

Summary of Response to Feedback on Environmental Impact Assessment for the Advanced Gas Turbine Cogeneration Combined Cycle Plant on Jurong Island, Singapore

**1. Overview of Plant Site**

Keppel's Advanced Gas Turbine Cogeneration Combined Cycle Power Plant (the “Plant”) is situated on Jurong Island as shown in Figure 1 below. Jurong Island is located to the southwest of the main island of Singapore and was formed from the amalgamation of offshore islands through Singapore's land reclamation efforts. The land reclamation on Jurong Island was completed in 2009, effectively transforming the region into a designated industrial zone. Access to the island is now restricted, limited to authorized personnel only. The Plant development is situated on a reclaimed and largely brownfield land at Sakra Avenue. Additionally, a portion of the Plant site had been previously occupied by a chemical plant, and the land underwent a reinstatement process around the end of 2017.

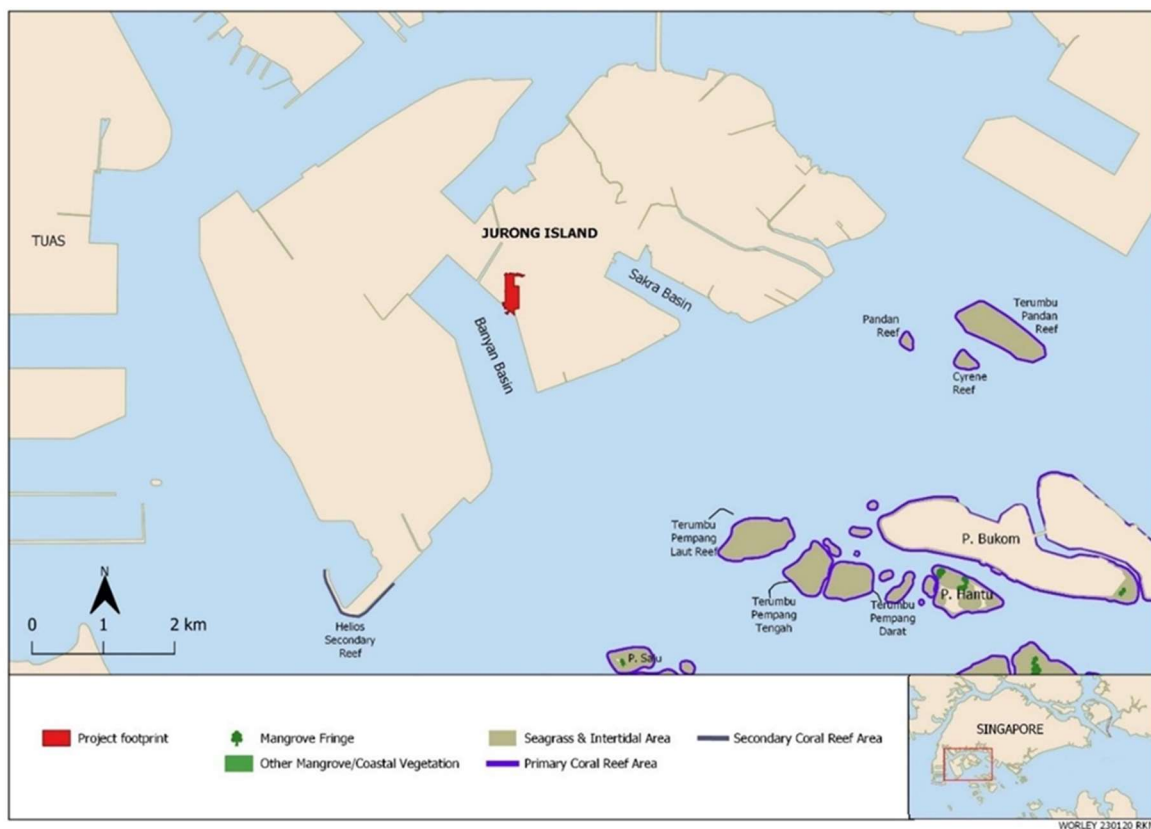


Figure 1: Plant Location

The development of the complete Cogen Plant facility will occur in two distinct phases. Phase 1 will involve the design and construction of a single unit of the Advanced Gas Turbine Cogeneration Combined Cycle Plant, capable of generating a maximum net output of 600 MW. Furthermore, there is the potential for an additional unit with a similar arrangement in Phase 2, which has been scheduled for future development. In the context of Phase 1, a cooling water (CW) system will be constructed. This system includes intake and outfall structures. The scope of this impact assessment study is exclusively focused on the development associated with Phase 1. For the Phase 1 implementation, approximately 8 hectares will be utilized.

The Plant is situated with Mitsui Phenols to the east, bordered by ExxonMobil Chemical Plant and the Jurong Island highway to the north, and with Banyan Basin marking its southern boundary. There are no residential receptors identified in the vicinity of Jurong Island. The nearest residential area to the Plant location is approximately 8.7 km northwest along West Coast Road on the Singapore mainland. The nearest water body is the Banyan Basin located approximately 25 m south of the Plant area. There is no recorded presence of coral reef habitats and intertidal/seagrass habitats along the shoreline of the Plant site and within Banyan Basin.

