Mid Island Consumer Services Co-operative (Mid Island Co-op)

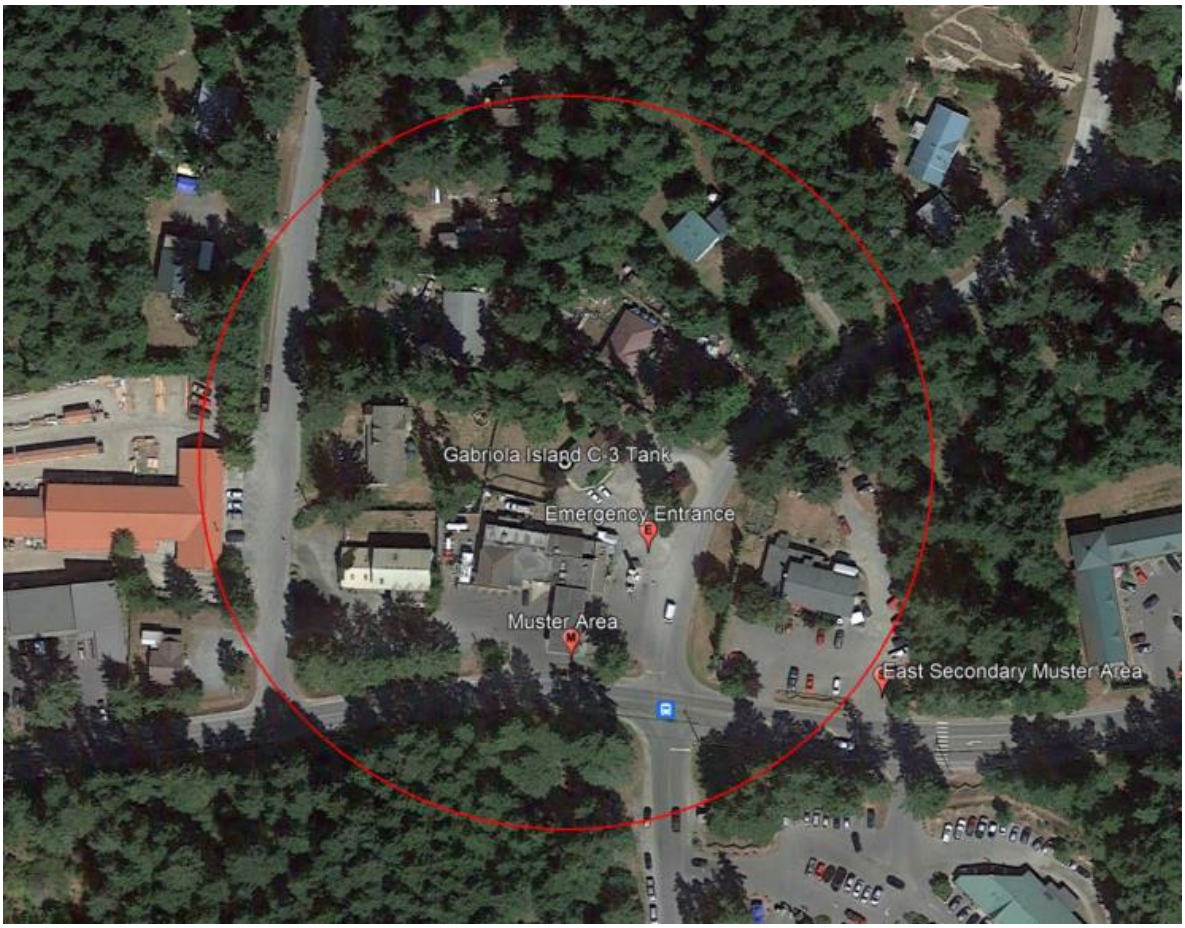
Environmental Emergency (E2) Plan

For the Propane Installation at 793 Lockinvar Lane, Gabriola Island, BC

Site Location
Emergency 1st Responder Entrance to facility: • GPS - DD (decimal degrees): 49.17439, -123.84605 • 793 Lockinvar Lane Gabriola Island BC One 9,400 USWG propane tank is located at: • Mid Island Co-op Bulk Plant • 793 Lockinvar Lane Gabriola Island BC V0R 1X0 • DD (decimal degrees): 49.17461, -123.84636 Mail to: • Head Office: 106–2517 Bowen Road Nanaimo BC V9T 3L2 E2ID# TBD

Section 1 Executive Summary

Following information is required in activating the E2 Plan: Map showing Muster Areas, 1st Responders Entrance, Emergency Information & Equipment Locations, Site Address, E2 Plan Activation and Emergency Contacts, Incident Procedures, and Emergency Notification & Communications Procedure.



Muster Areas: In case of emergency involving propane, all staff will go to the Muster Area and if not safe to meet/stay at the Muster Area go to the east Secondary Muster Area using the closest safe route. If the Muster Areas are not safe to meet/stay, go upwind or side-on to the wind out to a safe distance.

EMERGENCY INFORMATION & EQUIPMENT LOCATIONS	
FIRST AID/EYE WASH	In convenience store
E2 PLAN with SDS	In convenience store
FIRE EXTINGUISHERS	Propane Plant and Vehicles
TRUCK KEYS	In truck or with driver
EMERGENCY ALARM SYSTEM	Nitrogen powered horn activated on North exterior wall of convenience store
PROPANE PLANT ELECTRICAL SHUT-OFF	North exterior wall of convenience store
PROPANE PLANT PROPANE SHUT-OFF	North exterior wall of convenience store
MUSTER AREA	South of petroleum pumps
SECONDARY MUSTER AREA	East of site on North Road

ADDRESS of Gabriola Island Propane Bulk Plant: 793 Lockinvar Lane Gabriola Island BC
First Responder Entrance - GPS in DD: 49.17439, -123.84605

E2 PLAN ACTIVATION and EMERGENCY CONTACTS

IN CASE OF EMERGENCY CALL:

911

NEXT REPORT TO MANAGEMENT AT:

POSITION	NAME	LOCATION	BUS #	CELL #
CO-OP AREA MANAGER	KELLI CARTWRIGHT	NANAIMO	250-802-1198	250-802-1198

NEXT REPORT TO CO-OP EMERGENCY AT:

1-833-277-3674 (CRS-EMRG)

FCL PROPANE EMERGENCY CONTACTS:

POSITION	NAME	LOCATION	BUS #	CELL #
24 HOUR ON-CALL	TECHNICIAN	CHEMAINUS	250-668-9876	
AREA MANAGER	JOHN SLATTERY	ARMSTRONG	236-940-2063	250-938-3313

EXTERNAL EMERGENCY CONTACTS

POLICE/FIRE/AMBULANCE	EMERGENCIES	911
BC ENVIRONMENT	PROPANE RELEASE	1-800-663-3456
BC OH&S	WORKER INJURY	1-888-621-7233
BC EMERGENCY MANAGEMENT	PUBLIC SAFETY	1-800-663-3456
CO-OP EMERGENCY	EMERGENCY RESPONSE TEAM	1-833-277-3674 (CRS-EMRG)

INCIDENT PROCEDURES

FIRE OR EXPLOSION	CALL 911. If the event is beyond the control of staff, then the discovering staff member shall activate the emergency horn located on North exterior wall of convenience store to initiate an evacuation. All staff will go to the Muster Area and if not safe to meet/stay at the Muster Area go to the east Secondary Muster Area using the closest safe route.
MAJOR PROPANE RELEASE	CALL 911. The discovering staff member shall activate the emergency horn located on North exterior wall of convenience store to initiate an evacuation. All staff will go to the Muster Area and if it is not safe to meet/stay at the Muster Area go to the east Secondary Muster Area using the closest safe route. Station Road Marshalls if the release is a threat to traffic, at the Secondary Muster Areas to attempt to stop traffic from entering the area until the arrival of Fire and/or Police personnel.
BOMB THREAT	Observe and take note of all details of the call. Immediately notify the **ERC** (Emergency Response Coordinator who will be Management or the most senior and or most qualified staff member on site). Call 911. Notify all other staff, go to a Muster Area, and if not safe to meet/stay at the Muster Area go to the east Secondary Muster Area using the closest safe route.
SERIOUS INJURY/ILLNESS	Assess the scene and administer first aid as per training. Call 911 for assistance as warranted. Establish a clear pathway for EMS.
EVACUATION PROCEDURES	The **ERC** shall coordinate the activities during the evacuation such as alarms, searches, and emergency shutdowns and the accounting for all staff at the Muster Area and, if not safe to meet/stay at the Muster Area go to the east Secondary Muster Area using the closest safe route.
EMERGENCY REPORTING	After calling 911 and as soon as possible, the ERC shall report to Management then 1-833-277-3674 to activate the FCL Emergency Management Team.

EMERGENCY NOTIFICATION & COMMUNICATIONS PROCEDURE	
1	In the event of an uncontrolled propane release with or without fire or the reasonable likelihood of such a release, the discovering employee shall activate the emergency horn located on North exterior wall of convenience store to initiate an evacuation.
2	All personnel on site will go to a Muster Area and if not safe to meet/stay at the Muster Area go to the east Secondary Muster Area using the closest safe route and the **ERC** (Emergency Response Coordinator) who will be Management or the most senior and or most qualified staff member on site) shall account for all staff.
3	The **ERC** shall call 911 to report the event and the appropriate emergency provider will assume the role of Incident Command upon their arrival.
4	The **ERC** shall report to Management then 1-833-277-3674 (1-833 CRS EMRG) to activate the FCL Emergency Management Team.
5	FCL Emergency Management Team shall ensure the notification of the Local Police if the event involves an uncontrolled, unplanned, or accidental release of propane into the environment; or the reasonable likelihood of such a release into the environment.
6	FCL Emergency Management Team shall contact **ERAC** (Emergency Response Assistance Canada) if the event involves an uncontrolled, unplanned, or accidental release of propane into the environment; or the reasonable likelihood of such a release into the environment that is beyond the capabilities of staff. The ERAC HBC (Home Base Coordinator), TA (Technical Advisor) or RMA (Remedial Measures Advisor) may advise the FCL Emergency Management Team, the ERC, or the Emergency Service IC (Incident Command) of any required actions.
7	If the FCL Emergency Management Team implements the **ERAP** (Emergency Response Assistance Plan activation) in response to a release or anticipated release to **tier 1**: the Emergency Management Team will monitor the release or anticipated release and will be actively involved in the conversations and decisions that involve the dangerous goods and/or the means of containment. None of the emergency response resources found in the ERAP are brought to the site of the incident during tier 1.
8	If the FCL Emergency Management Team implements the **ERAP** (Emergency Response Assistance Plan) in response to a release or anticipated release to **tier 2**: an RMA (Remedial Measures Advisor) will be assigned to further assess the incident and an ERT (Emergency Response Team) may be assigned to the incident. The RMA and ERT will suggest, implement, or coordinate activities with IC (Emergency Service Incident Command). The ERT is equipped to conduct emergency procedures and repairs of the propane tank or system. **Note**: IC (Incident Command) needs to communicate with ERAC.
9	Upon assessment of the incident, IC (Incident Command) will determine the extent and length of evacuations and shall coordinate the evacuation.
10	FCL Emergency Management Team shall make a report to – where required - the Provincial and/or Federal Authorities listed in the Annex - External Reporting Section - of the E2 Plan for: Public Safety, Environmental, Health and Safety, Gas and Pressure Vessel, and Transportation of Dangerous Goods.

Table of Contents

Section 2 Introduction

2.1 CRS Health Safety and Emergency Preparedness and Response Statement

The CRS is committed to health and safety through operational integrity and effectively manages its work to identify and mitigate risks to health, safety, and the environment.

Operational integrity at the CRS means conducting all activities safely and reliably so that the public is protected, impact to the environment is minimized, the health and wellbeing of employees is safeguarded, contractors and customers are safe, and physical assets (such as facilities and equipment) are protected from damage or loss.

This Emergency Response Plan has been developed to meet or exceed the requirements of all applicable governing agencies and regulatory bodies where the CRS operates.

The following plan considers an area-specific hazard/risk analysis and outlines the necessary resources, personnel, logistics and initial actions to facilitate a prompt, coordinated and rational approach to any emergency.

2.2 Purpose

This Emergency Response/Environmental Emergency (E2) manual describes the procedures for Mid Island Co-op personnel in the event of an emergency at a company facility.

This E2 plan has been prepared in accordance with the Environmental Emergency (E2), Regulations made pursuant to the Canadian Environmental Protections Act, 1999 (CEPA 1999), reflecting the four pillars of emergency management: prevention and mitigation, preparedness, response, and recovery.

Sharing portions of information within this manual with interactive stakeholders or those residents or businesses in the proximity of effect from an emergency is encouraged.

2.3 Objectives of the E2 Plan

- Reduce the frequency and consequences of uncontrolled, unplanned, or accidental releases of propane.
- Promote the safety of workers, responders, and the public.
- Reduce the potential for destruction of goods and property.
- Minimize the effect upon the environment.
- Communicate risks associated to the facility with the local emergency response services.
- Help responders quickly determine and initiate proper remedial actions.
- Inform neighboring citizens and businesses of preparations and actions that will minimize risk to safety and health during an emergency event.
- Liaise with local municipal administrations in the context of public safety.
- Reduce recovery times and costs.

These objectives are achieved through the development, implementation, training/exercising and maintenance of this E2.

2.4 Scope of Emergency Procedures

Due to the complexity and variables of an emergency, it is difficult to determine an exact systematic process that will be effective in all situations. The common elements within responses are listed. The responder will determine the sequence and execution at the time of the incident.

This E2 Plan addresses the following list of risks:

- Propane gas release
- Propane liquid release
- Fires
- Explosions
- Threats to people, property, and goods
- Other site-specific values at risk

2.5 E2 Plan Access

An up-to-date plan shall be kept in the red plastic document holder - labelled E2/SDS - installed near emergency horn activation on North exterior wall of convenience store so as to be readily available to site personnel and 1st Responders.

2.6 Joint Responsibilities

Mid Island Co-op owns and operates this Bulk Plant on Gabriola Island BC.

2.7 Plan Consultation/References

- Canadian Environmental Protection Act, 1999 - Part 8: Environmental Matters Related to Emergencies
- Environmental Emergency Regulations SOR/2019-51
- Technical Guidelines for the Environmental Emergency Regulations, 2019 Version 2.0
- WorkSafe BC Guidelines – OHS Reg's. Part 4: Emergency Preparedness and Response
- WorkSafe BC Guidelines – OHS Reg's. Table of Exposure Limits for Chemical Substances
- CCOHS https://www.ccohs.ca/oshanswers/hsprograms/basic.html
- National Fire Code of Canada – Division B, Emergency Planning
- Federated Co-operatives Limited SDS – Propane
- CAN/CSA Z731-03 Emergency Preparedness and Response
- CAN/CSA B149.1 Natural Gas and Propane Installation Code
- CAN/CSA B149.2 Propane Storage and Handling Code
- ASME Vessel Specifications
- Canadian Electrical Code
- Provincial Boiler and Pressure Vessel Acts and Regulations
- Safeti, formerly PHAST (Process Hazard Analysis Software) Analysis Modelling from Marsh Risk Consulting
- MIACC (Major Industrial Accidents Council of Canada) is a risk-based land use planning guide (MIACC was dissolved in November 1999 with its works transferred to the Process Safety Management division of CSChE (Canadian Society for Chemical Engineering)

2.8 Record of Amendments

Record changes made to the Plan on the table below and replace applicable pages.

#	Date of amendment	Section # amended	Recorded by
1	2023	New E2 Plan	Kevin McEown - FCL and Kelli Cartwright - Mid Island Co-op

2.9 Company Profile

Nature of Business

Mid Island Co-op is a locally owned co-operative serving local communities with food and fuel.

Typical Storage Use and Delivery Activities

This Mid Island Co-op owned and operated Bulk Plant on Gabriola Island BC has a 9,400 USWG horizontal above ground propane storage tank supplying a 3,400 XXXX USWG delivery truck. Propane is replenished by Federated Co-operatives Limited (FCL) Propane department 5,950 USWG delivery units. Depending on seasonal demands, the tank is replenished ~once weekly (winter) and ~once every two weeks (summer). Deliveries to the tank take approximately 60 minutes to off-load.

2.10 Glossary

Active Mitigation: A safeguard system designed to mitigate the consequences of an incident that requires human intervention, external mechanisms, or energy sources. Examples include lighting, automatic and manual valves, etc.

Alternate Scenario: An environmental emergency that could reasonably be expected to occur at a facility and that would likely cause harm to the environment or constitute a danger to human life or health.

Alternate Worst-case Scenario: Means the scenario described in section 4(2)(f) of the E2 Regulations. It involves the alternate scenario that is more likely to occur than the worst-case scenario **and** that has the longest impact distance outside the boundary of the facility (if it exists).

BLEVE: (boiling liquid expanding vapor explosion) happens if a container holding a pressure liquified gas (e.g., propane) fails catastrophically. Catastrophic failure of the vessel is followed by the explosive release of boiling liquid and expanding vapour.

The BLEVE is a physical explosion where the hazards are blast and projectiles. Propane is flammable so a fireball may happen after a BLEVE if the released cloud is immediately ignited. This is usually the case if the tank failure is caused by fire impingement. If a flammable cloud is not ignited immediately then delayed ignition could lead to other fires, explosions, etc.

A BLEVE will typically occur when the steel of the tank is compromised by an external impinging fire and consequential rupture due to the combination of internal over-pressure and weakening steel strength due to overheating. A warning sign of an impending BLEVE may be intermittent or a continual flare-off from the pressure relief valve until the tank either BLEVE's or rids enough propane where flare-offs cease. The variables within the chain of events are difficult to accurately predict.

CAS Registry Number: The identification number assigned to a substance by the Chemical Abstracts Service, a division of the American Chemical Society. The Chemical Abstracts Service Registry number is the main identifier for regulated substances found in the E2 regulations. CAS number for Propane is 74-98-6.

CEPA: Canadian Environmental Protection Act, 1999.

CERCA: The Canadian Emergency Response Contractors' Alliance (CERCA) is an industry association comprised of stakeholders from all facets of the Canadian dangerous goods emergency response industry. The mission of CERCA is to foster the establishment of a sound emergency response network in Canada.

Community Emergency Systems Notification: An advisement document used to communicate avoidance and evacuation actions in the event of a vapor cloud drift, substantial release, or fire. This notification is for offer to neighboring residences and businesses that are within the harm radius of the risk model.

Container System: Any receptacle or network of receptacles that is used to contain a substance – including any connected pipelines or piping – except any part or that network that is automatically or remotely segregated from the rest of the network by shut-off valves, or other mechanisms in the event of any environmental emergency.

CRS: Co-op Retailing System.

CRS-EMRG: The Co-op Retail System (CRS) Emergency Hotline (CRS-EMRG) is a toll-free number (1-833-277-3674) to call (24/7) to report an emergency related to FCL or Co-op. A dispatcher (STARS) will ask a series of questions to gather information about the incident and will then notify the appropriate FCL Emergency Management Team (EMT).

