

ANNEX A-1

DETERMINATION OF RESTRICTION ZONES FOR THE LNG TERMINAL

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The concept of having a control or restricted area around an offshore facility is an established practice. The LNG Terminal is in Hong Kong waters but there is no local regulations for provision of restriction zone. Therefore, the following international standards and practices are cited as reference;

- *EN-ISO-28460:2010 – Petroleum and Natural Gas Industries Installation and Equipment for LNG Ship-to-Shore Interface and Port Operations.*
- *The UK Petroleum Act 1987.*
- *SIGTTO – Floating LNG Installations – 1st Edition 2021*

The above regulations and guidelines require some form of restricted area around an offshore facility or installation. The recommendations from SIGTTO are the most relevant and up-to-date. The Hong Kong Offshore LNG Terminal Project approach to the necessity for Restricted Zones is primarily based on the SIGTTO recommendations and thus, international LNG industry best practice.

SIGTTO = The Society of International Gas Tanker and Terminal Operators. It is the most respected organization in the LNG industry. It was formed as an international organisation through which all industry participants might share experiences, address common problems and derive agreed criteria for best practices and acceptable standards.

SIGTTO – Floating LNG Installations – 1st Edition

- When selecting a site location for an LNG installation, consideration should be given to zone management based on outcomes of safety studies.
- There is considerable difference between zones that are there to lower risk and prevent an incident occurring (passing traffic collision or security incident) and zones that are there to mitigate the consequences of an incident (vapour dispersion, thermal radiation).
- To meet the different functional requirements of the zones, it would be inappropriate to create a single zone for prevention and mitigation of the risks.
- All zones should be fully assessed and defined based on location and what is required by regulatory stipulations, host country/local requirements and project specific needs.

The recommendation of a Safety Zone (SZ) and a Marine Control Zone (MCZ) is in accordance with SIGTTO's Guidelines.

SIGTTO suggested that each site should establish its own restriction zone(s) according to its circumstances. In this section, examples of specific Hong Kong requirements with regards to providing the justification for Restricted Zones are discussed. These are also very typical of those being regulated by port/harbour authorities around the world.

- Hong Kong's Risk Guidelines, specifically the Individual Risk (IR) Criteria of 1×10^{-5}
- The Hong Kong adaptation of the International Ship and Port Facility Security (ISPS) Code
- Operational safety during berthing and unberthing of visiting LNG carriers and FSRU

During the process of obtaining an Environmental Permit (EP) for the Project, a 250m radius (from the centre of the Jetty) Safety Zone was proposed in the Environmental Impact Assessment Report for the Project (EIAO Register No. AEIAR-218/2018) and has been approved by the Hong Kong Government.

From security, and operational safety perspectives, it would also require a Marine Control Zone of up to 500m following the annulus of the LNG Terminal and extending up to the HKSAR Maritime Boundary but not beyond.

Figure A1 Worldwide examples of LNG/FSRU Safety and Marine Control Zones

Project	Cap. km ³	Location	Distance from shore	SZ/MEZ
Pecem Port	139	Brazil	Approx. 900m (jetty based with L-shaped breakwaters)	200m from the breakwater
Adriatic	250	Italy	17km	2km radius plus 2.4km area to be avoided
Neptune	138	USA	16km	500m
Jebel Ali	151	UAE	Open piled jetty. Approx. 200m from breakwaters, 300m from container port	250m
Livorno	135	Italy	19km	3km radius (no fishing or pollution)
Bahia Salvador	138	Brazil	4km	150m safety zone (no maintenance) 500m security zone (no vessels other than support)
Klaipeda	170	Lithuania	4km inland, 100-200m from land	200m
Ain Sokhna	170	Egypt	Jetty moored side-by-side 50-100m from shore, 500m from container port	Container ships pass within 200m of FSRUs.
Port Qasim	151	Pakistan	Jetty moored. Mangrove swamps.	150m from the marine loading arms
Bahia Blanca and Escoba	138 150	Argentina	Jetty Moored	Very restricted areas that require close monitoring. SZ/MEZ becomes irrelevant
Teeside and Grain	150+	UK	Jetty moored near shore terminal	150-250m exclusion distance
Summit FSRU	138	Bangladesh	1.5km from shore	500m
Planned	170	South Africa	FSRU	250m-500m for marine distance, 1000m for residential