

Decree No. 2021/28

Decree designating the quay of the Passenger Terminal Amsterdam for the bunkering of Liquefied Natural Gas (LNG) with an LNG-bunker ship

The Director of the Central Nautical Management North Sea Canal Area

Having regard to:

- Article 1.1 of the Regional Port Bye-laws for the North Sea Canal Area 2019;
- Article 1.5 of the Regional Port Bye-laws for the North Sea Canal Area 2019, which provides that the Mayor and Aldermen may attach regulations and restrictions to a designation to protect the interest of the designation concerned;
- Article 8.1, paragraph 1, of the Regional Port Bye-laws for the North Sea Canal Area 2019, and the Decree based thereon, which provides that Liquefied Natural Gas (LNG) is designated as a fuel that may only be bunkered with a permit from the Mayor and Aldermen;
- Article 8.1, paragraph 2, under c, of the Regional Port Bye-laws for the North Sea Canal Area 2019, which provides that the Mayor and Aldermen may designate areas or berths where bunkering of designated fuels is permitted in accordance with Article 8.1, paragraph 1, of the Regional Port Bye-laws for the North Sea Canal Area 2019;
- The Mandate, Power of Attorney, and Authorization Decree, dated 3 December 2019, on the basis of which the Director of the Central Nautical Management North Sea Canal Area is mandated to adopt Decrees on behalf of the Mayor and Aldermen of the Municipality of Amsterdam;

Having considered that:

- The use of LNG as a fuel significantly reduces emissions such as nitrogen oxides, particulate matter, and sulphur oxides, and thereby benefits local air quality and the living environment;
- The Director of the Central Nautical Management North Sea Canal Area, on behalf of the Mayor and Aldermen, is authorised to designate areas or berths where LNG can be bunkered;
- The Director of the Central Nautical Management North Sea Canal Area, on behalf of the Mayor and Aldermen, is authorised to attach further conditions and restrictions to the designation of areas or berths where LNG can be bunkered;
- The underlying idea behind this authorisation is the safety in the port and its immediate surroundings;
- The present designation takes into account aspects of external safety and nautical safety at the location concerned in relation to the hazardous characteristics of LNG and the operations carried out with it, such as the temperature of the LNG, the pumping speeds, the maximum duration of the operation, and the safety measures taken to mitigate the risks;
- Next to the conditions and restrictions attached to the designation of the location, the safety is even more safeguarded, as only licensed bunker operators are permitted to carry out LNG bunkering operations and the bunkering of LNG only can take place under the conditions of an internationally applicable operational safety bunker-checklist;
- The present designation of these berths has been made after an extensive study into the external safety by means of a risk approach and an impact approach making use of a recognised simulation model under worst-case conditions;
- The municipality of Amsterdam, the Environmental Agency North Sea Canal Area, and the Amsterdam-Amstelland Security Region have been involved in the methodology used and the results of the study;
- In coordination with the Rotterdam Environmental Agency and the Rotterdam-Rijnmond Security Region, the same methodology has been used in the study into the bunkering of LNG at the Rotterdam Passenger Terminal at the Wilhelminakade in Rotterdam;

- The results of the various studies, carried out by DNV-GL as external safety expert, have led to 1 specific outcome for the location of the Passenger Terminal Amsterdam. Subject to the conditions as described in this Decree, LNG can be bunkered to LNG powered ships or to ships that use LNG for the energy supply. LNG bunkering must be carried out in such a way that the risks, as defined in the relevant external safety legislation on land, are acceptable;
- A 6-monthly evaluation of this designation takes place with the expert safety officers of the municipality of Amsterdam, and, if necessary, also with external experts.

Has decided the following:**I.**

In the provisions under or pursuant to this Decree, the following terms are defined as stated below:

- a. LNG: Liquefied Natural Gas;
- b. Bunkering of LNG: The supply of LNG for the propulsion of ships or for the general or specific energy supply on board ships;
- c. LNG bunker ship: Ship used for the bunkering of LNG;
- d. LNG powered ship: A ship that uses or also uses LNG as fuel for the propulsion.

II.

To designate the quay indicated in green on the Map of LNG bunker berths at the PTA (see Annex) as the berth at which LNG can be bunkered with an LNG bunker ship. The quay indicated in green is the Veemkade, the designated berths lie between bollard numbers 11 and 37.

III.

