulted in the gas escape.
- 63) The gas transporter shall establish and maintain appropriate arrangements to ensure that members of the public can report to the gas transporter actual and suspected escape of gas or gas related incidents at any time and by reasonable means, including by telephone. The gas transporter shall ensure that there is appropriate publicity of the risks associated with gas escapes, and of the arrangements for reporting gas escapes.
- 64) The relevant gas licensee, as specified by URCA, shall carry out investigations and submit reports relating to all major incidents related to gas, and shall comply with all requirements specified in relation to the notification, investigation, reporting and follow-up action taken or to be taken in relation to such incidents.
- 65) The gas transporter shall maintain or make arrangement to maintain a 24-Hours Call Centre for the public to report actual or suspected escapes of gas or gas related incidents.
- 66) The gas transporter shall maintain records of all gas escapes and gas related incidents. The records shall include, but not be limited to, the type and cause of gas escape, date and time, location and the remedial actions taken.

5.2 Safety and Emergency Services

- 67) The gas transporter shall prepare a gas safety plan, in consultation with URCA and any other relevant authority as URCA deems fit, setting out the following, for URCA's approval:
- a) procedures to meet the gas transporter's duties under the Act and Regulation for the gas safety

(including protection from danger to health) of the general public, retail consumers, shippers and the gas transporter's employees, officers and agents. The gas transporter shall provide to URCA a standing operating plan describing the procedures to be adopted by the gas transporter for dealing with such incidents arising from gas-related activities, including the import of gas; and

- b) advice on the potential dangers arising from gas escapes and safety measures to be taken by retail consumers and shippers to minimise such dangers; and
- c) details of its proposed public safety awareness campaign relating to the use of gas for retail consumers within its authorised area.

68) URCA may approve the plans with such changes as URCA deems necessary.

69) Without prejudice to its obligations under the Act and the Regulation, the gas transporter shall prepare, in consultation with URCA, a major gas incident plan setting out how, in the conduct of its gas transportation business, it will monitor and repair the gas supply system in co-ordination with the appropriate emergency agencies (governmental or otherwise) and in the event of a major incident or potential major incident, including, without limitation major loss of gas supplies or public disruption that may develop into a gas explosion.

70) The gas transporter shall provide, to URCA, a standard operating plan describing the procedures to be adopted by the gas transporter for dealing with escapes of gas.

71) The gas transporter shall take steps to respond to a gas escape, in any premises to which the gas transporter conveys gas, or any other event which URCA considers to be an emergency or to be a risk to public safety, within one (1) hour of its being reported. The gas transporter shall make the reported gas escape safe and:

- a) ensure that the persons it engage or arrange to attend to the gas escapes are adequately trained to recognise the signs of gas leakage and that such persons are instructed to report any signs of such leakage to the owner or occupier of the premises immediately;
- b) take appropriate action to stop the gas escape; and
- c) inform the owner or occupier, or fix a notice on the premises, if, in the reasonable opinion of the gas transporter, any repair work is required.

72) The gas transporter shall ensure that it has, at all times, appropriate resources and is able to engage or arrange for persons with the appropriate skills to carry out such investigations into safety related technical matters on the gas supply system as either the gas transporter or URCA considers necessary.

73) The gas transporter shall submit a statement within the timeframe of the subsequent calendar year, in a form approved by URCA, setting out the gas transporter's performance in each calendar year, including the type and number of gas incidents and potential and actual interruptions in the conveyance of gas by it.

6 Interruption and restoration of gas supply

6.1 Planned Works

74) For planned works of the gas transporter which will involve interruption to the gas supply, written notification shall be given by the gas transporter at least fourteen days in advance (except for those consumers who through their relevant shippers or otherwise have separate agreements with the gas transporter in which case the provisions for prior written notification and restoration of gas supply in such agreements will take precedence) to each affected consumer.

6.2 System Faults

75) Where any consumer's gas supply is interrupted, the gas supply shall be restored as soon as practicable by the gas transporter unless:

- a) it is not safe to restore the gas supply; or
- b) the consumer has requested for the gas supply to be restored at a later time; or
- c) the gas supply has been interrupted due to fault present after the gas service isolation valve and has not been rectified by the responsible person.