E2 (Environmental Emergency): This refers to the Environmental Emergency Regulations that address the prevention of, preparedness for, response to and recovery from, and environmental emergency caused by uncontrolled, unplanned, or accidental releases.

E2 Plan: Environmental Emergency (E2) Plan is a document that provides guidance on actions under various emergencies and conditions.

ECCC: Environment and Climate Change Canada.

Emergency: An emergency is a potential or a real developing situation, which may cause injury, property damage, environmental damage and/or impact on corporate image and reputation.

Emergency Management Centre (EMC): The FCL EMC is where the FCL Emergency Management Team will meet in the event of an emergency involving the Propane Department will typically be located at FCL's Home Office.

Emergency Management Team (EMT): The FCL EMT is a group of subject matter experts and advisors who provide oversight and guidance to emergency response measures.

Emergency Notification System: Is an advisement document used to communicate actions in the event of a vapor cloud drift, fire, explosion, substantial release or other where proper avoidance, evacuation and muster point items are explained. This notification is for offer to neighboring residences and businesses etc. that are within the harm radius of the risk model.

Emergency Operations Manager (EOM): The FCL EOM is responsible for the FCL Emergency Management Centre and working with the Emergency Management Team initially determines Emergency Response Activation Plan activation, crisis level and owner and what support or guidance and performs duties as described within this plan.

Emergency Responders: General term for a group of individuals who have defined skills or responsibilities in an emergency.

Environmental Emergency: Means an uncontrolled, unplanned, or accidental release of an E2 substance into the environment (or the reasonable likelihood of such a release) that:

a) Has or may have an immediate or long-term harmful effect on the environment; or

b) Constitutes or may constitute a danger to the environment on which human life depends; or

c) Constitutes or may constitute a danger in Canada to human life or health.

Environmental Officer (EO): The EO as a member of FCL's Emergency Management Team initially assesses the degree of potential environmental impacts and performs duties as described in this plan.

ERAC: Emergency Response Assistance Canada formerly the Liquid Propane Gas Emergency Response Corporation is a division of the Canadian Propane Association developed to offer emergency services for the Canadian propane industry. The ERAC has Emergency Response Teams situated in various locations nationwide to respond to major propane emergencies.

ERAP: An emergency response assistance plan describes what to do in the event of a release or anticipated release of certain higher-risk dangerous goods – such as propane - while they are in transport. An ERAP requires a third-party responder agreement between FCL, and the third party listed in the ERAP – being ERAC - that will provide technical or emergency response advice, and/or provide resources to respond to a release or anticipated release on FCL's behalf.

ERC: The Emergency Response Coordinator will typically be the most senior and or qualified manager, supervisor or employee on site that is able to instruct the activities of others in the event of an emergency. The ERC will assume emergency response coordination of the situation until Emergency Services assume command. The ERC may still be required to assist or advise the Local Emergency Service during an event.

FCL: Federated Co-operatives Limited.

Fireball: Can result from an instantaneous release from a BLEVE or a release with a delayed ignition.

Full-scale Simulation Exercise: An action-based simulation exercise requiring the deployment of personnel, resources, and equipment.

HBC: The Home Base Co-ordinator is a person that is verified under CERCA to advise Local Emergency Responders, owners and their contracted Emergency Response Team on remedial activities following an incident.

Incident Action Plan (IAP): Within Incident Command System, includes the overall incident objectives, strategies and tactics established by Incident Command.

Incident Commander (IC): Within Incident Command System, has overall incident management responsibility.

Incident Command System (ICS): The ICS is a standardized on-site management system designed to enable effective, efficient incident management within a common organizational structure.

Information Officer (IO): The IO as a member of FCL's Emergency Management Team initiates and directs established communication response and performs duties as described in this plan.

Muster Area: The Muster Area is typically situated on site or adjacent to site in a safe location. Choice of location is prior to an emergency event. Posting a sign identifying the Muster Area and placing a copy of the E2 Plan there in a weatherproof container is required.

Operations Chief (OC): Within Incident Command System, directly manages all incident tactical activities and implements the Incident Action Plan.

Overpressure: The overpressure of the atmosphere due to an explosion. Probabilistic risk models used for FCL facilities base is 1-psi overpressure. Overpressure of 1 psi may cause structural damage to buildings. Levels of 3-5 psi will cause significant structural damage and cause severe or fatal injury to persons openly exposed to a pressure wave.

Passive Mitigation: A safeguard system designed to mitigate the consequences of an incident that does not require human intervention, external mechanisms, or energy sources. Examples include fencing, protection against collision damage etc.

PID: Piping and Instrumentation Diagram.

Planning Chief (PC): Within Incident Command System, oversees all incident-related data gathering and analysis regarding incident operations and assigned resources, conducts Planning Meetings, and prepares the Incident Action Plan for each operational period.

Reasonable: Means logically valid. It is based on using sound judgement, and therefore, practical, and sensible as opposed to extreme or excessive.

RMA: The Remedial Measures Advisor is a person that is qualified under the LPGERC (ERAC) to advise Local Emergency Responders and or CPA members on remedial activities following an incident.

SAFETI: Process Hazard Analysis Software used for Analysis Modelling prepared by Marsh Risk Consulting.

Safety Officer (SO): The SO as a member of FCL's Emergency Management Team monitors incident operations and advises the Emergency Operations Manager on all matters related to operational safety and performs duties as described in this plan.

SDS: Safety Data Sheet.

Secondary Muster Area: Two Secondary Muster Area are situated a cross wind to the Muster Area and evacuated to when it is not safe to go to a Muster Area or remain at the Muster Area. Choice of location depends on wind direction.

Shelter-in-place: Means finding a safe location indoors and staying there until you are given an "all clear" or told to evacuate.

Simulation Exercise: An exercise simulating the response to an environmental emergency involving the release of an E2 substance.

Strike Team (ST): Within Incident Command System, a set number of resources of the same kind and type that have an established minimum number of personnel, common communications, and leader.

STARS: STARS Emergency Contact Centre (ECC) is a service offered by STARS Emergency Link Centre (ELC) to answer calls to the Co-op Retail System (CRS) Emergency Hotline (CRS-EMRG) for emergencies related to FCL or Co-op and provide incident notification to the appropriate FCL Emergency Management Team.

Unified Incident Command (UIC): Within Incident Command System, UIC allows agencies with different legal, geographic, functional authorities and responsibilities to work together effectively. All responsible agencies jointly provide management direction through a common set of incident objectives and strategies established by a single Incident Action Plan.

USWG: United States Water Gallon. This measurement relates to the capacity of an LPG tank based on how much water the containment can hold.

VCE: (vapor cloud explosion) is a chemical explosion and occurs when a large quantity of flammable vapor or flammable gas is ignited, and the flame propagates at a rate/speed fast enough to create an overpressure. Release or migration of flammable vapor/gas into a confined area with ignition will create a substantial overpressure and thermal event. Migration of the vapor/gas cloud will determine where and the intensity of a VCE which will be influenced by degree of congestion, terrain, and other obstructions.

Wildfire: Wildfire, also known as a forest fire, prairie fire, grass fire, or brush fire, is an unplanned, unwanted, uncontrolled fire often occurring in wildland areas, but which can also consume structures.

Worst Case Scenario: Means the scenario described in section 4(2)(e) of the E2 Regulations. It must involve the release of the maximum quantity of an E2 substance that could be contained in the container system with the largest maximum capacity at a facility, or the maximum expected quantity of the substance on-site that is not contained. The scenario does not need to be reasonable.

Section 3 Management and Administration of the E2 Plan

3.1 E2 Plan Development Evaluation Review Update and Consultation Team

The team participating in the plan development, initial review and responsible for its annual evaluation, exercise, review, updates as necessary by the following individuals within their roles:

Participant	Organization	Function and Project Role
Bruce Buckingham	Mid Island Co-op	Director of Energy Operations (Plan Approval)
Kelli Cartwright	Mid Island Co-op	Area Manager (Plan Advisory for Development, Plan Implementation, Training/Exercise and Maintenance)
Kevin McEown	Federated Co-operatives Limited - Propane	Senior Health and Safety Advisor (Plan Development, Implementation, Training/Exercise Development and Maintenance)
Darrell Rose	Marsh Risk Consulting	Senior Vice President (exempted from approvals) (Risk Engineer)

3.2 E2 Plan Distribution

The E2 Plan will be made available to all employees, emergency service providers, stakeholders, and regulatory authorities by the following:

#	Name of Person who received the ERP manual	Individual/Organization	Date Issued
1	Bruce Buckingham	Mid Island Co-op - Director of Energy Operations	2023
2	Kelli Cartwright	Mid Island Co-op - Health & Safety Coordinator	2023
3	Kevin McEown	FCL Propane - Senior Health & Safety Advisor	2023
4	XXXX	Gabriola Volunteer Fire Department - Fire Chief	2023

3.3 ECCC Notifications

On XXXX, ECCC received Schedule 2-5 notices, under CEPA's E2 Reg's, 2019.

Section 4 Risk Assessment

4.1 Propane – General Characteristics and Hazards

4.1.1 Background

The inherent properties of propane with its low boiling point make it a feasible energy source used in a variety of energy applications from heating to transportation. Propane uses include fuel for heating, cooking, automobile and forklift truck fuel, crop drying, welding, and cutting operations. Industry uses propane as a refrigerant, solvent and as a chemical feedstock.

Under normal atmospheric conditions propane is a gas, however, increasing the pressure causes the substance to condense into a liquid. This characteristic of propane allows for storage of large quantities of liquid propane inside of a pressurized container. When liquid propane vaporizes (phase changes) from its liquid state into its gaseous state it creates a refrigerating effect (cooling).

4.1.2 Properties

Propane is stable and non-reactive under normal conditions of use, storage, and transport. Conditions to avoid include heat, sparks, open flames, and other ignition sources. Avoid contact with incompatible materials, which includes any strong oxidizing agents. Thermal decomposition of this product can generate carbon monoxide and carbon dioxide.

Propane is a colorless, odorless gas in its natural state, so the addition of a stench odorant called ethyl mercaptan gives propane a distinct boiling cabbage like odor. Propane is transported and stored as a liquid in pressure vessels to a capacity of approximately 80%, which allows room for vapor expansion. When propane liquid is released from its confinement, it converts to a gas to a rate of 270:1. The speed of vaporization is dependent on ambient temperature. Most calculations are based of 15° C; however, calculations are made for differing temperatures to assure safe load weights. Below -42° C, propane will lose its ability to vaporize and remain a liquid. Installation of vaporization appliances or supply tank heaters ensure function in extremely low temperatures or in high volume demand situations. Propane is 1.6 times heavier than air and settles in lower areas if released. Propane vapors will dissipate into the atmosphere rather quickly depending on wind conditions and ambient temperature. Propane is non-toxic, however may be an asphyxiant if enough breathable air is displaced. The combustible range of propane is between 2.2% and 9.5% mixture with the atmosphere. This is a relatively low range of flammability; however, periphery zones of a vapor cloud will ignite if it falls within the flammability range mentioned.

For more information refer to 9.2.1 Safety Data Sheet.

4.1.3 Provincial Exposure Limits

Table 4.1.3 Work Safe BC Table of Exposure Limits

Substance	CAS #	Time Weighted Average Limit (TWA)		Short Term Exposure Limit (STEL)	Notations
		ppm	mg/m³		
Propane	74-98-6	N/A	N/A	Simple asphyxiant	EX

Note: The term EX means the substance is a flammable asphyxiant - updated June 1, 2021.

4.1.4 Potential Health Effects/First Aid Measures

Propane is non-toxic, but if released into a confined space or settles in lower areas it will displace the air making it difficult to breathe. It is always important to seek medical attention if you are experiencing signs and symptoms from exposure. Some of the effects of exposure:

Eye Contact: Rapidly expanding Propane can cause eye irritation and frostbite (cold burn). Permanent eye damage or blindness could result.

Inhalation: Chemical asphyxiant hazard – if accumulation occurs to concentrations that reduce oxygen below safe breathing levels. Prolonged inhalation may be harmful. May cause drowsiness or dizziness at first but if inhaled at high concentrations, the central nervous system depresses and reduces the ability of the blood to carry oxygen to body tissues.

Skin Contact: Direct contact with liquefied propane gas can result in frostbite (cold burn).

Ingestion: Not a normal route of exposure - unlikely.

4.1.5 Summary – Potential Risks of Release for Propane

Propane has no natural odour and is non-toxic but is an asphyxiant in high concentrations. The vapour density of propane is 1.6; consequently, it will accumulate in lower areas such as ditches and sewers. To be combustible, propane needs to be within its flammable or explosive range between the Lower Explosive Limit (LEL) 2.2% and Upper Explosive Limit (UEL) 9.5% by volume in atmosphere. When liquefied propane is released into the atmosphere, it will expand up to 270 times in vapour to that of liquid.

The impact on life safety and the physical environment because of an unplanned release can be detrimental, so it is important to reduce the risk through the implementation of elimination, engineering, and administrative controls.

4.2 Facility Location, Storage, Handling, and Risk Mitigation

4.2.1 Description of Facility Property Surrounding Area Including Potential Receptors

The 9,400 USWG horizontal propane storage tank is installed above ground.

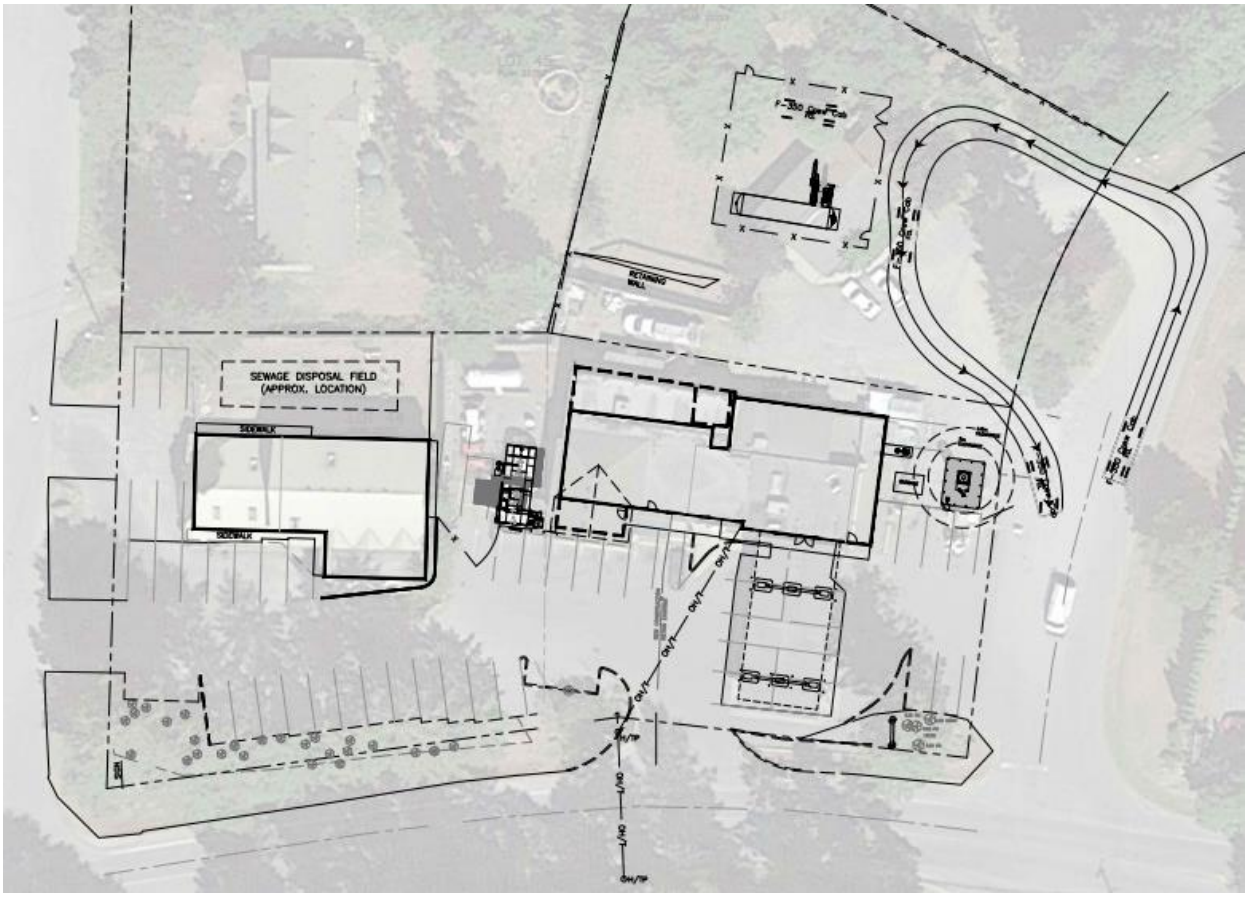
The facility located at 793 Lockinvar Lane, on Gabriola Island, within Gabriola Island Trust Area, and the Regional District of Nanaimo BC. Gabriola Island has a population of 4,500 and population density per square kilometer of 77.4 (Statistics Canada, 2021 Census).

The alternate worst-case scenario is a jet fire based on propane liquid released through a ruptured 3" pipe with an impact of 12.5 kW/m² at 100 metres. Ross Way is located 72 metres west, North Road 58 metres south, and Lockinvar Lane 35 metres east of the propane bulk plant. Seven residences, a restaurant, an office and two commercial occupancies are within the alternate worst-case scenario.

There is a delivery driver working from the propane bulk plant.

If an environmental release were to occur, impacts to the environment could result in consequences to the surrounding area, pending the amount of release and scale of the incident.

Figure 4.2.1 Facility and Property



4.2.2 Maximum Capacity and Quantity of Propane Stored on Site

Propane is the only product on site that meets the minimum threshold requirements for developing the Environmental Emergency (E2) portions of this Plan as per Environment and Climate Change Canada's E2 Regulations. The capacity of the largest single container in which propane is stored on site is 18.0243 metric tonnes (9,400 USWG). The maximum expected quantity of propane on site at any time during the calendar year is 18.0243 metric tonnes (including piping) - the working volume limited to 80% of the capacity of the propane vessel on site to allow for expansion/contraction of propane due to changes in temperature/pressure within the vessels. **18.0243 metric tonnes are registered with ECCC using SWIM for both quantity and capacity as it is not known how much if any tanks (at up to 5% maximum) or cylinders (at up to 80%) will be stored on-site.** Since both the largest single container and maximum expected quantity both exceed 4.5 metric tonnes, an E2 Plan is required.

4.2.3 Substance Identification

Schedule 1 of Environmental Emergency Regulations, 2019 - Part 1						
Item	Column 1	Column 2	Column 3	Column 4	Column 5	
	CAS No	Name of Substance	Concentration % mass/mass	Minimum Quantity (tonnes)	Hazard Category	UN No
17	74-98-6	Propane	1	4.5	E	1978

Legend: E explosion hazard

4.2.4 Process Description

This Mid Island Co-op staffed Bulk Plant has a 9,400 USWG horizontal above ground propane storage tank supplying a 3,400 XXXX USWG delivery truck. At this time, Propane is replenished by Federated Co-operatives Limited (FCL) Propane department 5,950 USWG delivery units. Depending on seasonal demands, the tank is replenished ~once weekly (winter) and ~once every two weeks (summer). Deliveries to the tank take approximately 60 minutes to off-load.

