



# Hong Kong Offshore LNG Terminal for a Greener Hong Kong towards Carbon Neutrality

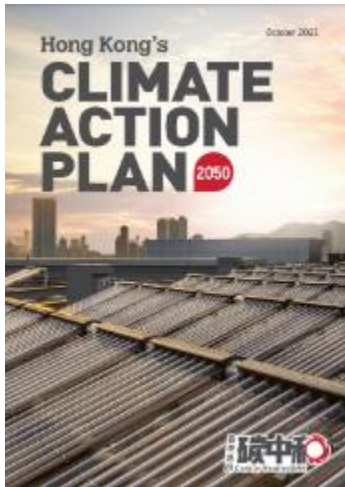
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# Project Background

# Development of HKOLNG Terminal Project

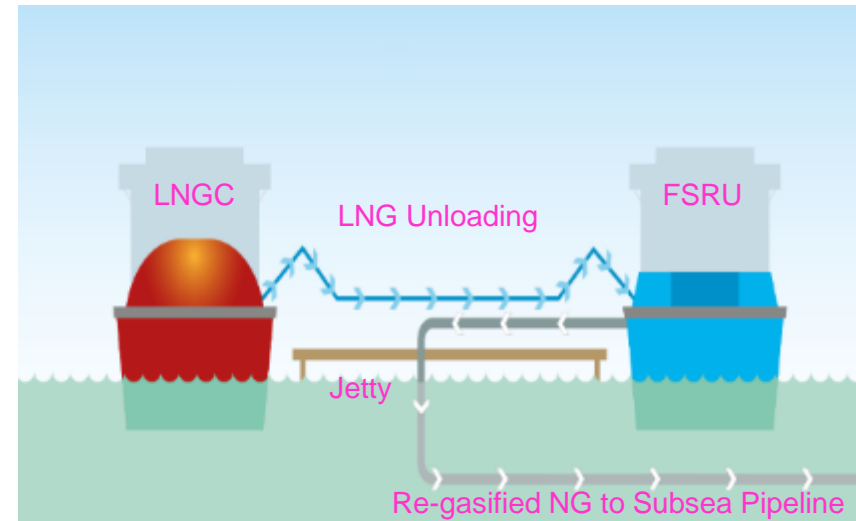
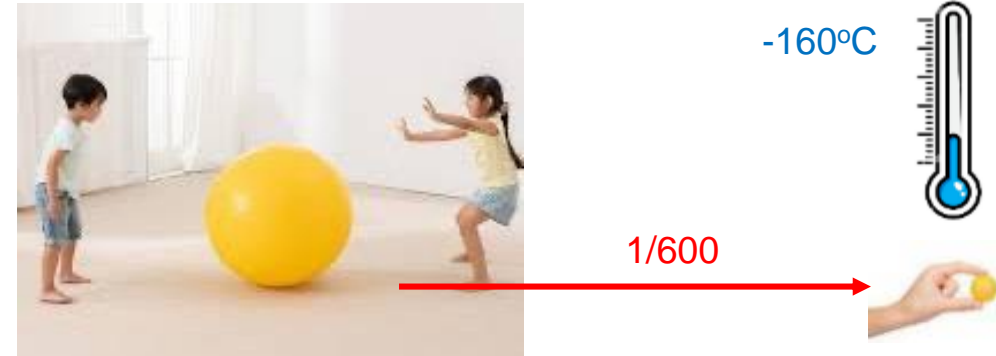


- To support the HKSAR Government in the increased use of natural gas in HK to reduce carbon intensity from 2020 onwards:
  - Mid-term: To reduce carbon intensity by 65-70% against 2005 baseline by 2030
  - Long-term: Carbon neutrality by 2050
- HK Electric and CAPCO identified the development of HKOLNG Terminal presents an option of additional gas supply that provides:
  - A long-term energy security for Hong Kong
  - An access to competitive gas supplies from global markets
- A Joint Venture between HK Electric and CAPCO was formed:



# FSRU – General Process

- LNG is natural gas being liquified down to  $-160^{\circ}\text{C}$  to reduce its volume by 600 times for easy handling, storage and transportation by LNG Carriers (LNGC).
- The LNG is unloaded from the LNGC via the jetty unloading system to the FSRU.
- The LNG stored at the FSRU is then re-gasified by the FSRU (using sea water as heating medium), pressurized and delivered to power stations via subsea pipelines.