76) Where for safety reasons the gas supply is interrupted or where a delay in restoration of gas supply is expected, the gas transporter will use its reasonable endeavours to inform as soon as is reasonably possible, all affected consumers of the gas supply interruption and the expected time at which the gas supply will be restored. The gas transporter may make the necessary arrangements with the relevant gas retailer for the safe restoration of gas supply to its retail consumers.

6.3 Faults in Consumer Premises

77) The gas retailer shall refuse to supply gas to any premises, if in its opinion, the gas installation or gas appliance to which such supply is made is unsafe for use or does not comply with the Act, the Regulation, or this or other relevant codes.

78) The gas retailer shall discontinue the supply of gas when it becomes aware that any gas installation or gas appliance to which a supply of gas is made by it is unsafe.

79) The gas retailer shall promptly inform the relevant retail consumer and the gas transporter the reasons for any discontinuance of supply of gas made by it under section 78).

80) The gas retailer shall ensure that the procedures for the restoration of the gas supply is in compliance with the Act, the Regulation, or this or other relevant codes.

81) The gas retailer shall within ten calendar days inform the gas transporter of any restoration of any supply of gas made by it.

7 Inspection programme for gas installation or gas fitting

82) The gas transporter shall ensure that every gas installation used to supply gas to a retail consumer or

retail consumers is inspected at such intervals as shown in subsequent sections in this part 7 for the purpose of ensuring that gas can continue to be supplied through such gas installation and used safely.

7.1 Inspection Programme Premises

83) The gas transporter shall be responsible for establishing and implementing the following systematic inspection programmes:

- a) for gas installation or gas fitting linking the gas service isolation valve to the meters of individual units within a building, annual inspection shall be carried out by a licensed gas service worker or a professional engineer, as the case may be, appointed by the responsible person;
- b) for gas installation or gas fitting from the meter to the gas appliances, annual inspection shall be carried out by a licensed gas service worker or a professional engineer appointed by the retail consumer;
- c) if any part of a gas installation or gas fitting referred to in sections 83) (a) and (b) is not accessible for inspection, soundness test shall be carried out by a professional engineer appointed by the responsible person once every three years. The soundness test for gas installation or gas fitting shall be carried out at the operating pressure. The inspection of the gas installation or gas fitting by a licensed gas service worker in sections 83) (a) and (b) will not be required for a period of 12 months after the soundness test by a professional engineer; and
- d) for a gas installation or gas fitting operating at any pressure above 30 mbars, the gas transporter may, require the responsible person to appoint a professional engineer to certify annually the fitness for such part of the gas installation or gas fitting for which the afore-mentioned person is responsible.

84) For gas installation or gas fitting referred to in section 83), the gas transporter may, in order to ensure that the said gas installation or gas fitting is maintained at all times in a safe and proper operating condition, functions at all times in a reliable manner and is reasonably protected against damage, notify and require the responsible person to engage a licensed gas service worker or a professional engineer, where applicable, to carry out the inspection on the gas installation or gas fitting and submit a certificate of fitness to the gas transporter.

85) If any person after being notified by the gas transporter under section 84) fails to comply with the inspection notice, the gas transporter may, subject to the power provided to it under relevant provisions of the Act, arrange with the relevant gas retailer or shipper to take necessary actions to discontinue or disconnect, where applicable, the supply of gas to the relevant gas installation or gas fitting.

86) The gas transporter shall not vary the frequency of inspection stipulated above unless it deems necessary to do so to meet changes in circumstances that may affect the integrity and safety of any gas installation, gas fitting or critical operations of the consumer.

87) The gas retailer and shipper, where applicable, shall provide the gas transporter with all relevant information pertaining to its consumers to enable the gas transporter to implement and maintain the

programme of inspection as stipulated in section 83).

8 Standards and standing operating procedures

88) All gas plant and equipment shall:

- a) be in compliance with all applicable technical requirements of this Code and shall be designed and constructed in accordance with industry practice;
- b) be capable of operating under normal and contingency conditions of the gas network; and where applicable, comply with the standards acceptable to the gas transporter.

