6a. ECOLOGICAL IMPACT (BOTH TERRESTRIAL AND AQUATIC) (TTAL SITE)

6a.1 Introduction

6a.1.1.1 The EIA Report predicted the construction of the IWMF would cause minor impact on the breeding ground of Little Grebe in the study area. Potential indirect impact on the adjacent natural habitats and associated wildlife due to increased human disturbance/activities and traffic noise would be resulted.

6a.1.1.2 Mitigation measures have been recommended to minimize potential direct and indirect impacts to ecological resources. With the recommended mitigation measures implemented, no unacceptable impact on wildlife is expected from the construction and operation of the Project. This section describes the requirements for the monitoring and auditing of ecological impacts arising from the Project.

6a.2 Site Inspection for Avoidance of Mortality of Little Grebe

6a.2.1.1 Breeding activities of Little Grebe were recorded within the Middle Lagoon. Juvenile and chicks of Little Grebe which have lower mobility could be killed by construction activities if unmitigated. As a precautionary measure, the whole Project site should be thoroughly inspected twice at the earliest two weeks prior to the commencement date of construction activities to confirm no breeding activities of Little Grebe (including their eggs, chicks and juveniles) would be affected by the construction activities. The inspection should be performed by experienced ecologist(s) with over seven year of experience in the relevant aspect. Agriculture, Fisheries and Conservation Department (AFCD) should be informed in writing about the suitability of commencing construction work at the Project site before the commencement of any site activities.

6a.2.1.2 If breeding activities of Little Grebe are found during the site inspection, the construction programme and method should be reviewed to identify the practicable measures to minimize impact to the breeding birds through:

- Careful phasing of construction work: postpone the works that are located within and near the breeding area(s).

- Minimization of disturbance to the breeding birds due to construction activities: hoarding should be set up around the breeding ground to screen off construction works and human activities before the commencement of construction phase. Sufficient buffer zone should be given between the breeding bird and the hoarding without hindering their feeding, foraging and roosting activities. The fenced-off area should be inspected once a week to review the effectiveness of the mitigation measure and make adaptive actions promptly. The inspection would terminate after the chick(s) or juvenile(s) leave the fenced-off area.

6a.3 Site Audit Requirement

6a.3.1 Construction Phase

6a.3.1.1 To minimize the disturbance impact on the natural habitat and wildlife, the implementation of the mitigation measures recommended in **Sections 7a.8.2.10 and 7a.8.2.11, 7a.8.2.16 and 7a.8.2.17** of the EIA report should be subject to regular site audit. Site audit should be carried out monthly throughout the construction phase. In case of non-compliance, the Contractor should be informed to strengthen the proposed measures properly.

6a.3.1.2 If breeding activities of Little Grebe are found during the pre-construction phase site inspection, no personnel shall be allowed to enter the breeding area without any written permission from the Resident Engineer. The fenced-off area should be inspected once a week by experienced ecologist(s) with over seven year of experience in the relevant aspect to review the effectiveness of the mitigation measure and make adaptive actions promptly.

6a.3.2 Operation Phase

6a.3.2.1 To minimize the disturbance impact on the natural habitat and wildlife, the implementation of the mitigation measures recommended in **Sections 7a.8.2.12 and 7a.8.2.13** of the EIA report should be subject to site audit. Site audit should be carried out monthly during major breeding season of Little Grebe (i.e. March to August) and bi-monthly throughout the plant test and commissioning period and within one year after the commencement of the operation of the IWMF. Should there be any non-compliance, the Contractor should be informed to strengthen the proposed measures properly.

6a.4 Ecological Monitoring of Avifauna and their Habitat

6a.4.1 Construction Phase

6a.4.1.1 To assess the effectiveness of the mitigation measures recommended in **Sections 7a.8.2.10 and 7a.8.2.11, 7a.8.2.16 and 7a.8.2.17** of the EIA report, monthly monitoring of avifauna and their notable behaviour including breeding activities, in the Middle and West Lagoons should be conducted during the construction phase. The avifauna monitoring should cover the remaining Middle Lagoon area outside the Project site and the whole West Lagoon. All birds seen and heard including signs of breeding (e.g. nests, recently fledged juveniles) of birds should also be recorded. The habitat condition, coverage of water, and PFA filling/dredging activities within monitoring area, the construction activities within the Project site as well as other noticeable activities should be recorded. The effectiveness of the proposed mitigation measures should be reviewed, with reference to the findings of avifauna monitoring and habitat condition of the monitoring area.

6a.4.2 Operation Phase

6a.4.2.1 To monitor the effectiveness of the mitigation measures recommended in **Sections 7a.8.2.12 and 7a.8.2.13** of the EIA report, monitoring of avifauna and their notable behaviour including breeding activities, in the Middle and West Lagoons should be conducted during the operation phase. The monitoring should be conducted monthly during major breeding season of Little Grebe (i.e. March to August) and bi-monthly throughout the plant test and commissioning period and within the first year after the commencement of the operation of the IWMF. The monitoring area should include the remaining Middle Lagoon area outside the Project site and the whole West Lagoon. All birds seen and heard in the monitoring area, including signs of breeding (e.g. nests, recently fledged juveniles) of birds should also be recorded. The habitat condition, coverage of water, and PFA filling/dredging activities in the Middle and West Lagoons, the activities within the Project site as well as other noticeable activities should be recorded. The effectiveness of the proposed mitigation measures should be reviewed, with reference to the findings of avifauna monitoring and habitat condition of the monitoring area.

6a.4.2.2 The ecological monitoring during construction and operation phase should be performed by experienced ecologist(s) with over seven year of experience in the relevant aspect. Should any unpredicted indirect ecological impacts arising from the proposed Project be detected, remedial measures should be recommended and implemented by the Contractor.

6a.5 Ecological Monitoring of Additional Compensatory Habitat and Enhanced Wetland Habitat

6a.5.1.1 An additional compensatory habitat would be constructed, and an enhanced wetland habitat at the southern unoccupied Middle Lagoon portion would be maintained to compensate for the loss of breeding habitat for Little Grebe. The optimal condition of the additional pond and the enhanced wetland area should be maintained for the use by Little Grebe. The condition of the pond and the wetland as well as the utilization by Little Grebe and other wildlife should be monitored in the first two years of its operation phase to review the performance of ecological function. The need and requirements of monitoring should be reviewed after the completion of the monitoring programme. The implementation details of the monitoring programme should be described in Detailed Habitat Creation and Management Plan (HCMP) of the recreated pond and the enhanced wetland prepared by experienced ecologist possesses at least a Bachelor's degree in relevant discipline and at least 7 years relevant professional experience. The HCMP should be circulated to relevant departments including AFCD prior to the construction.

6a.5.1.2 Parameters, such as the water level, water quality, coverage of emergent or floating vegetation and coverage of exotic invasive and undesirable plants cover, would determine the habitat condition of the pond and the wetland in the Middle Lagoon and thus influence the effectiveness of the mitigation measures. Monitoring of the above parameters and implementation details of the monitoring programme should be defined in HCMP.