

# 1 INTRODUCTION

## 1.1 BACKGROUND

CLP Power Hong Kong Limited (CLP) and The Hongkong Electric Company, Limited (HK Electric) are both responsible for providing a safe, highly reliable and clean supply of electricity to Hong Kong's population at reasonable cost.

CLP operates three power stations that supply electricity to the population in Kowloon, the New Territories and most of the outlying islands, namely the Castle Peak Power Station (CPPS), the Black Point Power Station (BPPS) and the Penny's Bay Power Station (PBPS) which are owned by the Castle Peak Power Company Limited (CAPCO), a joint venture between CLP and China Southern Power Grid International (HK) Co., Limited, of which CLP holds a 70% interest.

HK Electric operates the Lamma Power Station (LPS) that supplies electricity to the population on Hong Kong and Lamma Island.

Hong Kong has no indigenous energy resources and all energy for Hong Kong needs to be imported. Dependable fuel sources are critical to maintaining reliable power supply for the Hong Kong population, while providing environmental benefits.

In the early 2000's, CAPCO began planning for future pipeline gas supplies in light of the depleting gas reserves in CAPCO's sole supply source at that time, the Yacheng 13-1 gas field in the South China Sea that delivers natural gas to the BPPS via the subsea Yacheng Pipeline.

Early  
2000s

After considering various options, CAPCO proposed the development of a land-based Liquefied Natural Gas (LNG) Receiving Terminal and its Associated Facilities (HKLNG Terminal), and meetings and discussions with the Hong Kong Special Administrative Region (HKSAR) Government and other stakeholders commenced in 2004.

Year  
2004

The Environmental Impact Assessment (EIA) Report (Register No.: AEIAR-106/2007) for the HKLNG Terminal project proposed to be located on the South Soko Island was approved with conditions by the Environmental Protection Department (EPD), and an Environmental Permit (EP) (No. EP-257/2007) was granted on 3 April 2007.

Year  
2007

This project was then put on hold after the HKSAR Government signed a Memorandum of Understanding on Energy Co-operation with the Mainland Government, facilitating the supply of natural gas from Turkmenistan transported through the Mainland by the Second West-to-East Pipeline, and delivered to the BPPS by the subsea Hong Kong Branch Line; which commenced operations in early 2013.

Year  
2013

Therefore, the BPPS is currently supplied with pipeline gas from two sources, namely the Yacheng Pipeline and the Second West-to-East Pipeline / Hong Kong Branch Line, both from the Mainland.

In 2006, HK Electric began importing pipeline gas from the Guangdong Dapeng LNG receiving terminal in Shenzhen, Mainland via the subsea Dapeng Pipeline to supply the gas-fired power generation units at the LPS.

Year  
2006

In 2014, the Environment Bureau (ENB) of the HKSAR Government completed its consultations and discussions on the Future Fuel Mix for Electricity Generation for Hong Kong. According to the consultation document issued by EnB, two fuel mix options were proposed <sup>(1)</sup>:

Year  
2014

- **Option 1:** Importing more electricity through purchase from the Mainland power grid; and
- **Option 2:** Using more natural gas for local power generation.

On 31 March 2015, the HKSAR Government launched the three-month Public Consultation on the Future Development of the Electricity Market in Hong Kong. With regard to the above two fuel mix options, the HKSAR Government plans to increase the percentage of natural gas used for power generation to around 50 per cent by 2020 to meet its pledged environmental targets <sup>(2)</sup>.

Year  
2015

Subsequently, in January 2017, the HKSAR Government published Hong Kong's Climate Action Plan 2030+ Report, which set the following targets <sup>(3)</sup>:

Year  
2017

- To reduce absolute carbon emissions by 20% by 2020, and by 26% - 36% by 2030, using 2005 as the base; and
- To reduce carbon intensity by 50% - 60% by 2020, and by 65% - 70% by 2030, using 2005 as the base.

The Climate Action Plan 2030+ Report includes phasing down Hong Kong's remaining coal plants as they reach their retirement and replacing them with natural gas or non-fossil fuel sources, which will enable Hong Kong to further reduce carbon emissions significantly in the medium term. The report also states that the HKSAR Government will work closely with CLP and HK Electric; to ensure they can secure adequate supplies of natural gas and put the required infrastructure in place in the coming decade to handle the larger quantities of natural gas that will be required to be imported into Hong Kong in order to meet these HKSAR Government emissions targets.