89) For meter installation supplying natural gas to a generating station, the meter owner shall be the gas transporter or the relevant gas shipper.

90) For meter owner referred to in section 89), the meter owner shall ensure that its meter installation be designed and operated in such manner that no single failure / outage shall cause natural gas supply disruption to the generating station.

9 Gas quality and safety

9.1 Gas specification and characteristics

91) Gas supply to consumers at gas pressure not exceeding 30 mbars shall comply with the following specification limits as applicable:

Wobbe Index (WI)	:	45.2 – 52.0 MJ/m ³
Gross heating value	:	35.3 – 50.3 MJ/m ³
Hydrocarbon dewpoint	:	12.8 °C @ 50 bar
Water dewpoint	:	9.4 °C @ 50 bar
Free liquids	:	zero (0)
Methane (min)	:	80 % by volume of total reactants
Oxygen (max)	:	0.1 % by volume
Carbon dioxide (max)	:	5 % by volume
Nitrogen (max)	:	5 % by volume
Total inerts (max)	:	10 % by volume
Hydrogen sulphide (max)	:	8 ppm by volume
Total sulphur (max)	:	30 ppm by volume

Particulate – size (max)	:	10 micron
Particulate – quantity (max)	:	3 ppm by weight
Potassium and Sodium (max):		0.5 ppm by weight
Lead (max)	:	1 ppm by weight
Magnesium (max)	:	2 ppm by weight

9.2 Gas Odourisation

- 92) The operator of any relevant facility shall ensure that gas supply to all consumers be odorised using an appropriate odorant such as Tetrahydrothiophene (THT) to enable detection by a normal sense of smell.
- 93) The rate of injection of the appropriate odorant injected into the gas supply shall be continuously monitored and recorded. A record of the frequency and quantities of odorant injected into the gas shall be maintained according to the requirement of the gas transporter.

9.3 Pressure

- 94) LNG terminals shall be designed for injection of natural gas into the gas transmission network as follows:
- flow control with high pressure and low pressure overrides as specified by the gas transporter;
 - any other operating conditions as specified by the gas transporter and endorsed by URCA.
- 95) If an installation is to be connected to the gas pipeline network, the gas transporter shall notify the Applicant of the proposed location of the connection and the anticipated maximum delivery pressure at the connection point. The Applicant is to ensure that the installation is designed to operate safely at the anticipated maximum delivery pressure.

9.4 Public Safety

9.4.1 General Requirements

- 96) The gas transporter must ensure that the gas pipeline network is designed, constructed, commissioned, maintained and operated safely and effectively, in compliance with its duties, rights and obligations under the Act, the Regulation, its gas transporter's licence and the Gas Network Code. The gas transporter must:
- ensure as far as reasonably practicable that adequate protective measures have been taken or are in place;
 - ensure as far as reasonably practicable that personnel have the skills, training and experience to carry out the work safely; and
 - ensure as far as reasonably practicable that the public are aware of the works and are advised of

precautions they can take.

97) The gas transporter shall ensure that suitable procedures and practices are in place and adequate resources are used to operate and maintain the gas supply system safely and reliably.

9.4.2 Pipeline construction

98) During the construction of gas pipeline, the work area shall be cordoned off and only authorised personnel shall be allowed access to the site.

9.4.3 Testing and Commissioning of Pipeline

99) The gas transporter shall ensure that all gas pipelines in its gas supply system are tested, commissioned and de-commissioned safely.

100) For pressure testing of gas pipelines or transmission line valve above 1.4 bar, water shall be used as the testing medium unless:

- a) the gas pipeline or transmission line valve is located in the premises at the material time under the control of a gas transporter; or
- b) the gas transporter considers that the prevailing circumstances require air to be used for pressure testing above 1.4 bar in which case the requirements of section 101) shall be applicable.