4.2.5 Passive Mitigation

The 9,400 USWG horizontal propane storage tank is installed above ground.

Locked non-climb-able metal fence segregate the above ground propane tank from the public.

Stationary propane tank and its associated piping are protected against collision damage by concrete filled metal posts XXXX.

4.2.6 Active Mitigation

The facility is illuminated at night.

The facility has a typical amount of portable fire extinguishers as required by the local fire code. Access for fire department equipment is good.

The propane storage tank is within reach of hose streams from outside of the facility and firefighting water is supplied by water shuttles.

The delivery trucks have driven-away protection in the form of interlocks that prevent the truck from being placed into gear with the propane loading hose attached ("refinery gates"). The tanks on the delivery trucks are outfitted with excess flow valves that will shut off flow to the atmosphere should a significant hose or pipe break occur. Trucks are outfitted with positive air shut off devices and will shut down the engine if propane gas is ingested. Drivers have an emergency remote stop device in their possession that if activated shuts off the truck, closes the ISC valves and while pumping requires the driver to manually press a button at timed intervals to continue flow. A back-check valve at the barrel fill-in point protects piping.

Manual emergency shutdown devices are provided at the above ground tank and on the North exterior wall of the convenience store. Pressure relief valves are installed on the fixed tank and delivery vehicles.

There are good controls utilizing the operating and maintenance procedures. The storage tank has no other fire systems or controls such as fire or gas detection systems.

Vandals or trespassers to the facility and propane area are dealt with by the local law enforcement fully of the law.

4.3 Frequency, Probability and Consequence Risk Assessment

Version 8.71 of the commercially available software package, Safeti (formerly Phast Risk) from DNV was used to perform a probabilistic risk assessment of this operation:

https://www.dnvgl.com/services/qra-and-risk-analysis-software-phast-and-safeti-1676

Safeti has consequence modelling software, used for developing heat radiation levels, used in accessing the fire and explosion consequences (overpressures and heat radiation) associated with the propane tanks. Safeti examines the progress of a potential incident from the initial release to far-field dispersion, including modelling of pool spreading and evaporation, and flammable and toxic effects. Safeti was used for the consequence modelling of events modelled for emergency response purposes.

Safeti allows individual receptors to be defined with specific vulnerability data providing a much more accurate picture of the risks to which those within the calculated consequence areas are exposed. The program supports a range of vulnerability models, specific to the effect type being considered. For explosion vulnerability, models are available which consider either overpressure or impulse, with the data being treated discretely or interpolated. For radiation effects, flammable probit methods based on intensity and dose are used.

The methods and vulnerabilities are based on the guidance given by the National Institute of Public Health and the Environment (RIVM) Centre for External Safety, of the Netherlands, as set out in their External Safety (Establishments) Decree (BEVI) (RIVM, 2009). This methodology is based on the former guidelines presented by TNO in their "Coloured Books", with the Guidelines for Quantitative Risk Assessment, CPR18E, or more widely known as the "Purple Book" (CPR-RE, 2005). The concepts of the other "Coloured Books" are utilized within Safeti.

- BEVI – Besluit Externe Veiligheid Inrichtingen, translates as the External Safety (Establishments) Decree of RIVM
- Purple Book - CPR 18E "Guidelines for Quantitative Risk Assessment" published by the Committee for the Prevention of Disasters department TNO, a Netherlands Organization
- RIVM – Rijksinstituut voor Volksgezondheid en Milieu, translated as the National Institute of Public Health and the Environments of the Netherlands
- TNO - Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek, or the Netherlands Organization for Applied Scientific Research, out of Sdu Uitgevers, Den Haag (The Hague). Their Committee for the Prevention of Disasters publishes guidelines on quantitative risk assessment calculations.

The consequence estimating models used in this study are for risk management purposes only. As such, they are not modelling of the actual physical event. As with all models, small changes in the input parameters can significantly affect the resulting consequence estimates.

While the parameters selected in consultation with FCL are reasonable for the model and situation, it must be kept in mind that the results are not absolute. Therefore, the consequence estimates should be taken as only an indication of the extent or order of magnitude of the potential consequence. The actual consequence may be more severe than under the reasonably foreseeable conditions assumed.

SAFETI Parameters and Model Settings:

- Dispersion
    - Atmospheric Expansion - DNV Recommended
    - Modelling of Instantaneous Expansion - Old Standard Method
    - VCE - TNT, 10% yield, Ground Burst
    - Fireball - Roberts TNO Hybrid
    - BLEVE (not applicable to this site) - CCPS Second Edition

4.3.1 Frequency Analysis

As Mid Island Co-op has had no significant propane incidents in its history, we elected to use general industry data for the frequency analysis, specifically that data given in the Purple Book and BEVI methodologies. From these frequencies, combined with the consequence distances calculated for events which would reach offsite receptors, Individual Risk contours can be calculated to compare to acceptable risk criteria.

The use of this method negates the need for fault tree, event tree, and human reliability analysis, as the frequency of the end event is given directly for input into Safeti.

The probabilities of interest in this study are given as:

Table 4.3.1

Event / Installation	Events per Vessel-Year or per Hour-Operation		
Loss of Containment	Instantaneous	10 minutes Continuous	10 mm dia. Continuous
Stationary Pressure Vessel	5×10^{-7} /y	5×10^{-7} /y	1×10^{-5} /y
Loss of Containment	Instantaneous	Largest Connection, Continuous	
Pressurized Road Tankers	5×10^{-7} /y	5×10^{-7} /y	
Loss of Containment	Full Bore	10% Nominal Diameter Release	
Hoses	4×10^{-6} /h	5×10^{-5} /h	
Loss of Containment followed by Ignition	Instantaneous	Largest Connection, Continuous	
Road Tanker on Site	1×10^{-6} /y	1×10^{-6} /y	
Loss of Containment	Full Bore	10% Nominal Diameter Release	
Piping (nom dia. <75mm)	1×10^{-6} /m-y	5×10^{-6} /m-y	
Piping (nom dia. ≥75mm, ≤150mm)	3×10^{-7} /m-y	2×10^{-6} /m-y	
Piping (nom dia. >150mm)	1×10^{-7} /m-y	5×10^{-7} /m-y	

Safeti also utilizes the probability of ignition from the BEVI methodology for stationery and road tanker vessels. For stationary vessels, the probability of ignition is 0.2, 0.5, and 0.7 for continuous releases of 10, 10 to 100, and over 100 kg/s respectively, and for instantaneous releases of 1000, 1000 to 10,000, and over 10,000 kg respectively. Further, we have entered ignition sources at the adjacent facilities

and residential dwellings, which have gas-fired heating systems, and a linear ignition source being the roadways adjacent to the property.

We have multiplied the frequency at which a single vessel may lose containment by the number of similar vessels typically on site, by the number of hours loading hoses are used, or by the number of metres of piping which may contain propane.

An important element in the frequency at which a particular dispersion may reach a receptor is the wind direction and speed. Of slightly lower effect on the dispersion, but still somewhat significant for propane, is the atmospheric temperature, stability, and humidity. Although we have reviewed historical wind directions and speeds, and other pertinent weather parameters in the area, based on Environment Canada, we did not use this data directly in the compilation of the individual risk contours based on wind direction. Rather, we utilized the greatest possible extent of the Individual Risk contour and plotted that distance as a circle of that diameter, thus adding conservatism to the calculation based on wind direction.

We then considered the safety features of the facility, especially of the loading operations, which have the highest frequency of releases traditionally. Each of the delivery trucks are outfitted with an interlocking device, which does not allow the truck to move if the loading hose is attached to the main vessel. This feature lowers the frequency of a hose drive-away event occurring by approximately one order of magnitude.

Other typical features such as excess flow valves on delivery truck tanks, pressure relief valves, and, most importantly, management systems including operating and maintenance procedures and operator training, would be expected to lower the frequency of the postulated events by at least another order of magnitude in aggregate, virtually across the scenarios. However, within the loss data, as is typical with all frequency numbers, we do not know how many of the safety features were in place for the events that the frequency data was based on, therefore, we have assumed, conservatively, that the equipment in those losses had a reasonable number of safety features.

4.3.2 Consequence Analysis

Propane is held and dispensed from the above ground propane storage tank on the site. The vessel, hose, and piping sizes were entered in Safeti to calculate consequences of loss of containment events. In following the BEVI and TNO Purple Book methodology, and thus the remainder of the TNO Coloured Book series, we have used the vulnerability to receptors as contained in that series. Vulnerability was in relation to thermal radiation effects due to fireball, jet, and pool fires, and explosion overpressure effects.

4.3.2.1 Modelling Parameters and Weather

Weather parameters were modelled based on data provided at hourly intervals over a 5-year period. This data considers wind speeds and directions and the associated probabilities, the Pasquill atmospheric stabilities, relative humidity's, etc., and daytime and night-time conditions. This data was entered Safeti to calculate probabilities of weather-related dispersion events over the releases.

4.3.2.2 Releases in General

For each of the vessels and tank, there were common release events chosen, based on the BEVI requirements. These were a catastrophic, instantaneous release of all the mass of the vessel; a 10-minute release of the entire mass of the vessel, and a 10 mm hole in the system, releasing all the mass of the vessel over time. If vessels at this facility are connected via a common header, we postulate a release of more than one vessel through piping. In addition, when a hose connects the 9,400 USWG tank with the truck tank, there is a possibility that both tanks will empty their contents through the hose release if protection devices fail to operate. Thus, we have used the combined volumes of the two tanks in these cases.

Note that in all cases, the volume of the releases in question would be a maximum of 80% of the nominal volume of the tanks, based on maximum fill levels. However, for the consequence analysis for emergency response considerations, we have used the full 100% capacity of the propane tanks to add conservatism and to indicate worst probability scenarios.

All releases (other than catastrophic) were assumed to be released horizontally, which creates the maximum offsite consequences. The release can be directed in any direction over 360 degrees and impinges on the ground or nearby vessels and structures. Such impingement creates a larger consequence event onsite, but lesser consequences offsite. Thus, the use of a horizontal jet is conservative.

Ignition sources for the release events are essentially vehicles in the yard, vehicles on the roadways driving by the facility, heating systems and unclassified electrical equipment on any buildings around the facility. We have placed ignition sources at each of these buildings.

4.3.2.3 Vapour Cloud Explosion (VCE) – Worst Case Scenario

This event would involve a catastrophic breach with instantaneous release of the maximum quantity of propane from the largest tank and would produce:

- an overpressure of 1 psi out to 441 metres, and
- a level of 12.5 kW/m^2 m out to 307 m

According to the US Center for Chemical Process Safety, a vapor cloud explosion "is the result of a release of flammable material in the atmosphere, a subsequent dispersion phase, and, after some delay, an ignition of the vapor cloud. A flame must propagate at a considerable speed to generate blast, especially for 2-D (double plane configurations) and 3-D (dense-obstacle) environments." "In order to reach these speeds, either the flame has to accelerate, or the cloud has to be ignited very strongly, thereby producing direct initiation of a detonation." "…flame acceleration is only possible:

- in the presence of outdoor obstacles, for example, congestion due to pipe racks, weather canopies, tanks, process columns, and multilevel process structures.
- in a high-momentum release causing turbulence, for example, an explosively dispersed cloud or jet release.
- in combinations of high-momentum releases and congestion."

Thus, the use of the older TNT modelling procedure has for the most part been replaced by newer confined volume methods of VCE modelling. However, the VCE is an important scenario,

as it helps with the emergency response zone calculations for use in Environmental Emergency (E2) plans required by regulation. Thus, we present the TNT scenarios here, including the 652 m distance referenced as being the distance to 1 psi for a propane release. This uses a 10% efficiency with a TNT VCE using the EPA's RMP rule TNT calculation. Again, due to the lack of congestion around the site that would lead to large overpressure damage would dictate that the overpressure distances would be significantly smaller than these values in an actual VCE.

In the calculations for the Individual Risk calculations, we used the TNO MultiEnergy (ME) to perform overpressure calculations. The ME method is embedded in Phast Risk and was used in the calculation of overall risk. As this is a congested volume methodology, it is more representative of actual explosion overpressure events. As the calculation of individual risk is for the purpose of risk acceptability, these explosion calculations give better indication of actual risk posed.

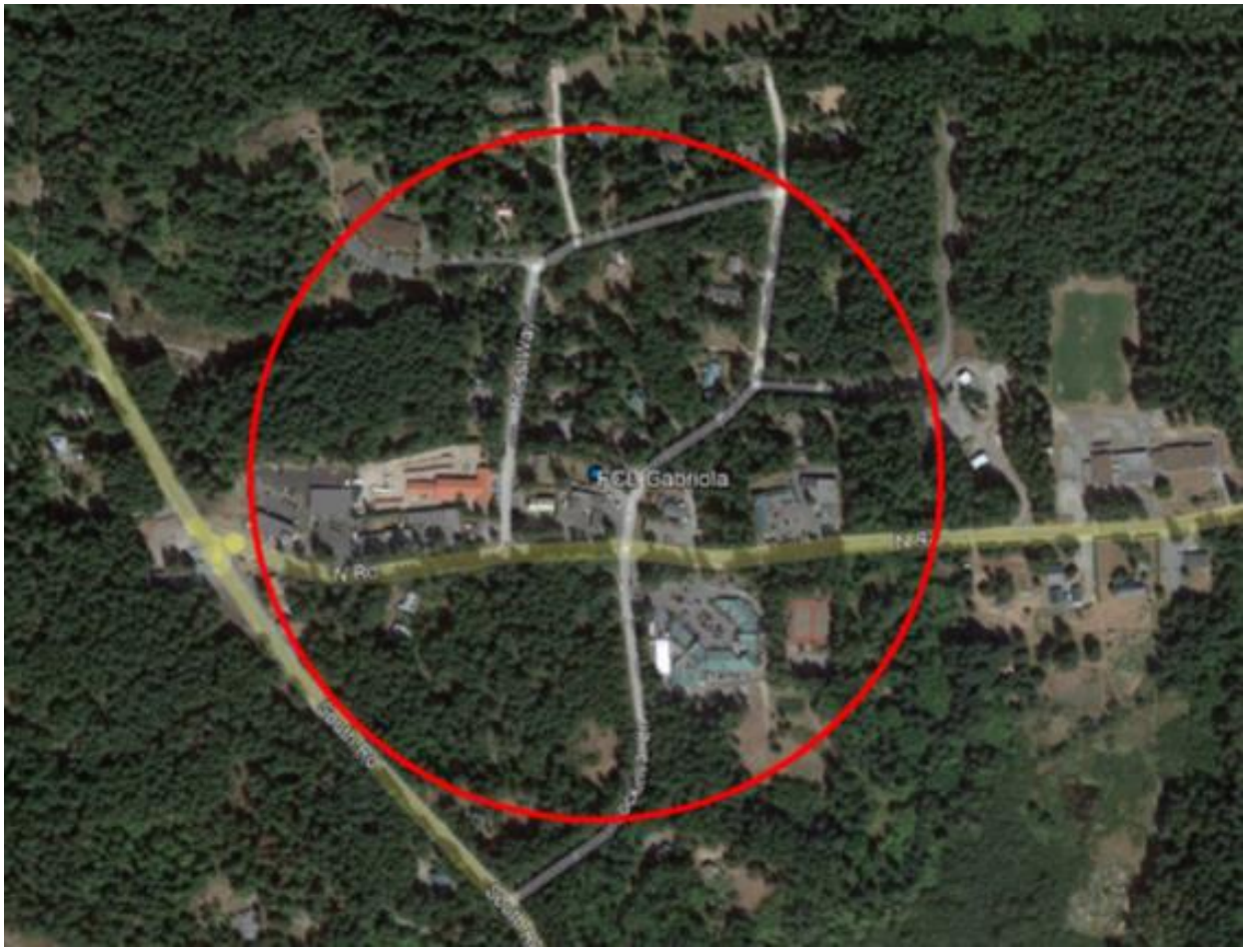
The 1-psi VCE overpressure plot is presented below. Note that the propane release is the result of a catastrophic release of all the contents of the vessel instantaneously.

Figure 4.3.2.3.1 Vapour Cloud Explosion (VCE) – Worst Case Release Scenario

The facility is in the centre and the red circle has the greatest impact distance of 1 psi out to 441 m.

In addition to overpressure, the fireball consequence of a VCE will occur. 12.5 kW/m² was chosen as the endpoint of the calculation as the distance where people without shelter could be injured in the event or, without time to seek shelter from the fire radiation.

Figure 4.3.2.3.2 Vapour Cloud Explosion (VCE) Fireball



The propane facility is in the centre and the red circle is the greatest impact distance of 12.5 kW/m² out to 307 m.

4.3.2.4 Jet Fire from a 2" Transfer Hose Rupture – Reasonable Alternate Scenario

This event is a release scenario that is more likely to occur than the release of the maximum quantity of propane from the largest tank. It will have an impact distance outside the boundary of the facility producing a level of 12.5 kW/m^2 m out to 76 m.

The jet fire is based on a rupture of the largest transfer hose (2" release) that may deliver liquid propane to the atmosphere. The direction of flow is horizontal, as this gives the greatest effect distances. The pressure of this flow is the vapour pressure at a relatively high normal liquid temperature, in this case being 30°C. Phast calculates the propane/air concentrations of the release, and the values between the Upper and Lower Explosion Limits (UEL and LEL) are considered to be burning. The heat radiation from this burning jet is calculated and plotted to a radiation level of 12.5 kW/m^2 for reasons described earlier.

A propane jet fire based on propane at vapour pressure released through a ruptured 2" transfer hose plotted below.

Figure 4.3.2.4 Jet Fire from a 2" Transfer Hose – Reasonable Alternate Scenario

The propane tank is in the centre and the red circle is the greatest impact distance of 12.5 kW/m^2 out to 76 m.

4.3.2.5 Jet Fire from a 3" Pipe Rupture – Alternate Worst Case Scenario

This event is a release scenario that is more likely to occur than the release of the maximum quantity of propane from the largest tank and that would have the longest impact distance outside the boundary of the facility. This event would involve a release scenario due to a rupture of a 3" pipe and would produce:

- a level of 12.5 kW/m^2 out to 100 m.

The direction of flow is horizontal, as this gives the greatest effect distances. The pressure of this flow is the vapour pressure at a relatively high normal liquid temperature, in this case being 30°C. Phast calculates the propane/air concentrations of the release, and the values between the Upper and Lower Explosion Limits (UEL and LEL) are considered to be burning. The heat radiation from this burning jet is calculated and plotted to a radiation level of 12.5 kW/m^2 for reasons described earlier.

A propane jet fire based on propane liquid released through a ruptured 3" pipe plotted below.

