

# **Summary of Response to Feedback on the Environmental Impact Assessment for the Floating Photovoltaic System on Kranji Reservoir**

## Overview of Project and Project Site

In December 2018, Singapore Government's Economic Development Board (EDB) launched a Request for Information (RFI) to explore the possibility of a large-scale floating solar photovoltaic (FPV) system for private sector consumption on Kranji Reservoir. EDB selected Malkoha Pte Ltd as the Renewable Energy User/Project Proponent to determine the technical feasibility and environmental impacts of the Project.

The Project is a 112.5 MWac (or 141 MWp) FPV system on Kranji Reservoir, with FPV infrastructure taking up a total area of up to 112 ha (21.5% of Kranji Reservoir's total surface area). The Project Sites are located within the north and central areas of Kranji Reservoir, with a land-based temporary staging/launching area and a permanent integrated Project Substation (and Operation and Maintenance facility) on the east of the reservoir within Sungei Kadut Industrial Estate. The Project Sites are located in close proximity to Sungei Buloh Wetlands Reserve, Johor Straits and Mandai Mangrove and Mudflats (to the north); Sungei Kadut Industrial Estate and a Future Kranji Reservoir Eastern Park (to the east); remaining areas of Kranji Reservoir and an area for military training (to the south); and the National Service Resort and Country Club (NSRCC) Kranji Sanctuary Golf Course, Kranji Marshes and Government land (to the west) (Figure 1).



**FIGURE 1: PROJECT SITE IN KRANJI RESERVOIR**

Environmental Study

Malkoha Pte Ltd engaged Environmental Resources Management (S) Pte Ltd (ERM) to conduct an Environmental Impact Assessment (EIA) for the Project. A Developer/Owner who will own, design, build, install, operate and maintain the FPV system will be selected after the approval of the EIA to ensure that the design, construction and operation of the Project is carried out within the limits of the EIA.

The purpose of the EIA was to evaluate the existing pre-construction baseline environmental status around the Project Site and carry out an objective assessment of the various impacts on the environment which may result from the construction and operational activities of the Project, with reference to the applicable legislation and guidelines. The full EIA and the Non-Technical Summary report can be found [here](#).

## Engagement with Stakeholders

Five stakeholder engagement sessions with Nature Groups (including independent academics/professionals) as well as relevant Government Agencies have been conducted between 2020 to 2024. The purpose of the engagements were to share information on the EIA scope, baseline surveys scope and methods, initial baseline findings, EIA approach, and EIA mitigation and outcomes. The engagements provided a forum for stakeholders to provide their opinions and potential concerns, and enable their feedback to be considered in the EIA.

## Feedback Received

The full EIA was publicly disclosed and open for public feedback from 7 June 2024 to 5 July 2024. A total of 9 comments from 4 individual submissions were received from the Kranji FPV EIA's feedback channels. The feedback providers asked for clarifications on the impact of the Project on biodiversity, particularly the impact on Kranji Marshes and birds (both native and migratory); on the FPV layout considerations; as well as the baseline and mitigation measures for vectors within the land-based construction site.

## Response to Feedback

We value all the feedback received and we recognize the importance of minimising adverse impacts from the Project to biodiversity and the environment. The feedback received has already been addressed within the EIA. The feedback included three thematic topics listed below with summarised responses:

### **1) Minimising and monitoring impacts to birds in the area**

Extensive bird baseline surveys were carried out for the Project, and a detailed assessment of impacts to birds has been conducted, including (amongst others) impacts from noise, vessel movements, bird collision with panels and reduced bird foraging opportunities (e.g. due to FPV panels reducing open water areas for bird foraging). Comprehensive mitigation measures, monitoring programmes and adaptive management (utilizing the monitoring data collected) have been incorporated within the EIA to reduce and monitor potential impacts to birds, for example, use of anti-reflective panels, re-orientation of FPV panels to avoid observed higher foraging areas, breaking up of the large FPV panels with 30-40m vessel corridor spacing, annual fish monitoring and monthly bird monitoring programmes, etc.

### **2) Clarifications on the basis of the FPV layout, setback usage and minimizing impacts to Kranji Marshes**

The size of the FPV layout was determined based on the maximum area of the reservoir which can be utilised for optimal electricity generation (e.g. where there are no current PUB operational constraints), right-sizing for construction and operation, and considering environmental constraints and opportunities (e.g. avoidance of observed higher bird foraging areas). This includes a 50m setback from the FPV panels to the western shoreline (i.e. Kranji Marshes) suggested by the Nature Groups. Temporary, phased construction vessel movements will occur adjacent to the FPVs; and in the longer-term minimal Project operational and maintenance (O&M) vessels will operate within the

Project Site; with existing PUB vessel operations continuing along the shorelines. Mitigation and management measures are proposed to manage disturbance to the shoreline and Kranji Marshes, e.g. in-reservoir piling noise mitigation measures.

### **3) Considerations for Vectors baseline and mitigation measures**

The latest and relevant data from NEA on dengue clusters (applicable to both residences and workplaces) was utilised to determine the baseline prevalence of mosquitoes. To mitigate the presence and spread of mosquitoes, a NEA-registered Environmental Control Officer (ECO) will be appointed to implement proper housekeeping (e.g. removal of stagnant water etc) at the construction sites. The use of pesticides, if deemed to be necessary beyond good housekeeping, will comply with the relevant legislation and guidelines.

### Conclusion

This Project is expected to contribute to 7.1% of Singapore's target of achieving 2 GWp of solar generation by 2030. This is equivalent to the avoidance of 76,785 tonnes of carbon emissions per year (equivalent to reducing 10,138 motor vehicles annually) and a total of approximately 1,919,625 tonnes of carbon emission over its 25 years operation (equivalent to reducing 253,450 motor vehicles annually).

Given that all feedback received has been appropriately addressed in the published EIA report, no changes are proposed to the EIA. The Project will be required to continue to monitor works throughout all stages of the development to ensure that any additional concerns that may arise are addressed adequately in collaboration with stakeholders.