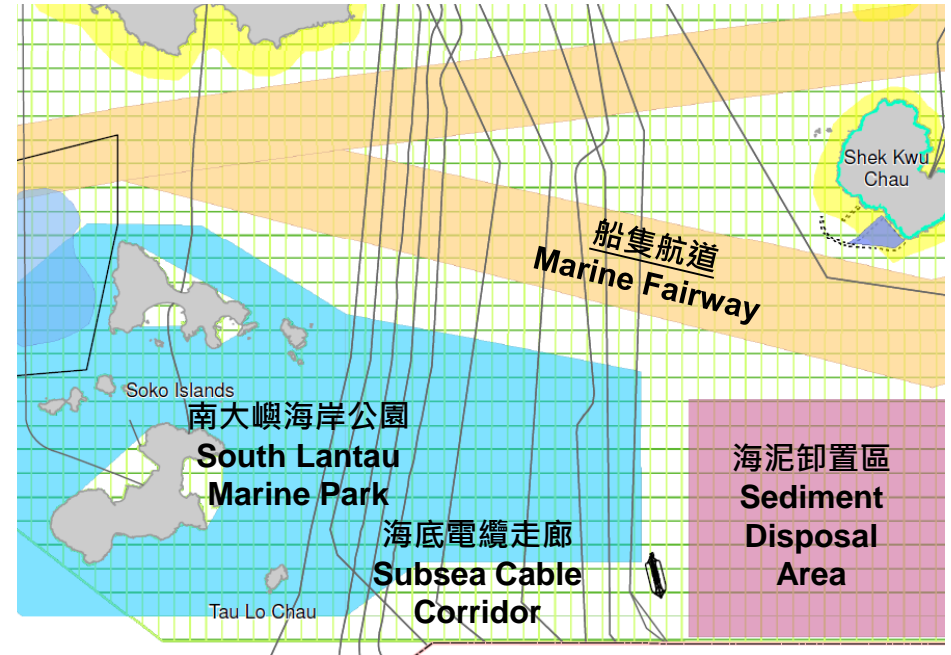


# Overview of HKOLNG Terminal (with short video)

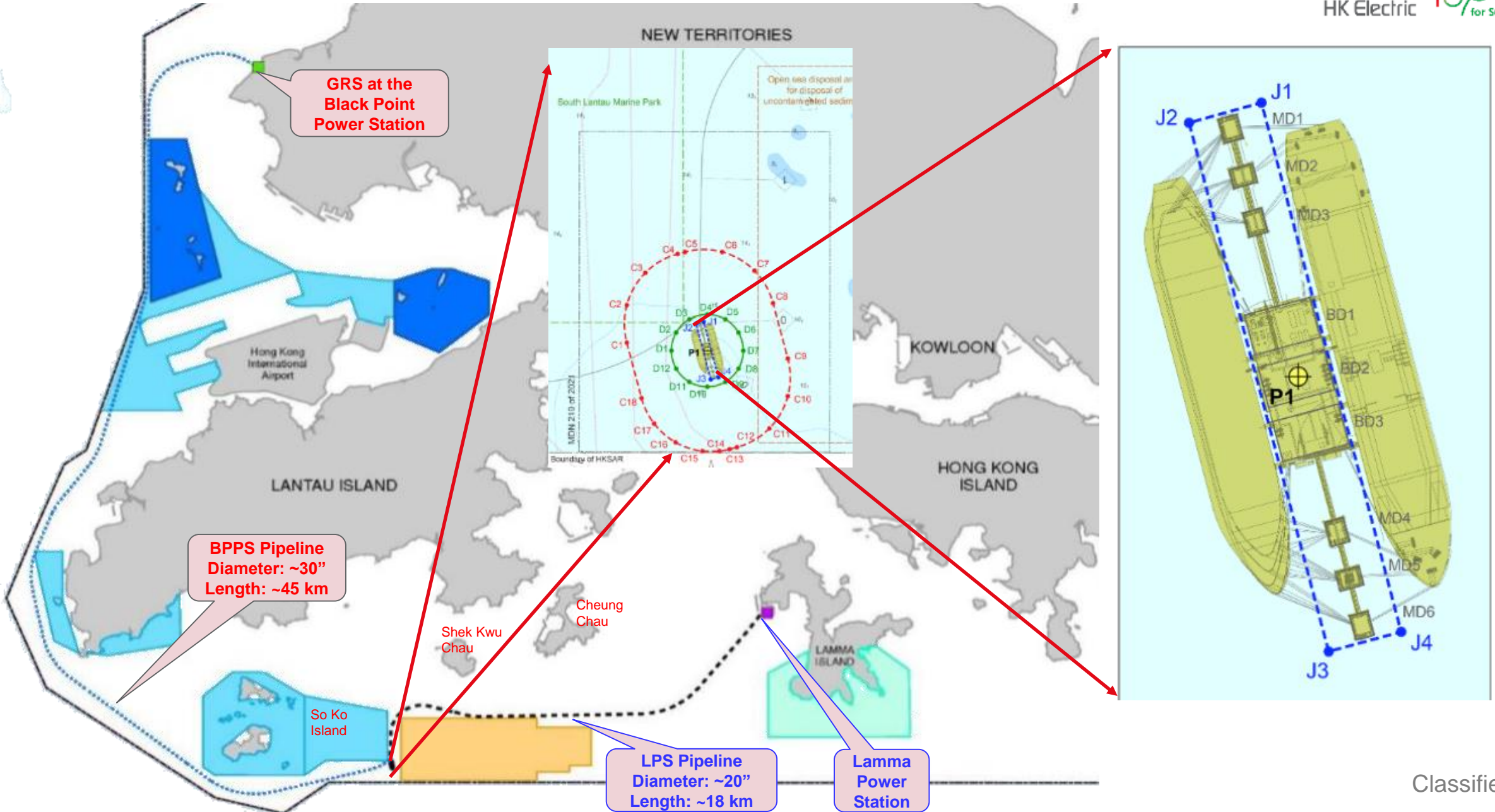


# Site Selection – Jetty

- A variety of factors, including environmental, marine, engineering, construction, operational (e.g. accessibility and operability), physical and risk constraints, were considered during the review of the siting and layout options
- Preferred Site Location:
  - Suitable met-ocean conditions such as water current
  - Minimum water depth of 15m
  - Avoid marine park and sediment disposal area
  - In area with few Chinese White Dolphin and relatively less Finless Porpoise
  - Maximize the distance from recreational zones
  - Minimize interference with the existing submarine cables