(1) Environment Bureau (2014) Future Fuel Mix for Electricity Generation: Consultation Document. 52 pp.

(2) Environment Bureau (2015) Future Development of the Electricity Market: Consultation Document. 82 pp.

(3) Environment Bureau (2017) Hong Kong's Climate Action Plan 2030+. 102 pp.

### 1.1.1

#### *Proposed Development of the Hong Kong Offshore LNG Terminal Project*

To support the HKSAR Government in the increased use of natural gas in Hong Kong to reduce carbon intensity from 2020 onwards, CLP and HK Electric have identified that the development of an offshore LNG receiving terminal (LNG Terminal) in Hong Kong based on Floating Storage and Regasification Unit (FSRU) technology presents an additional gas supply option that will provide long-term energy security for Hong Kong, as well as access to competitive gas supplies from world markets.

Further, the offshore LNG Terminal will have a reduced environmental footprint compared with the originally proposed onshore, land-based HKLNG Terminal, and its construction period will be much shorter.

Having an LNG Terminal in Hong Kong will increase CLP and HK Electric's optionality regarding the sourcing of future gas supplies for Hong Kong, and provide the flexibility to directly access competitively priced gas from the global LNG market, including its associated spot market, therefore improving the Hong Kong LNG buyers' future negotiating position, and diversity of gas supply sources. The additional gas supply sources will augment the current pipeline gas supplies via the Yacheng Pipeline and the Second West-to-East Pipeline / Hong Kong Branch Line to the BPPS, and the Dapeng Pipeline that is the sole source of pipeline gas supply to the LPS, and will provide enhanced security and reliability of electricity supply in Hong Kong.

Therefore, CLP and HK Electric have agreed to jointly explore the feasibility of siting an FSRU based LNG Terminal offshore in HKSAR waters to serve as a gas supply source to meet Hong Kong's future power generation fuel supply needs (hereinafter referred to as the '**Hong Kong Offshore LNG Terminal**' or the '**Project**').

The Project is planned to be a 'shared-use' import facility that has the capability to receive and store LNG and then deliver regasified LNG (natural gas) by subsea pipeline to the BPPS and the LPS. The LNG Terminal can also supply other potential current or future users with natural gas, or other potential uses of LNG in Hong Kong such as for marine transportation.

The proposed Project is to examine the feasibility and safety requirements of the development, construction and operation of the offshore and onshore infrastructure facilities required for the LNG Terminal and its associated subsea pipelines that will connect the LNG Terminal to the BPPS and the LPS and the gas receiving stations (GRS) at the BPPS and the LPS.

CLP is leading the development of the Project, acting for and on behalf of CAPCO and HK Electric, and hence for the EIA Study purposes, CLP is the Project Proponent. However, the submission of, and content described in this Environmental Impact Assessment (EIA) Report, does not amount to a commitment by or on behalf of CLP/CAPCO or HK Electric to proceed with the Project.

The scope of the proposed Project involves the construction and operation of the following key infrastructure facilities, as defined in *Clause 1.2* of the *EIA Study Brief No. ESB-292/2016* (EIA Study Brief) and is further described in *Section 2* and *Section 3* of the EIA Report:

- a FSRU vessel equipped with LNG storage tanks and regasification equipment;
- a double berth jetty with mooring facilities for the FSRU vessel and LNG carriers;
- two subsea gas pipelines connecting the FSRU vessel with the BPPS and the LPS respectively; and
- GRSS located entirely within the BPPS and LPS respectively.

Collectively, when completed and operational, the above-mentioned major infrastructure facilities will provide long-term energy security for Hong Kong. The implementation of these new infrastructure facilities is required to deliver the HKSAR Government's strategy to increase the use of natural gas for power generation in Hong Kong from 2020 onwards.

The LNG Terminal is to be located offshore, at a selected site in the southern HKSAR waters to the east of the Soko Islands, and will comprise of an FSRU vessel (FSRU Vessel) which will be moored at a double berth jetty (Jetty). The Jetty will have facilities to enable LNG carrier (LNGC) to berth alongside and transfer its LNG cargo across the Jetty into the storage tanks of the FSRU Vessel. The stored LNG on the FSRU Vessel will then be regasified as needed, such that the natural gas can be supplied to the GRSS at the BPPS and the LPS via the BPPS Pipeline and the LPS Pipeline, respectively.