101) If pneumatic testing is to be carried out at pressures above 1.4 bar, the gas transporter shall ensure that the following actions are carried out under the directions of a professional engineer:

- a) a detailed engineering study confirms the required test procedure and identifies all potential risks to workers, residents and the general public;
- b) all pressure testing is undertaken in accordance with the requirements of the test procedure and appropriate measures are implemented throughout the test period to control the identified risks and ensure that all testing is completed safely; and
- c) competent staff are sufficiently deployed at strategic locations to patrol the route of the pipeline during testing, keep members of the public away from the area and ensure that critical phases of the testing (e.g. whilst the test pressure is being raised or is being vented) are carried out when vehicular and human traffic are low.

102) On completion of all testing and commissioning, a detailed record shall be prepared confirming that the engineering study, test procedure and safety measures were all carried out in accordance with the above requirements. The record shall be signed by the professional engineer and retained by the gas transporter.

9.4.4 Pipeline Patrol

103) The gas transporter shall set up a programme and procedures to safeguard its gas transmission pipeline, any part of its polyethylene pipeline operating with gas pressures above 1 bar, and all other apparatus and equipment relating thereto against third party interference and damage.

104) The programme shall include publicising the various measures and precautions to be taken by third parties who intend to carry out any work in the vicinity of the gas transmission pipeline prior to and in the course of such work, which shall include requiring such third parties to provide plans of all relevant apparatus and equipment required, to check such plans prior to the commencement of work, to inform the gas transporter of all works to be carried out within the vicinity of any gas transmission pipeline, polyethylene pipeline operating with gas pressures above 1 bar, apparatus or equipment, to ensure that all necessary measures and precautions notified by the gas transporter have been carried out, and to permit the gas transporter's representative to be on site if the gas transporter so requires. The programme shall also include regular pipeline patrol.

9.4.5 Leak Survey

105) Leak survey of any gas main network and any part of the gas service pipe from a gas main up to a gas service isolation valve, and include any short length of pipe immediately after the gas service isolation valve that is buried in the ground, shall be carried out using the appropriate gas detection equipment which may be mounted on a vehicle or by foot patrol, as the case may be.

106) The gas transporter shall submit its programme for the leak survey annually to URCA.

107) The gas transporter shall maintain records of all leak surveys of the gas pipeline network and services and submit a report on such surveys to URCA at regular intervals.

108) In an area where soil subsidence is suspected by the gas transporter, a wider area in the vicinity as determined appropriate by the gas transporter, shall be surveyed and where the integrity of the gas installation or gas fitting may be affected by soil subsidence, the gas transporter shall notify the owner of the premises to engage a professional engineer to inspect and certify that the gas installation or gas fitting after the gas service isolation valve is safe for continuing use. If the owner of the premises fails to comply with the instruction, the gas transporter shall take the necessary action to disconnect the gas supply and notify the relevant gas retailer or shipper. All costs related to the survey of such wider area shall be borne by the gas transporter.

10 Handbook on gas supply

109) Each gas retailer shall establish and publish a Handbook on Gas Supply to provide a comprehensive guide to developers, consultants, professional engineers and licensed gas service workers in the application of gas supply. The Handbook on Gas Supply shall incorporate both the gas retailer's and the gas transporter's requirements for the application for supply, connection and turn-on of gas to retail consumers.

110) The Handbook shall contain, but not limited to the following:

a) Procedures, forms, certificates, etc. for:

i) application for supply of gas;

ii) approval of gas installation plan and drawings for supply of gas;

iii) approval of amendment plans for gas supply;

- iv) application for final pressure test (including the submission of the as-built drawings);
 - v) issuing of certificate of final pressure test;
 - vi) approval for final pressure test;
 - vii) request for connection to the gas main (include the as-built drawing and the certificate of final pressure test);
 - viii) approval for the connection to the gas main;
 - ix) application for admittance of gas (include the consent by professional engineer/main contractor/responsible person);
 - x) notification of the date for admittance of gas;
 - xi) issuing of statement of admittance of gas;
 - xii) application for turn-on of gas (include the consent by professional engineer/main contractor/responsible person);
 - xiii) issuing of statement of turn-on of gas;
 - xiv) statement certifying the appliance is safe for use; and
 - xv) notification of the date for turn-on of gas.
- b) Flowchart on the procedure for applying/obtaining gas supply to premises;
 - c) Procedure for replacement, addition and alteration of gas fittings and appliances; and
 - d) Other requirements of the gas transporter and gas retailer.
- 111) The gas transporter shall make available to all gas retailers its requirements and procedures for connection of gas supply and admittance of gas for each gas retailer to incorporate them in the gas retailer's Handbook on Gas Supply.
- 112) In the case where the supply is not for a retail consumer, the gas transporter shall publish and make available its requirements and procedures for application of gas supply, connection of gas supply, admittance of gas and turn-on of the gas supply.