Figure 4.3.2.5 Jet Fire from a 3" Pipe – Reasonable Alternate Scenario

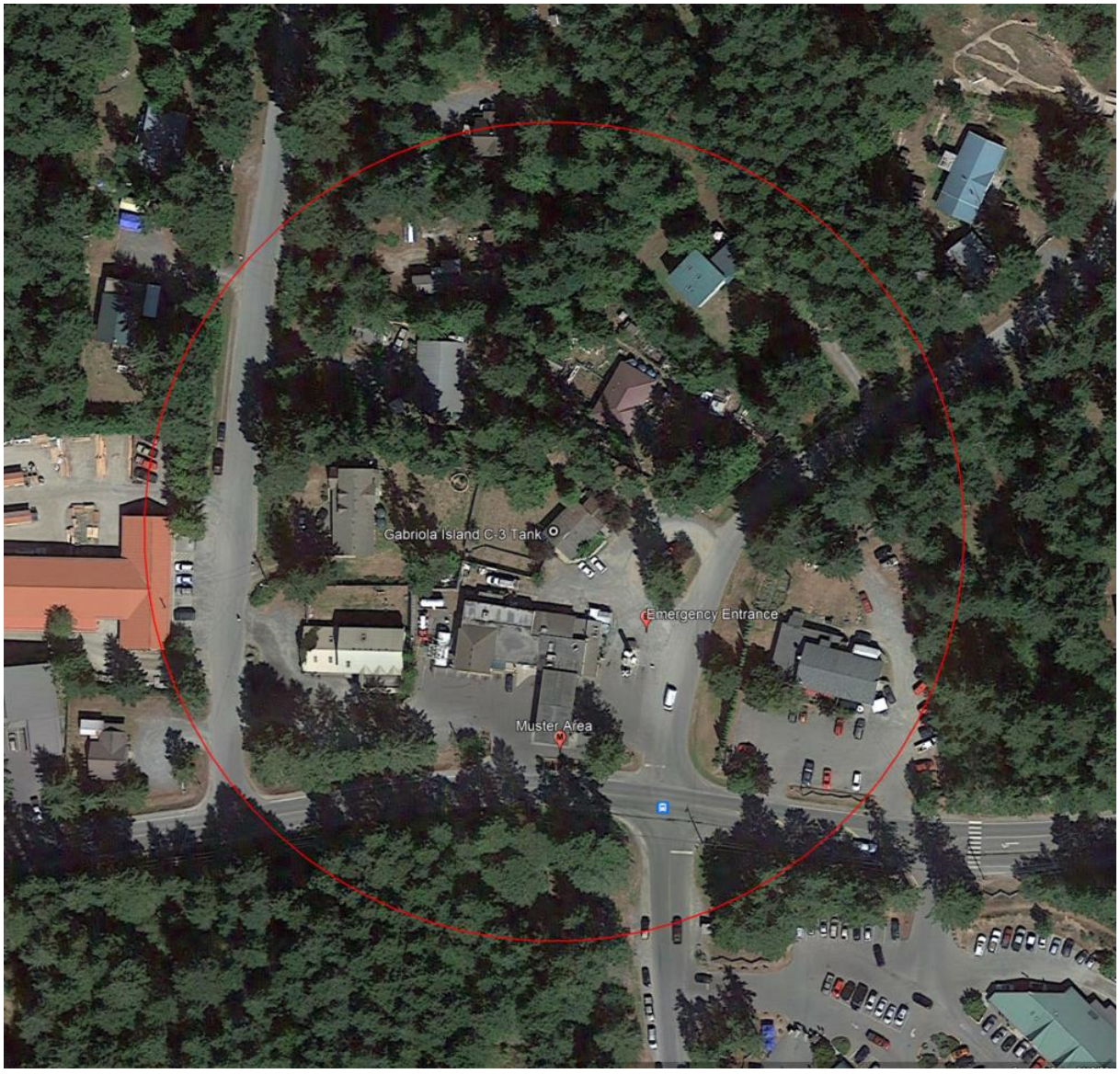
The propane tank is in the centre and the red circle is the greatest impact distance of 12.5 kW/m^2 out to 100 m.

4.3.3 Identification of Public Receptors

The alternate worst-case scenario is a jet fire based on propane released through a ruptured 3" pipe with an impact of 12.5 kW/m² at 100 metres. Ross Way is located 72 metres west, North Road 58 metres south, and Lockinvar Lane 35 metres east of the propane bulk plant. Seven residences, a restaurant, an office and two commercial occupancies are within the alternate worst-case scenario XXXX.

If an environmental release were to occur, impacts to the environment could result in consequences to the surrounding area, pending the amount of release and scale of the incident.

Figure 4.3.3 Identification of Public Receptors



The facility is in the centre <u>and</u> the red circle is the greatest impact outside the boundary of the facility of 12.5 kW/m² out to 100 m from a most likely release being a rupture of a 3" pipe that may deliver liquid propane to atmosphere.

4.3.4 Identification and Assessment of E2 Scenarios

Mid Island Co-op at 793 Lockinvar Lane Gabriola Island BC – 9,400 USWG Propane Tank (100% full)		
Worst-case Scenario		
Vapour Cloud Explosion (VCE)[1][3][4]		
Frequency of Loss of Containment (See Table 4.3.1)		
Instantaneous Loss of Containment	5×10^{-7} VCE's per year	Probability of a VCE occurring every 2 million years
Probability of Ignition		
Probability of Ignition for Instantaneous Loss of Containment	>10,000 kg	70%
Consequence		
Fireball (Result of VCE) [1][3][4]	12.5 kW/m²	307 m
Overpressure	1 psi	441 m
Alternate Worst-case Scenario		
Jet Fire from a 3" Pipe Rupture [2][3][4]		
Frequency of Loss of Containment (See Table 4.3.1)		
Loss of Containment – Full Bore	1×10^{-6} /m-y	Probability of jet fire occurring 1 in a million years
Probability of Ignition		
Probability of Ignition for Continuous Release	10 Kg	20%
Consequence		
Heat Radiation from Burning Jet	12.5 kW/m²	100 m
Reasonable Alternate Scenarios		
Boiling Liquid Expanding Vapour Explosion (BLEVE)[1][3][4]		
Frequency of Loss of Containment (See Table 4.3.1)		
Instantaneous Loss of Containment	5×10^{-7} BLEVE's per year	Probability of a BLEVE occurring every 2 million years
Probability of Ignition		
Probability of Ignition for Instantaneous Loss of Containment	>10,000 kg	70%
Consequence		
Fireball (Result of BLEVE) [1][3][4]	12.5 kW/m²	307 m
Overpressure	1 psi	138 m
Jet Fire from a 2" Transfer Hose Rupture [2][3][4]		
Frequency of Loss of Containment (See Table 4.3.1)		
Loss of Containment – Full Bore	4×10^{-6} /h	Event occurring every 30 years
Probability of Ignition		
Probability of Ignition for Continuous Release	10 kg	20%
Consequence		
Heat Radiation from Burning Jet	12.5 kW/m²	76 m

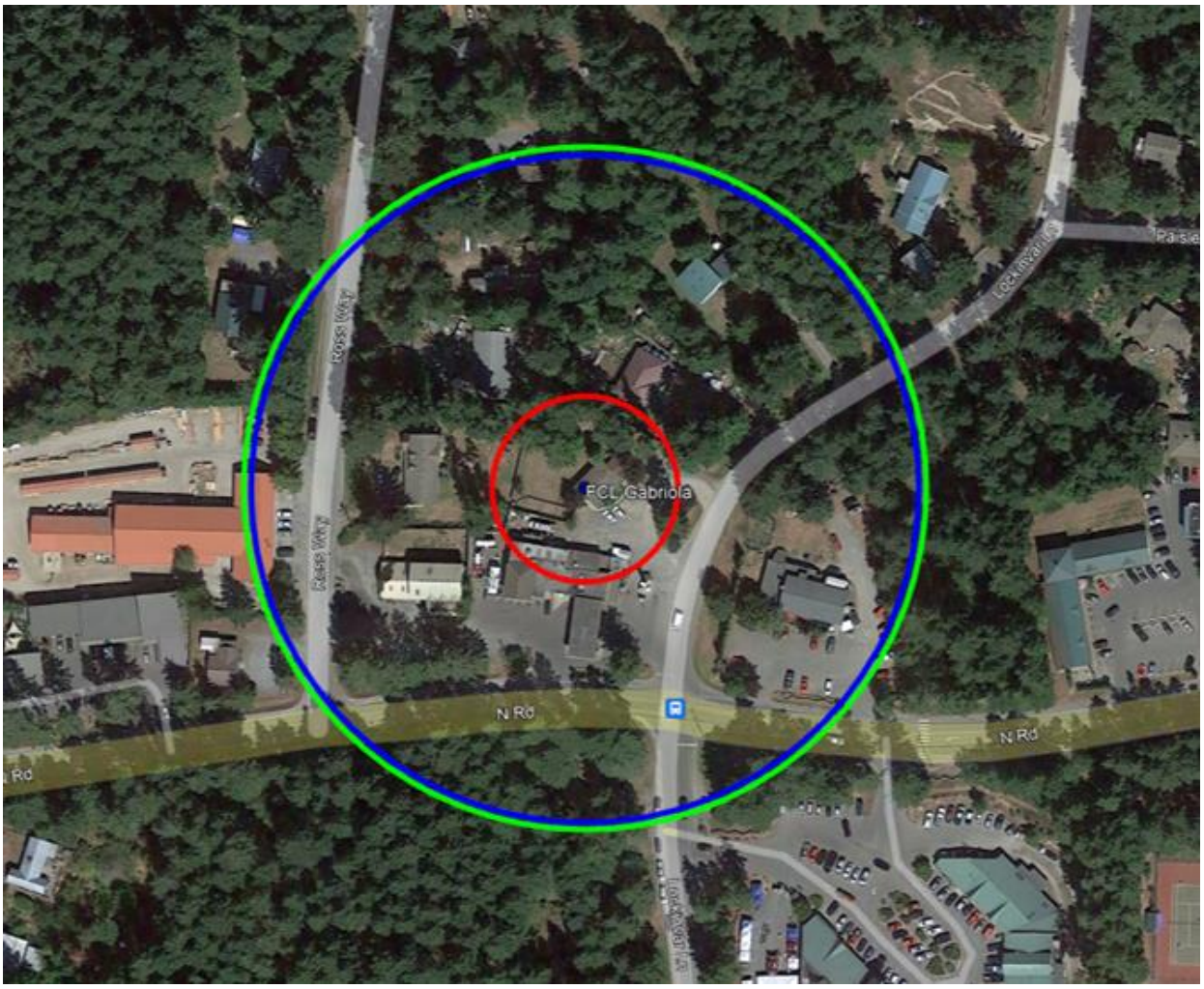
1. ***In the event of a catastrophic failure of the 9,400 USWG tank due to human operating errors, unforeseen defects, natural occurring events or acts of terrorism the possible effect on the area would be overpressures from a blast causing structural damage and or injury as well as possible thermal damage and or injury due to a fire event as described previously in this section.***
2. ***In the event of a release from piping, leaking flange, seal, joint and transfer hoses due to human operating errors, unforeseen defects, natural occurring events or acts of terrorism, the possible effect on the area would be thermal damage and or injury due to a fire event as described previously in this section.***
3. ***If the event were in preliminary stages an alarm would be sounded, emergency shutdowns engaged, evacuations made, traffic control measures implemented, Emergency Services, Mid Island Co-op Management, and FCL's Emergency Management Team contacted, and Incident Command established. Mid Island Co-op will assist Emergency Services. If activated by FCL, ERAC may also assist Emergency Services.***
4. ***The event model accuracy may vary due to general weather, wind speed and direction. Emergency responders would adjust evacuation and avoidance radius of effect accordingly.***
5. ***See 6.9 Environmental Emergency Simulation Exercises Scenarios A-F, and Annex 9.2.2 - Part 2 Scenarios.***

4.3.5 Risk Estimation Evaluation and Comparison with Risk Acceptance Criteria

A comparison of risk estimation modelling results to risk acceptability criteria based on MIACC (Major Industrial Accidents Council of Canada) guidelines for land-use planning and siting determined the site is within risk acceptance criteria.

MIACC dissolved in November 1999 with its works transferred to the Process Safety Management division of CSChE (Canadian Society for Chemical Engineering).

Figure 4.3.5 (1) MIACC Risk Acceptability Criteria



3x10-7 – All occupancies, including sensitive populations such as schools, hospitals, etc allowed outside of this Contour
1x10-6 – High Density Residential allowed Outside of this Contour
1x10-5 – Low Density Residential and Commercial, Offices, Retail Centres allowed Outside of this Contour

Section 5 Prevention and Mitigation

5.1 Regulatory and Legal Requirements

5.1.1 Risk Management Tools

See 2.7 Plan Consultation/References for tools used to mitigate risks.

5.2 Prevention Initiatives

5.2.1 Elimination Controls

5.2.1.1 Site Selection

See 4.3.5 Risk Estimation Evaluation and Comparison with Risk Acceptance Criteria.

5.2.2 Engineering Controls

5.2.2.1 Equipment

Qualified personnel conduct equipment installations, repairs, and maintenance. Applicable codes and standards for design, construction and maintenance of all vessels, piping valves and safety systems. This facility is equipped with crash protection and dry chemical fire extinguishers, which are located throughout the facility.

5.2.2.2 Emergency Shutoffs and Isolation Equipment

The propane plant has been fitted with emergency shut-offs, pressure and temperature gauges, pressure relief valves, flow indicators, electrical bonding/grounding systems, and drive-away prevention systems on the bulk delivery trucks XXXX.

5.2.3 Administrative Controls

5.2.3.1 Mechanical Integrity - Preventative Maintenance Inspections

Mid Island Co-op and FCL endeavors to maintain all equipment according to the standards set out in provincial Act and Regulation. The maintenance of the propane facility component follows the CSA B149.2-20 Propane Storage and Handling Code. Trained and competent technicians regularly inspect the facility. Defects are corrected records kept.

CSA B149.2-20 inspections:

7.22.5 Maintenance procedures

7.22.5.1

Maintenance procedures shall be appropriate to the particular facility and shall take into account, amongst other things, the following:

a) inspection of protective devices, alarms;
b) regular inspection and testing of hoses;
c) regular review of emergency procedures;
d) regular review of emergency evacuation procedures and designated safe location;
e) propane purging procedures;
f) isolation and tagging;
g) fire extinguishers and firefighting equipment;
h) piping, tubing, pumps, valves, and other propane equipment;
i) storage tanks;
j) electrical equipment;

k) fencing and security measures, signage, and notices;
l) lighting;
m) regular inspection and testing of vaporizers; and
n) any manufacturer's maintenance instructions for equipment.

7.22.5.2
Persons who perform maintenance on these propane systems shall be trained in the hazards of these systems and in the maintenance and testing procedures applicable to the facility

Note: See Dynamic Records – Equipment inspection, testing and maintenance schedules

5.2.3.2 Training

Employee and responder training that pertains to this plan is listed in Preparedness Section 6.

5.2.3.3 External Alerting and Emergency Notification System

The following is a general guideline in the event of a major propane escape or fire.

- Escaped propane vapours will form a white cloud and travel at ground level in the direction of the wind.
- Do not enter a propane vapour cloud.
- If an alarm is sounded or if you observe a propane escape, prepare for a quick evacuation.
- If a propane vapour cloud or fire approaches, travel upwind to a safer location.
- As you leave, turn off ignition sources such as vehicles if safe to do so.
- Local emergency services may direct you to a safe location.
- Local emergency services and/or Mid Island Co-op will inform you when it is safe to return either in person or using public and/or social media and where possible electronic communication methods.
- Communicate and post this information with all people at your residence, business, or organization.

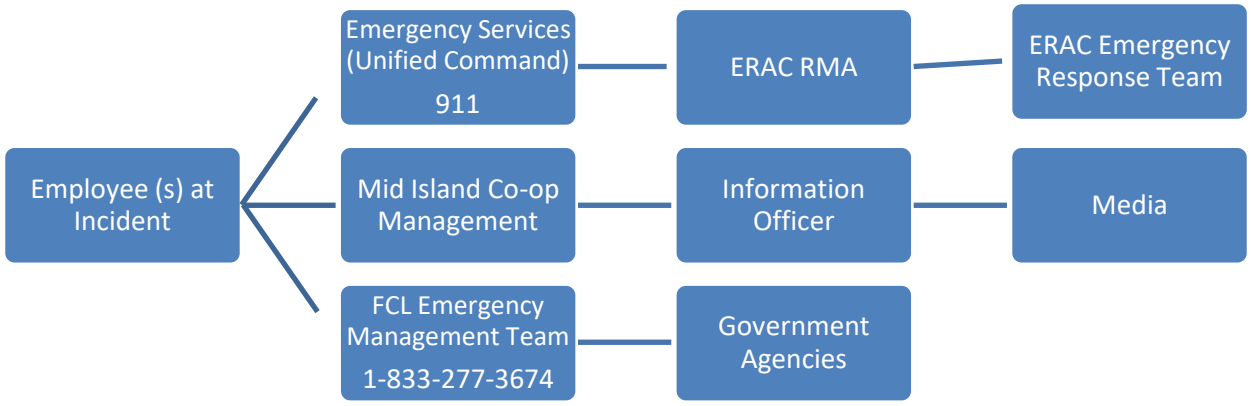
Section 6 Preparedness

6.1 Incident Management System

6.1.2 Emergency Response Management Model

Mid Island Co-op employees are the first line of response in an emergency. They will transfer responsibility of the scene to the appropriate emergency service provider when they assume Incident Command of the event. The appropriate emergency service provider may include but not be limited to a local fire department, police department, EMO Coordinator, etc. A Remedial Measures Advisor (RMA) as designated by Emergency Response Assistance Canada (ERAC) etc. may be dispatched to scene to provide technical advice. Depending on the nature of the event, it may be a combination of the emergency service providers and may include regulatory officials who establish a Unified Incident Command at which time an Mid Island Co-op employee may participate in Unified Command at the emergency in a Unified Command or advisory role. If the event sustains over a period typically a standard Incident Command protocol will prevail which will include the establishment of operational periods; and, development of an incident action plan stating the objective/s, strategy/s, and tactics for the operational period.

FCL's Emergency Management Team is a group of subject matter experts and advisors who would provide guidance to Mid Island Co-op's emergency response measures. STARS emergency contact centre will take in Co-op emergency calls then will provide a report to this team that outlines the details of the emergency call. Refer to 7.2.3 FCL Emergency Management Team for further information.



6.2 Mid Island Co-op/FCL Roles and Responsibilities

6.2.1 Emergency Response Coordinator (ERC)

The ERC will typically be the most senior or qualified manager, supervisor or employee on site that is able to instruct the activities or others in the event of an emergency. The ERC will assume emergency response coordination of the situation until Emergency Services assume command. The ERC may still be required to assist or advise the Local Emergency Service during an event.