In order to guarantee the interests of safety, the following conditions are attached to the bunkering of LNG at this berth;

- The ship to be bunkered must be at least 150 metres long, at least 28 metres wide, and must have a superstructure the height of which is at least 25 metres above the water level, both at the LNG bunker connection and over a length of at least 50 metres on either side of this connection. The ship to be bunkered is a cruise ship or a ship with similar dimensional characteristics. A (cruise) ship's dimensions form a physical barrier (or shield) in the event of a possible leakage of LNG;
- Between the LNG bunker ship and the ship to be bunkered, fenders of at least 1 metre wide are used which, in the event of an LNG outflow, do not enclose the LNG but allow it to pass through;
- The maximum annual volume of LNG to be bunkered at this location is 112,500m³;
- The maximum pump discharge for the LNG bunkering is 900m³/hour;
- The temperature of the LNG to be bunkered is minus 155 degrees Celsius or lower;
- Use must be made of a composite hose, or a hose with equivalent safety properties, with a maximum diameter of 8 inches;
- During LNG bunkering, except during the start-up and shut-down phases (the phases during which there is no constant pump discharge), use must be made of an automatic Emergency Shut Down (ESD) system with a valve closure time of not more than 15 seconds and with a system reliability of at least SIL-2 (Safety Integrity Level), or a probability of system failure of not more than 1 in 100;
- LNG bunkering is not permitted if a second ship has been moored at the designated quay;
- LNG bunkering is not permitted if an event is held in the terminal building of the Passenger Terminal Amsterdam;
- During the LNG bunkering no civilians or passengers are present at the designated quay;
- During the LNG bunkering no other persons are present at the designated quay, unless this is explicitly permitted in the bunker management plan of the LNG powered ship for carrying out simultaneously operations, such as ship supply activities by suppliers or ship's crew.

IV.

This Decree enters into force one day after its publication.
The Decree will be published in the digital version of the Municipal Gazette and also as an Announcement to Shipping IJmond North Sea Canal Area (BASIJN).

V.

This Decree may be cited as: "Decree designating the quay of the Passenger Terminal Amsterdam for the bunkering of LNG".

Thus adopted on behalf of the Mayor and Alderman on 23 July 2021,

The Director of the Central Nautical Management North Sea Canal Area



J.H.M. Mateyo

Please Note

In accordance with the Algemene Wet Bestuursrecht (the Dutch General Administrative Law Act), an interested party can lodge a notice of objection against a decision within six weeks after its publication. The notice of objection must be sent to the municipal authority concerned. The notice of objection must be sent to the following address: Burgemeester en Wethouders van Amsterdam, Postbus 202, 1000AE Amsterdam. The notice of objection must be signed and must contain at least the name and address of the person lodging the objection, the date, a description of the decision against which the objection has been lodged as well as the grounds for objection. If you choose to be represented, we request you to submit an authorization.

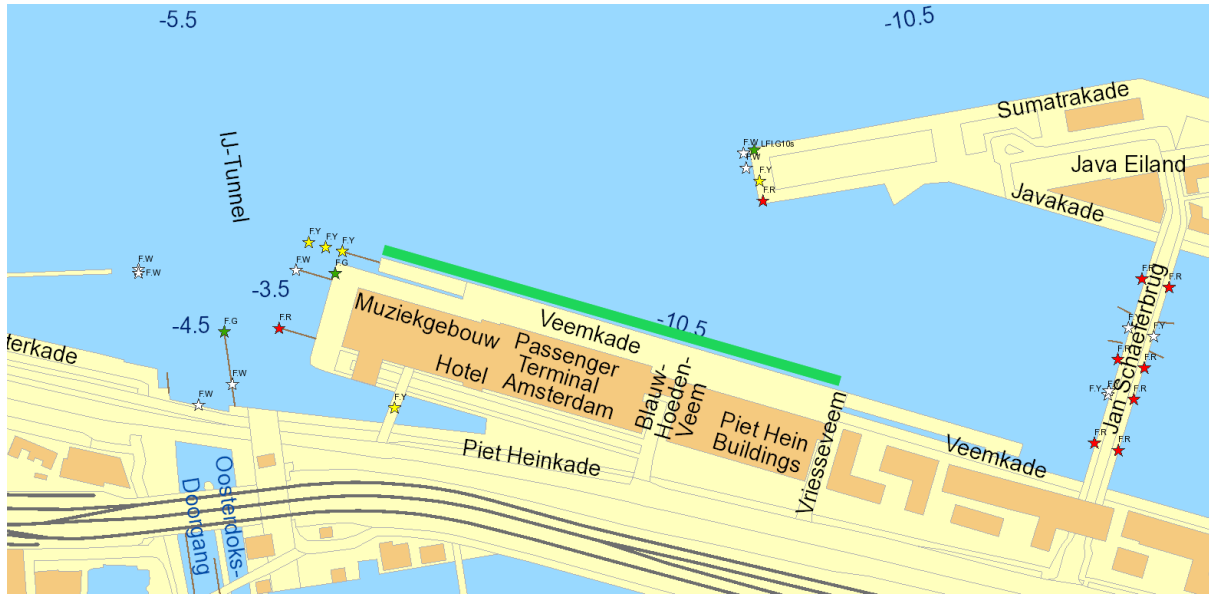
The Municipality of Amsterdam also enables you to lodge a digital objection through its website at www.amsterdam.nl/bezwaar/jb. For this option you will need a DigiD.