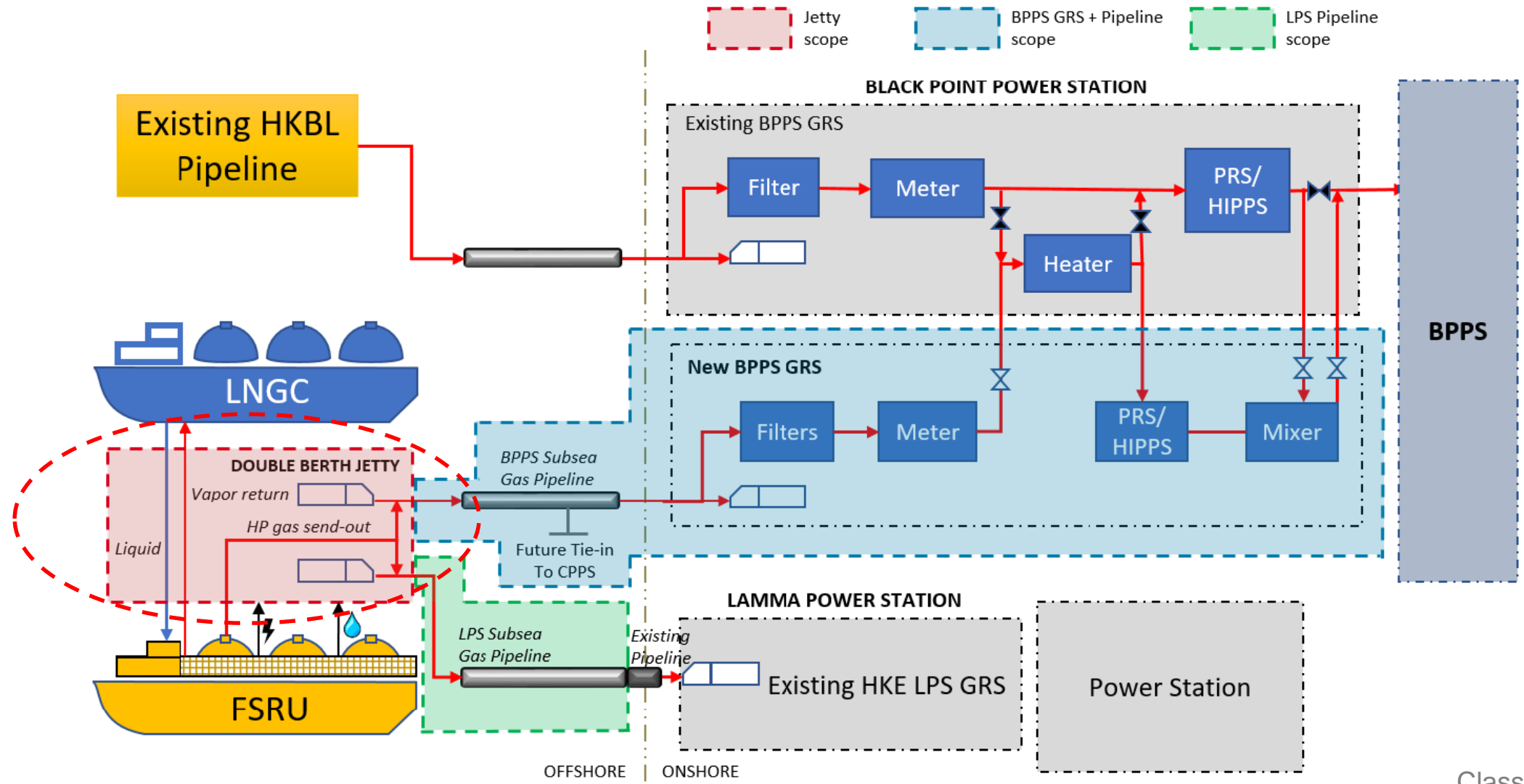


# Double-berth Jetty and Marine Control/Safety Zones





# Project Scope



# Floating Storage Re-gasification Unit (FSRU) – “Bauhinia Spirit”



港燈  
HK Electric

130+ 推動永續未來  
