

Safe and Secure Operations



Viva Energy's number one priority is safe operations. As operator of the proposed new gas terminal we will build on our long track record of responsible operations at the Geelong Refinery.

Viva Energy owns and operates the strategically located Geelong Refinery in Victoria, which has been an important part of the Geelong community for almost 70 years. We are an experienced operator of Major Hazard Facilities including the Refinery, Newport Terminal and Lara LPG facility in Victoria. In addition, we own and operate licensed pipelines in Victoria and across Australia, safely and efficiently delivering fuels to customers.

Proposed Gas Terminal

Viva Energy is proposing to build a new gas terminal, to import LNG (liquefied natural gas) via ship through the Port of Geelong and provide a new, reliable supply of gas for south-east Australia.

Development of a gas terminal facility would require an extension to the existing Refinery Pier, the mooring of a Floating Gas Terminal at the new berth, and construction of a new 6.5 km pipeline to take the gas from the facility to Victoria's gas transmission system.

The operation of the terminal would also require some new wharf and berthing infrastructure such as pipes and marine loading arms which are mounted to the pier.

Each of these different parts of the project will have its own safety features and safeguards in place to ensure we minimise risk to our employees, the community, the environment and the Port.



Viva Energy Emergency Response

There are trained emergency response personnel present at the Viva Energy Geelong Refinery 24 hours a day, 7 days a week, who will respond to all refinery emergencies covering:

- Fire-fighting
- First aid
- Dealing with hazardous materials incidents.

The refinery has a broad range of fire-fighting capabilities, including foam injection facilities that are regularly tested and maintained to a high standard.

A history of safe and secure operations

The Geelong Refinery has a long history of safe operations, working closely with local regulators like WorkSafe to ensure the safety of our workforce and the local community.

The proposed terminal is next to the Geelong Refinery, and the operations of the two facilities will be connected. The new facility will likely be a designated MHF separately licenced and regulated by Worksafe. As an experienced operator of hazardous facilities, we will extend our strong safety culture and proven processes to the new gas terminal operations. These arrangements will continue to provide strong protection for the refinery including the gas terminal and the LNG import operation.

Liquefied Natural Gas (LNG)

LNG is natural gas (mostly methane) that has been turned into a liquid by cooling it to -161°C . As a liquid, it takes up a lot less space and does not have to be stored under pressure - so it is easier to transport and can be safely shipped to markets around the world.

As a liquid, LNG is odourless, colourless and is not flammable. It will vaporise quickly if exposed to air. It is non-corrosive and non-toxic, and quickly evaporates if released to water - so it won't pollute land or water in the unlikely event it escapes.

When LNG reaches its destination at the receiving terminal such as a floating gas terminal, it is warmed up using seawater and converted from a liquid back into gas, and sent through pipelines for delivery to end users.

If you have any questions or feedback please contact us on:

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We expect up to 40 LNG ships a year to visit the Gas Terminal – a small percentage of 1000+ ships forecast to visit the Port of Geelong annually.

LNG is shipped using specialised carriers

LNG has been safely produced and transported across the world since the 1960s - over 135,000 voyages have been completed without a major incident or loss of cargo. There are hundreds of LNG carriers transporting LNG from production facilities to gas terminals and markets worldwide. LNG carriers are built to very strict international design standards, and feature sophisticated equipment to enhance safe navigation.

The carriers are specially designed and constructed to prevent leakage or rupture.

LNG is stored in a special containment system within the inner hull of the vessel. This primary and secondary cargo containment system (known as a “double hull”) prevents leaks, and the design of this system maintains the very low temperature of LNG, enabling LNG to stay cold without the need for pressurisation. The absence of pressurisation significantly reduces the chances of an incident, and further contributes to the safe transportation and storage of LNG.

Floating Gas Terminal Safety

A Floating Gas Terminal (also known as a Floating Storage and Regasification Unit or FSRU) is basically an LNG ship with extra facilities on board to regasify the LNG – that is, to warm up the liquid and turn it back into a gas.