The indicative location of the key Project components is shown in *Figure 1.1*, below.

The following elements of the Project are classified as Designated Projects under the *Environmental Impact Assessment Ordinance (EIAO)* (*Cap. 499*):

- Construction of a storage, transfer and trans-shipment facility of liquefied natural gas with a storage capacity of not less than 200 tonnes (Item L.2 of *Part I* of *Schedule 2* of *EIAO*);
- Dredging operations for the construction and maintenance of the LNG Terminal Jetty, the construction of the BPPS Pipeline and the LPS Pipeline that exceeds 500,000m<sup>3</sup> or are less than 500m from the nearest boundary of an existing or planned marine park (Item C.12 of *Part I* of *Schedule 2* of *EIAO*); and

- Construction of the submarine gas BPPS Pipeline and LPS Pipeline connecting the LNG Terminal with the GRS at the BPPS and the GRS at the LPS (Item H.2 of Part I of Schedule 2 of EIAO).

### 1.3

#### *PURPOSE AND OBJECTIVES OF THE EIA STUDY*

The purpose and objectives of the EIA Study are to provide information on the nature and extent of the environmental impacts arising from the construction and operation of the Project and associated works that will take place concurrently in accordance with meeting the requirements described in the EIA Study Brief. This information will contribute to decisions by the Director of Environmental Protection on:

- The overall acceptability of any adverse environmental consequences that are likely to arise as a result of the Project and associated works;
- The conditions and requirements for the detailed design, construction and operation of the Project and associated works to mitigate against adverse environmental consequences wherever practicable; and
- The acceptability of residual impacts after the proposed mitigation measures are implemented.

The detailed requirements of the EIA Study are set out in *Clause 3* of the EIA Study Brief, and the specific scope of work for the EIA Study is presented in *Clause 3.2* of the EIA Study Brief.

In more detail, the objectives of the EIA Study as defined in the EIA Study Brief are as follow:

- (i) to describe the Project and associated works together with the requirements and environmental benefits for carrying out the Project;
- (ii) to identify and describe elements of community and environment likely to be affected by the Project and associated works and/or likely to cause adverse impacts to the Project, including both the natural and man-made environment and the associated environmental constraints;
- (iii) to identify and quantify the potential hazard to life due to the Project and associated works and activities;
- (iv) to identify and quantify emission sources and determine the significance of impacts on sensitive receivers and potential affected uses;
- (v) to identify and quantify any potential losses or damage to flora, fauna and natural habitats;
- (vi) to identify any potential visual and glare impacts and to propose measures to mitigate these impacts;

- (vii) to identify any negative impacts on archaeological resources, and to propose measures to mitigate these impacts;
- (viii) to propose the provision of infrastructure or mitigation measures so as to prevent or minimise hazard to life, pollution, environmental disturbance and nuisance during construction and operation of the Project;
- (ix) to investigate the feasibility, effectiveness and implications of the proposed mitigation measures;
- (x) to identify, predict and evaluate the residual (i.e. after practicable mitigation) environmental impacts and the cumulative effects expected to arise during the construction and operation phases of the Project in relation to the sensitive receivers and potential affected uses;
- (xi) to identify, assess and specify methods, measures and standards, to be included in the detailed design, construction and operation of the Project which are necessary to mitigate these residual environmental impacts and cumulative effects and reduce them to acceptable levels;
- (xii) to design and specify environmental monitoring and audit requirements; and
- (xiii) to identify any additional studies necessary to implement the mitigation measures or monitoring and proposals recommended in the EIA report.

The EIA Report has been produced in accordance with the requirements in the EIA Study Brief and the *Technical Memorandum on Environmental Impact Assessment Process* issued under the EIAO (EIAO-TM) for the Project, the aim being to obtain an EP under the EIAO. The description of the Project presented in the EIA Report has been based on the best available information compiled by CLP and HK Electric that describes the relevant construction activities, operational details and baseline information describing the conditions relating to the Project and its surrounding environment. **This EIA Report for the Project prepared by CLP and HK Electric is hereby submitted to EPD for approval under the EIAO.**

## 1.4

### *PUBLIC ENGAGEMENT*

During the performance of the EIA Study for the Project, CLP and HK Electric have been reaching out to potential stakeholders to explain the Project, and seek their views and opinions. Stakeholder engagement activities, which commenced in May 2016, included briefings and meetings with special interest groups including members of District Councils, advisory committees, academics, fishermen groups, environmental bodies etc. Details of the stakeholder engagement activities undertaken and the feedback received are presented in *Annex 1A*. The feedback and opinions obtained from the

stakeholders has been fully considered and incorporated, where applicable, as part of the technical assessments undertaken in the EIA Study.