Powering  
for Sustainability

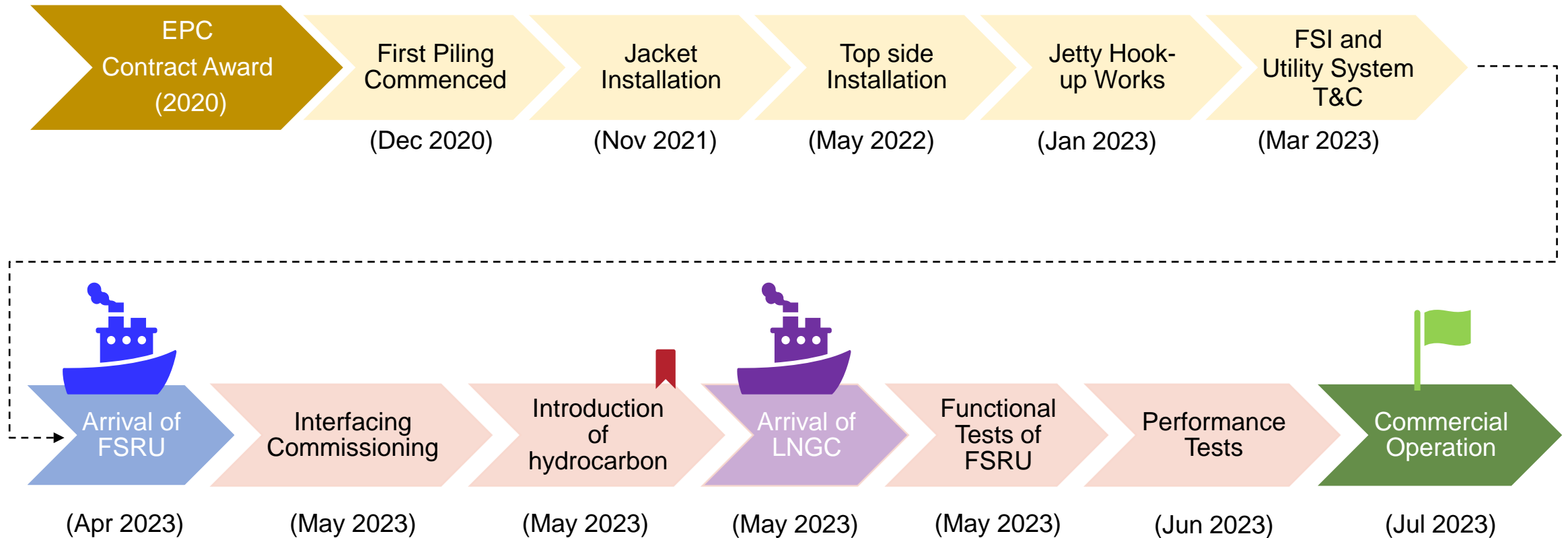


## Floating Storage Regasification Unit (FSRU)

Cargo Tank Capacity	: 263,000 m <sup>3</sup>
Length overall approx.	: 345 m
Breadth, moulded	: 55 m

