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**ACE-EIA Paper 6/2005**

*For Advice*

**Environmental Impact Assessment Ordinance (Cap. 499)  
Environmental Impact Assessment Report  
Drainage Improvement in Southern Lantau**

**Purpose**

This paper presents the key findings and recommendations of the Environmental Impact Assessment (EIA) report for the Drainage Improvement in Southern Lantau (hereafter known as the Project), submitted under section 6(2) of the Environmental Impact Assessment Ordinance (EIAO). Drainage Services Department (DSD) is the Applicant for the Project and they will make a presentation at the meeting. Comments from the public and the Advisory Council on the Environment will be taken into account by the Director of Environmental Protection when he makes the decision on the approval of EIA report under the EIAO.

**Advice Sought**

2. Members' views are sought on the findings and recommendations of the EIA report.

**Need for the Project**

3. In the previous study conducted by DSD, deficiencies and flooding problems were identified in the existing drainage systems in the Southern Lantau area. The Project is part of the recommendations of the study to upgrade the existing drainage capacity to alleviate the flooding problems.

**Description of the Project**

4. The Project is to carry out drainage improvement works in the Pak Ngan Heung (PNH) River, Tai Tei Tong (TTT) River and Luk Tei Tong (LTT) River and to

construct a U-channel at Ling Tsui Tau Village in Mui Wo. Location of the Project is shown in Figure 1. Major works of the Project include :

- (i) For PNH River, construction of gabion wall with natural bed of approximately 80m long at the upstream, three cells diversion box culvert of approximately 180m long and rectangular channel of approximately 100m long at the downstream;
- (ii) For TTT River, widening of three existing bottlenecks with gabion lining;
- (iii) For LTT River, construction of a by-pass channel of approximately 350m long and gabion wall with natural bed of approximately 240m long; and
- (iv) For U-channel at Ling Tsui Tau Village, construction of a 750mm wide U-channel of approximately 200m long.

5. The Project is classified as a designated project under Item C.12, Part I, Schedule 2 of the EIAO, i.e. “a dredging operation which is less than 500 metres from the nearest boundary of an existing bathing beach”.

### **Consideration of Alternative Drainage Improvement Options, Design Measures and Construction Methods**

6. The following six alternative drainage improvement options were considered for relieving flooding in the three rivers, with environmental factors played in the consideration, for recommending the preferred options in the Project :

- Option A – Maintenance of existing river
- Option B – By-pass channel or box culvert
- Option C – Interception and storage pond
- Option D – Floodwall and pumping station
- Option E – River training of existing drainage system
- Option F – Construction of earth bunds at both sides of LTT River

7. Having regard to the environmental factors, among other factors, and the comments received during the Continuous Public Involvement (CPI) process (see paragraph 17 below), a combination of the above options was recommended for the Project. The recommended options include by-pass box culvert for PNH River,

by-pass channel for LTT River, river training of existing PNH and LTT Rivers, and improvement of bottlenecks at TTT River. The options minimise the ecological impact by reducing the areas of affected habitats and alleviate the visual impact due to engineering structures such as floodwall, pumping station and earth bunds.

8. Several environmentally friendly design measures were recommended in the Project. They include use of natural substrates for riverbeds, use of soft engineering materials such as rock-filled gabion for riverbanks, preservation or re-creation of meanders, management or maintenance of water level/water table and planting of native species, etc.

9. Construction works within LTT marsh and the confluence of the three rivers will be carried out in dry season to minimise the ecological and water quality impacts. Moreover, construction method of placing earth bunds or walls along the river channels to separate the construction site and existing rivers will be adopted. This method will minimise the ecological and water quality impacts by providing a dry condition on one side of the rivers for construction whilst maintaining the flow of rivers on another side.

### **Specific Environmental Aspects to Highlight**

10. The key environmental issues identified for the Project are ecological and water quality impacts during construction phase.

### **Ecological Impact**

11. As mentioned in paragraph 7 above, having regard to the comments received during the CPI process, the Project will adopt the drainage improvement options which have less ecological impacts. Environmentally friendly design measures and due construction methods and programme, such as carrying out of construction works within the river confluence in dry season to avoid breeding season of White-shouldered Starlings recorded in the Disused Watchtowers situated close to the river confluence, as mentioned in paragraphs 8 and 9 above will be implemented to further minimize or mitigate the ecological impacts. Compensation in terms of woodland area and trees planted will be on at least a 1 : 1 ratio, covering an area of at least 0.13 hectares.

12. The by-pass channel for LTT River will adopt a shallow and wide design with weir at the downstream end to maintain the water table in order to minimize the

impact to riparian life. The construction works will be limited to one dry season that will avoid breeding season of avifauna and herpetofauna species that may be present in the LTT marsh. Construction of the by-pass channel including removal of turf will be carried out sections by sections, with no more than 100 metres each time. The removed turf will be reused in the by-pass channel. All temporary works area will be reinstated.

13. With the implementation of mitigation measures, the residual ecological impact of the Project will largely be associated with the loss of small areas of habitats, such as 0.2 hectare of inactive wet agricultural land, 0.03 hectare of active dry agricultural land and 0.03 hectare of tree/orchard, which are of low ecological value. The net loss of marsh habitat at LTT will only be about 0.2 hectare.

#### Water Quality

14. The Project will not involve large scale of construction activities. With the implementation of mitigation measures such as carrying out of major construction works in dry season and placing of earth bunds or walls along the river channels to provide dry zone for construction as mentioned in paragraph 9 above, and implementation of good site practices to minimize site runoff and prevent erosion, no adverse water quality impact is anticipated during construction phase of the Project.

#### Other Environmental Impacts

15. The EIA report also addressed impacts of air quality, noise, waste management and cultural heritage, and recommended landscape design to minimize the impacts of landscaping and visual quality. Due to the close proximity of a noise sensitive receiver (NSR) to the proposed retaining wall site at the PNH River, a short term residual noise impact of 3dB(A) for a period of about 4 weeks may be experienced by the NSR. The EIA report concluded that, with implementation of appropriate mitigation measures, the environmental impacts are considered acceptable.

#### Environmental Monitoring and Audit (EM&A)

16. The EIA report includes an EM&A Manual which recommends the EM&A works during both construction and operation phases of the Project.

## **Public Consultation**

17. The Applicant has applied the Continuous Public Involvement process and consulted some green groups, the Islands District Council, Mui Wo Rural Committee and Village Representatives to seek their comments on the Project during the preparation of the EIA report. The EIA report, EM&A Manual and Executive Summary are available for the public to comment under the EIAO starting from 26 September 2005 for 30 days. Members will be briefed about the comments received from the public at the meeting.

**October 2005**  
**Environmental Assessment Division**  
**Environmental Protection Department**