## **1.5 ORGANISATION OF THE EIA REPORT**

Following this Introduction, the remainder of the EIA Report is organised as follows:

**Section 2** Presents the background and history of the Project and provides information on the purpose, objectives and benefits of the Project, consideration of alternatives, and scenarios with and without the Project.

**Section 3** Presents a description of the Project highlighting the key design, engineering, construction, commissioning and operational activities, and the timeline for implementing the Project. This section forms the basis of the technical assessments for the EIA Study presented in **Sections 4 - 12** below.

**Section 4** Presents the Air Quality Impact Assessment.

**Section 5** Presents the Hazard to Life Study.

**Section 6** Presents the Noise Impact Assessment.

**Section 7** Presents the Water Quality Impact Assessment.

**Section 8** Presents the Waste Management Implications.

**Section 9** Presents the Ecological Impact Assessment.

**Section 10** Presents the Fisheries Impact Assessment.

**Section 11** Presents the Visual Impact Assessment.

**Section 12** Presents the Cultural Heritage & Archaeology Impact Assessment.

**Section 13** Presents the Environmental Monitoring and Audit Requirements.

**Section 14** Presents the Conclusions, and summarises the Environmental Outcomes of the EIA Study.

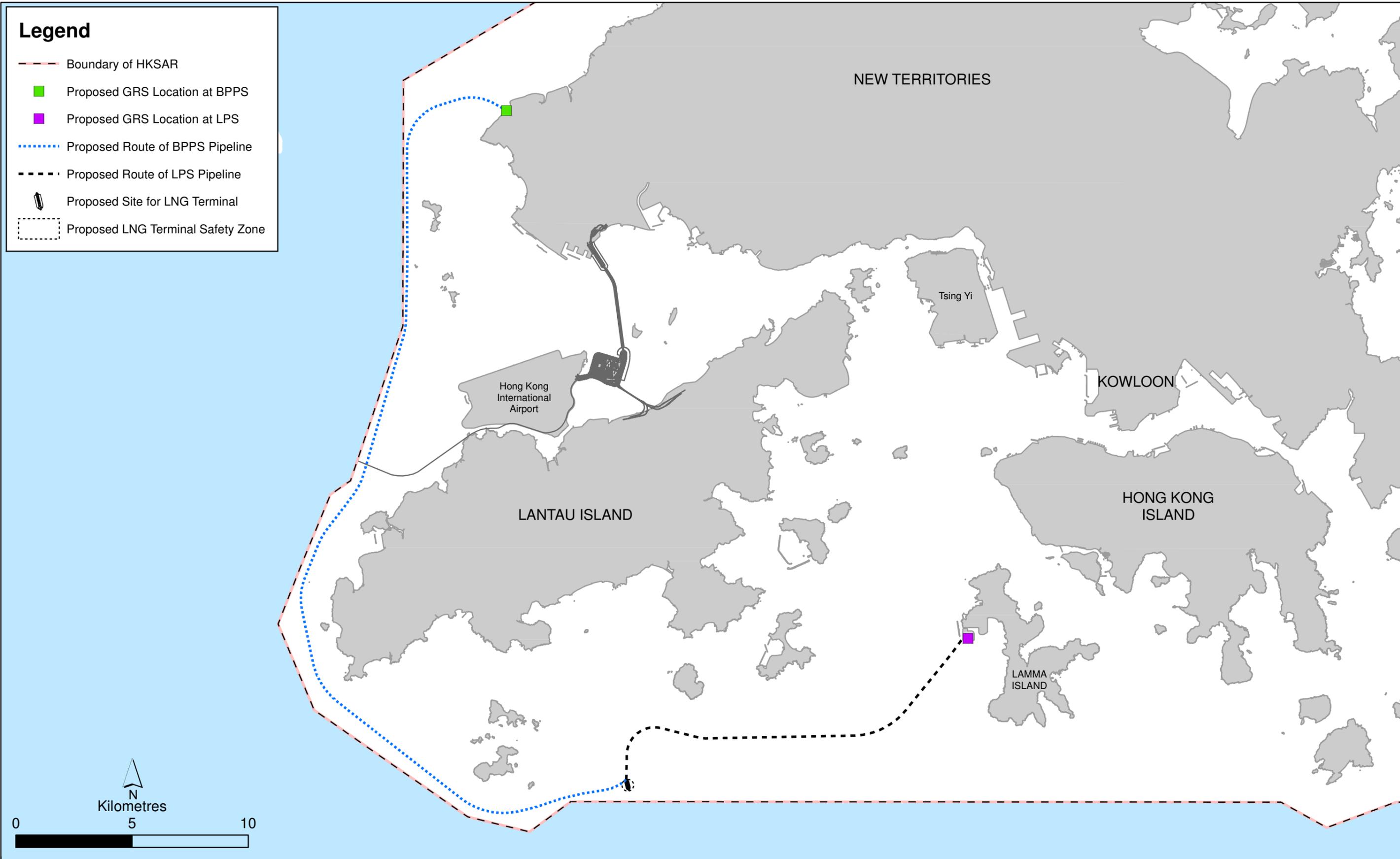


Figure 1.1

Indicative Location of Key Project Components

Annex 1A

## Stakeholder Engagement Activities

## 1A *STAKEHOLDER ENGAGEMENT ACTIVITIES*

### 1A.1 *OBJECTIVES OF STAKEHOLDER ENGAGEMENT*

The objectives of the stakeholder engagement carried out for the Project include the following:

- To build an understanding of the need for the Project and explain the key elements of the Project to stakeholders, to actively seek their views and, address their concerns related to the future Project development and implementation; and
- To ensure transparent, responsive and responsible communications with stakeholders.

### 1A.2 *ENGAGEMENT PERIOD*

The engagement with concerned stakeholder groups commenced in May 2016 and the engagement continued throughout the EIA Study.

### 1A.3 *KEY STAKEHOLDERS*

Since May 2016, a series of briefings and meetings have been arranged with special interest groups and stakeholders as listed in *Table 1A.1*.

An introductory video, PowerPoint presentation and factsheet were used as tools to inform the stakeholders and enhance their understanding of the Project.

*Table 1A.1 Type of Stakeholders Consulted*

<b>Stakeholder Type</b>
<ul style="list-style-type: none"><li>• Advisory Bodies</li><li>• Academia</li><li>• Fishermen Groups</li><li>• Green Groups</li><li>• Think Tanks</li><li>• Professional Bodies</li><li>• Legislative Councillors and District Councillors</li></ul>