# Construction of the Jetty and Pipeline

# Key Milestones



# Components of the Jetty



# Construction of the Jetty



Jacket and Piling Installation

# Construction of the Jetty



Topside Structure & Equipment Installation

# Construction of the LPS Pipeline



Supply of Line Pipes



Rock Armour Placement



Post-Jetting Work



Welding of Line Pipes

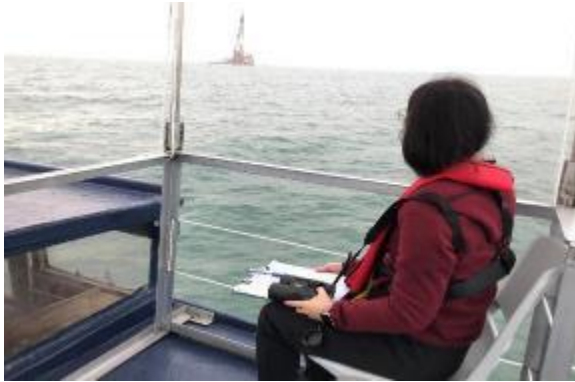


Pipelaying



# Environmental / Marine Measures

# Highlights on Environmental Measures for Piling Work



- Implementation of marine mammal exclusion zone for piling work



- Adoption of ramp-up piling procedure, maximum use of quieter vibratory and hydraulic hammering methods for pile installation



- Deployment of structural jacket and bubble curtain to enclose the pile installation works

# Highlights on Environmental Measures for Pipe Laying



- Water quality monitoring during dredging & jetting work



- Pilot test of silt curtain to ascertain the removal efficiency



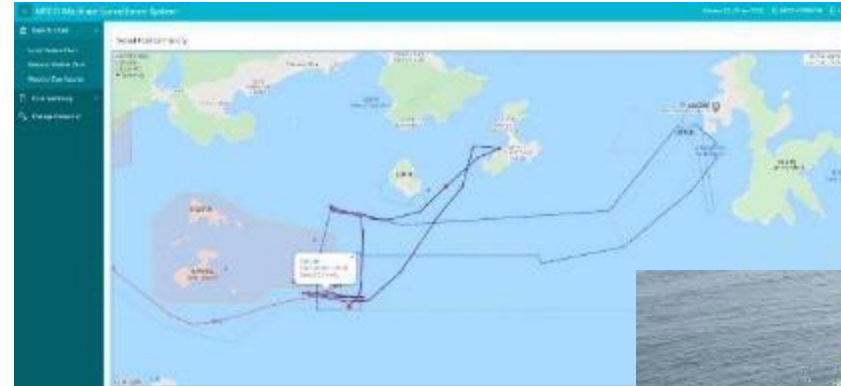
- Deployment of silt curtain during dredging & jetting work



- Implementation of marine mammal exclusion zone during jetting / MFE work

# Highlights on Marine Measures

- Vessel tracking to ensure the operating speed below 10 knots at the vicinity of CWD
- Establishment of Marine Traffic Coordination Office in contractor's office
- Regular Marine Management Liaison Group Meeting
- Deployment of guard boats
- Deployment of marker buoy to demarcate positions of anchors



Vessel Tracking Record



Guard Boat



Marker Buoy

# Summary

# Challenges of the Project

- **Lack of Knowledge or Experience to New Technology**

- **Piling Window Restriction (Dec to May)**

- **Cross-Boundary Collaboration for the Pilotage of FSRU and LNGC**

- **Manpower Shortage and Equipment Delay due to COVID-19 Pandemic**



# Conclusion

## Overcoming the Challenges

- Despite the challenges, the joint project team of CLP and HK Electric had worked closely together with COOEC to minimize the impact resulted from the challenges

## Commercial Operation

- Upon completion of the commissioning activities in June 2023, the terminal started its commercial operation in July 2023

## Future Outlook

- HK Electric will continue its commitment to providing safe, reliable, environmentally friendly and affordable power supply to the community for a Greener Hong Kong towards Carbon Neutrality





**Thank You**