Typical duties are:

- Coordinate and direct the activities of the site employees during an event.
- Using sounding an alarm, alert occupants of the event
- Assess the resources and actions required for a response.
- Ensure Emergency First Responders are notified using 911, notifying Mid Island Co-op Management and the Co-op Emergency Management Team
- Maintain communication with the Emergency First Responders and, if required, assign an Assistant Coordinator
- Ensure that all personnel are directed in any post incident activities.

6.2.2 Information Officer

In the event of an incident that may require communications with the media and our regulator, the Mid Island Co-op will assign an Information Officer. The Information Officer may be involved with the activities during a response and may be involved with remedial activities following an event.

6.2.3 FCL Emergency Management Team

This team is a group of subject matter experts and advisors who would provide oversight and guidance to the emergency response measures. STARS emergency contact centre will take in FCL, and Co-op emergency calls then will provide a report to this team that outlines the details of the emergency call.

There are five roles within the EMT, and a list of their responsibilities follows. The EMT will work together with assignment of on-scene personnel to work toward ensuring FCL's objectives are accomplished.

Emergency Operations Manager (EOM)

- Working with the EMT, determines:
    - Whether an Emergency Response Assistance Plan should be activated
    - The crisis levels.
    - The crisis owner
    - What support or guidance may be provided?
- Accepts responsibility for the FCL Emergency Management Centre and sets over-all objectives and priorities.
- Assigns an on-scene Incident Commander (IC) or Technical Advisor who will represent FCL in Unified Incident Command (UIC) for on-scene emergency response.
- Working with FCL on-scene IC, designates or approves on-scene Information Officer (IO) to manage communications.
- Assesses and monitors crisis for appropriate level of escalation/de-escalation, in consultation with other EMT members.

- Works with and approves the following, alongside the on-scene IC:
    - Incident Action Plans (IAP) – Works with on-scene FCL IC to develop and approve on-scene IAP objectives.
    - Approves resource orders to support response measures.
    - Approves demobilization plans.

Safety Officer

- Monitor's incident operations and advises the Emergency Operations Manager on all matters related to operational safety, including the health and safety of emergency responder personnel.
- Works directly with on-scene Safety Officer or UIC (if no safety officer has been designated), to ensure a safety plan and accountability plan has been developed and implemented.
- Reviews and approves the safety and accountability plans developed by on-scene Safety Officer or UIC
- Advises on Health & Safety regulatory requirements.
- Develop an Incident Safety Plan
- Ensure incident investigation responsibilities are fulfilled.
- Communicates with Health & Safety regulators.

Information/Liaison Officer

- Initiates and directs established communication response for Level 1 and 2 crisis situations.
- Informs the Crisis Communication Lead (CCL) about crisis and determined crisis level.
- Assists in the preparation of external communication materials delivered by the CCL, including updates, press releases, media statements, key messages, etc.
- Under the direction of the CCL, prepares and delivers internal key messages and updates.
- Delivers updates to internal stakeholders through the Everbridge system, including FCL's Senior Leadership Team
- Track's media calls and requests and refers them to the CCL.

Environmental Officer

- Liaison with initial Response Personal / Incident Commander / Emergency Operations Manager to assess the degree of potential environmental impacts.
- Provides technical support in the development of tactics to minimize / mitigate the environmental impacts.
- Responsible for retaining, dispatching, and managing Environmental Consultants to manage any environmental consequences of the incident or spill as required.
- Provides technical assistance to response teams, as required.
- Manage and supervise operations associated with the transfer, storage, and disposal of liquid, solid and/or hazardous wastes during emergency response operations.
- Determine the most effective methods to be employed and how to minimize the amount of waste materials generated during emergency response operations.
- Delivers updates on environmental impacts response measures and status to Emergency Operations Manager
- Reports environmental spills, releases, or potential imminent releases to federal and provincial authorities.
- Provides direction and technical advice regarding post-incident cleanup and recovery.

Secondary Support – as determined by the Emergency Operations Manager

On-scene Incident Commander/Technical Advisor

- Reports to the Emergency Operations Manager (EOM)
- Provides summary of the incident to the EOM and EMT (example ICS form 201 – Incident Briefing)
- Initiates a site activity log for the operational period (example ICS form 214)
- Working within UIC, develops on-scene IAP incident objectives and develops or approves strategies and tactics.
- Working within UIC, assigns Operations and Planning Chiefs or accepts their roles in determining strategies and tactics of IAP and supervises on-scene resources.
- Working within UIC and with Operations Chief, ensures Strike Team accomplishes strategies and tactics of the IAP.
- Provides technical expertise to the EOM and UIC on the product or commodity that is involved.
- Provides regulatory expertise such-as regulatory: compliance, reporting and liaise with regulators.
- Liaise with ERAC, as necessary.

Security Officer

- Maintains overall management and guidance to security and protection of FCL facilities.
- Liaison with initial Response Personal / Incident Commander / Emergency Operations Manager to assess the degree of potential security impacts.
- Provides technical support in the development of tactics to minimize / mitigate the security impacts.
- Responsible for retaining, dispatching, and managing Security Consultants to manage any security requirements.
- Provides technical assistance to response teams, as required.
- Delivers updates on security impacts response measures and status to Emergency Operations Manager

Additional Roles

The Emergency Operations Manager will determine the need for additional support. Depending on the severity and length of the crisis, additional roles such as Finance and Logistics Officers, Legal, Insurance, Documentation, Procurement, Government Relations, Human Resources, etc. may be required.

6.3 Advance Public Notification and Communication

6.3.1 Public and Neighborhood Emergency Awareness Notifications

The process of preparation will have similarities for most areas, which will mostly be site visits and the offering of information pertaining to evacuations, propane vapor-cloud characteristics and other related safety measures. Some communities have systems organized by the local EMO Coordinators that will automatically notify areas of risk through electronic communication methods. This would involve a combined effort between Mid Island Co-op facility management and local emergency services. Mid Island Co-op offers a pamphlet (see 6.3.2 Community Emergency Notification System) to inform the neighboring businesses or community on the actions required in the event of an incident. Employers, organizations, and residents that are located within the notification zone may incorporate portions of the E2 plan into their own safety practices.

Notification of potentially impacted neighbouring occupancies and Gabriola Island Fire Rescue from the Alternate Worst-case Scenario – 4.3.2.5 Jet Fire from a 3" Pipe Rupture was accomplished. Figure 4.3.2.5 illustrates the greatest impact outside the boundary of the facility of 12.5 kW/m2 out to 100 m - see Annex 9.3.3.

Emergency Notification System

The intent of this notification is to inform all neighboring residences, businesses and organizations of actions that may be required in the unlikely event of a major propane escape or fire that would cause an emergency evacuation.

The following is a general guideline in the event of a major propane escape or fire.

- Escaped propane vapours will form a white cloud and travel at ground level in the direction of the wind.
- Do not enter a propane vapour cloud.
- If an alarm is sounded or if you observe a propane escape, prepare for a quick evacuation.
- If a propane vapour cloud or fire approaches, travel upwind to a safer location.
- As you leave, turn off ignition sources such as vehicles if safe to do so.
- Local emergency services may direct you to a safe location.
- Local emergency services and/or Mid Island Co-op will inform you when it is safe to return either in person or using public and/or social media and where possible electronic communication methods.
- Communicate and post this information with all people at your residence, business, or organization.

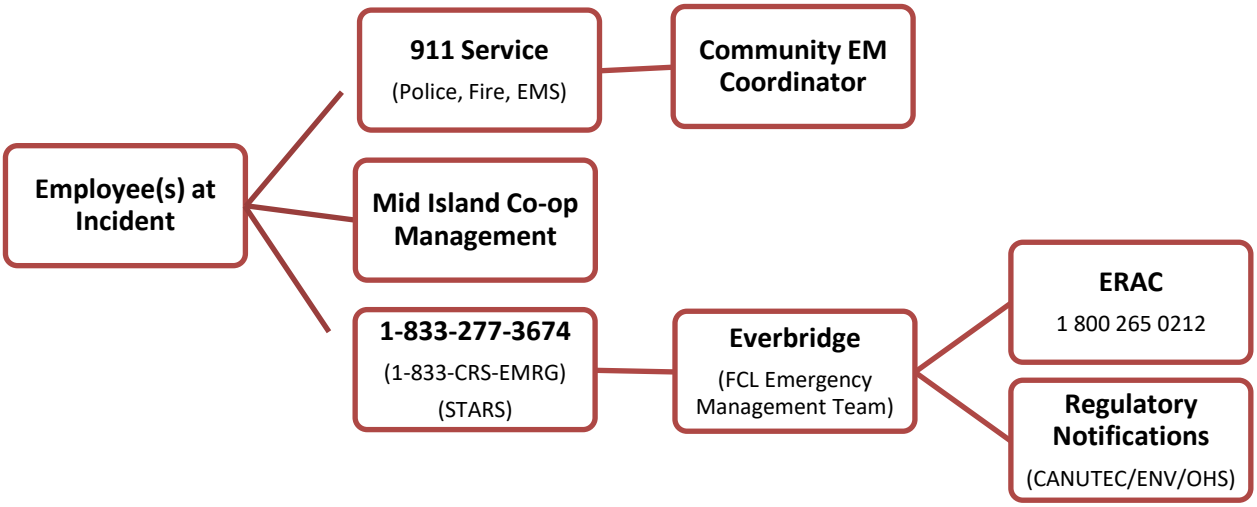
Important facts about Propane:

- Propane is non-toxic.
- Propane has an odourant added to it that makes it smell like rotten eggs or skunks.
- Flames, smoking material, sparks, and static electricity will ignite propane when mixed with the right amount of oxygen.

If you require any additional information or have any concerns, please contact Mid Island Co-op at (250)-802-1198.

6.4 External Alerting and Notification

6.4.1 Emergency Assessment and Alert Notification



For External Alerting/Notification/Resources Contact Lists refer to Annex 9.1

6.5 Evacuation and Shelter-in-place

There is potentially one outcome that can occur that affects the public. The circumstances of the event will dictate the type of instructions given to the public.

- Shelter-in-place – It may be safer for the public or neighbouring facilities to shelter-in-place to avoid exposure to a propane release depending on the quantity and modifying conditions, such as the prevailing wind.
- Evacuate – Under the direction of local emergency services, it may be necessary to evacuate to a safe distance. Instructions will be provided to the public regarding the evacuation.

6.6 Mutual Aid and Mutual Assistance

Mid Island Co-op employees are the first line of response in an emergency. They will transfer responsibility of the scene to the appropriate emergency service provider when they assume Incident Command of the event. The appropriate emergency service provider may include but not be limited to a local fire department, police department, EMO Coordinator, etc. A Remedial Measures Advisor (RMA) as designated by Emergency Response Assistance Canada (ERAC) and where required an ERAC Emergency Response Team etc. may be dispatched to scene.

6.7 Equipment

The site is equipped with dry chemical fire extinguishers that are strategically located, and on trucks. Emergency electrical switches that shut-off electrical power to portions of the facility or, the entire facility is strategically located on site.

6.8 Training and Exercise

To ensure successful plan activation, management will ensure that employees receive adequate training to be familiar with the E2 plan requirements. Conducting regular function specific training and emergency exercises prepare personnel and ensure viability of the plan. The following is a non-exhaustive list of the training that employees receive according to their internal roles and responsibilities.

6.8.1 Employee Training

Training and testing of facility employees who have specific emergency duties ensures understanding of their roles and responsibilities listed in this E2 Plan.

All personnel handling propane hold appropriate certification of training. Personnel receive annual and/or new hire awareness training on Mid Island Co-op site-specific emergency response plans.

Some of the additional courses that would accommodate product awareness and emergency activities include WHMIS, TDG and Fire Extinguisher use.

6.8.2 E2 Plan Exercise Schedule

Training	Attendees	Frequency
E2 Plan – Awareness Workshop	All	On Hire
E2 Plan – Simulation Exercise	All	Each Year
E2 Plan – Full-scale Simulation Exercise	All	Every 5 Years

6.8.3 Responder Training

First level response training is provided internally for employees through orientations and annual Emergency Response/Environmental Emergency Plan training sessions designed to meet Federal Environmental Emergency Plan Regulation requirements.

LPGERC (Liquid Propane Gas Emergency Response Corporation) now called ERAC (Emergency Response Assistance Canada) which is a non-profit division of the CPA (Canadian Propane Association) facilitates secondary or sustained emergency response training.

FCL (Federated Co-operatives Limited) Propane and the CRC (Co-op Refinery Complex) are both participants with ERAC. TC (Transport Canada) approves secondary or sustained emergency response systems meeting TDG (Transportation of Dangerous Goods) ERAP (Emergency Assistance Plans) Regulations.

ERAC has established, HBC (Home Base Coordinators), TA's (Technical Advisors), RMA's (Remedial Measures Advisors) and ERT's (Emergency Response Teams) to help and/or advise local emergency services across Canada.

Emergency Fire Services may utilize the training offered by the ERAC specifically designed for propane fire response called PTI 911-01 LPG Awareness for Firefighters.

6.9 Environmental Emergency Simulation Exercises

Scenario A
Propane Release – no fire

Scenario B
Propane Release – with fire

Scenario C
Structural Fires – local to propane storage

Scenario D
Wildfires – local to propane storage

Scenario E
Bomb Threats/Terrorism

Scenario F
Evacuation Procedures

See Annex 9.2.2 - Exercise Documents, Part 2 Scenarios - for Scenario A-F Emergency Simulation Exercise scenario examples.

Section 7 Response

7.1 E2 Plan Activation and Emergency Contacts

ADDRESS of Gabriola Island : 793 Lockinvar Lane Gabriola Island BC
First Responder Entrance - GPS in DD: 49.17439, -123.84605

E2 PLAN ACTIVATION and EMERGENCY CONTACTS

IN CASE OF EMERGENCY CALL:

911

NEXT REPORT TO MANAGEMENT AT:

POSITION	NAME	LOCATION	BUS #	CELL #
CO-OP AREA MANAGER	KELLI CARTWRIGHT	NANAIMO	250-802-1198	250-802-1198

NEXT REPORT TO CO-OP EMERGENCY AT:

1-833-277-3674 (CRS-EMRG)

FCL PROPANE EMERGENCY CONTACTS:

POSITION	NAME	LOCATION	BUS #	CELL #
24 HOUR ON-CALL	TECHNICIAN	CHEMAINUS	250-668-9876	
AREA MANAGER	JOHN SLATTERY	ARMSTRONG	236-940-2063	250-938-3313

EXTERNAL EMERGENCY CONTACTS

POLICE/FIRE/AMBULANCE	EMERGENCIES	911
BC ENVIRONMENT	PROPANE RELEASE	1-800-663-3456
BC OH&S	WORKER INJURY	1-888-621-7233
BC EMERGENCY MANAGEMENT	PUBLIC SAFETY	1-800-663-3456
CO-OP EMERGENCY	EMERGENCY RESPONSE TEAM	1-833-277-3674 (CRS-EMRG)

INCIDENT PROCEDURES

FIRE OR EXPLOSION	CALL 911. If the event is beyond the control of staff, then the discovering staff member shall activate the emergency horn located on North exterior wall of convenience store to initiate an evacuation. All staff will go to the Muster Area and if not safe to meet/stay at the Muster Area go to the east Secondary Muster Area using the closest safe route.
MAJOR PROPANE RELEASE	CALL 911. The discovering staff member shall activate the emergency horn located on North exterior wall of convenience store to initiate an evacuation. All staff will go to the Muster Area and if it is not safe to meet/stay at the Muster Area go to the east Secondary Muster Area using the closest safe route. Station Road Marshalls if the release is a threat to traffic, at the Secondary Muster Areas to attempt to stop traffic from entering the area until the arrival of Fire and/or Police personnel.
BOMB THREAT	Observe and take note of all details of the call. Immediately notify the **ERC** (Emergency Response Coordinator who will be Management or the most senior and or most qualified staff member on site). Call 911. Notify all other staff, go to a Muster Area, and if not safe to meet/stay at the Muster Area go to the east Secondary Muster Area using the closest safe route.
SERIOUS INJURY/ILLNESS	Assess the scene and administer first aid as per training. Call 911 for assistance as warranted. Establish a clear pathway for EMS.
EVACUATION PROCEDURES	The **ERC** shall coordinate the activities during the evacuation such as alarms, searches, and emergency shutdowns and the accounting for all staff at the Muster Area and, if not safe to meet/stay at the Muster Area go to the east Secondary Muster Area using the closest safe route.
EMERGENCY REPORTING	After calling 911 and as soon as possible, the ERC shall report to Management then 1-833-277-3674 to activate the FCL Emergency Management Team.

7.2 Emergency Information & Equipment Locations

EMERGENCY INFORMATION & EQUIPMENT LOCATIONS	
FIRST AID/EYE WASH	In convenience store
E2 PLAN with SDS	In convenience store
FIRE EXTINGUISHERS	Propane Plant and Vehicles
TRUCK KEYS	In truck or with driver
EMERGENCY ALARM SYSTEM	Nitrogen powered horn activated on North exterior wall of convenience store
PROPANE PLANT ELECTRICAL SHUT-OFF	North exterior wall of convenience store and Convenience store electrical room
PROPANE PLANT PROPANE SHUT-OFF	North exterior wall of convenience store
MUSTER AREA	South of petroleum pumps
SECONDARY MUSTER AREAS	East of site on North Road

7.3 Emergency Notification and Communication and Procedure

EMERGENCY NOTIFICATION & COMMUNICATIONS PROCEDURE	
1	In the event of an uncontrolled propane release with or without fire or the reasonable likelihood of such a release, the discovering employee shall activate the emergency horn located on North exterior wall of convenience store to initiate an evacuation.
2	All personnel on site will go to a Muster Area and if not safe to meet/stay at the Muster Area go to the east Secondary Muster Area using the closest safe route and the **ERC** (Emergency Response Coordinator) who will be Management or the most senior and or most qualified staff member on site) shall account for all staff.
3	The **ERC** shall call 911 to report the event and the appropriate emergency provider will assume the role of Incident Command upon their arrival.
4	The **ERC** shall report to Management then 1-833-277-3674 (1-833 CRS EMRG) to activate the FCL Emergency Management Team.
5	FCL Emergency Management Team shall ensure the notification of the Local Police if the event involves an uncontrolled, unplanned, or accidental release of propane into the environment; or the reasonable likelihood of such a release into the environment.
6	FCL Emergency Management Team shall contact **ERAC** (Emergency Response Assistance Canada) if the event involves an uncontrolled, unplanned, or accidental release of propane into the environment; or the reasonable likelihood of such a release into the environment that is beyond the capabilities of staff. The ERAC HBC (Home Base Coordinator), TA (Technical Advisor) or RMA (Remedial Measures Advisor) may advise the FCL Emergency Management Team, the ERC, or the Emergency Service IC (Incident Command) of any required actions.
7	If the FCL Emergency Management Team implements the **ERAP** (Emergency Response Assistance Plan activation) in response to a release or anticipated release to **tier 1**: the Emergency Management Team will monitor the release or anticipated release and will be actively involved in the conversations and decisions that involve the dangerous goods and/or the means of containment. None of the emergency response resources found in the ERAP are brought to the site of the incident during tier 1.
8	If the FCL Emergency Management Team implements the **ERAP** (Emergency Response Assistance Plan) in response to a release or anticipated release to **tier 2**: an RMA (Remedial Measures Advisor) will be assigned to further assess the incident and an ERT (Emergency Response Team) may be assigned to the incident. The RMA and ERT will suggest, implement, or coordinate activities with IC (Emergency Service Incident Command). The ERT is equipped to conduct emergency procedures and repairs of the propane tank or system. **Note**: IC (Incident Command) needs to communicate with ERAC.
9	Upon assessment of the incident, IC (Incident Command) will determine the extent and length of evacuations and shall coordinate the evacuation.
10	FCL Emergency Management Team shall make a report to – where required - the Provincial and/or Federal Authorities listed in the Annex - External Reporting Section - of the E2 Plan for: Public Safety, Environmental, Health and Safety, Gas and Pressure Vessel, and Transportation of Dangerous Goods.