11 Application for a new or modified LNG terminal connection – general conditions

- 113) An application to connect an LNG terminal facility to the gas transmission network or modify the injection capacity of an existing LNG terminal connected to the gas transmission network shall be submitted by the responsible person ("Applicant") to the gas transporter. After having submitted the application, the Applicant shall promptly notify the gas transporter in writing of any subsequent material additions or changes to the information submitted.

- 114) Upon receipt of the application from the Applicant, the gas transporter:
- a) shall forward such application to URCA;
 - b) may require additional information to be submitted by the Applicant;
 - c) shall perform the necessary analysis and studies of the application, based on the projected quantity and locations of demand submitted by the Applicant and/or provided by URCA, to determine the pipe size and routing. The proposed connection shall not have any adverse effect on the secure, stable and reliable operation of the gas transmission network and any other installation, already connected or approved for connection to the gas transmission network;
 - d) shall advise the Applicant on whether the sites identified by the Applicant are suitable for new connections. If a connection point has been identified for each of the respective sites at which a connection may be made, the gas transporter shall advise the Applicant of details, e.g. type of joint, map co-ordinates etc with regards to the connection; and
 - e) shall ensure that any requirements with respect to the network expressed by URCA have been satisfied.
- 115) The gas transporter shall forward the proposed connection indicating the pipe size, pipeline laying, and locations of connection to URCA. URCA, upon receiving the proposed connection from the gas transporter:
- a) may require additional information to be submitted by the Applicant and/or the gas transporter;
 - b) shall conduct analysis and studies to determine the impact of the proposed connection or modification to existing LNG terminal on the security, stability and reliability of the gas supply system;
 - c) shall, within 30 calendar days of receiving the proposed connection scheme from the gas transporter, advise the gas transporter whether it endorses or rejects the proposed connection. If URCA rejects the proposed connection, it shall inform the Applicant and the gas transporter in writing of its reason(s) for such rejection; and
 - d) where deemed necessary, shall advise the Applicant on the requirements of the proposed connection or modification to the existing LNG terminal to ensure the security, stability and reliability of the gas supply system. The Applicant shall confirm in writing to URCA, with a copy to the gas transporter, its acceptance of the requirements specified by URCA and ensure that the requirements are met.
- 116) The gas transporter shall respond to the Applicant within 21 calendar days regarding the proposed connection after it is duly endorsed by URCA and the project costs approved by URCA.
- 117) The gas transporter shall notify the Applicant of the terms and conditions of connection or modification to the existing connection, and of the charges, if any, payable to the gas transporter to carry out the relevant works for the Applicant's acceptance. The gas transporter shall provide to the Applicant a copy of the System Entry Agreement within the next 42 calendar days upon the Applicant accepting the proposed connection.

- 118) The gas transporter shall not connect any LNG terminal to the gas transmission network if the Applicant fails to comply, or the gas transporter determines on reasonable grounds that the Applicant is not capable of complying, with the procedures and requirements for connection to and use of the gas transmission network set forth in this Code and the System Entry Agreement.
- 119) The processes and procedures for connection of an LNG terminal shall also apply in the case of a reconnection.