The notice of objection has no suspensive force. If, pending the objection procedure, the situation requires a suspension or immediate relief, an application to grant suspension or provisional relief can be submitted to the judge in preliminary relief proceedings of the Administrative-Law Sector of the Court of Amsterdam, Parnassusweg 226, Postbus 75850, 1070 AW Amsterdam. For this procedure, court fees are due.

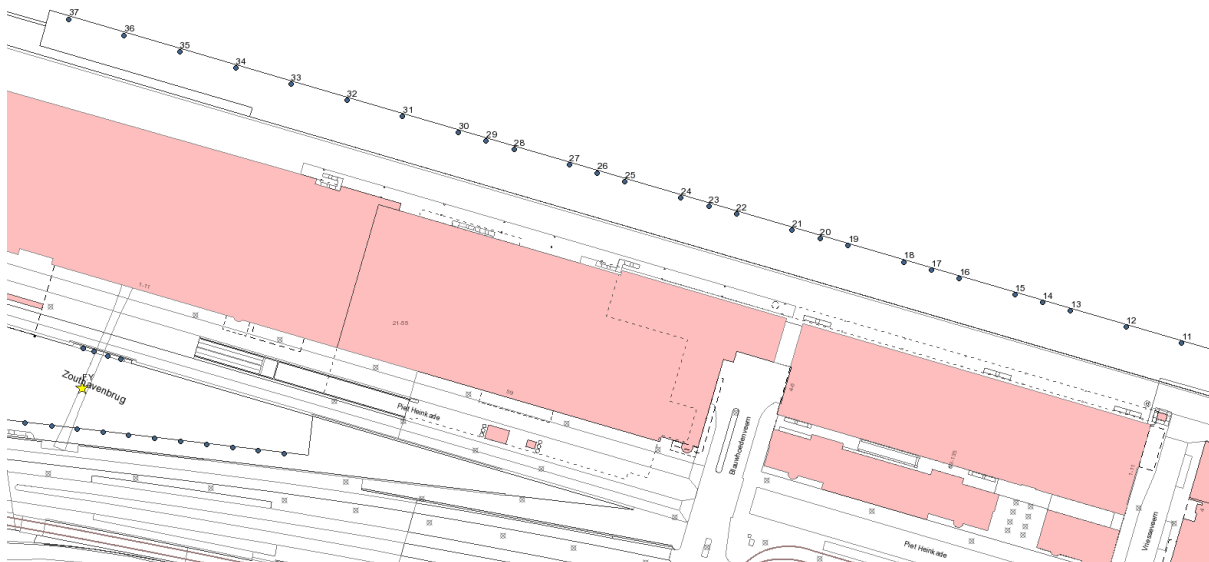
You can also submit the above application digitally at <http://loket.rechtspraak.nl/bestuursrecht>. For this option you will need a DigiD. Please visit the above-mentioned site for more information.

Appendix:

Map of LNG bunker berths at the PTA, Map I and map II



Map I, overview of the quay (green)



Map II, bollard numbers 11 to 37

Explanation

INTRODUCTION

As part of the worldwide tightening of environmental standards with regard to emissions from maritime shipping, the development of LNG as a fuel is under way in various sectors of maritime shipping, including the cruise sector. A large number of new-build orders are fitted with the necessary equipment, such as bunker tanks, engines, and technical systems for the use of LNG as a fuel. Some recently delivered cruise ships already use LNG.

In the context of a sustainable port with clean shipping, cruise ships are given high priority. This is because the cruise terminal (PTA) is located in the centre of the city. Local emission reductions of nitrogen and sulphur oxides and of particulate matter are very important and so the LNG development is a step in the right direction.

It is therefore important to facilitate the bunkering of LNG as a fuel. In the shipping sector, bunkering and transshipment of LNG has been taking place for years and with an excellent safety record. An important factor here is that bunkering operations are carried out by trained specialists. This is exactly the reason why the Regional Port Bye-laws for the North Sea Canal Area 2019 require that only licensed bunker operators are permitted to carry out LNG bunkering operations and that prior to commencing the bunkering of LNG, an extensive safety checklist must be completed between the LNG bunker ship and the ship to be bunkered.