7.4 Emergency Response Measures

7.4.1 Propane Release – no fire

If safe to do so, use the following procedures, as they are applicable to the situation:

- Activate emergency shutdowns (propane valves, Bulk Plant, electrical etc.) – where applicable.
- Shutdown propane delivery truck using the remote controller – where applicable.
- Ensure all vehicles in the compound are not running or started.
- Close all doors to buildings, notify building occupants and advise an evacuation if the propane vapors have potential to travel into a building or its ventilation system.
- If the source of the release cannot be shut-off, initiate an evacuation.
- Go to the Muster Area and if not safe to meet/stay at the Muster Area go to the east Secondary Muster Area using the closest safe route. A more distant evacuation may occur if conditions warrant.
- Call 911.
- Contact Management at 250-802-1198.
- Report to 1-833-277-3674 (CRS-EMRG).
- Assist or advise Emergency Services as required.

7.4.2 Propane Release – with fire

If safe to do so, use the following procedures, as they are applicable to the situation:

- Activate emergency shutdowns (propane valves, Bulk Plant, electrical etc.) – where applicable.
- Shutdown propane delivery truck using the remote controller - where applicable.
- If the fire is not propane fed, attempt to extinguish the fire.
- If the fire is propane fed and extinguishment may lead to an uncontrolled propane release do not attempt to extinguish the fire
- If the source of the release cannot be shut off and or if extinguishment is not possible, activate the emergency horn located on North exterior wall of convenience store, go to the Muster Area and if not safe to meet/stay at the Muster Area go to the east Secondary Muster Area using the closest safe route. A more distant evacuation may occur if conditions warrant.
- Call 911.
- Contact Management at 250-802-1198.
- Report to 1-833-277-3674 (CRS-EMRG).
- Assist Emergency Services as required.

7.4.3 Structural Fires – local to propane storage

- Notify personnel to evacuate the building.
- Do not place yourself in an area where fire entrapment can occur.
- Attempt to extinguish fire using fire extinguishers, if safe to do so.
- Close doors as you leave rooms to minimize fire spread rate.
- Leave the building using the closest safe exit.

- As you evacuate a building and/or property look for others that may not have heard the evacuation call/alarm such as washrooms, vehicles, or noisy areas.
- Close doors as you leave buildings.
- Have fuel delivery units (petroleum and propane) moved, if safe to do so – where applicable.
- Go to the Muster Area and if not safe to meet/stay at the Muster Area go to the east Secondary Muster Area using the closest safe route.
- Call 911.
- Contact Management at 250-802-1198.
- Report to 1-833-277-3674 (CRS-EMRG).
- Assist Emergency Services as required.

7.4.4 Wildfires – local to propane storage

In the event of a wildfire and an evacuation is pending:

- Alert all personnel and have any fuel delivery units (petroleum and propane) and other vehicles in the field remain away from the facility until the fire threat is over.
- If fuel delivery units (petroleum and propane) are on site upon the evacuation order have them driven off site if it is safe to do so and following the direction/permission of the Emergency Authority.
- Prior to site evacuation ensure all fuel storage systems are shut down, close all building doors.
- Drain all Bulk Plant hoses if safe to do so.
- Secure Bulk Plant by closing and locking gates.
- Report how much propane in in Bulk Storage to BC Wild Fire.

7.4.5 Bomb Threats/Terrorism

Bomb or act of terrorism threats may come in the form of a call, mail or note, electronically, verbally in person or maybe the discovery of a device either obvious or disguised.

Discovery of a suspicious device/package:

- Do not touch it or attempt to open or disarm it.
- Evacuate the location following the evacuation procedure.
- Go to the Muster Area and if not safe to meet/stay at the Muster Area go the Secondary Muster area using the closest safe route. A more distant evacuation may occur if conditions warrant.
- Complete a tally of personnel.
- Call 911.
- Contact Management at 778-772-9800.
- Report to 1-833-277-3674 (CRS-EMRG).

If you receive a threatening call:

- Listen to the caller in a calm and polite tone of voice.
- Start taking notes as soon as possible.
- Try to silently get the attention of a co-worker and write down the situation.

- Ask about the bomb location.
- Ask what type of bomb it is.
- Ask when and how it will explode.
- Ask the caller why they placed the bomb.
- Take note of the person's voice description such as accent, speech speed and language skills, mannerism, sex, and age.
- Take note of any background noises.
- Take note if the person seemed to be familiar with your location.
- Take note if the person's voice seemed familiar to you.
- Ask for the person's name and where they are calling from.
- When the conversation is over call 911.
- Establish communication process with police for further direction.
- Go to the Muster Area and if not safe to meet/stay at the Muster Area go to the east Secondary Muster Area using the closest safe route.
- Complete a tally of personnel.
- Contact Management at 250-802-1198.
- Report to 1-833-277-3674 (CRS-EMRG).

7.6.6 Evacuation Procedures

When notification of a propane emergency or an evacuation order is given:

- Stop all activities.
- Eliminate all ignition sources if safe to do so.
- As you evacuate a building and/or property look for others that may not have heard the evacuation call/alarm such as washrooms, vehicles, or noisy areas.
- Close doors as you leave buildings.
- Go to a Muster Area and if not safe to meet/stay at the Muster Area go to the east Secondary Muster Area using the closest safe route. A more distant evacuation may occur if conditions warrant.
- Complete a tally of personnel.
- Call 911.
- Contact Management at 250-802-1198.
- Report to 1-833-277-3674 (CRS-EMRG).

7.4.7 Serious Injury/Illness

- Assess the scene.
- Administer first aid as per training.
- Call 911 for assistance as warranted.
- Establish a clear pathway for EMS.
- Contact Management at 250-802-1198.
- Report to 1-833-277-3674 (CRS-EMRG).

7.6.8 Vehicle Incidents – Involving On-site Propane Delivery Units

Risk Assessment

- Determine threats to life (injuries to self or others, release or anticipated release of propane, traffic, fire, etc.).
- Identify ignition sources (shut-off engine, use vehicles electrical disconnect switch where possible).
- Inspect propane vessel, piping, valves etc. and truck to identify leaks, damage etc.

Report the Incident

- Call 911 when:
    a. You require Police, Fire or Medical personnel.
    b. There is a release or anticipated release of propane e.g.
        i. a propane delivery truck rolled over in a ditch with all four sides not visible is an example of an anticipated release.
- Contact Management at 250-802-1198.
- Report to 1-833-277-3674 (CRS-EMRG).

Secure the site.

- Deploy roadside markers and reflectors (no flares).
- Clear the area of non-essential and untrained personnel.
- If safe to do so, stop or divert traffic or public access to site.

Section 8 Recovery/Restoration

8.1 Disposal and Waste management

In the unlikely event of release that caused damage, Mid Island Co-op will endeavor to reduce and remediate any damage to the environment and will bring in the proper resources including specialized equipment and personnel to develop and implement the appropriate disposal and waste management plan. Due to the inherent characteristics and hazards of propane as described in Section 4, recovery activities may be limited to removal of debris.

8.2 Site Restoration

In consultation with public authorities, Mid Island Co-op will initiate site restoration processes as soon as possible, striving for rapid restoration from environmental damage. A specific restoration plan will be generated following an incident and will consider the specific details and circumstances of an incident.

8.3 Public Notification

In consultation with public authorities and specialized personnel, the extent of damage will be determined. Appropriate communication will be provided by public authorities and/or Mid Island Co-op to all relevant parties, including the public utilizing in person visits, local emergency services, radio, TV, automated phone messages, and social media e.g., Facebook, Twitter etc.

8.4 Stakeholder Engagement

This facility is owned and operated by Mid Island Co-op and will assist the organization of the community's resources necessary for people recovering from an emergency.

8.5 Post Incident Evaluation

8.5.1 Post Incident Review and Debrief

A post incident review and debrief will be conducted after every incident or training exercise for all personnel involved to evaluate the incident. Record and assess - using the Exercise Evaluation and Corrective Actions document found in Part 4 of Annex 9.2.2 of this plan - to ensure the activities carried out were in accordance with the plan. Replace and/or service safety equipment as required.

Section 9 Annexes

Annex 9.1 External Reporting

- 9.1.1 Environmental Reporting
- 9.1.2 Public Safety Reporting
- 9.1.3 OHS Reporting
- 9.1.4 TDG Reporting
- 9.1.5 ERAP Activation Reporting
- 9.1.6 Gas and Pressure Vessel Reporting

Annex 9.2 Documents

- 9.2.1 Safety Data Sheet
- 9.2.2 Annual and 5-Year Full-scale Simulation Exercise Document
  - Part 1 – The Exercise Plan
  - Part 2 – Scenarios
  - Part 3 – Participation List
  - Part 4 – Exercise Evaluation and Corrective Actions

Annex 9.3 Dynamic Records

- 9.3.1 Exercise Records
- 9.3.2 Preventative Maintenance Inspections Records
- 9.3.3 Community Notification Records
- 9.3.4 Plan Stakeholder Status and Acknowledgement
- 9.3.5 Facility Photos

Annex 9.4 Maps and Diagrams

- 9.4.1 Fire Services Route to Site
- 9.4.2 Emergency 1st Responders Entrance to Facility
- 9.4.3 Muster Areas
- 9.4.4 Facility Maps
- 9.4.5 Plant Schematics
- 9.4.6 P&ID drawings
- 9.4.7 Tank/s Data Plate/s

Annex 10.1 External Reporting

9.1.1 Environmental Reporting

British Columbia

Call 1-800-663-3456 (Emergency Management BC – EMBC 24/7) to report a spill or imminent spill and/or for propane: if a propane spill exceeds 20 litres (10 kg/5 USWG/22 lbs.).

- Complete an End of Spill Report as outlined in section 6 of the Spill Reporting Regulation and submit to SpillReports@gov.bc.ca stating the Dangerous Goods Incident Report (DGIR) number and 'End-of-Spill Report' in the subject line.
- Submit within 30 days of the emergency response completion date of the spill.

Federal - Environment and Climate Change Canada (ECCC)

- Complete and submit a written report to Regional Director, Environmental Enforcement Directorate-ECCC-PYR ec.dale-rpn-enforcement-pnr.ec@canada.ca
    - for an environmental emergency that has or may have an immediate or long-term harmful effect on the environment,
    - constitutes or may constitute a danger to the environment on which human life depends, or
    - constitutes or may constitute a danger in Canada to human life or health.
- The written report must include the information referred to in Schedule 8 of the E2 Reg's, SOR/2019-51.

Note: ECCC has accepted Transport Canada Transport Canada 30-Day Follow-Up Form (TP16-0086E) and all other container specifications forms as fulfilling this responsibility.

9.1.2 Public Safety Reporting

British Columbia

Call 1-800-663-3456 (Emergency Management BC – EMBC 24/7) to report a spill or imminent spill and/or for propane: if a propane spill exceeds 20 litres (10 kg/5 USWG/22 lbs.).

- Emergency Management BC – EMBC – will make necessary provincial contacts.

9.1.3 Occupational Health & Safety Reporting

British Columbia

- Call 1-888-621-7233 (Work Safe BC 24/7) to report a serious incident or chemical release (e.g., propane) or unsafe working conditions including:
    - Serious injury to or death of a worker
    - Major structural failure or collapse of a building, bridge, tower, crane, hoist, temporary construction support system, or excavation
    - Major release of a hazardous substance
    - Fire or explosion that had a potential for causing serious injury to a worker.
    - Blasting incident causing personal injury
    - Dangerous incident involving explosives, whether there is personal injury.
- Crisis Support Line (injured worker) 1-800-624-2928 (24/7)
- Critical Incident Response (witnessed to a traumatic workplace accident) 1-888-922-3700 (24/7)

9.1.4 Transportation of Dangerous Goods Reporting

British Columbia

Call 1-800-663-3456 (24/7) (Provincial Emergency Program – Emergency Management BC) to report a spill or imminent spill and/or for propane: if a propane spill exceeds 20 litres (10 kg/5 USWG/22 lbs.).

- Complete an End of Spill Report as outlined in section 6 of the Spill Reporting Regulation and submit to SpillReports@gov.bc.ca stating the Dangerous Goods Incident Report (DGIR) number and 'End-of-Spill Report' in the subject line. Submit within 30 days of the emergency response completion date of the spill.

Federal – Transport Canada

- Call 1-888-226-8832 (CAN-U-TEC 24/7), 1-613-996-6666 or *666 on cellular in the event of an emergency involving a release or anticipated release of dangerous goods, and/or to report any release of propane into the environment that could pose a danger to public safety or any sustained release of 10 minutes or more, and
- Complete a Transport Canada 30-Day Follow-Up Form (TP16-0086E) and send to the Director General, TDG at dor-rcd@tc.gc.ca utilizing TP 15294 – Guide for Reporting Dangerous Goods Incidents (where applicable, ensure to fill out a container specifications form found in Annex E of the Guide), and

Note: Confirm approval from Transport Canada prior to moving a damaged propane truck or trailer from the scene or roadway

9.1.5 Emergency Response Assistance Plan (ERAP) Reporting

Federal

- Transportation Incidents: In response to a release* or anticipated release**, FCL's Emergency Management Team will implement the Emergency Response Assistance Plan (ERAP) by:
  - Calling Emergency Response Assistance Canada (ERAC) at 1-800-265-0212 and implement Federated Co-operatives Ltd. ERP2-0010-025 to tier 1 or 2.
    - tier 1 implemented for technical or emergency response advice, but none of the emergency response resources listed in the ERAP are mobilized to the site of release or anticipated release.
    - tier 2 implemented for technical or emergency response advice, and emergency response resources listed in the ERAP are mobilized to the site of release or anticipated release.

*Release means escape of dangerous goods

**anticipated release examples: an incident has occurred, and propane will have to be transferred; propane vessel has been damaged, and propane may be released; and a tanker rolled over, with all four sides not visible

9.1.6 Gas and Pressure Vessel Reporting

Provincial

Incidents and hazards can be reported 24/7 by completing the incident form or by calling 1-866-566-7233.

Definitions

Incident: A failure of a regulated product, work or operation that caused damage or injury

Hazard: A source of potential harm to persons or potential damage to property.

https://www.technicalsafetybc.ca/contact-us/report-an-incident

SAFETY DATA SHEET

1. Identification

Product identifier PROPANE- LIQUEFIED PETROLEUM GAS

Other means of identification

Product code 127

Synonyms Unstenched Propane * Stenched Propane * HD-5 Propane * Standard Propane

Recommended use Various.

Recommended restrictions None known.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer Consumers' Co-operative Refineries Limited

Address P.O. Box 260; 9th Avenue North
Regina, SK S4P 3A1 Canada

Telephone (306) 719-4353

Supplier Consumers' Co-operative Refineries Limited

Address P.O. Box 260; 9th Avenue North
Regina, SK S4P 3A1 Canada

Telephone (306) 719-4353

24-Hour emergency telephone (613) 996-6666 - Canutec

2. Hazard(s) identification

Physical hazards	Flammable gases	Category 1
	Gases under pressure	Liquefied gas
	Simple asphyxiants	Category 1

Health hazards Not classified.

Environmental hazards Not classified.

Label elements

Signal word Danger

Hazard statement Extremely flammable gas. Contains gas under pressure; may explode if heated. May displace oxygen and cause rapid suffocation.

Precautionary statements

Prevention Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep container tightly closed. Use only outdoors or in a well-ventilated area. Wear respiratory protection.

Response Leaking gas fire: Do not extinguish, unless leak can be stopped safely. Eliminate all ignition sources if safe to do so.

Storage Protect from sunlight. Store in a well-ventilated place.

Disposal Dispose of waste and residues in accordance with local authority requirements.

Other hazards Contact with liquefied gas may cause frostbite.

Supplemental information None.

3. Composition/information on ingredients

Mixtures

Chemical name	CAS number	%
Propane	74-98-6	100

Ethanethiol	75-08-1	0.005

Composition comments All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First-aid measures

Inhalation Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory tract irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation. Get medical attention if breathing difficulty persists.

Skin contact Not likely, due to the form of the product. If frostbite occurs, immerse affected area in warm water (not exceeding 105°F/41°C). Keep immersed for 20 to 40 minutes. Get medical attention immediately.

Eye contact Not likely, due to the form of the product. If frostbite occurs, immediately flush eyes with plenty of warm water (not exceeding 105°F/41°C) for at least 20 minutes. If easy to do, remove contact lenses. Get medical attention promptly if symptoms persist or occur after washing.

Ingestion This material is a gas under normal atmospheric conditions and ingestion is unlikely.

Most important symptoms/effects, acute and delayed Symptoms of overexposure can include shortness of breath, drowsiness, headaches, confusion, decreased coordination, visual disturbances and vomiting, and are reversible if exposure is stopped. Continued exposure can lead to hypoxia (inadequate oxygen), cyanosis (bluish discoloration of the skin), numbness of the extremities, unconsciousness and death. Exposure to rapidly expanding gas or vapourizing liquid may cause frostbite ("cold burn").

Indication of immediate medical attention and special treatment needed Provide general supportive measures and treat symptomatically.

General information If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media Water fog. Water spray. Foam. Dry chemical powder. Carbon dioxide (CO_2).

Unsuitable extinguishing media Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical Extremely flammable gas. Contents under pressure. Pressurised container may explode when exposed to heat or flame. During fire, gases hazardous to health may be formed.

Special protective equipment and precautions for firefighters Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with full face-piece operated in positive pressure mode. Use approved gas detectors in confined spaces.

Fire fighting equipment/instructions In case of fire and/or explosion do not breathe fumes. Do not extinguish fires unless gas flow can be stopped safely; explosive re-ignition may occur. Promptly isolate the scene by removing all persons from the vicinity of the incident. No action shall be taken involving any personal risk or without suitable training. For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus. Stop flow of material. Use water to keep fire exposed containers cool and to protect personnel effecting shutoff. If a leak or spill has not ignited, use water spray to disperse the vapors and to protect personnel attempting to stop leak. Prevent runoff from fire control or dilution from entering streams, sewers or drinking water supply.