The floating gas terminal is a relatively simple operation. The LNG carrier moors alongside the terminal where LNG is transferred and stored as a very cold liquid. When needed it would be warmed up to regasify it and sent via pipeline through the refinery and into the Victorian gas transmission network. The LNG is warmed up by circulating seawater through pipes – there are no boilers or electric heaters involved in this process.

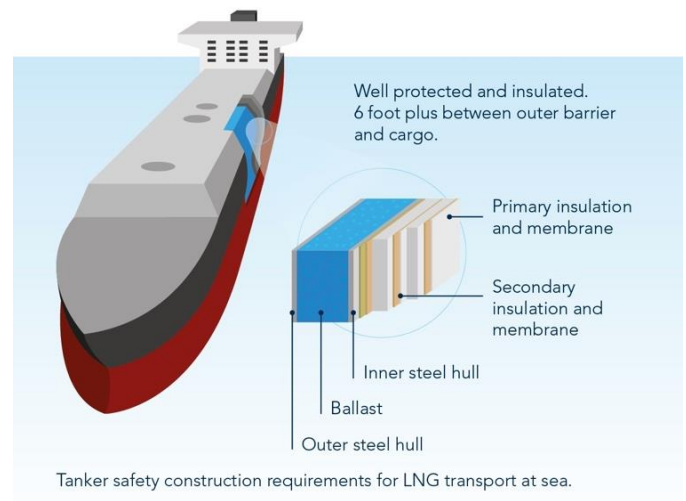
LNG receiving terminals currently operate worldwide in over 35 countries and these facilities have proven to be a safe and efficient means of supplying gas into local markets.

Our floating gas terminal will be a modern ship supplied by an experienced international ship builder, with the latest in safety technology. A number of safety features are built into the design of the gas terminals to avoid, mitigate and manage hazard events. The double-hull storage system means it is very unlikely that a leak could occur. Fire and gas detection systems would be installed, and manual and automatic shutdown systems would quickly isolate and shutdown operations if any abnormalities are detected in operations.

As with refinery operations, we plan to be well prepared and well-practiced in case of an emergency. Fire protection and fire-fighting systems would be installed, including on the wharf. Evacuation and rescue systems and procedures would be in place, with all the appropriate protocols and training.

It is worth noting that LNG is stored onboard the floating terminal as a cold liquid. In this state it is not flammable. Natural gas is not stored onboard (there are no gas storage tanks) - as the liquid LNG gets turned back into gas it would be transmitted from the terminal via pipeline.

Although moored in Port, the Floating Gas Terminal remains a seaworthy vessel, with a marine crew living on board, so it could be sailed out of Port quickly if required.



LNG Properties



LNG is not carried under pressure and as a liquid cannot be ignited.



In the unlikely event of an uncontrolled release, LNG will revert to a gas as it warms up in the open air.



Natural gas is lighter than air and quickly dissipates into the atmosphere.



Natural gas and LNG are non-toxic.

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Listening to the Community – Public Consultation Process

The community will have the opportunity to provide feedback on the Gas Terminal Project through the Environment Effects Statement (EES) process. Information including results of safety studies and assessments will be presented at regularly-scheduled community briefings and meetings. For details and other information visit vivaenergy.com.au/gas-terminal

Shipping and Port Safety

The existing operation at Refinery Pier currently handles around 240 ships each year, as Viva Energy brings in crude oil for processing and exports fuel as part of our day-to-day operations. The Refinery works closely with a range of external parties including Ports Victoria to ensure safe shipping operations, including appropriate mitigation and safety precautions for loading and unloading ships.

We expect up to 40 LNG ships each year to visit the Gas Terminal – which is a small percentage increase in the 1000+ ships forecast to visit the Port of Geelong each year.

A navigational risk assessment are underway for the safe navigation of additional ships into the Port. Emergency response preparedness is closely regulated and required for our shipping licence. As a member of the Australian Marine Oil Spill Centre (AMOSC), we have priority access to specialist equipment and expertise in spill response, based in Geelong.