12 Responsibilities of the gas transporter and LNG terminal operator

- 120) Gas transporters and the LNG terminal operator shall operate and maintain their pipelines and LNG terminals, as the case may be, in a reasonable and prudent manner to ensure that normal operating condition is maintained at all times, the risk of failure to convey gas to the consumers is minimized at all times, and carry out prompt response during emergencies. To achieve such a condition, the gas transporter, and the LNG terminal operator shall do, at least but are not limited to, the following:
- a) determine the maintenance programme required in respect of the gas supply system or the LNG terminal, as the case may be, and plan the maintenance in accordance with/or as stringent as the Original Equipment Manufacturer's requirements and/or the industry best practices so as to minimise or avoid gas supply disruption;
 - b) carry out analysis to identify factors that can affect the gas supply system or the LNG terminal, as the case may be, and take necessary precautions to mitigate the risks prior to any operation, maintenance and modification activities;
 - c) state and update all operation and maintenance procedures and ensure the persons responsible for the procedures are fully aware and conversant in carrying out their job;
 - d) comply with the operation and/or maintenance procedures referred in section 120)(iii) to ensure the risk of failure to convey gas to the consumers is minimized at all times and prompt response to sudden disruption in gas supply and/or gas emergencies;
 - e) carry sufficient inventory of critical spares and consumables in a local store room within the Bahamas to facilitate timely replacement or to replenish depleting consumables at any of its facilities or assets so that the facilities or assets can operate as designed for, in the shortest possible time;
 - f) engage and make available, at all times, trained and qualified person(s) to operate and maintain the gas supply system or the LNG terminal, as the case may be;
 - g) take precautionary measures to ensure that all activities carried out do not pose a danger to the gas supply system or the LNG terminal, as the case may be;
 - h) operate the gas supply system or the LNG terminal, as the case may be, in a manner which enables the supply of gas to meet downstream demand for gas;
 - i) ensure that any malfunction of equipment must be properly investigated and its root cause identified. Action must be taken to rectify the malfunction promptly; and

- j) put in place adequate cyber security measures to ensure that designated Critical Information Infrastructures (CIIs) are properly maintained, operated and secured so as not to compromise or cause any adverse impact to the security, reliability and stability of the gas supply system including interruption of gas supply due to inadvertent system or equipment failure, human error or through malicious actions of other parties. The cyber security measures shall include those described in Appendix 1.
- 121) The LNG terminal operator shall carry out the following promptly at all times to enable the shippers using the LNG terminal, as the case may be, to inject gas into the gas supply system:
- a) provide data/information (whether electronic, written or in any other form) to the shippers on the gas quality and availability of the incoming gas supply to the LNG terminal, as the case may be;
 - b) provide advanced information and notices to shippers on the potential problems that can arise from the activities of the LNG terminal operator licensee, as the case may be; and/or
 - c) fully co-operate with shippers and relevant agencies to mitigate the consequences of any failure of the LNG terminal, as the case may be, such as an increase/decrease of gas supply or gas pressures, etc.
- 122) The LNG terminal operator shall investigate any failure of the LNG terminal, as the case may be, in injecting gas into the gas supply system and submit a written report to URCA within a reasonable period of time as may be directed by URCA.
- 123) The Licensee (namely the LNG Terminal Operator Licensee and the Gas Transporter Licensee) shall:
- a) report any near miss to URCA within 4 weeks from the occurrence of the near miss; and
 - b) collate reports of near misses encountered by their contractors while working on the licensees' pipeline/equipment/plant/facility, and submit these reports to URCA within 4 weeks from the occurrence of the near miss.
- 124) URCA may, where it considers necessary, require the Licensee to share the learning points of the near miss with other key stakeholders in the gas industry.
- 125) For the purposes of this section, "near miss" means an unplanned incident that did not result in but had the potential to cause either a failure or mal-operation of equipment, plants, facilities or gas pipelines, or partial/total disruption in gas supply. A near miss does not include averted equipment failures observed or discovered or suspected through maintenance, condition monitoring, commissioning or re-commissioning works.
- 126) The reporting of near miss is not intended to determine/apportion blame or liability, but is for the industry to share and learn from the incidents and make necessary improvements so as to enhance the reliability of their equipment and plants/facilities.
- 127) The Licensee (namely the LNG Terminal Operator Licensee and the Gas Transporter Licensee) shall:

- a) establish and maintain adequate safety procedures to ensure the safety of the public or personnel and/or prevention of death/injury to any person or damage to any property for any work or testing is carried out on any gas pipelines or equipment belonging to or under the management or control of the gas transporter, or the LNG terminal operator.
- b) comply with all applicable or relevant safety procedures, requirements and practices to ensure the safety of the public or personnel and/or prevention of death/injury to any person or damage to any property when any work or testing is carried out on any gas pipelines or equipment belonging to or under the management or control of the gas transporter, or the LNG terminal operator.