### 1A.4 *KEY COMMENTS AND SUMMARY OF RESPONSES*

This section provides a summary of the key comments and suggestions relating to the Project made by those stakeholders consulted.

#### 1A.4.1 *Air Quality*

Most of the stakeholders agree the potential exists for the Project to contribute to improving the air quality of Hong Kong by enabling the phasing down of coal-fired power generation. The transition away from coal-fired power

generation was cited as a positive aspect of the Project with some stakeholders highlighting the need for further increasing gas-fired power generation as part of the fuel mix for Hong Kong.

The key views relating to air quality and responses are summarised in *Table 1A.2*.

**Table 1A.2** *Key Views and Responses Relating to Air Quality*

Key Views	Responses
<ul style="list-style-type: none"> <li>Supported the Project, given it enables the use of more natural gas for power generation in Hong Kong, which in turn would improve air quality in the long-term, with the added benefit of enhancing reliability/security of gas supply.</li> <li>Agreed that the Project is beneficial for Hong Kong to transition from coal-fired power generation to gas-fired power generation.</li> <li>The Project will help reduce carbon emissions in Hong Kong.</li> </ul>	<ul style="list-style-type: none"> <li>Noted, the Project supports the Government’s fuel mix policy for increasing the use of natural gas for power generation, whose purpose is to improve Hong Kong’s air quality and reduce carbon emissions by phasing down coal-fired power generation.</li> </ul>
<ul style="list-style-type: none"> <li>The Project is not anticipated to have an adverse impact on air quality.</li> <li>The EIA Study should assess the air quality impacts during the operation of the Project.</li> </ul>	<ul style="list-style-type: none"> <li>The air quality impact from the operation of the GRs at the BPPS and the LPS, and the LNG Terminal have been assessed and the results are presented in this EIA Report.</li> </ul>
<ul style="list-style-type: none"> <li>What are the impacts of boil-off gas?</li> </ul>	<ul style="list-style-type: none"> <li>The air quality impacts during the operation of the LNG Terminal have been assessed and the results are presented in this EIA Report.</li> </ul>
<ul style="list-style-type: none"> <li>Will the Hong Kong’s emission control measures to vessels be applied to the visiting LNG carriers?</li> </ul>	<ul style="list-style-type: none"> <li>After entering Hong Kong waters, the visiting LNG carriers shall comply with the relevant Hong Kong regulations, including the use of low sulphur fuel in accordance with the <i>Air Pollution Control (Ocean Going Vessels) (Fuel at berth) Regulation</i>. The relevant requirements are presented in this EIA Report.</li> </ul>