## **2. Environmental Study**

In view of the potential marine environmental impact associated with power plants, including their requirement for large exchanges of sea-water for cooling, Keppel was required to carry out an Environmental Impact Assessment (EIA) to study the potential impact to the adjacent marine basin (Banyan Basin), such as thermal profile changes and sedimentation, and develop relevant mitigation measures. The EIA was scoped in consultation with Government agencies. For more details, please see the full report at the following website (<https://www.keppinfra.com/en/sustainability/>).

## **3. Public Disclosure of EIA Report**

Keppel received approval from the technical agencies and URA for the public disclosure of the EIA report. Under the public disclosure, Keppel sought the public's feedback on the findings and proposed mitigation measures. The EIA report was published online for public feedback from 8 August 2023 to 5 September 2023. In total, three responses were received via Keppel's feedback channel.

## **4. Feedback Received**

We value the feedback from the members of the public and interested groups or parties. We have reviewed all feedback and suggestions that were submitted.

The feedback providers have voiced concerns about the EIA's predominant focus on marine-related impacts, with comparatively less attention directed toward terrestrial aspects. Feedback has also been provided regarding the protocol for tree clearing activities, with suggestions or concerns related to this process. We appreciate the feedback, as it has provided us with valuable insights into the biodiversity within the site and the associated processes. We assure the public that our EIA process and tree clearing activities adhere to all regulations imposed by relevant authorities and complied with all relevant environmental regulations and standards.

In addition, we have received feedbacks on the completeness of the information within the EIA, report presentation, and several stakeholders have also requested supplementary documentation and references to substantiate the report's findings and conclusions.

We have also received some comments on the more technical aspects of the EIA, such as on the EIA scope, Latin names of species, and conservation status of species.

During this public disclosure period, we appreciate the valuable suggestions from the public to minimise building-related bird collisions. Keppel is dedicated to carefully studying these suggestions during the construction and detailed design phase of the development.

## **5. Response to Feedback**

Keppel values the feedback we have received, and we fully recognize the significance of minimizing any adverse environmental impacts. We remain dedicated to achieving the right balance between energy needs and environmental sustainability.

Taking into consideration the EIA findings and the feedback received, we have updated the EIA report. The development of the Advanced Gas Turbine Cogeneration Combined Cycle Plant would be carried out with the following measures:

**a. Minimise impact to biodiversity**

- b. The EIA was scoped in consultation with Government agencies to focus on the potential impact to the marine environment. The Plant's implementation plan had included mitigation measures and best practices to minimise any potential adverse effects to the marine environment. These measures are designed to comply with regulatory requirements and to protect the marine environment. Additionally, the project will be subjected to ongoing monitoring and compliance checks by regulatory authorities to ensure that it remains within the established environmental parameters and adheres to the required standards.

As part of our commitment to environmental stewardship, we have plans in place for replanting and mitigating the impact of the tree felling. This includes initiatives such as replanting new trees in the Plant as part of its design.

Our tree felling activities have been carried out after securing the necessary approvals from NParks. We ensured that all required permits and authorizations were obtained, and we strictly adhered to the conditions and guidelines specified in those permits. In accordance with the requirements for this approval, a tree survey on the Plant site was conducted and the designated trees to be felled were visibly tagged prior to the commencement of tree felling operations. Additionally, a pre-felling fauna survey had been conducted to confirm that there were no fauna, active nests, or burrows on the trees and within the vicinity, before any tree felling activities took place. If any wildlife is encountered on site during the progress of the development, NParks (Wildlife Management Division) would be consulted for specific actions to be taken. Should any fauna be encountered within the work site, they are to be relocated to suitable locations as advised by NParks.

**c. Bird-friendly Building Design**

We value the feedback concerning bird collisions with windows, and we have given it careful consideration. The Plant's design will encompass mitigation measures and best practices designed to minimize the risk of bird collisions with windows and other glass exteriors. During the construction phase of the Plant, we are evaluating implementing mitigation strategies such as. (1) deploying work lights with a lower colour temperature (~2700 - 3000K) and (2) reduce the blue light output as far as practicable. In addition, another mitigation measure we are considering to implement is to direct external lighting downward or shield light fixtures to prevent light from spilling upwards.

**d. Implementation of Environmental Monitoring and Management Plan (EMMP)**

Keppel will implement an Environmental Monitoring and Management Plan (EMMP) before construction works commence based on the EIA findings and public feedback received. This

includes earth control measures, water quality monitoring, noise quality monitoring and biodiversity measures. In addition, the Plant will be subjected to ongoing monitoring and compliance checks by regulatory authorities to ensure that it remains within the established environmental parameters and adheres to the required standards. The EMMP is included in the full report of the EIA.

Keppel is committed to the implementation of mitigation measures outlined in the report, ensuring their integration into the development and operational phases of the plant to ensure development works will be sensitive to the overall environment.

## **6. Conclusion**

The Advanced Gas Turbine Cogeneration Combined Cycle Plant represents a significant step in the nation's commitment to harnessing hydrogen as a pivotal component in expediting the shift towards achieving net-zero emissions by the year 2050. Not only will this development substantially reduce our carbon footprint, but it also exemplifies our dedication to safeguarding our environment. In crafting our plans, we have considered our commitment to the environment, ensuring our operations are designed to minimize any detrimental impacts on the environment. We understand the importance of responsible growth and the imperative to protect our environment. We will continue to review our development to achieve this outcome.