Specific methods Evacuate area. Check oxygen content before entering area. Stop leak if you can do so without risk. Remove pressurised gas cylinders from the immediate vicinity. Turn leaking cylinder with the leak up to prevent escape of gas in liquid state. Closed containers can burst violently when heated, due to excess pressure build-up. Use water spray to keep fire-exposed containers cool. Self-contained breathing apparatus and full protective clothing must be worn in case of fire. In the event of fire and/or explosion do not breathe fumes.

General fire hazards Extremely flammable gas.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Eliminate all sources of ignition in vicinity of released gas. Evacuate all non-essential personnel to an area upwind. Stop leak if possible without any risk. Ventilate enclosed areas to prevent formation of toxic, flammable or oxygen deficient atmospheres. Use suitable protective equipment (section 8). Follow all fire-fighting procedures (section 5). Keep out of low areas. Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks). Wear appropriate protective equipment and clothing during clean-up. Emergency personnel need self-contained breathing equipment. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Local authorities should be advised if significant spillages cannot be contained.

Methods and materials for containment and cleaning up

Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Keep combustibles (wood, paper, oil etc) away from spilled material. Stop leak if you can do so without risk. If possible, turn leaking containers so that gas escapes rather than liquid. Isolate area until gas has dispersed. For waste disposal, see section 13 of the SDS.

Environmental precautions

Prevent further leakage or spillage if safe to do so. Attempt to stop the gas leak, if no risk is involved.

7. Handling and storage

Precautions for safe handling

Eliminate all sources of ignition. When using do not smoke. Before entering storage tanks and commencing any operation in a confined area, check the atmosphere for oxygen content and flammability. Valve protection caps must remain in place unless container is secured with valve outlet piping to use point. Close valve after each use and when container is empty. Do not drop, drag, slide or roll cylinders on their sides. Use a suitable hand truck to move gas containers. Use a pressure reducing regulator when connecting container to piping or systems. Never insert an object (e.g. wrench, screwdriver, pry bar) into cap openings. Use an adjustable strap wrench to remove over-tight or rusted caps. Open valve slowly. Do not use gas directly from containers. Do not heat container by any means to increase the discharge rate of product from the container. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Do not enter storage areas or confined spaces unless adequately ventilated. Use only outdoors or in a well-ventilated area. Oxygen concentration should not fall below 19.5 % at sea level (pO2 = 135 mmHg). All equipment used when handling the product must be grounded. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities

Keep away from heat, sparks and open flame. Store in a cool, dry place out of direct sunlight. Secure cylinders in an upright position at all times, close all valves when not in use. Store in original tightly closed container. Store in a well-ventilated place. Store away from incompatible materials (see section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

Components	Type	Value
Propane (CAS 74-98-6)	TWA	1000 ppm

Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

Material	Type	Value
PROPANE- LIQUEFIED PETROLEUM GAS (CAS Mixture)	TWA	1000 ppm

Components	Type	Value
Propane (CAS 74-98-6)	TWA	1000 ppm

Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)

Material	Type	Value
PROPANE- LIQUEFIED PETROLEUM GAS (CAS Mixture)	TWA	1000 ppm

Components	Type	Value
Propane (CAS 74-98-6)	TWA	1000 ppm

Canada. Quebec OELs. (Ministry of Labour - Regulation Respecting the Quality of the Work Environment)

Components	Type	Value
Propane (CAS 74-98-6)	TWA	1800 mg/m3 1000 ppm

Biological limit values No biological exposure limits noted for the ingredient(s).

Exposure guidelines No exposure standards allocated.

Appropriate engineering controls Explosion proof exhaust ventilation should be used. Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Provide adequate ventilation and minimize the risk of inhalation of gas.

Individual protection measures, such as personal protective equipment

Eye/face protection If eye contact is likely, safety glasses with side shields or chemical type goggles should be worn.

Skin protection

Hand protection Wear cold insulating gloves.

Other Wear suitable protective clothing.

Respiratory protection If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. Selection and use of respiratory protective equipment should be in accordance with OSHA General Industry Standard 29 CFR 1910.134; or in Canada with CSA Standard Z94.4.

Thermal hazards Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations When using do not smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance

Physical state Gas.

Form Compressed liquefied gas.

Colour Colourless.

Odour Boiling cabbage if stenched.

Odour threshold 4800 ppm

pH Not available.

Melting point/freezing point -180 °C (-292 °F) / -185.89 °C (-302.6 °F)

Initial boiling point and boiling range -42 °C (-43.6 °F)

Flash point -101.1 °C (-150.0 °F) Pensky-Martens Closed Cup

Evaporation rate > 1 (Ether (anhydrous)=1)

Flammability (solid, gas) Extremely flammable gas.

Upper/lower flammability or explosive limits

Flammability limit - lower (%) 2.2 %

Flammability limit - upper (%) 9.5 %

Explosive limit - lower (%) Not available.

Explosive limit – upper (%) Not available.

Vapour pressure 1034.1 - 1241 kPa

Vapour density 1.6

Relative density Not available.

Solubility(ies)

Solubility (water) 6.5 % v/v in water.

Solubility temp. (water) 20 °C (68 °F)

Partition coefficient (n-octanol/water) Not available.

Auto-ignition temperature	432 °C (809.6 °F)
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Critical temperature	96.6 °C (205.88 °F)
Explosive properties	Not explosive.
Molecular weight	44.11 g/mol
Oxidising properties	Not oxidising.
VOC	100 %

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Avoid heat, sparks, open flames and other ignition sources. Avoid temperatures exceeding the flash point. Contact with incompatible materials.
Incompatible materials	Strong oxidising agents.
Hazardous decomposition products	Thermal decomposition of this product can generate carbon monoxide and carbon dioxide.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Suffocation (asphyxiant) hazard - if allowed to accumulate to concentrations that reduce oxygen below safe breathing levels. Prolonged inhalation may be harmful. May cause drowsiness or dizziness. Inhalation of high concentrations may result in central nervous system depression and reduce the ability of the blood to carry oxygen to body tissues.
Skin contact	Exposure to rapidly expanding gas or vapourizing liquid may cause frostbite ("cold burn").
Eye contact	Exposure to rapidly expanding gas or vapourizing liquid may cause frostbite ("cold burn").
Ingestion	This material is a gas under normal atmospheric conditions and ingestion is unlikely.
Symptoms related to the physical, chemical and toxicological characteristics	Symptoms of overexposure can include shortness of breath, drowsiness, headaches, confusion, decreased coordination, visual disturbances and vomiting, and are reversible if exposure is stopped. Continued exposure can lead to hypoxia (inadequate oxygen), cyanosis (bluish discoloration of the skin), numbness of the extremities, unconsciousness and death. Exposure to rapidly expanding gas or vapourizing liquid may cause frostbite ("cold burn").

Information on toxicological effects

Acute toxicity	Not expected to be acutely toxic.

Components	Species	Test results
Propane (CAS 74-98-6)		
Acute		
Inhalation		
Gas		
LC50	Rat	> 80000 ppm, 15 Minutes

Skin corrosion/irritation	Contact with liquefied gas might cause frostbites, in some cases with tissue damage.
Serious eye damage/eye irritation	Direct contact with liquefied gas may cause eye damage from frostbite.
Respiratory or skin sensitisation	
Respiratory sensitisation	Not a respiratory sensitiser.
Skin sensitisation	This product is not expected to cause skin sensitisation.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	Not classifiable as to carcinogenicity to humans.
Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure	Not classified.

Specific target organ toxicity - repeated exposure	Not classified.
Aspiration hazard	Not likely, due to the form of the product.
Chronic effects	None known.
Further information	Chronic effects are not expected when this product is used as intended.

12. Ecological information

Ecotoxicity	The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.
Persistence and degradability	No data is available on the degradability of this product.
Bioaccumulative potential	
Partition coefficient n-octanol / water (log Kow)	
Propane (CAS 74-98-6)	2.36
Mobility in soil	The product is slightly soluble in water.
Mobility in general	The product contains volatile substances, which may spread in the atmosphere.
Other adverse effects	The product is a volatile organic compound which has a photochemical ozone creation potential.

13. Disposal considerations

Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.
Local disposal regulations	Dispose in accordance with all applicable regulations.
Hazardous waste code	The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

TDG

UN number	UN1978
UN proper shipping name	PROPANE
Transport hazard class(es)	
Class	2.1
Subsidiary risk	-
Packing group	Not applicable.
Environmental hazards	No
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

IATA

UN number	UN1978
UN proper shipping name	Propane
Transport hazard class(es)	
Class	2.1
Subsidiary risk	-
Label(s)	2.1
Packing group	Not applicable.
Environmental hazards	No
ERG Code	10L
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

IMDG

UN number	UN1978
UN proper shipping name	PROPANE
Transport hazard class(es)	
Class	2.1
Subsidiary risk	2F

Packing group	Not applicable.
Environmental hazards	
Marine pollutant	No
EmS	F-D, S-U
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not applicable.

15. Regulatory information

Canadian regulations

This product has been classified in accordance with the hazard criteria of the HPR and the SDS contains all the information required by the HPR.

Controlled Drugs and Substances Act

Not regulated.

Export Control List (CEPA 1999, Schedule 3)

Not listed.

Greenhouse Gases

Not listed.

Precursor Control Regulations

Not regulated.

International regulations

Stockholm Convention

Not applicable.

Rotterdam Convention

Not applicable.

Kyoto protocol

Not applicable.

Montreal Protocol

Not applicable.

Basel Convention

Not applicable.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information

Issue date	10-January-2017
Revision date	-
Version No.	01

Further information	The classification for health and environmental hazards is derived by a combination of calculation methods and test data, if available.
Disclaimer	To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

9.2.2 Annual and 5-Year Full-scale Simulation Exercise Documents

Part 1 - The Exercise Plan

- Exercises are to be completed annually.
- All staff members must be present for the exercise.
- Make the following available to the exercise group: copy of the E2 Plan, copy of the Mid Island Co-op Safety Program, note pads and any other related material such as maps and contact lists.
- Invite an Emergency Services representative whenever possible to participate in the exercise sessions.
- Pre meeting inspection of all fire extinguishers, emergency signs, call #s and alarm system to be completed prior to exercise.
- Review the E2 Plan document with all participants (paper copies or projector)

Incident Action Plan

For the scenario/s, the reason **why** there is a need for action has been defined. The objective is to take the scenario from the beginning of the event until the incident reaches the point of recovery/restoration.

Plan and document:

- Strategies that will be used to complete the objective (How are we going to meet the objective)
- Tactics that will be used to implement the strategies including:
    - **What** needs to be accomplished?
    - **Where** they will be accomplished
    - **When** they are to be accomplished
    - **Who** will accomplish what?

In a chronological form, document: agencies, names, positions, times, contact numbers, and other applicable information related to the incidents. Attach the exercise notes to the main document.

Complete the following scenario(s) in either handwritten or printed form.

Part 2 – Scenarios

Listed below are Environmental Emergency Exercises that will be rotated on an annual basis:

- Emergency Simulation Exercise scenarios (annual tabletop), and
- Five Year Full-scale Simulation scenario that.

Propane Release – no fire

Emergency Simulation Exercise Scenario

Propane release from hoses/piping/fittings/pump – no fire

Hose rupture during propane transfer from delivery unit to bulk tank.

- The driver is unable to approach the truck or the immediate transfer area.
- It is 2:00 PM
- Light winds and +10 C
- All staff are on site.

Propane Release – with fire

Emergency Simulation Exercise Scenario

During propane transfer from delivery unit to bulk tank a leak within pumping cabinet ignited and flashed back to the point of discharge.

- The driver is unable to approach the truck or the immediate transfer area.
- It is Wednesday at noon.
- Calm winds and -5 C.
- Propane delivery driver and all staff are on site.

Structural Fire – local to propane storage

Emergency Simulation Exercise Scenario

A large amount of smoke is coming from the electrical room.

- It is 2:00 PM
- Light winds and +1 C
- All staff are on site.

Wildfires – local to propane storage

Emergency Simulation Exercise Scenario

A wildfire is approaching the facility.

- It is 3:00 PM
- Moderate winds and +30 C
- All staff are on site.

Bomb Threats/Terrorism

Emergency Simulation Exercise Scenario

Worst-case Scenario - vapour cloud explosion (VCE) vapour release from storage tank – with fire/explosion

A caller reported a bomb placed on top of the above ground propane tank and ended the call.

- It is Tuesday at 10:30 AM
- It is 25 C with wind from the northwest.
- All staff are on site.

Severe Weather

Emergency Simulation Exercise Scenario

Tornado

The customer spotted a funnel cloud.

- It is Monday at 3 PM
- +25 C with strong winds
- All staff are on site.

Emergency Simulation Exercise Scenario

Lightning

A storm is approaching with visible and audible lightning.

- It is Thursday at 1:00 PM
- +30 C strong winds
- All staff are on site.

Evacuation Procedures

Emergency Simulation Exercise Scenario

Notification of a propane emergency or an evacuation order is given:

- It is Tuesday at 8:00 AM
- -10 C light breeze
- All staff are on site.

Serious Injury/Illness

Emergency Simulation Exercise Scenario

An employee slipped and fell while outside striking their head and is unconscious. An employee has witnessed the event.

- It is Monday at 9:00 AM
- All staff are on site.

Vehicle Incidents - On-site Delivery Unit Scenario

Emergency Simulation Exercise Scenario

A delivery unit has been driven into by a customer. The driver escaped injury and the barrel appears to be damaged.

- It is Monday at 7 PM and dark.
- It is -20 C with no wind.

Jet fire

The bulk storage tanks 3” liquid bottom outlet valve has ruptured releasing propane west toward the property line. The release ignited causing a jet fire out to 100 m.

- The release is major.
- It is 1:15 pm
- Gusting winds from the east at 20 km/hr.
- +25 C
- All staff are on site.

Part 3 – Participation List

Mid Island Co-op E2 Plan Exercise Report

Date				
Exercise Facilitator				
Signature				
Position				
Facility	Gabriola Island Bulk Plant			
CRS Retail	1748			
Location	017			
Address	793 Lockinvar Lane, Gabriola Island BC - V0R 1X0			
Phone #s	Area Manager Kelli Cartwright 250-802-1198			
Storage Capacity	Tank 1	9,400 USWG	Tank 2	N/A

Participants

Print	Sign

Part 4 – Exercise Evaluation and Corrective Actions

Following the exercises, the evaluation should include completeness of the E2 Plan, reader understanding, flow, accuracy, reaching objectives, learning success, challenges, and recommendations. The evaluation should also include any other items of concern during the exercise.

Discussion Notes, Evaluation and Corrective Actions

Name of Author:		**Date:**	

Corrective Actions

Assigned Person	Required Action	Completion Date (YYYY/MM/DD)	Priority (H/M/L)
Assigned Person	**Required Action**	**Completion Date (YYYY/MM/DD)**	**Priority (H/M/L)**
Assigned Person	**Required Action**	**Completion Date (YYYY/MM/DD)**	**Priority (H/M/L)**

Exercise Facilitator	
Facilitator Title	

Agencies Attending the event:

Note: The environmental emergency plan for this facility was updated in accordance with section 10 of the Regulations and includes the full-scale simulation exercise.

2023 ER.E2 Plan Review and Tabletop Exercise ppt may be found here:

Corrective Actions

Assigned Person	Required Action	Completion Date (YYYY/MM/DD)	Priority (H/M/L)
			H
Assigned Person	**Required Action**	**Completion Date (YYYY/MM/DD)**	**Priority (H/M/L)**
			H

Exercise Facilitators	
Facilitator Title	

Agencies Attending the event:

Note: The environmental emergency plan for this facility was updated in accordance with section 10 of the Regulations and includes the full-scale simulation exercise.

9.3.2 Preventative Maintenance Inspections Records

Annual preventative maintenance inspections are conducted by an FCL technician with records stored electronically and can be located at I:\AA Propane Fastfield PDFs. Hard copies are printable at any given time.

9.3.3 Community Notification Records

XXXX

9.3.4 Plan Stakeholder Status and Acknowledgement

Municipal Information	
Municipality or District	Gabriola Island – Local Trust Area
Address	
Gabriola Island Trustees	Tobi Elliott 250-268-7434 telliott@islandstrust.bc.ca Susan Yates 250-247-8086 syates@islandstrust.bc.ca

Emergency Service Information	
Fire Service Name	Gabriola Volunteer Fire Department
Address Fire Hall #1	730 Church Street, Gabriola BC V0R 1X3
Address Fire Hall #2	2400 South Road 250-247-8332
Fire Chief	Will Sprogis
Fire Chief Contacts	W: 250-247-9677
DFC	XXXX
DFC Contacts	XXXX
Duty Officer	Pager: 250-755-9289
Travel Time to Facility	2 minutes travel time from Fire Hall #1 to Bulk Plant
Initial Attack Water Volume	2,000 gallons
Sustained Action Water Source	Water shuttle
Training Schedule	

Mutual Aid Agreements	
Name of Agency	Regional District of Nanaimo (RDN)
Location of Agency	6300 Hammond Bay Road, Nanaimo, BC V9T 6N2
Primary Contact Person	inquiries@rdn.bc.ca
Phone #	250-390-4111

Gabriola Volunteer Fire Department received a completed copy of the E2 plan on 2023.

I, _____ of Gabriola Volunteer Fire Department acknowledge that I have received the E2 Plan.