#### 1A.4.2 *Hazard to Life*

Common themes from stakeholders included the need to carry out an assessment of the risks from potential hazardous events related to the Project, and the arrangements to be put in place during periods of inclement weather.

The key views relating to hazard to life and responses are summarised in *Table 1A.3*.

**Table 1A.3 Key Views and Responses Relating to Hazard to Life**

Key Views	Responses
<ul style="list-style-type: none"> <li>The EIA study should assess potential hazardous events (e.g. gas leak, explosion etc.) at the FSRU Vessel.</li> </ul>	<ul style="list-style-type: none"> <li>A Quantitative Risk Assessment of risks associated with storage, transfer, handling of LNG and natural gas and other dangerous goods at the FSRU Vessel in normal and inclement weather or tidal situations has been carried out in accordance with the requirements of the EIA Study Brief and the EIAO-TM, and the results are presented in this EIA Report.</li> </ul>
<ul style="list-style-type: none"> <li>How are the risks associated with the pipelines assessed?</li> </ul>	<ul style="list-style-type: none"> <li>A Quantitative Risk Assessment for evaluating the risks associated with the accidental leakage of natural gas from the subsea pipelines during operation has been carried out and the results are presented in this EIA Report.</li> </ul>
<ul style="list-style-type: none"> <li>How will the Project manage risks during inclement weather (e.g. typhoons)?</li> </ul>	<ul style="list-style-type: none"> <li>The LNGC and FSRU Vessel will depart their berths at the LNG Terminal and sail to an area of open sea outside HKSAR waters, which is deemed to be a safe and practicable way of managing risks during inclement weather.</li> </ul>
<ul style="list-style-type: none"> <li>The EIA Study should consider risks associated with natural hazards (e.g. earthquakes).</li> </ul>	<ul style="list-style-type: none"> <li>The risks of potential initiating external events, including natural hazards such as earthquake, subsidence, tsunami, lightning, storm surge etc., that may result in hazardous events during the operation of the Project have been assessed and the results are presented in this EIA Report.</li> </ul>
<ul style="list-style-type: none"> <li>What safety measures will be in place for emergency situations?</li> </ul>	<ul style="list-style-type: none"> <li>Safety management plans and emergency response procedures will be prepared and agreed with the relevant Government Departments.</li> </ul>
<ul style="list-style-type: none"> <li>What is the consequence of LNG leakage?</li> </ul>	<ul style="list-style-type: none"> <li>In the event of LNG leakage, the LNG (liquefied at -162 °C) will vaporize and disperse immediately and dissipates into the atmosphere because natural gas is lighter than air. The potential impact of accidental leakage of LNG or natural gas have been assessed and the results are presented in this EIA Report.</li> </ul>

**1A.4.3 Noise**

Stakeholders enquired about the potential impact of noise during the construction and operation of the Project.

The key views relating to Noise and responses are summarised in **Table 1A.4**.

**Table 1A.4 Key Views and Responses Relating to Noise**

Key Views	Responses
<ul style="list-style-type: none"> <li>Noise from the construction and operation of the Project (e.g. at the Jetty) should be considered and assessed.</li> </ul>	<ul style="list-style-type: none"> <li>The construction and operational noise impacts of the Project have been assessed in accordance with the requirements of the EIA Study Brief and the EIAO-TM, and the results are presented in this EIA Report.</li> </ul>

**1A.4.4 Marine Ecology and Fisheries**

Stakeholders were concerned with the potential impacts to Chinese White Dolphins and Finless Porpoises, marine parks, fisheries resources, and the cumulative impacts from concurrent projects.

