

15 July 2022

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Attention: Jessie Williams

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Dear Jessie

DIRECTIONS FOLLOWING HEARING 3 – BEST PRACTICE GAS TRANSMISSION INDUSTRY STANDARDS

The Hearing Panel sought further clarification and information in relation to the best practice standards within the gas transmission pipeline industry with respect to Firstgas seeking a 20m setback from its pipelines and 30m from above ground incidental equipment.

PIPELINE REGULATORY FRAMEWORK

The Health and Safety in Employment (Pipeline) Regulations 1999 regulates the design, construction, operation, maintenance and suspension or abandonment of the Firstgas transmission pipeline network. Regulation 8 mandates that these activities must, as far as reasonably practicable, be carried out in accordance with specified standards, the most relevant of which is NZS/AS2885 Pipelines – Gas and Liquid Petroleum, comprising (i) AS2885.0 Part 0: General Requirements, 2019; (ii) AS2885.1 Part 1: Design and Construction, 2018; (iii) AS2885.2 Part 2: Welding, 2016; (iv) AS2885.3 Part 3: Operation and Maintenance 2012; and (v) AS2885.6 Part 6: Pipeline Safety Management.

Section 5 of AS2885.3 2012 relates to Pipeline Integrity Management. The section states that pipeline structural integrity is achieved when the pipeline is leak-tight, operating within design parameters and able to withstand all identifiable forces to which it may be subject during operation. Pipeline owners are required to prepare safety management studies, which requires the pipeline route to be divided into safety management sections depending on land use and population density, and to prepare and implement a pipeline integrity management plan (PIMP). The PIMP is required to consider external interference threats to the pipeline.

Section 7 of AS2885.3 2012 relates to External Interference Management and states that regular communication with the community, stakeholders and the relevant authorities is required to raise and

reinforce awareness of the presence of a pipeline and the constraints with respect to the use of land on and/or near the pipeline. Pipeline owners are required to identify and liaise with groups such as land use planners, developers, property and service designers, owners and operators, drillers and excavators, blasting companies and borers to identify as early as possible any changes in planning, development or other activities that pose a threat to the pipeline.

MANAGING RISK TO PIPELINE INTEGRITY, NETWORK OPERATIONS AND OTHER ACTIVITIES

The original design and construction of the transmission pipeline considered the environment within which they were located in at the time (between 1968 and 1975). The pipelines placed in urban areas with denser populations and more intense land uses had different specifications from those used in rural areas with low density and production orientated land uses, i.e. thicker wall pipe is used in urban areas. Over time however, large areas of rural land around the North Island have become more urbanised. Urbanisation carries a number of threats to pipelines designed for rural land, including as a result of excavation/disturbance on or near the pipelines, unacceptable soil loading, vibrations from heavy machinery, electromagnetic interference, buildings being placed too close to pipelines, restricted access to pipelines for maintenance purposes, the presence of hazardous facilities and substances and so on. Urbanisation also changes the risk profile of the pipelines in the event of an incident. The pipelines were not originally designed to mitigate against these risks which then directs the pipeline owners to consider the management of risk factors in proximity to the assets.

Changes in the land use may introduce the need for design and/or operational changes to the pipeline to ensure that any ongoing safety obligations are achieved. As outlined above, this is due to the design of the pipeline being influenced by location classifications; attributed to different sections of the pipeline to determine risks and their associated management. AS2885.0:2018 defines "Location Class" as the classification of an area according to its general geographic and demographic characteristics, reflecting both the threats to the pipeline from land usage and the consequences for the population should the pipeline suffer a loss of containment. Primary location classes include rural, rural residential, residential, and high density. Secondary location classes include sensitive uses, industrial, and heavy industrial. "Sensitive Use" is described within AS2885.6:2018 as land where the consequences of a failure may be increased because it is developed for use by sectors of the community who may be unable to protect themselves from the consequences of a pipeline failure and includes, but is not restricted to, schools, hospitals, aged care facilities and prisons. Sensitive use location class shall be determined by any portion of pipeline where there is a sensitive development within a specific measurement length. It shall also include locations of high environmental sensitivity to pipeline failure.

Part 6 of AS2885.6:2018 defines how a measurement length is calculated, based on pipeline diameter, and operating pressure etc. According to the AS2885.1 (Appendix Y) method for radiation

contours, an average pipe size for the Firstgas network (DN200) and typical design pressure of 8.62MPag, a radiation intensity is calculated at 12.6kW/m² within a 60m radius from the affected pipe. As stated within Appendix B3 of AS2885.6, “a thermal radiation level of 12.6 kW/m² represents the threshold of fatality, for normally clothed people, resulting in third degree burns after 30 seconds of exposure”. To provide context, this would be a low probability but extreme consequential event which has been historically low numbers world-wide as a result primarily of active pipeline corridor threat management regimes.

The Major Industrial Accidents Council of Canada (MIACC) published a document titled ‘Land use planning with respect to pipelines: A guide for local authorities, developers and pipeline operators (1999)’ which recommends that local authorities establish a ‘Consultation Zone’ that extends for 200 meters either side of a pipeline. This distance is based on the immediate area affected should a pipeline incident occur. Developments within this zone would be required to demonstrate that consultation with the pipeline operator had occurred before any approvals are given. The MIACC do not go as far as to recommend prohibiting specific land use types within the Consultation Zone, however certain land uses were encouraged, and others discouraged. Lower density housing is encouraged due to ease of evacuation in the event of an emergency. Critical services, such as hospitals, police and fire departments that would need to function in the event of a pipeline emergency are encouraged to be located outside of the ‘Consultation Zone’. The MIACC concludes that any type of development should provide unobstructed access to the pipeline corridor to allow for operational and maintenance activities and in the event of an emergency.

NEW ZEALAND CONTEXT – SAFE SEPARATION DISTANCES BEING SOUGHT

Firstgas has considered the NZ/AS2885 framework and the MIACC advice in respect of the New Zealand context. Consideration has been given to the activities likely to be carried out in association with sensitive activities and the above-mentioned regulatory requirements, whilst considering the perception of the erosion of private landowner rights. We believe that the provisions sought, being a separation distance of 20m from the pipeline for the establishment of sensitive activities, and 30m from above ground incidental equipment (e.g. gas delivery points) will provide a reasonably practicable solution to achieving the safe operation of the network and mitigation of risk for the wellbeing and health and safety of people and communities.

Yours faithfully



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