Position _____

Signature _____

Date _____

Mid Island Co-op Representative _____

Position _____

Signature _____

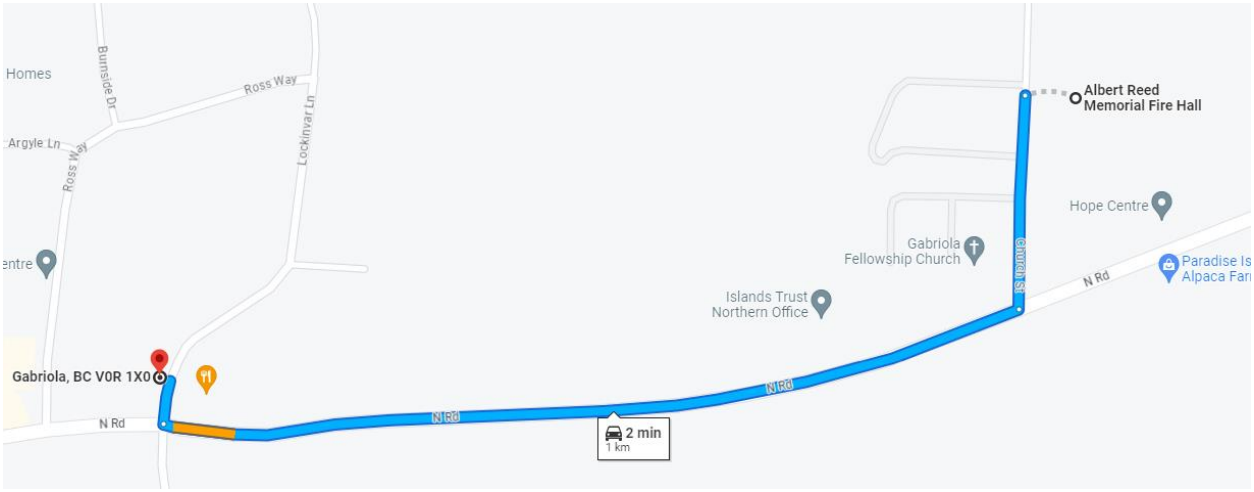
Date _____

9.3.5 Facility Photos

XXXX

Annex 10.4 Maps and Diagrams

9.4.1 Fire Service Route to Site



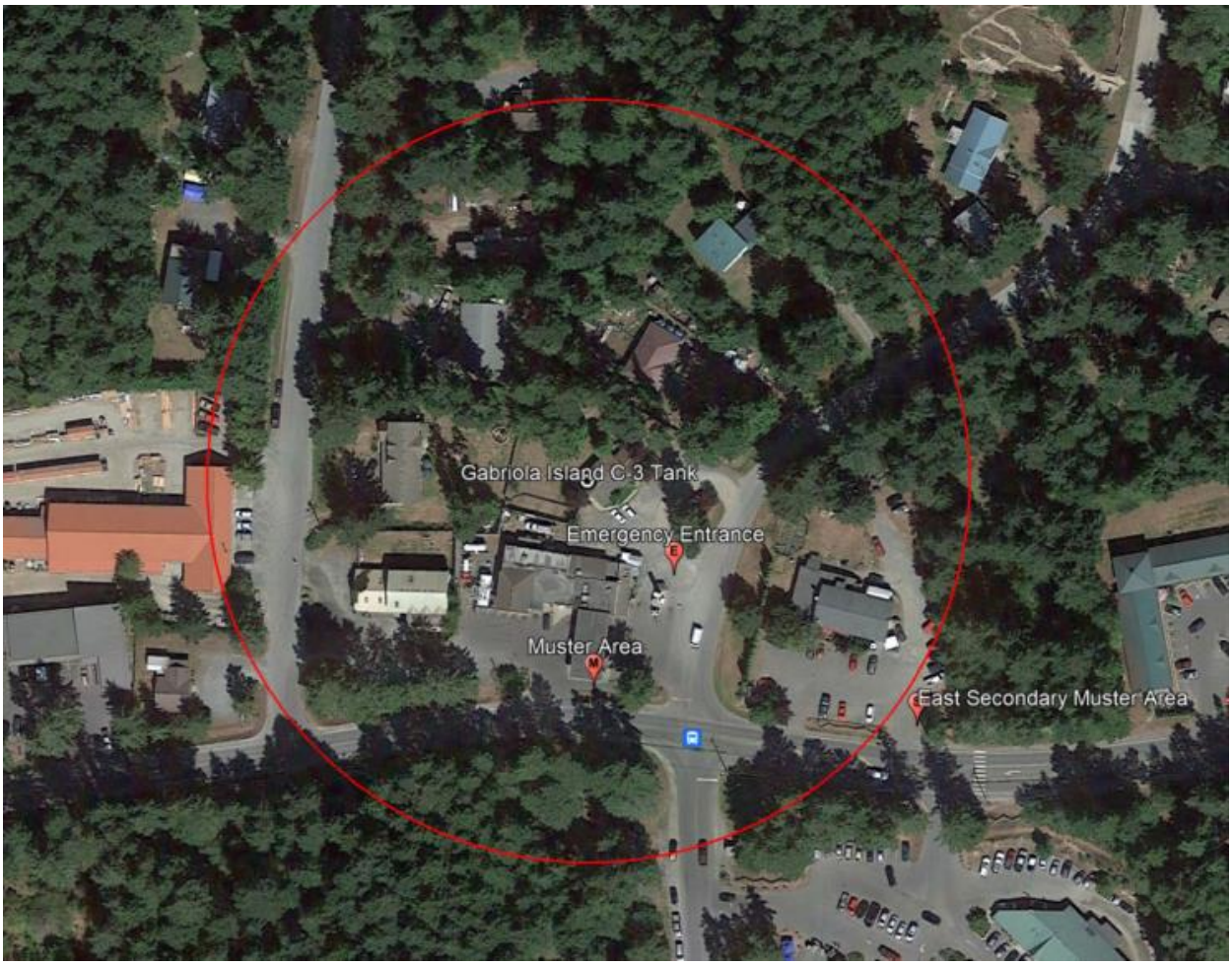
9.4.2 Emergency 1st Responder Entrance to Facility

- ***GPS - DD (decimal degrees): 49.17439, -123.84605***
- ***Road Address: 793 Lockinvar Lane Gabriola Island BC***

9.4.3.1 Muster Area

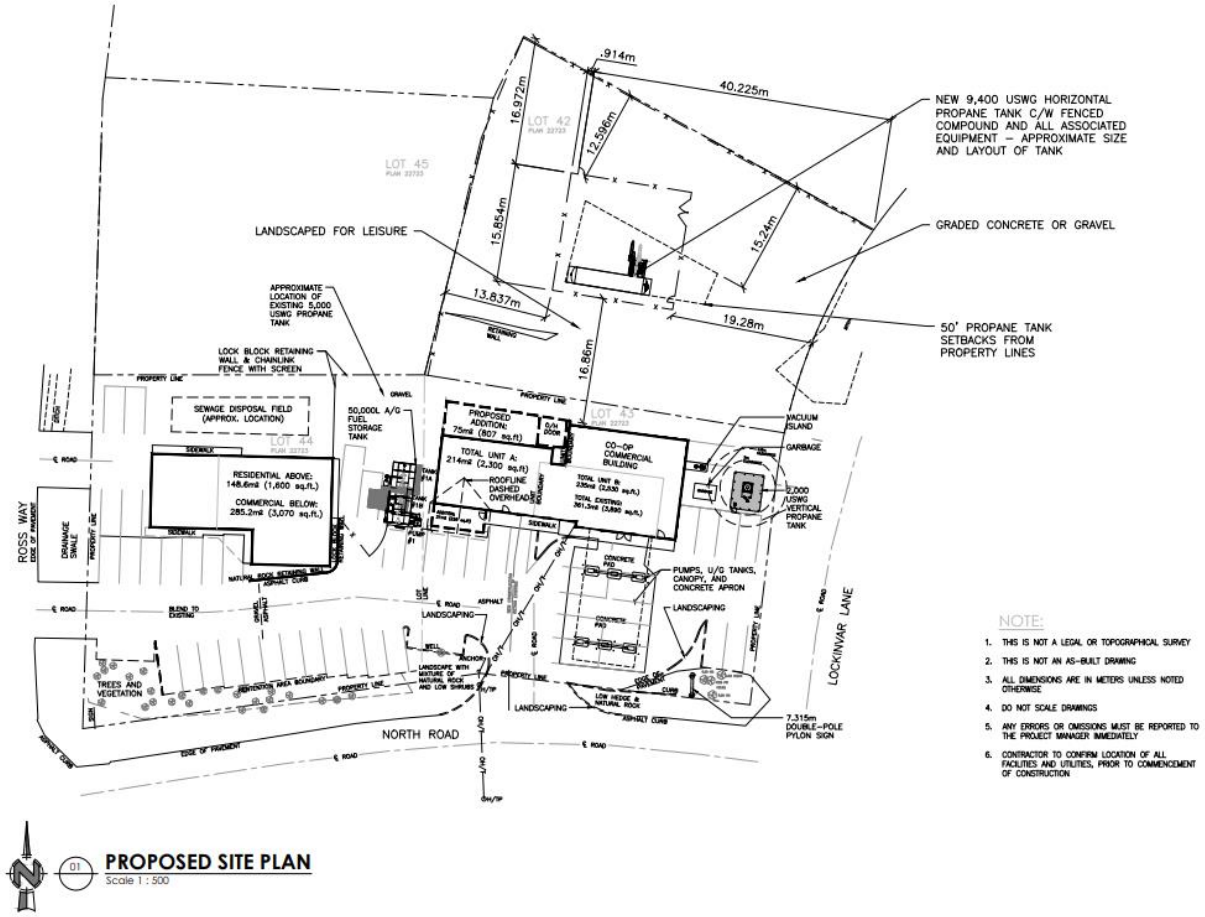
Muster Areas: In case of emergency involving propane, all staff will go to the Muster Area and if not safe to meet/stay at the Muster Area go to the east Secondary Muster Area using the closest safe route. If the Muster Areas are not safe to meet/stay, go upwind or side-on to the wind out to a safe distance.

9.4.3.2 Secondary Muster Area

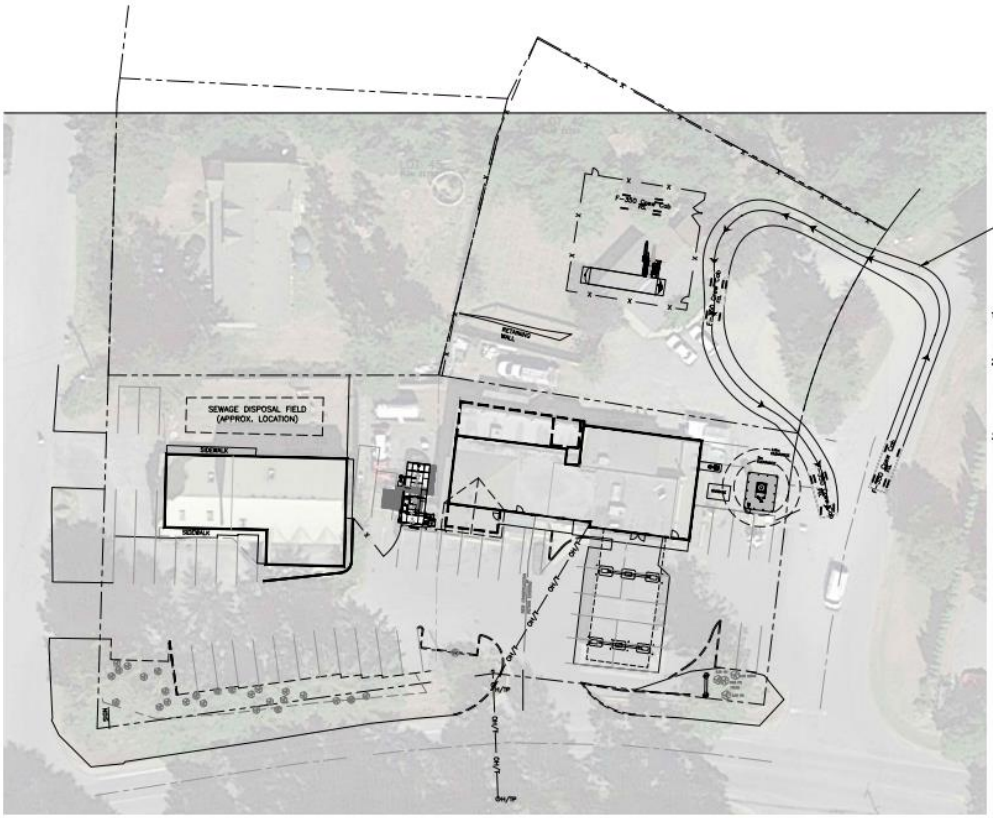


Muster Areas: In case of emergency involving propane, all staff will go to the Muster Area and if not safe to meet/stay at the Muster Area go to the east Secondary Muster Area using the closest safe route. If the Muster Areas are not safe to meet/stay go upwind or side-on to the wind out to a safe distance.

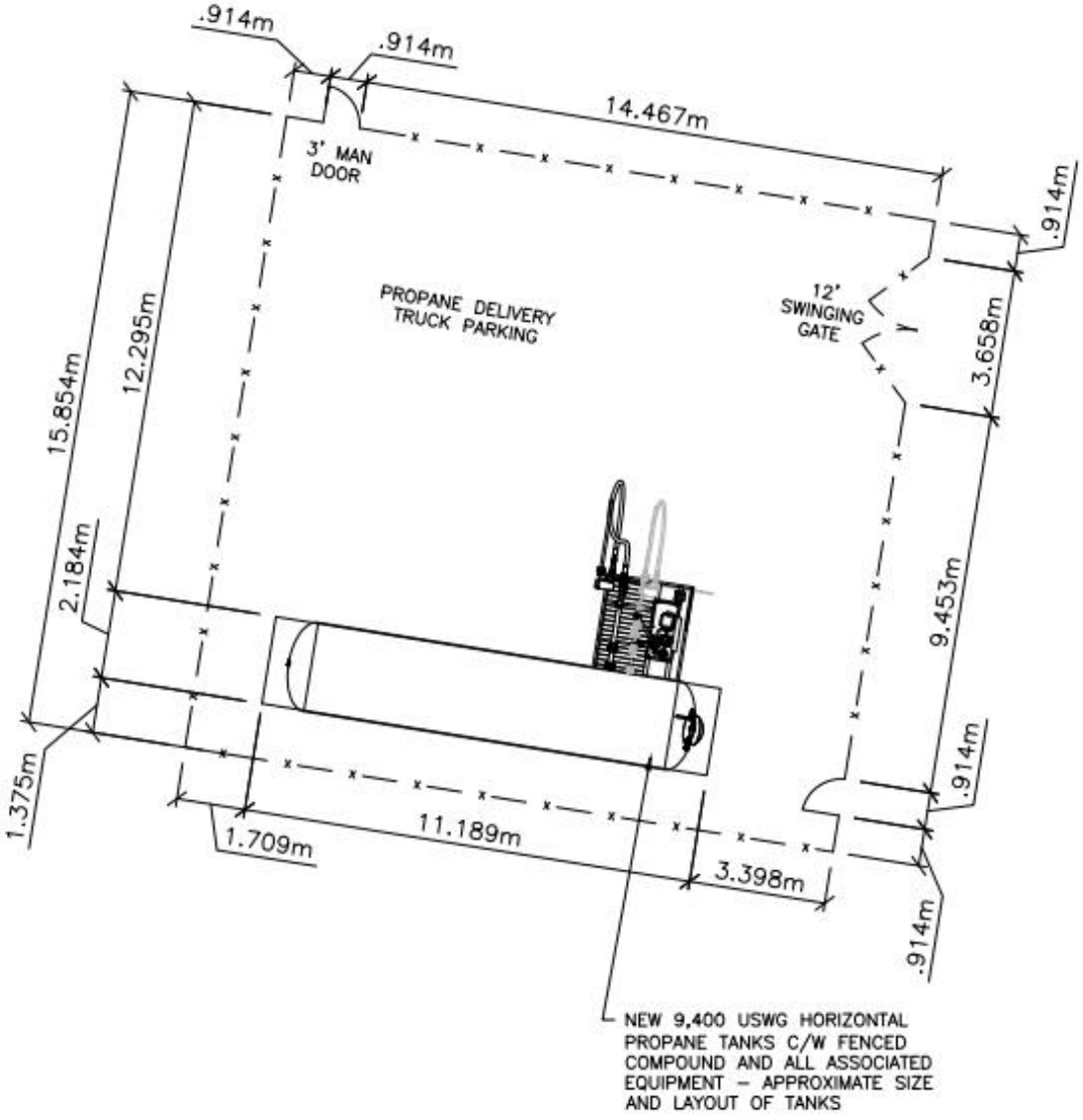
9.4.4 Facility Maps



01 **PROPOSED SITE PLAN**
Scale 1 : 500



01 **PROPANE VEHICLE PATH**
Scale 1 : 500

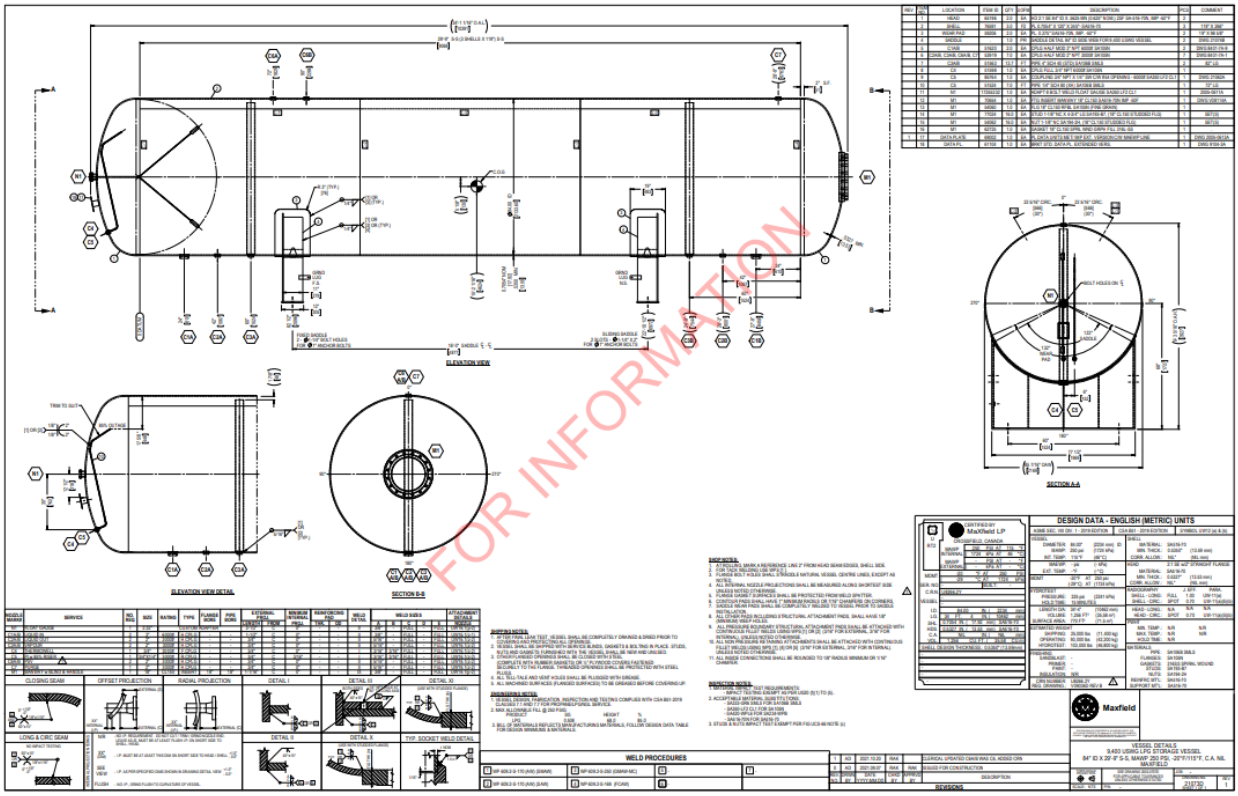


01 **PROPANE DETAIL PLAN**

Scale 1 : 150

9.4.5 Plant Schematics

9.4.5.1 Facility Specific Schematics



9.4.6 P&ID Drawings

9.4.6.1 Facility Specific Drawings

XXXX.

9.4.7 Tank/s Data Plate/s

XXXX

END