Ports Victoria has strict procedures and controls in place to ensure safe transit and berthing of all ships in Corio bay, which would cover LNG ships. The LNG ships will travel along the Geelong shipping channels under the escort of tugboats, with a maximum speed limit imposed.

Safe pipeline operation and monitoring

A new pipeline would transmit gas from the terminal along the wharf, and through the refinery to connect into the existing Victorian gas network. All up, about 6.5km of new pipeline will be constructed – 4km underground through existing pipeline corridors and 2.5km above ground (on refinery operated land).

Viva Energy is an experienced pipeline operator, and the new pipeline would be managed in accordance with industry best-practice, in full compliance with all regulations and safety requirements. This includes pipeline monitoring, 24-hour leak detection and automatic shutdown systems. Pipeline operation is highly regulated, and prior to receiving a licence to operate, we will have to prepare and submit a pipeline licence application which includes a Safety Management Plan for approval from Energy Safe Victoria (ESV).

Regulatory Reviews and Oversight

Viva Energy must apply to WorkSafe Victoria for a license to operate the new facilities. Like a number of our existing facilities, including the refinery, the Floating Gas Terminal will be classified as a Major Hazard Facility (MHF) and will be subject to strict operational parameters and conditions that are stipulated by the regulators and detailed in our operational licence. As part of the approvals process a comprehensive hazard and risk analysis will be completed. This will cover the Floating Gas Terminal operation and jetty facilities, including the offloading facilities on the pier that will transmit the natural gas to the onshore pipeline

Before we can obtain a licence to operate the new facility, we are required to prepared and submit a Safety Case demonstrating that the facility will be operated safely. The safety case:

- identifies the hazards and risks
- describes how the risks are controlled
- describes the safety management system in place to ensure the controls are effective and reliable

A Safety Case includes a summary of the potential major incidents that could occur, including the hazards that could cause those incidents and the control measures that are in place to prevent or minimise any impacts. We will work closely with Worksafe Victoria and other regulators on its preparation, including any interaction with the existing refinery Safety Case.

As part of the process we are required to communicate and consult and with employees, emergency services and the local council. Modelling and quantitative risk assessment (QRA) will look at whether the proposed Floating Gas Terminal would create any additional risks to the refinery, and how these risks can be mitigated.

Government regulators use the Safety Case to help assess whether the risks associated with operating the facilities are eliminated or reduced to so far as reasonably practicable prior to granting an operating licence. There are around 50 licenced MHF's in Victoria.



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A Focus on Security

While Australia is a very safe place to do business, as an experienced hazardous facility operator, Viva Energy is ever-vigilant and focused on ensuring that we take all possible practical measures to keep our facilities secure.

Viva Energy works closely with law enforcement agencies, security intelligence agencies, Federal and State Government departments and industry groups -on an ongoing basis, in order to monitor and manage any potential threats to our business. We have safely and securely operated the Geelong refinery, including shipping operations at Refinery Pier, for nearly 70 years.

Secure operations

Security measures currently deployed at the Geelong refinery and Refinery Pier will be extended to the new gas terminal. Refinery Pier is surrounded by a regulated security zone. There are strict controls over who has access to the pier, and unauthorised personnel or craft are not permitted within this area. These controls would apply to the new facility. Federal Government Security background checks would be mandatory for all personnel including contractors requiring access.

In addition to specific requirements for the gas terminal operation, the Geelong Refinery Pier Facility and the Port are heavily regulated by the Commonwealth Government. The Port also has their own strict security protocols and procedures in place to ensure the safe transit of over 1000 ships each year.

Regular security meetings are held to ensure a coordinated approach with key external authorities, such as the Police, Water Police, Australian Border Force, Parks Victoria, Ports Victoria, Department of Home Affairs - Aviation and Maritime Security Department and the City of Greater Geelong.

Viva Energy regularly carries out emergency drills and exercises, looking at a range of safety and security-related scenarios at both the refinery and Refinery Pier. These drills can include Government bodies, spill response agencies and local authorities such as emergency services, Ports Victoria and Water Police, to ensure a coordinated and prompt response in case of an emergency.