13 Register of pipelines and other records

128) The gas transporter shall keep an up-to-date record of:

- a) all assets associated with the gas supply system as owned, operated or the responsibility of the gas transporter;
- b) natural gas pipelines;
- c) premises connected to the gas supply system, including, without limitation, by means of an gas installation or an internal pipe;
- d) the reference number assigned by the gas transporter to each meter installed at metered premises which are so connected to the gas supply system;
- e) the ownership of meters through which gas conveyed by the gas transporter was supplied to premises and metered;
- f) each shipper with whom the gas transporter has a contract for the conveyance of gas;
- g) each gas service isolation valve on the gas supply system; and
- h) gas pipeline networks installed in and under public places and highways, in such form as is accessible by other utility service providers or such other persons who reasonably require such information.

129) The gas transporter shall provide such record storage, access schemes and including digital mapping and such other processes that may be used to locate gas pipelines effectively as required by URCA for the purpose of public safety, infrastructure planning works or other purposes as required by government agencies and agreed by URCA. The gas transporter shall also ensure that its digital mapping or records of gas pipelines are accurate and comply with the relevant requirements as required by any government agency.

Appendix 1 – Cyber security measures

External Connections and External Access

- a) Remove all non-essential connections between a CII (Critical Information Infrastructure) and any external system, and implement network segregation for essential connections.
- b) For essential connections requiring only a 1-way data flow out of the CII, to put in place devices or systems that will ensure that only a unidirectional flow out of the CII is permitted.
- c) For essential connections requiring a 2-way data flow into/out of the CII to put in place a 2-way non TCP/IP serial communication link.
- d) Implement encryption for all site-to-site communications.
- e) Implement strict syntactic and semantic checks (of allowed data set) such that data entering the CII does not contain any commands that can alter CII operations. In addition, strong authentication mechanisms e.g. transmission security and message integrity should be implemented.

System Lockdown

- a) Minimise the number of users with domain, system or local administrative privileges.
- b) Disable all unused input/output ports, all unused internal drives or media devices, and all non-essential Operating System (OS) services.
- c) Implement stringent controls on use of all removable media and laptops in CII environment. All removable media devices and laptops used in the CII shall be owned and maintained by the CII Owners, and must be authorised only for dedicated use between specific servers, workstations and end-point devices, Programmable Logic Controllers (PLCs), Remote Terminal Units (RTUs), network switches and routers.

Network and End-point Protection

- a) Monitor perimeter, network and security of the CII to detect any system anomaly. Cyber security logs including, but not limited to, system security logs, system health logs, devices/services activity logs and audit logs shall be kept for at least 18 months. These logs shall be piped to URCA's Sectoral Detection and Early Warning System at intervals specified by URCA.
- b) Install necessary firewalls, Intruder Detection System / Intruder Protection System (IDS/IPS) and network monitoring software.
- c) Application of whitelisting to prevent malicious software and other unapproved programs from executing.
- d) Install anti-virus on all servers, workstations and end-point devices of CII Systems and ensure the virus definitions are up to date.

- e) Ensure that all CIIs shall be regularly patched to resolve software applications and operating system vulnerabilities and that all patches are up to date. Interim mitigating controls shall be in place to address the vulnerabilities if the patches cannot be implemented promptly.

Governance and Operation

- a) CII Owners shall attain and maintain certification to ISO-27001 (or equivalent) for all CIIs.
- b) CII Owners shall provide updated copy of CII's network diagram and asset inventory lists annually or as and when there are changes to the network equipment in machine readable PDF format at least showing, but not limited to, the hostname and IP address of the equipment/devices.