The key views relating to marine ecology and fisheries, and responses are summarised in *Table 1A.5*.

**Table 1A.5 Key Views and Responses Relating to Marine Ecology and Fisheries**

Key Views	Responses
<ul style="list-style-type: none"> <li>The EIA Study should include sufficient coverage of marine ecology and fisheries surveys and related consultation.</li> </ul>	<ul style="list-style-type: none"> <li>Baseline surveys on marine ecology and fisheries have covered the locations of the different project components and were conducted in both wet and dry seasons. The survey methodologies were agreed with the relevant authorities in accordance with the requirements of the EIA Study Brief and the EIAO-TM. The baseline survey results are presented in this EIA Report.</li> <li>Ongoing consultation with relevant stakeholders will be continued in relation to the marine ecology and fisheries aspects of the Project.</li> </ul>
<ul style="list-style-type: none"> <li>Have alternative route options been considered for the BPPS Pipeline?</li> </ul>	<ul style="list-style-type: none"> <li>Alternative route options have been considered for the BPPS Pipeline, including “marine only” routes passing north of Soko Islands and passing through the South Lantau Marine Park, as well as “marine-land-marine” route passing through Lantau Island. The evaluation of these alternative routes has been conducted and the findings are presented in this EIA Report.</li> </ul>

Key Views	Responses
<ul style="list-style-type: none"> <li>The impacts on marine ecology and fisheries, including Chinese White Dolphins and Finless Porpoises, should be included in the EIA Study, and appropriate mitigation measures and marine mammal monitoring (in particular Finless Porpoise) identified.</li> <li>Underwater noise impact during construction works (e.g. piling) and operation on marine mammals should be examined.</li> <li>Environmental impacts of the construction of the subsea pipelines should be assessed.</li> </ul>	<ul style="list-style-type: none"> <li>Impacts on marine ecology and fisheries, including Chinese White Dolphins and Finless Porpoises, during the construction and operation of the Project have been assessed and the results are presented in this EIA Report. Appropriate measures have been recommended where practicable for mitigating and reducing the potential impacts on marine ecology and fisheries. Appropriate marine mammal monitoring programme has also been recommended and presented in this EIA Report.</li> </ul>
<ul style="list-style-type: none"> <li>Will the Project fall within a marine park?</li> </ul>	<ul style="list-style-type: none"> <li>The LNG Terminal and the LPS Pipeline will be located outside existing, proposed and potential marine parks.</li> <li>The BPPS Pipeline route will be located outside existing, proposed and potential marine parks except that it will run parallel to the western boundary of the proposed Three Runway System (3RS) Marine Park which is anticipated to be designated after construction of the BPPS Pipeline.</li> </ul>
<ul style="list-style-type: none"> <li>What are the impacts of the Project (e.g. pipeline construction) on marine parks?</li> </ul>	<ul style="list-style-type: none"> <li>There might be potential temporary impacts in the water quality of the marine parks during pipeline construction works. Such impacts have been assessed in accordance with the requirements of the EIA Study Brief and the EIAO-TM and the results are presented in this EIA Report.</li> </ul>
<ul style="list-style-type: none"> <li>Cumulative impacts to the marine environment, in particular in the western Lantau waters from concurrent projects should be assessed.</li> </ul>	<ul style="list-style-type: none"> <li>The cumulative impacts from other concurrent projects based on the best available information, particularly during the construction of the pipelines, have been assessed and the results are presented in this EIA Report.</li> </ul>
<ul style="list-style-type: none"> <li>How would the FSRU Vessel (e.g. cooled water intake and discharge) affect the fisheries in the vicinity of the LNG Terminal?</li> </ul>	<ul style="list-style-type: none"> <li>Potential impact on the fisheries resources associated with the operation of LNG Terminal has been assessed in accordance with the requirements of the EIA Study Brief and the EIAO-TM, and the results are presented in this EIA Report.</li> </ul>