In addition to these two requirements, the designation of the locations where LNG bunkering may take place is important in the context of external safety for the minimisation of risks to the living environment. In the context of the designation of locations under the Regional Port Bye-laws, use will be made of the methodology as applied on land under the External Safety Establishments Decree (Bevi). The Bevi approach is not based on impact, but on probability. This has previously led to a Decree on the basis of the Regional Port Bye-laws regulating the designation of various LNG bunker locations in the port of Amsterdam.

Location Veemkade Passenger Terminal Amsterdam

The method used in designating LNG bunker locations in the port is the method that determines the location-related risk (the so-called 10^{-6} contour). The distance determined for this contour is the minimum distance within which no vulnerable objects (e.g. offices or houses) are allowed. In practice, however, this method proved unfeasible for the Veemkade, due to the fact that it lies very close to the terminal and to a number of other buildings falling under the vulnerable objects category, such as the Muziekgebouw, the IJ-toren, the Piet Hein Buildings and the Mövenpick Hotel.

It must also be pointed out that calculating the distance of the 10^{-6} contour using the standard risk methodology does not take into account that in the event of an LNG leakage the (cruise) ship, due to its high superstructure, acts as a barrier or shield preventing the LNG vapour cloud, or the fire resulting from its ignition, to reach these vulnerable objects. From this perspective, subsequent research was conducted into the actual effects of an LNG leakage using a recognised simulation model, a so-called CFD (Computational Fluid Dynamics) study. This same methodology has been applied previously in the port of Rotterdam with the agreement of the local Security Region and the local Environmental Agency.

Impact study

When determining a standard 10^{-6} contour, the results of all risk scenarios are taken into account. A further study showed that the risk scenario in which a hose rupture occurs, which subsequently activates the automatic Emergency Shut Down system (ESD system), determines the total location-related risk by 95 percent. The other risks (the residual risks), such as a small leakage in the LNG bunker hose or a failure of the ESD system, only contribute 5 percent to the total risk.

In other words, the risk of an accident during the bunkering of LNG is minimal. In the unlikely event of an accident, 95 percent of the cases can be attributed to a hose rupture. As has been pointed out, the ESD system immediately intervenes after a hose rupture and the leakage will be stopped within 15 seconds.

The effect of a 15-second leakage is dispersion of an explosive vapour cloud and, on ignition of that vapour cloud, a fire. This has been simulated in a worst-case scenario. A realistic simulation was carried out with the assistance of an LNG bunker operator and the owner of a small cruise ship, powered by LNG, which is still under construction. Worst case means that the simulation was based on conceivable circumstances that pose the most danger or risk, such as wind and weather conditions, currents, maximum pumping speeds, and a small cruise ship the superstructure of which is less effective as a physical barrier or shield.

The result of the simulation showed that under these conditions there was no risk of fatality on the quay or in the buildings on the quay. There are two reasons for this. Firstly, no explosive vapour cloud occurred; and secondly, the radiant heat (limit value: 9.85 kW/m²) generated by the flames in the event of an ignition of the LNG pool, did not occur at the buildings, but only briefly in the vicinity of the cruise ship itself, which is built to withstand such situations.

Residual risks

The risk results of the other scenarios were examined next. This resulted in a very small location-related 10⁻⁶ risk contour. Vulnerable objects were well outside the contour; only the ships themselves were inside the contour. Cruise ships that are built and equipped to run on LNG use an extensive safety and communication procedure, whereby the area around the LNG bunker connection will be cleared so that passengers and crew will not be put at risk. It must be noted that the ships, including passengers and crew, are not considered as vulnerable objects.

The analysis and calculation of the residual risks, however, has shown that the group risk level is still being exceeded. This is considered to be acceptable for the purposes of this Decree for the following reasons:

- The calculation is based on worst-case scenario conditions, which means that the outcome can be considered a conservative and cautious one;
- It must be borne in mind that, firstly, the conservative calculation model used to calculate the group risk takes no account of the fact that the ship itself acts as a physical barrier or shield; and secondly, that the impact study has shown that the effects on the quay and on the buildings are minimal.
- If any effects occur at all, they will only occur after a considerable time (10 minutes). This will allow maximum use to be made of the evacuation possibilities on the quay and in the buildings;
- Both the (cruise) ship and the LNG bunker ship have the means, knowledge and expertise to act immediately in the event of LNG leakage and its consequences;
- A second cruise ship (or other ship) is not allowed to be moored at the quay at the time of the bunkering. As a result of this, the group risk in the residual scenarios is much lower.
- Ultimately, the added value of the facility to bunker LNG as a cleaner fuel outweighs the minimal risks involved.

Evaluation

A 6-monthly evaluation of this designation will be held with the expert safety officers of the municipality of Amsterdam and, if necessary, also with external experts. The evaluation must ensure that this Decree can be reconsidered or adapted should circumstances change.