Risk assessment and detailed planning

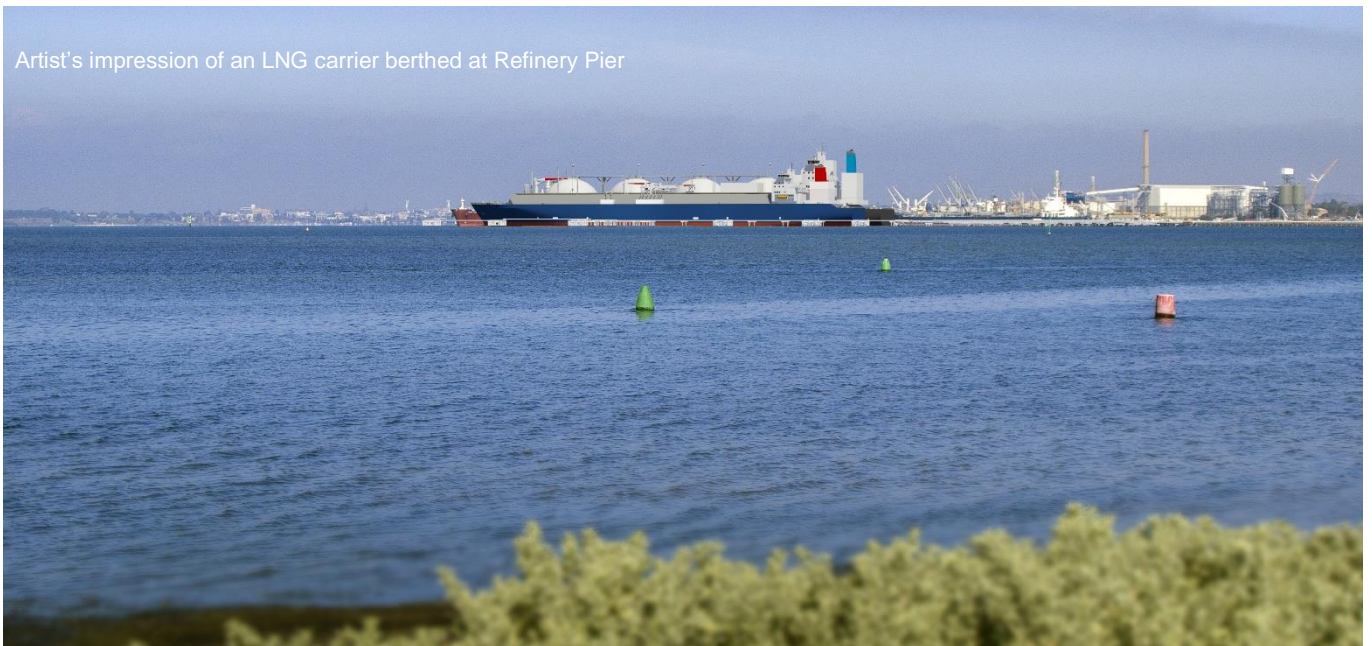
Viva Energy must prepare an updated Maritime Security Plan (MSP) covering both the current and new operations, and setting out security control measures and mitigations in detail. Prepared in consultation with a range of experts, the MSP must be approved by the Federal Government.

Once the proposed terminal is operational, the MSP would be regularly reviewed, actively managed and updated as required. It is subject to regular audits which are conducted by independent experts, the Government and other authorities such as Ports Victoria.

A security risk and vulnerability assessment has been carried out on the proposed gas terminal and the LNG import operation. This is an important input to the planning process for the proposed terminal, and the study will inform both the terminal design, operation and security plans. The scope of the review included LNG ship transit and mooring, the proposed Floating Gas Terminal operation and the new pipeline.

This comprehensive external study found existing security measures would be appropriate and adequate for the proposed Floating Gas Terminal and LNG import operations, and no major changes are required to existing security arrangements. It concluded that Viva Energy is well prepared to monitor the security environment and respond to any risks identified.

Artist's impression of an LNG carrier berthed at Refinery Pier



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