Key Views	Responses
<ul style="list-style-type: none"> <li>What are the impacts associated with anticipated increase of marine traffic during operation on nearby marine life?</li> </ul>	<ul style="list-style-type: none"> <li>During the operation of the LNG Terminal, the FSRU Vessel will depart the Jetty only during inclement weather, and the frequency of LNGC visits on average is expected to be one LNGC arriving every five to eight days subject to actual gas demand, therefore the increase in marine traffic will be minimal.</li> <li>The impacts associated with this minimal increase in marine traffic during operation has been assessed in accordance with the requirements of the EIA Study Brief and the EIAO-TM, and the results are presented in this EIA Report.</li> </ul>
<ul style="list-style-type: none"> <li>Will the design of the underwater structures (e.g. foundation piles) of the Jetty be optimized to enhance the artificial reef effect?</li> </ul>	<ul style="list-style-type: none"> <li>At the detailed design stage, optimization of the Jetty's underwater structural design to enhance the artificial reef effect will be explored where appropriate with due consideration of its structural integrity.</li> </ul>
<ul style="list-style-type: none"> <li>Will the project consider any additional/enhancement measures on marine conservation/fisheries?</li> </ul>	<ul style="list-style-type: none"> <li>Enhancement measures on marine conservation and fisheries have been considered and presented in this EIA Report.</li> </ul>

#### 1A.4.5

#### *Water Quality*

Stakeholders were concerned about the potential impacts to water quality from the Project, in particular, the construction of the subsea pipelines and the discharge of cooled seawater from the FSRU Vessel, and the cumulative impacts from concurrent projects.

The key views relating to water quality and responses are summarised in *Table 1A.6*.

*Table 1A.6 Key Views and Responses Relating to Water Quality*

Key Views	Responses
<ul style="list-style-type: none"> <li>Environmental impacts during the construction of the pipelines should be assessed.</li> </ul>	<ul style="list-style-type: none"> <li>The impacts of suspended sediment elevations associated with the pipeline construction have been assessed in accordance with the requirements of the EIA Study Brief and the EIAO-TM, and the results are presented in this EIA Report.</li> </ul>
<ul style="list-style-type: none"> <li>Cumulative impacts to the marine environment, in particular in the western Lantau waters from concurrent projects should be assessed.</li> </ul>	<ul style="list-style-type: none"> <li>The cumulative impacts from other concurrent projects based on the best available information, particularly during the construction of the pipelines, have been assessed and the results are presented in this EIA Report.</li> </ul>

Key Views	Responses
<ul style="list-style-type: none"> <li>Will there be any emissions from the FSRU Vessel into the sea? What are the impacts to the marine environment? What are the environmental impacts of the chemicals used in the regasification process?</li> </ul>	<ul style="list-style-type: none"> <li>The EIA Report describes that seawater will be used in the open loop regasification process at the LNG Terminal (to enable the change in state of LNG to natural gas). Only low concentrations of sodium hypochlorite are used in the regasification process and this is added to the seawater intake and outfall systems to control biofouling. The discharge of cooled seawater with residual chlorine will be at a low concentration. The impacts of such seawater discharge on water quality, marine ecology and fisheries have been assessed in accordance with the requirements of the EIA Study Brief and the EIAO-TM, and the results are presented in this EIA Report.</li> </ul>
<ul style="list-style-type: none"> <li>Can the Project adopt a closed-loop system during the regasification process?</li> </ul>	<ul style="list-style-type: none"> <li>Closed-loop system is less energy efficient for the regasification process when compared to open-loop system and generates more air emissions. If propane is used as the heat transfer fluid, it may pose potential hazards to the FSRU Vessel and its operations as a result of increasing the explosion and fire risk. The consideration of the closed-loop system alternative is presented in this EIA Report.</li> </ul>

#### 1A.4.6

#### *Waste*

Some stakeholders were concerned about the handling and disposal of sewage and potential waste generated by the Project.

The key views relating to waste management and responses are summarised in *Table 1A.7*.

*Table 1A.7 Key Views and Responses Relating to Waste Management*

Key Views	Responses
<ul style="list-style-type: none"> <li>How will sewage and waste generated from the FSRU Vessel be treated, and how will these activities be monitored?</li> </ul>	<ul style="list-style-type: none"> <li>A small amount of sewage is anticipated and will be treated in a treatment unit on board the FSRU Vessel. Waste will be collected, sorted, stored and transferred by barge to designated onshore waste disposal facilities.</li> </ul>

#### 1A.4.7

#### *Other Comments*

Some stakeholders were also concerned about other aspects of the Project such as impact on tariff, the use of renewable energy, LNG for the marine

transportation sector, compensation related to the fisheries sector, etc. which are not directly related to the Project's environmental impact and thus these will not be included in the EIA Report. Responses were made separately and updates will be provided, if necessary, in the future.